



ASSOCIATION FOR INDUSTRIAL ARCHAEOLOGY ESSEX CONFERENCE TOUR NOTES

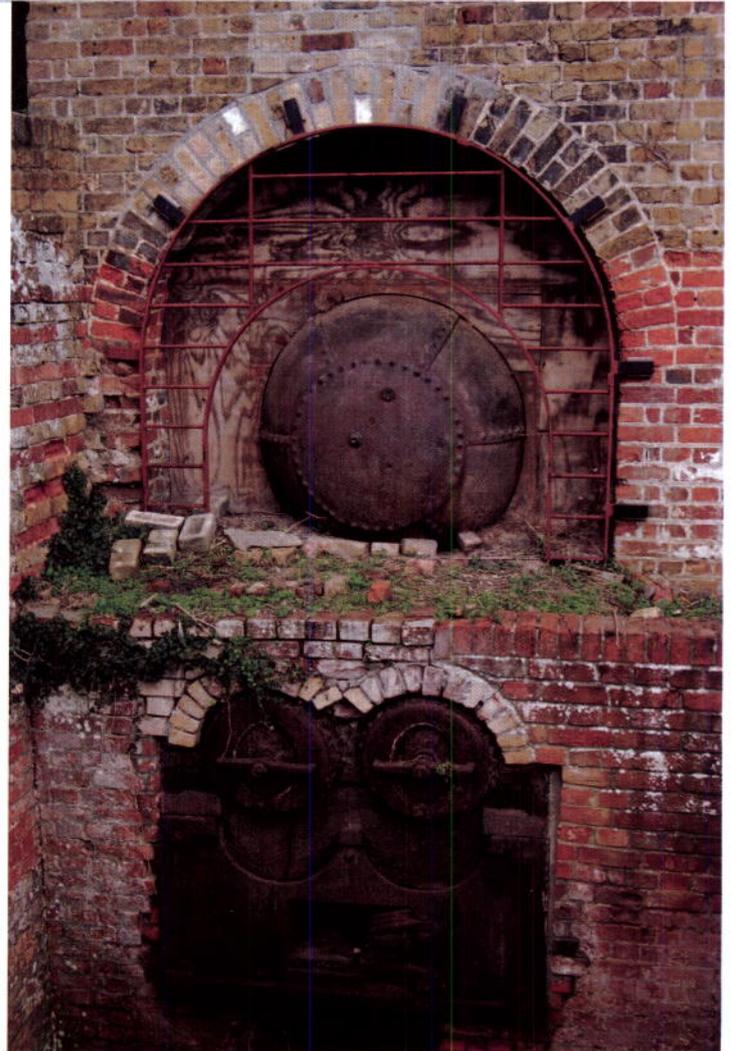


**August
2012**



*Beeleigh Lock,
Chelmer & Blackwater Navigation*

The 'elephant' boiler at Beeleigh Mill



Front cover: Thames barge moored at the Hythe, Maldon

Introduction

In recent years Essex has suffered from the image of Essex girls and men, which rather oddly affects how it is viewed as a landscape. The tours on this conference will almost completely avoid the suburban sprawl found in the west of the county, inside the M25. Elsewhere it is a rolling landscape, never high and more wooded than Suffolk to the north. Apart from the Thames valley, and the coastal marshlands there are few flat areas. Constable's Stour Valley, the epitome of English countryside, is, after all, half in Essex, with the Stour being the county boundary for most of the border between Essex and Suffolk. The visits do penetrate into southern Suffolk because the Stour was always more of a link than a barrier, and in particular the main industrial theme for eight centuries, textiles, very much spanned the border. Over the years weaving of various materials, wool, silk, horsehair, artificial silks, dominated the Stour valley and the adjacent areas.

The other feature of Essex, often overlooked, is its coast: the many island filled river estuaries give it what is claimed to be the longest coastline of any English county. A surprising number of coastal settlements even now are on islands linked by causeways to the mainland, and are cut off by very high tides, Mersea being a notable example. The shallow rivers and many mudbanks led to an abundance of shellfish, especially oysters, which have been farmed since Roman times. As there are no good natural harbours between the Orwell and the Thames, North Sea fishing was less significant though not negligible.

The county was home to a variety of building styles and materials. In the Saxon period it was heavily wooded, and at Greenstead Juxta Ongar there is the only surviving Saxon wooden church. In the medieval period half timbered buildings were the norm, with a variety of infilling, though the most common now seen is lath and plaster. The outside of these houses was normally almost completely plastered with little wood showing, the plaster sometimes heavily moulded in patterns and low relief pictures, the technique known as pargeting. Because the county was relatively well wooded, weatherboarding was an alternative, and in the nineteenth century in coastal areas the availability of Baltic timber made this a common practice. There are areas of brick clay, but virtually no stone, though the proximity to the sea meant importing stone was not difficult. Nevertheless, most of the statelier properties are in brick. In towns like Maldon and Braintree there are far more timber-framed properties than you might imagine from a cursory look. In the eighteenth century Essex was somewhat more affluent than Suffolk, and many properties received a new frontage but were not totally rebuilt.

The industrial revolution had no very marked effect on most of Essex. As in Norfolk and Suffolk, the demands of the farming community led to the establishment of iron foundries and agricultural engineering works, but probably only the 'Tortoise' stoves made in Halstead had a national reputation. However, the coming of the railways and paddle steamers did lead to the creation of the tourist resorts of Clacton and above all Southend, the latter within easy reach of a day trip from the East End. In the twentieth century as in all the counties surrounding London there was a rapid growth in the new industries dependent on electricity rather than steam and providing the new products technological change had made available: radios, electric lights, artificial silk underwear, steel framed windows for suburban houses, which wouldn't rot – but did eventually rust.

Essex was always the last line of defence before London, and so there is a proliferation of military sites and forts, especially along the Thames. Harwich and the mouth of the Orwell were similarly defended. The fortifications surviving range from the seventeenth century Tilbury Fort to the artificial Nore forts erected in the Thames estuary in the Second World War. The coming of aerial warfare had equally significant effects, with airfields for fighters created in both the First and Second World Wars, as well as a chain of supportive observation points and defence centres.

Context for Tours C and H

In 1909 Maldon was rightly described as “one of the most ancient towns and Boroughs in Essex”. But for all that heritage, even at that stage Maldon was a modern commercial place and, thanks to a number of early entrepreneurs, a centre of industry and employment. The River Blackwater was an important factor in all of that. The **shipping trade** was still very much in existence, as were the **fisheries** - oyster and otherwise – and the town had its own active fleet of **fishing smacks**. Then there was **boat and yacht-building** - traditionally by John Howard (d.1915) and Cook and Woodard down at the Hythe – and the associated trades, like **sail-making** by Taylor’s (Arthur G. Taylor took over the business from Joseph Sadler in 1914). There were convenient river to land links via the **Chelmer and Blackwater Navigation** and out to sea by way of the estuary. Although not in any way as lucrative as it had been a century earlier, there was also **farming** in the surrounding countryside and across the Dengie.

Maldon and Heybridge were also the location for **iron-founding** and the manufacturing of agricultural equipment, the major player being **Bentall’s** ‘Heybridge Works’. Bentall’s began in the late-18th century with the invention of the famous ‘Goldhanger Plough’. By the early 20th century they were employing 700 hands and the business covered an area of about 14 acres. At the outbreak of the Great War a large proportion of the output switched from agricultural equipment (and a short and unsuccessful venture into motor-car production) to the manufacture of shell cases. Many millions were made in Heybridge, with women being engaged to work as ‘moulders’.

John Sadd & Sons Ltd the **timber** and builders’ merchants, was trading in Maldon from as early as 1729. Sadd’s was, until quite recently, a leading firm in the town, importing timber from Europe and, at one time, slate from Wales and supplying cement, lath and Stockholm tar to the trade. They were also corn merchants, warehousemen and early providers of Maldon’s electricity (which they generated by burning vast amounts of their sawdust!). So successful were they that they became the second biggest employer in the area. From 1831 their busy saw mill, wharfs and sheds were established on the north side of Fullbridge, where their own fleet of **sailing barges** (complete with distinctive blue and white house flags, or ‘bobs’ aloft) off loaded countless cargoes. The Sadd barges included the Maldon built ‘James & Harriet’ (1864), ‘Oak’ (of 1881) and ‘Cypress’ (1887). They also had the ‘Falcon’ (built in Paglesham in 1868) and, after 1919, the ‘Record Reign’ (Maldon 1897). Barges were key to their business and from 1921-1936 the firm even sponsored a challenge cup as part of the annual Maldon Barge Race. Always astute in their business dealings, their houses, including ‘Mount View’ in London Road and ‘Hill House’ on Market Hill were equipped with belvederes to enable regular observation of their Fullbridge works, the barges and other river traffic. (*photo opposite Tour Notes H*)

The **brewing trade** also operated in the area - **Gray & Sons** had their ‘Maldon Brewery’ in Gate Street from 1865 to 1952. In fact there have been brewers here from as early as 1446 – some with familiar names like Petchie in 1569 and some “foreigners” such as a group of Dutchmen in the 1550s. Others were based in the pubs – John Wells down at the White Hart, Fullbridge (1605) and Francis Syritt at the Queen’s Head (1820s). And that tradition continues to this day, not least with the Maldon Brewing Company at the Blue Boar.

There is an awful lot more to Maldon’s industrial story than these brief examples but we cannot leave the subject without mention of **Maldon salt** – Delia’s favourite! Salt extraction (through evaporation) has taken place in the area of the River Blackwater since Roman times and a commercial enterprise - the ‘Maldon Salt Works’ - was established here as early 1777. The ‘**Maldon Crystal Salt Company**’, a successor business started in 1882, still operates out of Maldon today, panning the crystals in the time-honoured way.

TOUR NOTES A,B & C

On these tours, you may well get a quick look at **Moulsham Mill**. A watermill on this site is mentioned in Domesday Book, but the present wooden building was constructed in 1819, extended in brick in 1890. Steam power was introduced by 1839, and roller milling in the 1890's. It was operated by Messrs W H Marriage & Son until closure in 1971. The firm still exists, and operates from Chelmer Mills, built as a steam mill in 1900. In 1983 a major restoration project developed it as a business and craft centre, but this involved removing almost all the machinery. An unusual feature at the Army and Navy roundabout is the bi-directional flyover, built in 1978, taking light traffic into the city until 2.30 p.m. and thereafter traffic leaving the city. En route to Sandford Mill we follow in part the original Chelmsford bypass, opened in 1932. Concrete bridges were a feature of Essex C.C. engineering at this time, and we cross a good example, though this viaduct is due to be replaced in the near future.

Sandford Mill

In 1926 the Chelmsford Corporation built a waterworks on this site, which was taken over by the Essex Water Company in the mid seventies. It was decided to concentrate water treatment at Langford (see below), so the pumping machinery was removed and in 1984 the buildings were returned to the corporation. Since there was an urgent need for storage space for museum artefacts, it was decided to use the Engine House for industrial items. Additionally, it was decided to develop a Science Education Centre for use by local schools and in term time this is its major role.

Rebuilt within the museum is the hut, originally sited in Writtle, used by Marconi for research into aircraft radio. From 1922 it broadcast the first regular public radio service with the call sign 2MT or 'Two Emma Toc'. Marconi continued to use it for research until the 1960's when it was moved to a local school as a sports hut. Finally it was moved to Sandford. In it is recreated that first broadcasting studio. Other recreations include four typical ship radio stations from the 1900s to the 1970s. There is also a collection of radio transmitters and receivers and TV camers. There are a number of other artefacts representing Chelmsford's other pioneering firms, Crompton and Hoffman, stationary engines, milling machinery and a rebuilt blacksmith's forge from High Easter.

Museum of Power, Langford

An urgent need in the 1920's for more water supplies led to the Southend Waterworks Company deciding to construct a new pumping station at Langford, which was officially opened in September 1929. The station originally held two vertical triple expansion engines by the Lilleshall Company Limited. In 1931 a third similar engine was installed, and this is the one which it was decided to preserve when the station went over to electric pumps in 1963. From the start the station had electric lighting from three 80kw steam powered generators. In 1966 the 150' tall chimney was demolished. In 1970 a new pumping complex opened elsewhere on the site, and the original works closed completely. However, the works was not forgotten, and in 1996 a scheme to reopen the buildings as a Museum of Power came to fruition with the support of Maldon District Council and the Essex and Suffolk Water Board. Further examples of engines of various kinds have been acquired and examples of machine tools set up as a belt driven workshop.

Beeleigh Lock and Weir *(photo inside front cover)*

This is the first lock from the sea on the Chelmer and Blackwater Navigation and it is not easy to understand the various waterways. However, there is a helpful explanation board by the weir. Essentially the weir marks the point where the River Blackwater now joins and supplies the artificial cut of the Chelmer and Blackwater Navigation, with excess water falling over a weir into the tidal Chelmer. Originally this confluence was very much nearer the mouth of the Chelmer in Maldon, though the rivers were always very close at Beeleigh. As you stand with your back to the tidal section below the weir, the navigation to the right leads to Heybridge and the sea lock

there, the cut the other side of the lock joins the Chelmer where it is non tidal above another weir. However, at very high tides the tidal water overtops this weir. To prevent it turning back towards Heybridge and causing flooding there, a pair of flood gates is sited just beyond the bridge. To confuse things further there is a channel branching off the Chelmer leading up to Beeleigh Mill and the associated barge dock.

Beeleigh Mill

There has been a mill at Beeleigh since before the Norman conquest. However, the oldest of the present structures dates back to 1797 when a very large five storey mill was built, mainly in timber. It had a 13' head of water serving two large breast shot wheels and ten (later twelve) pairs of stones. It had two barge bays which survive, though now badly silted. In 1845 a second hand compound beam engine was installed in a new steam mill built alongside the watermill. It was originally built in 1837 to Woolf's design by Wentworth & Sons of Wandsworth and it is not known where it came from. Only two other Wentworth engines survive, both in the now closed Young's Brewery. Clearly the steam mill was built before the engine was acquired, as both the building and the engine had to be modified to fit it in. Also installed was the even more unusual 'elephant' or 'egg end' wrought iron boiler which survives intact and in remarkably good condition. (*photo inside front cover*) Imported from France, though designed and built by an English engineer, Humphrey Edwards, it is the only known example in Britain. The engine drove five pairs of stones in a fine cast iron hurst frame. The profits of the complex paid for a new Mill House, built in 1850 and still standing next to the mill. However, in 1875 disaster struck when the watermill caught fire and despite the best efforts of the local fire brigade was almost completely destroyed, only the ground floor brick walls surviving. The brigade did manage to prevent the fire spreading to the steam mill, but the business was ruined (the mill had not been fully insured), and milling ceased even in the steam mill. The door was locked and it was left. Eventually the site was acquired by the Essex Water Company, who in the 1960's restored the roof and made the structure sound, then in 1995 leased it to the Essex County Council. Problems with bats were finally solved and in 2009 the Beeleigh Mill Restoration Group was formed and work proceeds.

An odd facet of the mill's history is that its remote location led to its being a base for one of the Auxiliary units created to be a guerrilla force in the event of a German invasion, with a hideout hidden under what had been the floor of the watermill. A canoe was kept hidden in the wheelpit. Perhaps unfortunately, the location was backfilled and sealed off after the war.

Heybridge

On the far bank of the Chelmer from Maldon the land is much flatter and lower lying. It is not, therefore surprising that industries developed here and in Heybridge in the nineteenth century, encouraged by the opening of the Chelmer and Blackwater Navigation in 1797, and the Eastern Counties Railway (later Great Eastern Railway) branch from Witham to Maldon East in 1848. Along the river were flour mills (Greens Flour Mill still stands and mills) and timber yards, and behind them an iron works with another ironworks beside the navigation. (See Tour H notes)



Maldon East station: rather magnificent, in the Jacobean style with a nine bay arcade facing the road approach. Built 1847/8 and closed to passengers in 1964, after some vicissitudes it has now been nicely restored as offices.



Maldon Ironworks: built by Joseph Warren, who moved here to be near the railway by 1853. The fine building with its 'MALDON IRONWORKS COMPANY LIMITED' inscription replaced an earlier foundry damaged by fire. Now in varied commercial use

Bentall's Warehouse:

William Bentall moved his Goldhanger foundry to this site in 1815 to be by the navigation. His son E.H.Bentall later gave his name to the firm, which was noted for the Goldhanger Plough and the very early Bentall motorcar. Most of the buildings have gone, but this magnificent warehouse of 1863 survives, converted into offices.



The Towers: E.H.Bentall was an early enthusiast for the use of reinforced concrete. Very early (and now very battered) concrete walls line much of Goldhanger Road and Colchester Road, on which in 1875 he built The Towers. This mansion was Italianate and concrete, so strong it had to be blown up. The only surviving building is the matching lodge at the gate.

Heybridge Basin

Here a small settlement grew up with the necessary pubs, warehouses and housing where the Chelmer and Blackwater Navigation reached tidal water, and a small basin was created. Because of the tortuous course of the tidal Blackwater, this was a mile and a half nearer the sea than the Blackwater's old course, which joined the Chelmer near Fullbridge in Maldon. The sea lock is still operative.

TOUR NOTES D

En route we shall see Bocking Mill on our left. This postmill was built in 1721, making it the second oldest in Essex. It was moved some 170 yards in about 1830 and probably modernised at the same time. Throughout its working life it was owned by the Tabor family until 1929 when it was given to Bocking Parish Council, who to their credit organised its preservation, though currently it is only cosmetically restored and not in working order.

Haverhill

Certainly there were Saxon settlements in Haverhill and the adjacent Sturmer, which sent a battalion to fight at the Battle of Maldon in 991. Haverhill seems already to have had a market by the time of the Domesday Book and by the sixteenth century was a more important market town than Sudbury or Clare. Its prosperity was enhanced by a weaving industry, but this was on the fringe of the textile area dominated by Long Melford and Lavenham, and the steep decline in the industry towards the end of the sixteenth century was less disastrous to Haverhill than elsewhere. Some weaving survived certainly until the mid eighteenth century and then flourished again with the assistance of the Gurteens. Other industries developed over the next century, encouraged by the arrival of the railway in 1863 (Colne Valley and Halstead) and 1865 (Stour Valley Line). Like most towns the new industries included a foundry, Atterton's, which was to become Atterton and Ellis and established on its present site in 1882. This firm has survived through its development of machinery for grinding lawn mower blades. A rope factory and brushmakers survived until after W.W.2. The town also developed a silk weaving industry, like some areas in south-west Suffolk, and at least three of the factory buildings survive in in other uses. However, by far the biggest employer in the town until relatively recently was Gurteens. At the end of W.W.2, the town went into a state of decline and the council offered to take London overspill. While to some degree this this encouraged new industries, such as Addis toothbrushes in an old silk mill, it also brought a number of problems which have only been resolved by time.



Disused silk weaving mill c1828, Haverhill

Gurteen's Chantry Works.

In 1784 Daniel Gurteen, a master weaver of Huguenot descent who had moved to the town some years earlier, deposited the then very large sum of £1000 in the bank. Clearly his business was flourishing. His speciality was drabbet weaving, used for agricultural smocks, and he also had these made up. Since then the firm has always specialised in the production of clothing though it had some sidelines, including the weaving of coir mats (another south Suffolk trade). It gave up cloth weaving in about 1972, but only stopped making up clothing in the present century. Still very much in business, it is now essentially a distributor. Its first factory was built around 1820. In 1856 the first part of Chantry Mills was constructed, a large 3 story red-brick building, and in 1879 a horizontal steam engine, 'Caroline', and three Lancashire boilers were installed to power the 150 looms. The engine was built by Hicks, Hargreaves and Co of Bolton, No 519, and developed about 120 H.P. The flywheel is 16' in diameter. At a later stage it also drove an electricity generator. It was pensioned off in 1961 and replaced by two electric motors, but is still in situ and can be shown in motion. In 1900 the company employed some 2500 people in or around Haverhill. Gurteens was a caring employer, providing housing, a canteen and medical services for its employees. It has been a generous benefactor to the town,

for which the Gurteens have provided a recreation ground, supported (and played for) the town's cricket club, and built the Town Hall (now an Arts and Local History centre with a large hall and a coffee shop). They also provided much of the money for a new non-conformist chapel (where we shall have lunch). Mr Christopher Gurteen has created a museum on the top floor of Chantry Mills which we shall visit, but most of the buildings are now sublet.

Aythorpe Roding Post Mill

The largest remaining post mill in Essex, she was probably built in 1779 on an ancient mill site. She worked until 1936 with the aid of an auxiliary steam engine on windless days. She shows signs of regular refurbishment and updating, including the adoption of patent sails and the addition of a fantail. The roundhouse may also be a later addition. The cast iron windshaft is unusual in having a square cross section for much of its length (*photo on back cover*) and was probably installed when the two pairs of stones were brought together in the head of the mill – one pair had previously been in the tail. Restored to working order by Vincent Pargeter in 1980, she is now maintained by the County Council. Fittings include a bolter for dressing the meal.

The Epping and Ongar Railway

We pass the Ongar Station of the Epping and Ongar Railway. The original Great Eastern branch to Epping and Ongar opened in 1865 but was taken over by London Transport in 1949 as part of the extended Central Line. The line was electrified as far as Epping, but the last very rural section was not thought to warrant the expense, and a steam shuttle service ran between Epping and Ongar. Then in 1958 the line was lightly electrified, sufficient to run three or four coach trains which took less current and fitted the short platforms. However, the line carried few passengers and in 1994 services ended. There was enthusiasm to preserve the line, but its recent history under preservation has been complex. Closed in 2008 for engineering work, it reopened on May 25th 2012. Somewhat incongruously, the two largest steam locomotives are from the GWR, one (a 'Hall') very much a main line locomotive.

Kelvedon Hatch Nuclear Bunker

Created since the Second World War as part of the defence system, this site had a changing role during its service life. Built in the middle of the countryside, it was always top secret. The guard house looks like a very ordinary chalet-bungalow. Its first role, when it was constructed in 1952/3, was as a sector operations centre for Fighter Command that would be safe from nuclear attack. It is 125' under an artificial hill, and has 3 levels. Originally it had a large central hall with galleries round and a plotting table in the centre (a scene familiar from the Battle of Britain). When the plotting role was abandoned, with some conversion it became a Regional Seat of Government, and then Regional Government Headquarters, with the role of assisting the civilian population and maintaining government in the event of a nuclear attack. The bunker had elaborate provision against the effects of nuclear war and fall out including protected water supplies and air filters, air conditioning, its own generating plant and food reserves for three months for a staff of several hundred. As the nearest bunker to London, it would probably have housed the national government in the event of nuclear conflict, with rooms for senior government and military officials including the Prime Minister and elaborate communication links with other bunkers all over the country. (*photo on acknowledgements page*)

The Chelmsford Museum, Oakland Park

The museum has a display only created three years ago on the three main technical industries of Chelmsford in the twentieth century: Marconi Radio, R E Crompton electrical lighting and engineering, and Hoffman ball-bearings – though none of these now survives in business in the town.

TOUR NOTES E

Flatford Mill was worked by Golding Constable, father of the artist John Constable. A large and attractive building of red brick, the mill is now a Field Studies Centre and all the machinery has been removed. Just below the mill is the setting for Constable's painting *The Haywain*, which was in fact a timber jinn temporarily converted into a harvest wagon. The adjacent lock is a rebuilding of one of a series of locks installed early in the eighteenth century to enable lighters to negotiate the river as far as Sudbury. There were originally thirteen locks and thirteen staunches or flash-locks on the Stour Navigation between Cattawade and Sudbury, later simplification removed the staunches and added two more locks so that there were just fifteen locks on the river. The lock gates are hung on pintles on upright land posts that are held apart by a gallows beam linking their upper ends instead of the arrangement normal on British canals. Flatford lock was rebuilt in concrete in 1928 and restored in 1975. The drydock which still exists above the mill features in one of Constable's paintings, which shows a Stour lighter either being built or under repair. It was excavated and restored a few years ago. The arrangement for emptying the lock of water once it has been isolated from the river by a temporary dam is interesting; the water was allowed to drain through a timber trunk sunk into the river bed into the soke dyke on the other side of the river. The dyke drains into the lower section of river below the lock.

The lighters used on the Stour operated in pairs and were of the same design as those used on the Fenland rivers. It seems likely that the earliest of these were built by a boatbuilder from the Fens introduced to the Stour by an "undertaker" working on the construction of the navigation, possibly in the 17th century. Copies of the main Constable paintings featuring the area are on display in the National Trust's Bridge Cottage. A surviving lighter is under restoration at the Pioneer Trust in Brightlingsea (see notes for Tour F)

Hadleigh was in the Middle Ages engaged in the woollen cloth trade and had one or more fulling mills on the River Brett; 'Roger the fuller' is recorded about 1180. The woollen trade was in decline by the 16th century and in the 18th was replaced to some extent by the weaving of silk and in the 19th by the manufacture of coir matting. In 1834 a steam-driven silk throwing mill in which raw silk was spun into thread was built by a company of local shareholders headed by the rector, Archdeacon William Lyall; the idea behind the promotion of the mill was not merely to provide much-needed employment but to obtain control over the young people working there, most of whom were no more than children. It was thought that by controlling the workforce the local philanthropists could influence both their education and their moral wellbeing. A school being provided; it is recorded that of the 295 workers in the mill only 25 boys and 91 girls attended school for an hour a day, and irregularly at that. In 1869 the silk mill was taken over by a London firm and converted into a coconut matting factory. It was demolished in 1996 and an old people's housing complex has been erected on the site.

Malting was an important trade in Suffolk since the county's farms produce excellent malting barley. Hadleigh retains several of the small floor maltings in which barley was processed into malt both for local brewers and for "export" to the larger breweries in London and Burton-on-Trent, though all are converted to other uses. Larger maltings were built beside the railway station after the opening of the branch line in 1847; these have been transformed into housing. As we leave Hadleigh we shall cross the Brett by a modern bridge which incorporates a girder from the earlier cast-iron bridge bearing the inscription 'St. Peter's Iron Works, Ipswich, 1843'. A section of the old bridge has been re-erected on the green at the approach to the bridge. In Bridge Street the offices of Babergh District Council (which takes its name from the old Babergh Hundred) are a conversion by Arup and Partners of a 19th-century malting complex.

The name of **Brent Eleigh** commemorates a disastrous fire that destroyed much of the village in the distant past. At **Monks Eleigh** a pump on the green in front of the church was made by Ransomes of Ipswich about 1840; a similar pump by the same makers stands in front of the Town Hall in Hadleigh

Our road crosses the Brett again between Monks Eleigh and Lavenham. Beside the modern bridge stands a cast-iron bridge by Ransomes dated 1813; it is a scheduled Industrial Monument.

Lavenham is now a tourist honeypot as a result of the town's poverty following the collapse of the woollen trade in the 16th-17th century. When householders in more prosperous communities were pulling down their timber-framed dwellings and replacing them in the latest architectural fashion the people of Lavenham were able at best to update their homes with a brick front, and much survives, including two of the town's four guildhalls. It is significant that in 1818 Lavenham was the third most impoverished parish in Suffolk and spent an enormous £2,986 that year on poor relief. Silk and horsehair weaving and coir matmaking came to the rescue and by the end of the 19th century William Whittingham Roper & Sons were employing more than 200 men and boys at their mat factory in High Street, now converted into housing named Roper's Court. In 1892 Roper's were described as "horsehair seating, curled hair, crinoline cloths, brushmakers' draughts & cocoa-nut mat and matting manufacturers" giving some idea of the range of their products. Approaching the town, the three-storey terrace on the left was built in 1908 as a horsehair weaving factory, the last to be built in the relatively prosperous days before the First World War. In Water Street is the site of the gasworks, opened in 1863; the surviving gasholder of 1868 is scheduled as an Industrial Monument. Water Street is so called because there is a brick-built culvert carrying a stream beneath the buildings on the south side of the street that doubtless supplied the medieval dyehouses and carried away the effluent therefrom. The very fine church reflects the prosperity of Lavenham when the woollen trade was thriving, and the name Tenterfield next door to the churchyard is a reminder of that trade; the tenters on which the cloth was stretched were erected there.

Sudbury was another centre of the East Anglian woollen weaving trade in the Middle Ages and was among the first places to benefit when the silk trade migrated from the Spitalfields area of London in the last quarter of the 18th century. The town still has a few terraces of 19th-century three-storey silk weavers' houses with very large windows on the middle floor to give light to the weavers at their looms. There is an early silk factory in Acton Place, but much larger premises are occupied by the two firms that continue the production of silk; one of them supplied silk for the Queen's Coronation robes sixty years ago.

The Sudbury area was also important for the production of bricks, many of which were carried down the River Stour and transhipped at Mistley quay into coasting vessels that took them to London, where they contributed to the construction of many prominent buildings, the Royal Albert Hall among them. At Bulmer, a few miles from Sudbury, there is still a working brickyard that provides "specials" for the restoration of historic buildings (see notes on Visit G). There were also at Sudbury large chalkpits, one of which was served by a siding from the Stour Valley railway line, and an engineering works which in the 20th century specialised in the making of ships' propellers.

Sudbury Quay

What is now the Quay Theatre began life as a warehouse, built by the commissioners of the Stour Navigation. It also served for a time as the town's first electricity power station. Another smaller warehouse is now the headquarters of the River Stour Trust. The Stour is still a statutory navigation, and the Stour Navigation Trust was formed in 1968 to attempt to make the river navigable again. Flatford, Dedham and Great Cornard Locks have been restored to working order but problems with riparian land owners and the Drainage Authority byelaws which effectively ban powered vessels from most of the river have hampered progress. We shall be taking a cruise on the river, to or from Great Cornard Lock. Note the disused railway bridge of the Stour Valley Railway crossing the river en route to Long Melford and thence to either Cambridge via Haverhill or Bury St Edmunds.

Chelmsford Museum See notes for Tour D

TOUR NOTES G

Witham

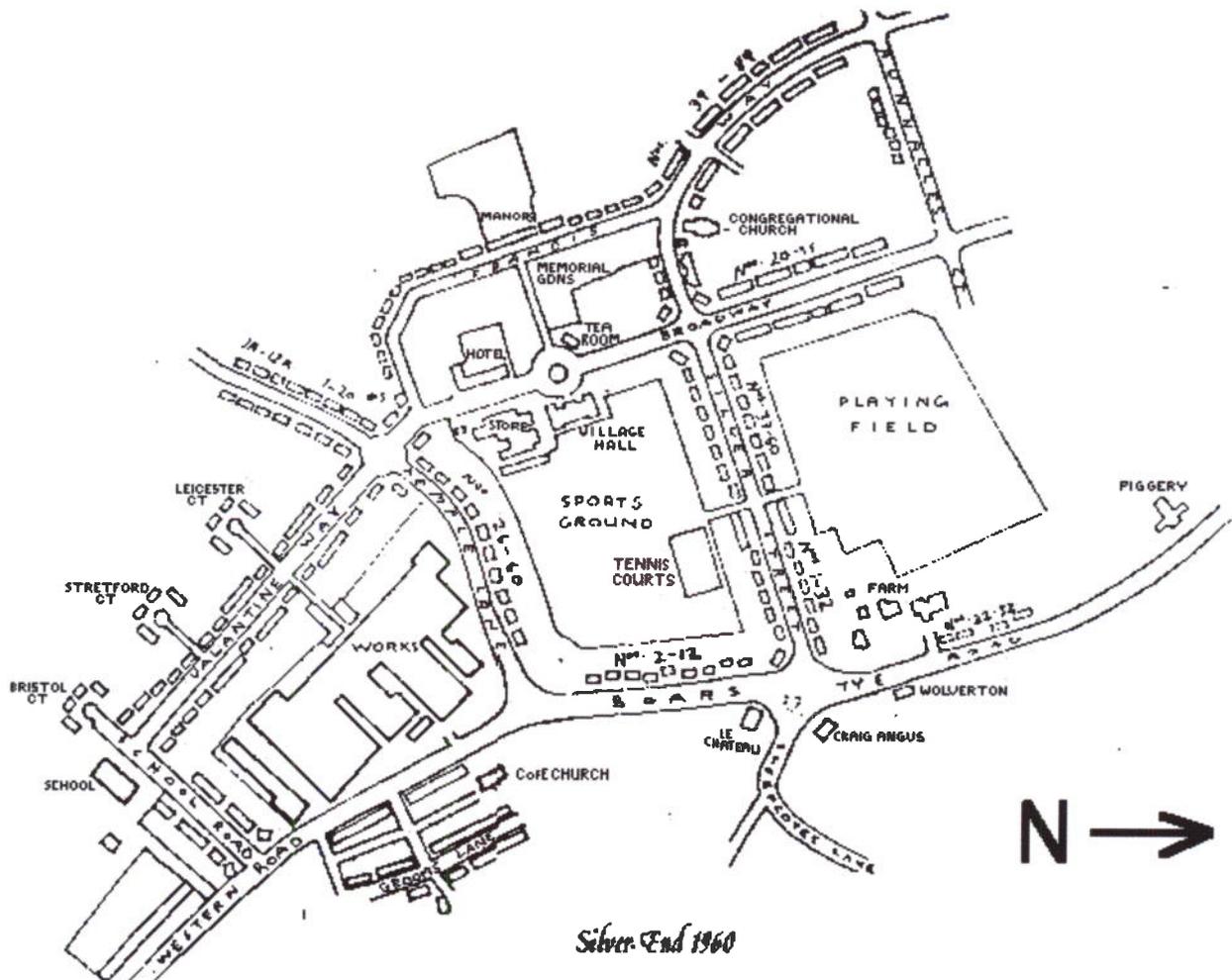
Industries have included malting, metal windows and electronic engineering. Baird's modern malting plant is one of only three remaining malting sites in Essex. Witham was historically one of the bases for Crittall windows and is now the headquarters. English Electric Valves built a factory here in the 1960s which then became part of the Marconi group and is now E2V.

Cressing Temple Barns

From the twelfth century Cressing Temple site was the headquarters of the Knights Templar in England. Two barns from that period survive on site – the wheat and the barley barns. There is also a seventeenth century granary which contains the remains of malting features.

Silver End

Crittall Manufacturing Co.Ltd was established in 1889. It specialised in steel framed windows and developed bases in Braintree and Witham. During the inter-war period they built a factory to produce small window fittings at Silver End, mid-way between Braintree and Witham, and surrounded it with their model village, developed as a self-sufficient community for the workforce. Started in 1925 the model village provided housing of a very high standard with hot & cold running water, proper sanitation, gas or electric light and gardens. Several architects were commissioned to design the houses in order to avoid monotony and this resulted in both modernist housing with flat roofs, rendered and painted elevations and linear glazing, (*photo inside back cover*) but mainly traditional pitched roofed, brick houses. Community facilities included a village hall with library, theatre/cinema, restaurant, lecture room and social spaces; hotel, department store, churches and public gardens. The village was completed by 1932 and is now a conservation area. The factory was built in 1926, but most buildings were demolished in 2008, only the 1926 factory building and the power house survive.



Braintree

Braintree was a significant industrial centre with major bases for both Courtauld's and Crittall's, also being the site of a number of iron foundries and maltings. Crittall's built experimental concrete housing here while the Courtauld family provided a large number of community facilities and some houses.

The **Clockhouse Way Estate** was built for Crittall staff in 1918. All elements of these flat-roofed houses were mass produced in multiples or fractions of a metre. The external structure is of concrete blocks and internal fittings, not just the window frames, were mainly made from steel. They proved inefficient and have been altered, but the estate survives.



Braintree Museum is housed in the former Manor Street School and forms a part of a group of buildings around Market Place funded by the Courtauld family which includes the Town Hall, a drinking fountain and a house. The museum houses displays of the silk industry and Crittall's.

The **Embassy Cinema** was built in 1935 in Art Deco style and is now a public house and restaurant.

The **Warner Archive** is housed in part of what was Walter's 1850s silk weaving mill which is characterised by white weather-boarding and long horizontal windows, all on a brick plinth. Walter's went into liquidation in 1894 and the mill was bought by Warner & Sons. The mill ceased operation in 1971 and the buildings are now offices. Opposite is **Pound End Mill** built by Courtauld's in 1818 as a horse powered silk weaving mill which was sold to Walter's in 1822 (Photo above). It too is of white weather-boarding with long rows of windows. Further along South Street are surviving examples of weavers' cottages with loom rooms to the side.



Bocking was another centre for Courtauld's although the mill here has been demolished and the site is now a housing development. However, reminders of the village's link with the business are found in the Workers' Hall, the Village Hall and workers' housing.

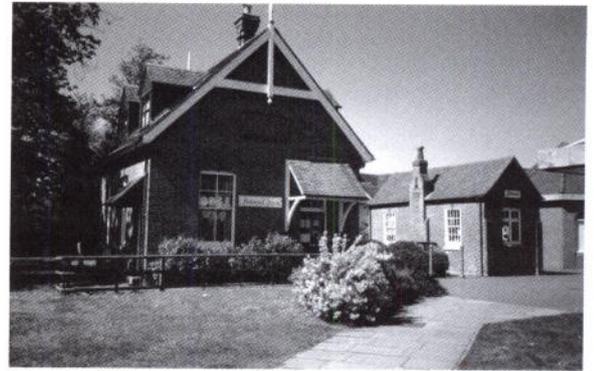
Bocking windmill dates from 1721 and is the second oldest surviving windmill in Essex (*photo left*). In 1898 steam power was introduced as auxiliary power for when there was no wind. It ceased operating in 1929 and is now maintained by the local Council.

Halstead was the third major base for Courtauld's who not only had a large mill here, but also provided many houses for staff and facilities for the local community. The town was also a centre for brewing, buildings of Adam's brewery survive adapted to residential use, the brewery chapel now being a museum. There were also iron works including the Tortoise Foundry Co Ltd which specialised in making stoves, but this site is now cleared.

Of the Courtauld's **Silk Mill**, Townsford Mill survives, originally a water powered corn mill it was adapted to silk throwing and weaving in 1825 by Courtauld and bought by them in 1828. Now it is a restaurant where we will have lunch. Adjacent to this mill an extensive power loom factory was developed, much of which has now been demolished and the site redeveloped as shops.

continued

One range of the factory has been incorporated into the shopping centre and two ancillary buildings date from the early C20th survive (*photo right*). Staff housing was built around the factory at Factory Terrace – two terraces of three-storey houses – in 1872; The Causeway – a terrace of higher status houses – in 1883; and Vicarage Meadows in 1920.



Bulmer Brick & Tile Co. is on the site of a mid-19th century brickworks which was bought by the current owners, the Minter family, in 1936. Bricks continue to be produced using traditional methods, many for restoration projects. On site are throwing sheds where the bricks and tiles are hand made using moulds, drying sheds where the green bricks lose water before firing, and two 1930s down-draught kilns which are still regularly used.



*Belvederes on houses on Market Hill, Maldon, (see Stephen Nunn's context notes)
Apologies for the leaning verticals!*

TOUR NOTES H

Maldon Waterside.

Maldon is an ancient town. Although the earliest recorded mention is in 913 in the Anglo Saxon Chronicle, there is archaeological evidence of Saxon settlement from the fifth century onward and from 958 it held a royal mint. In the Domesday Book it is recorded as self-governing, and Henry II gave it a charter confirming its rights in 1171. Its importance lay in its position on a hill beside the upper Blackwater estuary at the furthest point readily reached by seagoing vessels which also had good inland communications. The quay area significantly is called the Hythe, a Saxon term. The Blackwater had provided food since prehistoric times: it was particularly noted for shellfish and oysters. The mud flats also encouraged wildfowl, another food source. It has always been the home port of trading fleets of coasting vessels, which for the last 150 years have largely been Thames barges. From the sixteenth century coal and chalk (for lime for building purposes) were brought in both for local use and to take inland to Chelmsford and other towns. The opening of the Chelmer and Blackwater Navigation in 1797 encouraged this trade further until the coming of the railways in the mid nineteenth century reduced it without actually killing it. Improbably the Navigation company was never nationalised and survived until 2003, when it passed to Essex Waterways Limited, a wholly owned subsidiary of the Inland Waterways Association. A number of industries grew up along the Chelmer as it circled the town, including iron works, timber yards, and grain mills, the last of these still functioning and served by modern coasters. Inevitably there also grew up a servicing community of boat builders and repairers, sail makers, iron workers, ropewalks and the like. Some of the buildings survive in maritime use. Another old established industry was the preparation of salt, originally in salt pans, but later (and still) using evaporation pans. Maldon basically lived by its maritime connection: a prolonged severe frost in 1776 froze the Blackwater and left two thirds of the town's workforce without pay.



The River Chelmer at Fullbridge Wharf, 2012

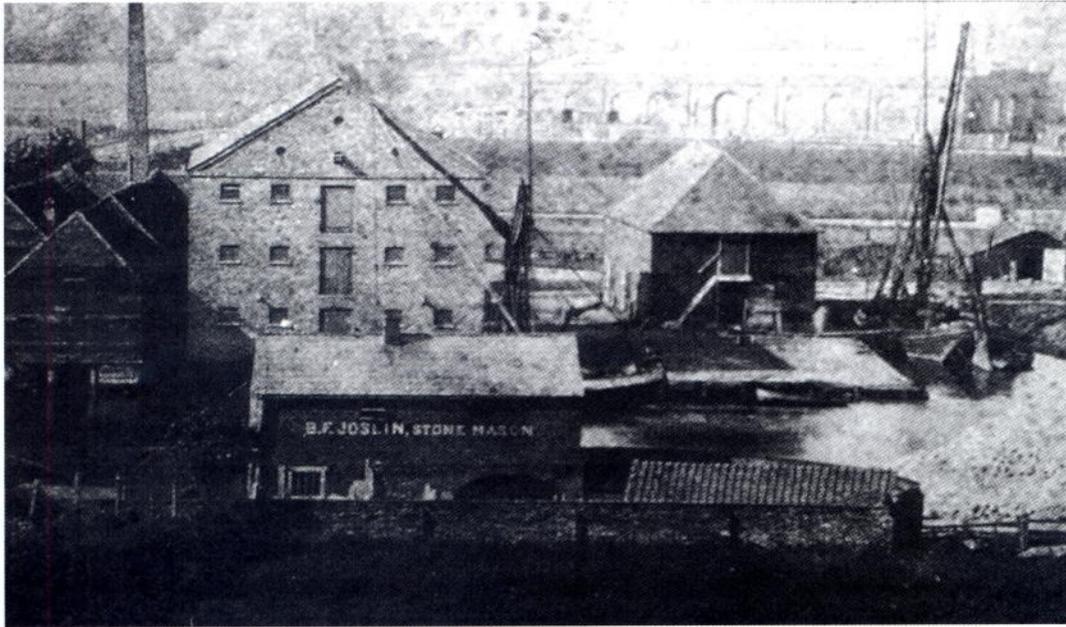
Fullbridge wharf: There were two principal areas of maritime activity at Maldon, Fullbridge and further down river the Hythe in the Parish of St. Mary's. The river which runs under the bridge here is the Chelmer which was originally joined a little further down river by the Blackwater. The construction of the Chelmer and Blackwater Navigation meant that the two rivers were joined at Beeleigh. Heybridge Mill which was fed by the Blackwater had a water supply provided by the canal which led from Beeleigh to Heybridge Basin. What had been the bed of the River Blackwater became the tidal Heybridge Creek. The mill ceased work in 1942 and was demolished in 1955, only the mill house remains. Heybridge creek was subsequently dammed off to prevent the tidal flooding which frequently occurred in Hall Road.

The importance of the Fullbridge area is indicated by the number of inns in the vicinity. Today only the 'Welcome' (previously the 'Welcome Sailor' and in the nineteenth century the 'Angel') remains. Almost next door to the 'Angel' was the 'White Hart' and in Mill Lane a little further on was the 'Hoy'. As the road name suggests, there was a windmill in the meadow behind the 'White Hart'. Also located there were coke ovens. On the Maldon side of the river the former 'White Lion' stands on the corner and almost opposite across the road was the 'Ship' hotel. In the 1920s the 'White Lion' was supplied with beer by the Russell's brewery at Gravesend. Russell's brick built warehouse with a distinctive 'Shrimp Brand' logo over the doorways faced the quay until it had to be demolished after a fire in 2011.



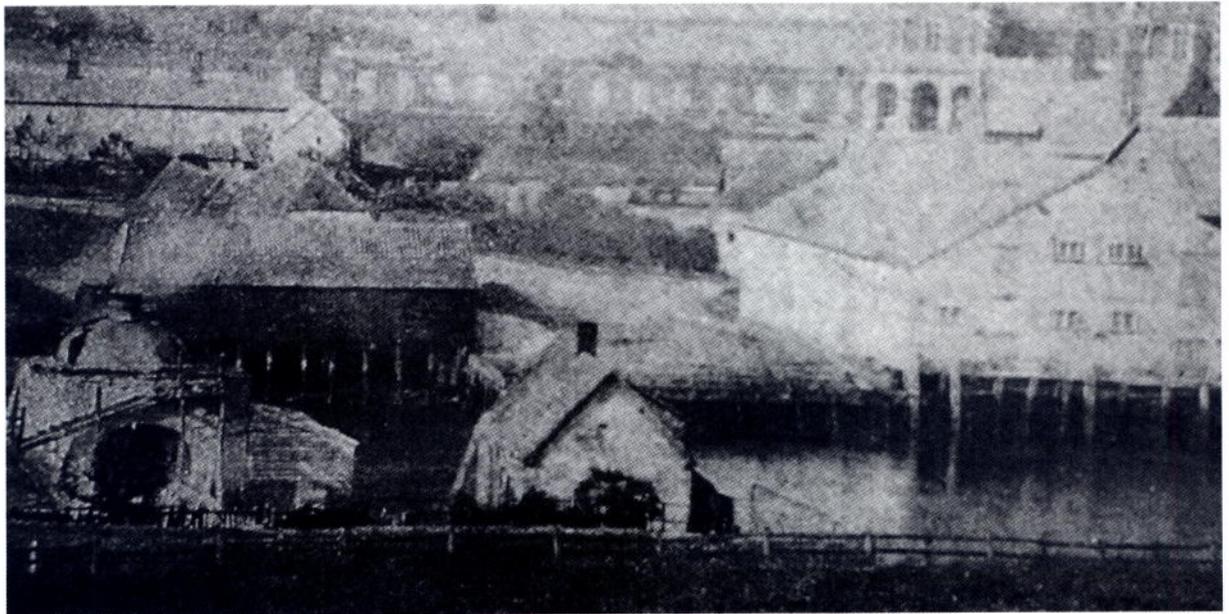
1874 O.S. map of Fullbridge area.

Across the river from Fullbridge Quay stands the former Fullbridge Mill, the first of three nineteenth century steam powered roller flour mills built to mill imported wheat. Next down river is Halser's Mill which last worked in the 1980 as an animal feed mill. The third mill is Green's Mill which is still milling flour. Of particular interest is the granary which stands next to Hasler's Mill. This building has been re-roofed but is still essentially a nineteenth century timber built grain store.



Note the drawdock beside the granary. This was in existence until the river frontage was sheet piled in the 1980s. Railway sheds in the background were recently demolished before they could be listed.

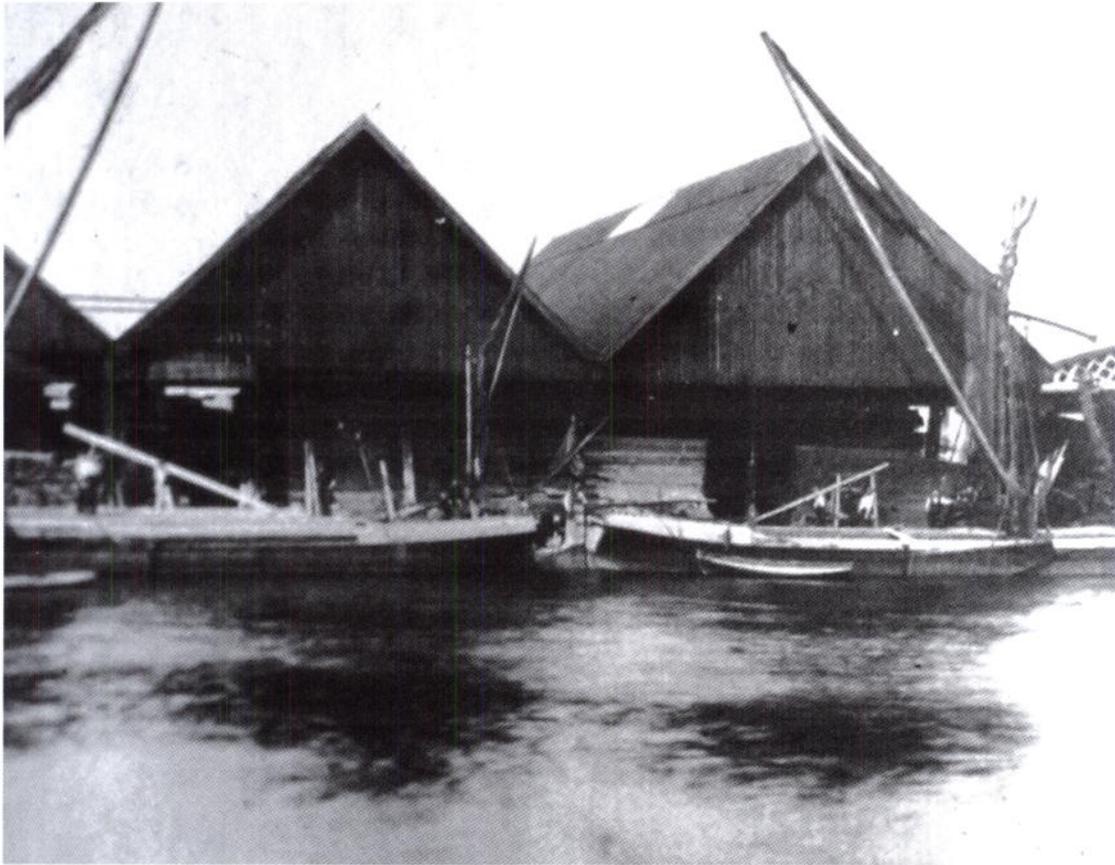
As you walk downriver following the map you pass a boat yard and some recently built offices. It was behind these buildings that the large lime kiln was located.



The limekiln is bottom left in the picture. Across the river is what is now Green's Mill

Follow the marked route down river to Bath Place Wharf. From here there is a good view across the river. The wharf opposite was occupied by Sadd's timber yard. The business of John Sadd was established in the eighteenth century. Sadd was a coal as well as a timber merchant and was involved in ship and barge owning. John Sadd and Jonathan Stammers, the Langford miller, built the first barge at Maldon in 1797. Sadd's were importing timber to their wharf up until the 1980s.

The only part of Sadd's river frontage which remains is the hardware store which has been converted into residential accommodation with moorings provided in the draw dock.



Barges unloading timber at Sadd's Wharf. The site of this wharf was cleared in the 1980s and has been the subject of numerous planning applications

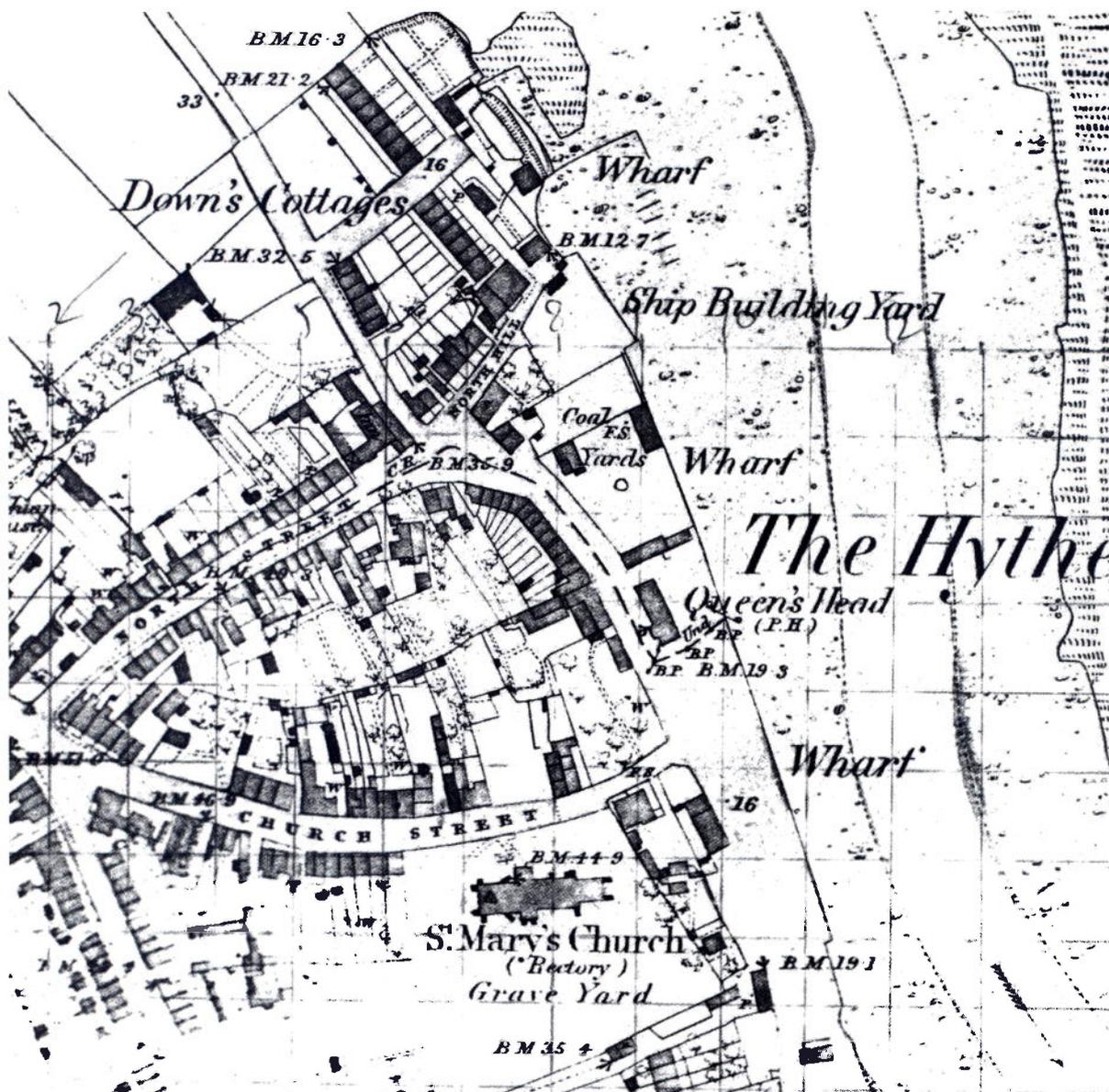
As you continue down river you pass Maldon Salt Works and climb a short hill to join Downs Road. (*Care should be taken here as this is quite a busy road.*) Stop at Downs Road boat yard on your left where there is a good view across the river to Heybridge Creek.

Follow Downs Road past the open space on your left and the houses beyond. At the end of the terrace of modern houses turn left and walk down a short slope towards the entrance to Hedgecock's Yard. Turn right at the bottom of the slope and walk along the narrow lane between the boatyard and the cottages. At the end of this lane you join North Street. At the bottom of North Street is the Public Hard which gives free access to the river. At one time the free hard was used for barge breaking with the remains of redundant barges being used to provide building material and firewood. The elm bottom planking was frequently used to provide walkways for boat yard jetties and there are still some in use in Maldon

The boatyard adjacent to North Street was, from the 1870s, the barge building yard of John Howard who had a reputation for high quality barges particularly 'stack' barges for the forage trade. John Howard's house and drawing office are marked with a blue plaque.

Walk up North Street and turn left at the junction with the Hythe. Note the large former public house on the corner. This was the 'Castle' which had rather an unsavoury reputation and served as both an inn and a 'doss-house'.

The site on the left before the Queen's Head was, from the latter part of the nineteenth century, a sail maker's yard. The first owner was Joseph Sadler and it later became Taylor's. The lawn on which sails could be spread in order to be dressed can be seen in the centre of the site. Flax canvas sails were prone to mildew and rot and were spread out on the grass when new and 'dressed' with a coating of red ochre, fish oil and seawater. Prior to its use for sail making this was a coal yard and granary. The granary building still stands on the quay edge.



1874 O.S. Map of the Hythe area. Note that the site later occupied by Sadler's sailmaking business is still shown as a coal yard and the granary is shown on the map

Thames barges

Walk past the Queen's Head and onto the Hythe. Although no cargoes now arrive at the Hythe it is still busy. The barges which once carried cargo now carry people and Maldon is the principal base for the fleet of Thames barges which still ply the Thames estuary. At their peak it was said that there were as many as 2000 barges; today only a few dozen remain. These are expensive craft to maintain and must work for their living. The barges which have passenger certificates can carry up to fifty passengers. Other barges offer 'live-aboard' accommodation and offer cruises of up to week exploring the estuaries of Essex, Suffolk and Kent.

The barges based at the Hythe in Maldon, include 'Centaur' (built by Cann of Harwich in 1895) and 'Pudge' (built 1922 and a Dunkirk veteran) of the Thames Sailing Barge Trust. We are sailing for a two hour cruise with Topsail Charters on 'Kitty'. She was built in 1898 by Cann of Harwich and owned by the Horlick's fleet of grain barges, trading until 1955. Other barges owned by Topsail include 'Hydrogen', built 1906 and the largest surviving wooden barge, 'Thistle' steel built in 1895 on the Clyde, 'Cabby', the last wooden barge to be built at Strood in 1928, and 'Reminder', another Horlick boat, built 1929 and notably fast. We may well see a number of these. Barges served not just the Thames, Kent and Essex, but many ports as far as the West Country and the North-east. Most remained under sail throughout the war, but after the war numbers dwindled, many being converted to diesel power before final redundancy.

At the far end of the Hythe is another yard. This is the former barge yard of Walter Cook who built a number of barges included the recently restored 'Dawn'. At the down river end of Cook's Yard the steam tug 'Brent' is moored. She is a TID (tug in dock) built for the Admiralty during the Second World War, using prefabrication techniques similar to the U.S 'Liberty' ships. No 159 was built by William Pickersgill & Son in Sunderland: after the war she was sold to the Port of London Authority and named 'Brent'. She was the last steam tug to work on the River Thames. Disposed of in 1970, she was bought in 1971 from ship breakers by Janet and Ron Hall as a very early preservation project. They cared for her for forty years, but she was an increasing burden and in 2011 Janet passed her over to the Steam Tug Brent Trust, who are busy restoring her.

On the way to lunch at the Blue Boar, look out for 'belvederes'. These are glazed towers added to some of the larger houses to enable the owners to keep an eye on their fishing or barge fleets as the vessels made their way up or down the River Blackwater. (*see photo before these notes*)

Stow Maries Aerodrome

In 1916 the government was increasingly alarmed at the threat to south east England and in particular London from Zeppelins and Gotha bombers. It created a number of new aerodromes, and in September 1916 the first aircraft arrived at Stow Maries, a grass airfield with tented accommodation. 37 Squadron (Home defence) had three flights: 'A' flight was based at Rochford (now Southend Airport), 'B' at Stow Maries and 'C' at Gardeners Farm, Goldhanger. The Headquarters flight was based at The Grange in Woodham Mortimer. The first commanding officer of 'B' flight was Lieutenant Claude Ridley, MC, DSO, at the ripe old age of nineteen.

Organisation and training took some time and the first recorded operational flight from Stow Maries was not until 23/24 May 1917, when a large Zeppelin raid threatened London. Although 'C' Flight claimed the last Zeppelin shot down over Britain, L48 on 17 June 1917, 'A' flights only engagements seem to have been with bombers, with no record of any German aircraft being brought down, although some were certainly engaged. In 1917 the decision was made to concentrate the squadron at Stow Maries and to provide permanent brick buildings. 'A' flight joined 'B' flight in the summer. On the 1st April 1918, the Royal Flying Corps became the Royal Air Force, independent from the army. Later in 1918 the Headquarters flight moved to Stow Maries. The war's end in November meant the abandonment of the work, and some buildings were never fully completed. 'C' flight arrived in February 1919, which briefly brought numbers up to 24 aircraft and some 300 staff. A month later the RAF high command decided to shift the whole squadron to Biggin Hill and the new station was abandoned.

The site returned to agriculture, with the buildings being used for storage and accommodation, but little altered. Eventually the site was bought by Steve Wilson and Russell Savory of RS Performance, and is being developed in two ways. In part it is a Nature Reserve, but the original buildings, which with the exception of the hangars survived more or less intact, are being carefully restored to present a unique record of World War 1 aviation architecture. The grass airfield is operational, used by light aircraft and preserved or recreated W.W.1 fighters. In one building RS Performance custom build vehicles.



Building under restoration, Stow Maries Aerodrome

Stock Tower Mill

Built about 1816, Stock Mill was for many years accompanied by two post mills. Originally the tower mill had cloth sails set from a stage round the mill at first floor level, as can be seen from patches in the brickwork. During the 19th century the mill was updated with patent sails and a fantail, and c1890 an extra pair of stones was added to the existing two pairs. This was done by bringing all three sets down a floor and putting in some reinforcement to take the extra weight. By 1902 provision had been made to drive the stones from an external portable engine, and the mill continued working until 1930. Between 1991 and 1993 she was restored to working order and is maintained by the County Council.

TOUR NOTES K

Harwich

Perhaps surprisingly, there is no real record of any settlement before about 1150. Surprising, because the Stour/Orwell estuary is the safest natural port between the Thames and the Humber, with shelter from gales, good depth of water and a straightforward route through the sandbanks which beset the East Anglian coast. The reason is probably a shift south by the two rivers, creating the promontory on which Harwich developed. Here there was shelter from all wind directions. However, the deep water channel runs on the Suffolk side of the river, hence the development of Felixstowe in recent years, capable of taking much larger vessels than Harwich can. The giant cranes of the container port are readily visible from Harwich. The town developed fast, gaining a royal charter as a free borough in 1320. Harwich has always been significant as a passenger port, particularly from the sixteenth century onward when it became the base of packet boats plying to Holland, Scandinavia and the states of Germany, the other Protestant strongholds in Europe. However, the not infrequent disputes also made it significant as a naval base, especially during the Dutch Wars. There was a Navy Yard here in Elizabeth I's reign, and after 1660 a shipyard, building vessels for the Royal Navy. The diarist Samuel Pepys, Secretary to the Navy Board, was also M.P. for Harwich. It closed as a R.N. yard in 1962. Over the years a series of fortifications have been provided to protect town and shipping from attack, from the Tudor period to the Second World War. The town retains substantial numbers of timber framed buildings, including the house belonging to the captain of the '*Mayflower*', a Harwich based vessel.

The tour of Harwich will not necessarily visit these sites in the following order, but it is hoped there will be time to see them all.

Trinity House

As early as the sixteenth century its importance as a safe haven to both coastal and North Sea trade meant that Harwich became an early base for Trinity House, and now it is the operating headquarters for their lighthouse and buoyage service. The Corporation of Trinity House probably originated as a medieval charitable guild, but by the sixteenth century it was sufficiently important and useful to receive a Royal Charter in 1514 and later survive Henry VIII's pillage of such guilds. The charter gave the brethren the power to 'regulate the pilotage of ships in the King's streams'. Over the centuries the Brethren's powers have steadily been extended over pilot services and aids to navigation. They built their first lighthouse at Lowestoft in 1609. The Corporation is funded by all vessels using English waters which have to pay light dues. Until the nineteenth century many lighthouses were privately owned, as was the case with the Harwich High and Low Lights, but unreliability led in 1836 to legislation for the compulsory purchase of all private lighthouses and their handing over to Trinity House. Until 1987 Trinity House provided pilots for London, Southampton and many other ports, but then all responsibility for port pilotage passed to Harbour and Port Authorities. Trinity House still provides Deep Sea pilots for North European waters. Since 2005 Harwich has been the operational headquarters for all of the activities of Trinity House, with outstations in Swansea and St Just in Cornwall. We shall see the workshops where buoys are built and maintained, as well as the operations centre.

St. Nicholas Church

Dedicated in 1822, this white brick and Coade stone church contains unexpected delicate cast iron columns, gallery and window tracery, from Jacob Garrett's foundry in Ipswich.

The Man Crane

Built in 1667 for the naval yard, this man crane is the only British survivor to use a pair of wheels, each 16' diameter and 3'10" wide. The jib projects 17'10" Originally the roof was boarded, now pantiled. There is no proper brake, which must have made operation somewhat perilous. On the closure of the naval yard the crane was moved to Harwich Green, on a slight mound which once housed a Tudor gun battery

The Electric Palace

This very early purpose designed cinema opened its doors in 1911 and remains remarkably little altered. It retains its original frontage, lobby and paybox, original projection room, separated for safety reasons from the main auditorium, and silent screen – though now also fitted with modern equipment. In the basement is a gas powered generator with 7' flywheel. It closed in 1956 and was to be pulled down for a lorry park, but in 1972 a team from Kingston Polytechnic drew the attention of the Harwich Society to it and it was spot listed. In 1975 the Harwich Electric Palace Trust was formed, who carefully restored it, creating new moulds from the surviving plasterwork. In 1981 it was reopened and is run as a cinema club. Now 2* listed, it is essentially self-supporting, though it has benefited from lottery grants.

Harwich High and Low Lights.

Two lighthouses survive both built in 1818 under the supervision of John Rennie. The high lighthouse unusually is octagonal and is now a private house. The Low lighthouse has been restored as a maritime museum and there should be time to visit this. Built to provide leading lights for vessels entering the harbour, shifting sandbanks by 1863 had rendered the lights ineffective, and they were replaced with new lights in adjacent Dovercourt. Cast-iron framed, these still survive, though they are no longer in use.

LV18

Built in 1958, LV (Light Vessel) 18 was the last manned Trinity House light vessel in service, being taken off station in 1995. In 1997 she was sold to Sea Containers to form part of a marina development which never materialised. Between 1997 and 2007 she starred in various films and reconstructions recalling the days of pirate radio, the latest being 'The ship that rocked'. In 2001 ownership passed to the Pharos Trust for the princely sum of £1. Partly with the help of film revenues and partly generous support in kind from S.J. Woods Engineering, she has been restored to operating condition. This includes nine cabins, mess room, and all the electrical and mechanical systems. She is now moored by the Ha'Penny Pier and was opened to the public last year.

The Ha'Penny Pier

Opened in 1853, this was a departure point for paddle steamers serving the growing seaside resorts along the Essex and Suffolk coasts.

The Train Ferry Terminal

Opposite Trinity House is the site of the Train Ferry Terminal. There was a train ferry service from Harwich to Zeebrugge from 1924 to 1987 (with the exception of the war years). This was exclusively for goods traffic, but little evidence remains.

Parkeston

Harwich declined in the early nineteenth century, but its fortunes were restored by the coming of the Great Eastern Railway in 1854. The revival in the packet service to Holland was encouraged by the construction of the Great Eastern Hotel (now the town hall) by the quay and the wooden Continental Pier in 1866. Rebuilt in the 1950's this pier is now used by Trinity House. However, the cramped conditions in the centre of Harwich encouraged the railway to construct in 1883 a new passenger terminal and quays at Parkeston, somewhat up river. Named after the chairman of the GER, Charles Parkes, Parkeston Quay (Harwich International as it is now called) has a handsome station building with railway housing inland in Parkeston village. It is still very much in use for both services to the continent and cruise liners. We shall drive down to look at these if time permits.

TOUR NOTES L

The Ipswich Transport Museum

The museum is housed in a trolleybus depot built by Ipswich Corporation in 1936 for housing and maintaining the fleet of trolleybuses that had taken over from the town's electric trams between 1923 and 1926. A restored tram and both single-deck and double-deck trolleybuses are among the museum's collection of vehicles built in Ipswich or used in the area; some of the town's trolleybuses were built by the local firm of Ransomes Sims & Jefferies. Besides vehicles, the museum has many other exhibits dealing with the town's engineering heritage, including a working model dragline by Ransomes & Rapier, makers of the largest walking dragline in the world.

A registered museum, the ITM is run entirely by volunteers who besides manning the museum when it is open restore and maintain the exhibits, many of which are roadworthy and are often seen at events outside the museum. An annual event organised by the ITM is the Ipswich to Felixstowe historic vehicles road run, which always includes a number of the museum exhibits.

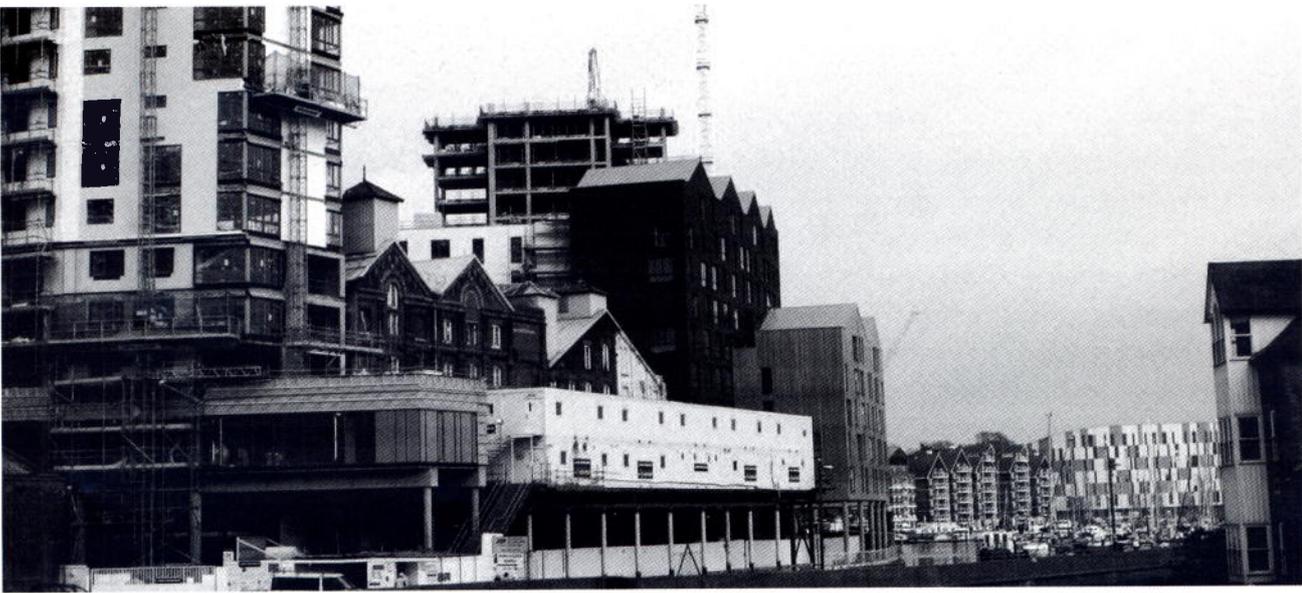


(photo Ipswich Transport Museum)

One of the museum's buses will take us on a tour of Ipswich to visit the sites of various industrial concerns. Among them are the two Ransomes companies, one of which is best known for agricultural implements and the other for waterway and railway engineering. It constructed the first railway in China, opened in 1876, and the sluices for the Aswan Dam on the Nile. More locally it built the sluice at Denver. Other notable firms were: Reavell's, noted for their compressors widely used for a variety of applications, more recently in nuclear submarines; E.R. & F. Turner, milling engineers who were foremost in introducing roller milling machinery to Britain; R. & W. Paul's maltings and the Tolly Cobbold brewery, which has a Turner steam engine.

The Wet Dock

Opened in 1842 and constructed under the Ipswich Dock Act of 1837, the Wet Dock was at the time of its opening the largest in Britain with the exception of Bristol's Floating Harbour. The engineer responsible for the dock's construction was Henry Palmer, a vice-president of the Institution of Civil Engineers. Following the example of the Floating Harbour, a section of river lined with industrial and commercial premises was dammed top and bottom to form the dock and a New Cut was made to carry the water of the River Gipping into the Orwell estuary. The original entrance lock opened from the New Cut, but a new, larger and more convenient lock was brought into use in 1881 at the southern end of the dock. For many years passenger vessels carried trippers from the New Cut to Felixstowe and other destinations. The construction of the dock undoubtedly paved the way for the Victorian industrial expansion of Ipswich. Between 1836 and 1848 the engineering firm of Ransomes relocated to a site on the east of the dock, facilitating both the delivery of raw materials direct to the works and the export by sea of the firm's products. When in 1869 a new company, Ransomes and Rapier, was formed to take over the railway materials side of the business, its works were situated beside the New Cut.



Ipswich wet dock 2009: now almost entirely residential or commercial premises though one timber importer still operates at the southern end. Photo by Lynne Walker

Lunch will be taken in the Brewery Tap, adjacent to the magnificent but sadly deteriorating Cliff Brewery. Originally moving to this site in 1746, the brewery was largely rebuilt in 1894, and extended in 1904. This impressive 5 storey building, somewhat reminiscent of a French chateau, was the central brewery for Tolly Cobbold beers until its closure in 1989. Since then it has had a chequered history, with attempts to create a working museum ultimately failing and final closure in 2002. One of the problems for reuse is that in 1989 not only the building, but all of its brewing plant was listed. The other is the adjacent Vopak oil storage depot, making it an unsuitable site for housing conversion.

Wilkin & Sons of Tiptree

This well known maker of jams and preserves was founded in 1895 by Arthur Wilkin from a local farming family. There is a varied range of fairly undistinguished buildings, containing very modern jam and preserve making plant. Most of the fruit used is grown on their own farms. However, a later scion of the family, John Wilkin, began collecting some of the farm and jam-making machinery as it became obsolescent, and this has now been put into a small, but well laid out museum behind the tearooms. It is not large enough for the whole group to tour it at the same time, but it should not be too much hardship for a split party to spend the rest of the time having tea (*not included in the tour fee*). The cream tea is strongly recommended!

Acknowledgements

A number of people have co-operated in the preparation of these notes. I would mention in particular, Dr Roger Becket for the very full illustrated notes for the Riverside walk in Tour F, Tony Crosby, especially relating to Tours G and J, Charles Gurteen for help with the notes on his family firm, Bob Malster for the notes on Tours E and L, Stephen P. Nunn for the notes giving the context for the visits to Maldon and Heybridge, and Lawrence Tattersall for checking the notes on Beeleigh Mill. To anyone else who has commented or helped and whom I have failed to mention, my sincere apologies. I blame my failing memory. What I have done is sometimes to add extra material, and generally adapt all contributions to a consistent style of type face, layout etc.

However, the one person to whom I owe most is my wife Anne, principally for putting up with the stresses created by preparing for a Conference, but also for joining me in many trips of investigation, taking notes, jogging my memory when needed, route finding and driving, proof reading these notes and generally being indispensable.

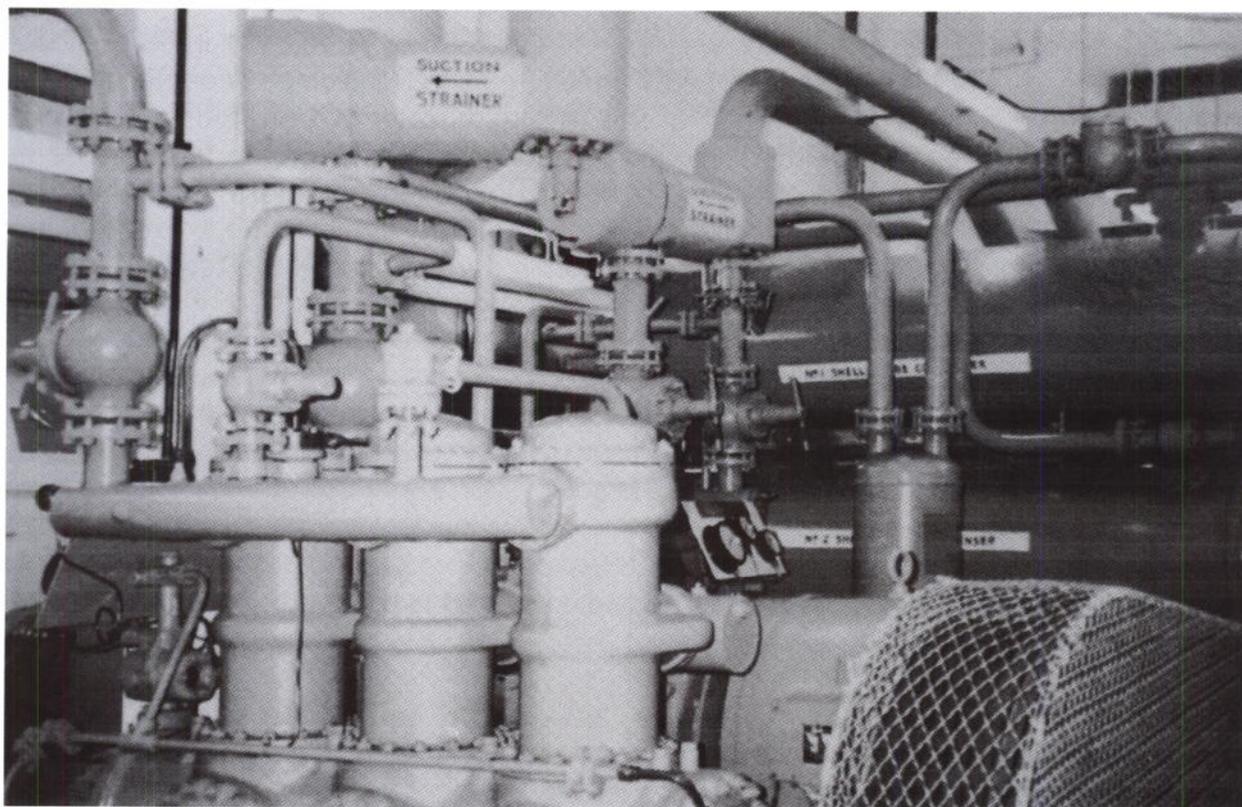
I should also like to thank the many people who have put themselves out to help me make the arrangements for the tours and site visits, but especially perhaps the volunteers at Beeleigh Mill, Langford Museum of Steam, the Bata Reminiscence and Resource Centre at East Tilbury, Mr Christopher Gurteen and Ms Amanda Stear. Again, my apologies to anyone I ought to have mentioned but have not.

David Alderton

Photo credits:

Tour G Tony Crosby supplied the photographs and map,
Tour H Dr Roger Beckett supplied the maps and photos for the Riverside walk,

Other photographs unless otherwise acknowledged by David Alderton



Air cleaning and conditioning plant at Kelvedon Hatch Nuclear Bunker.

Photograph courtesy of the Secret Nuclear Bunker

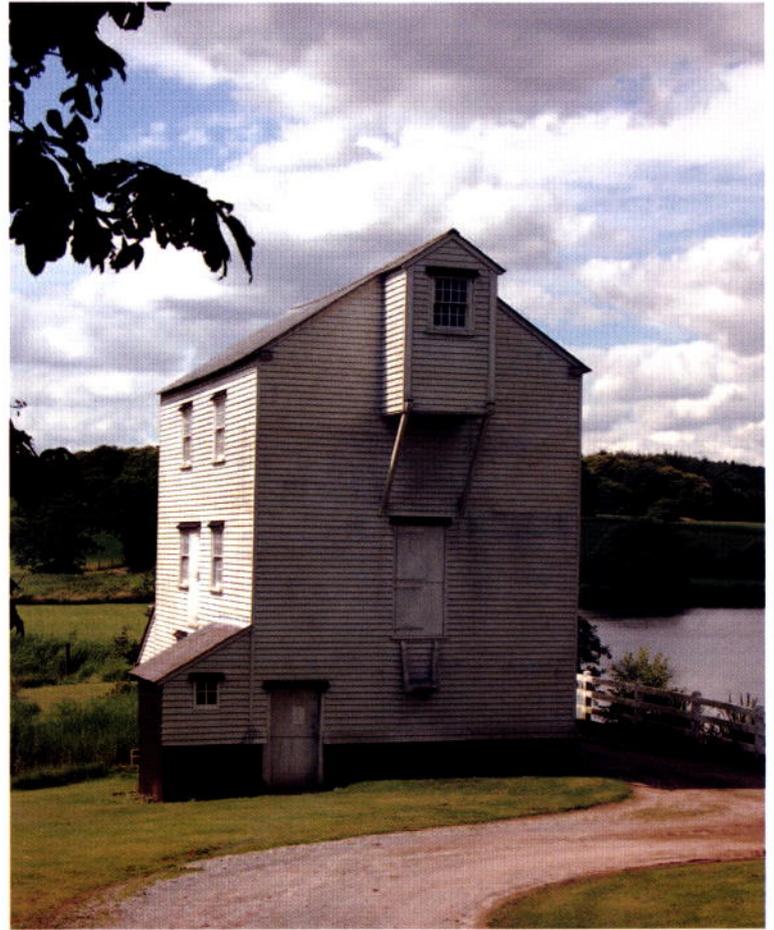
© The Association for Industrial Archaeology



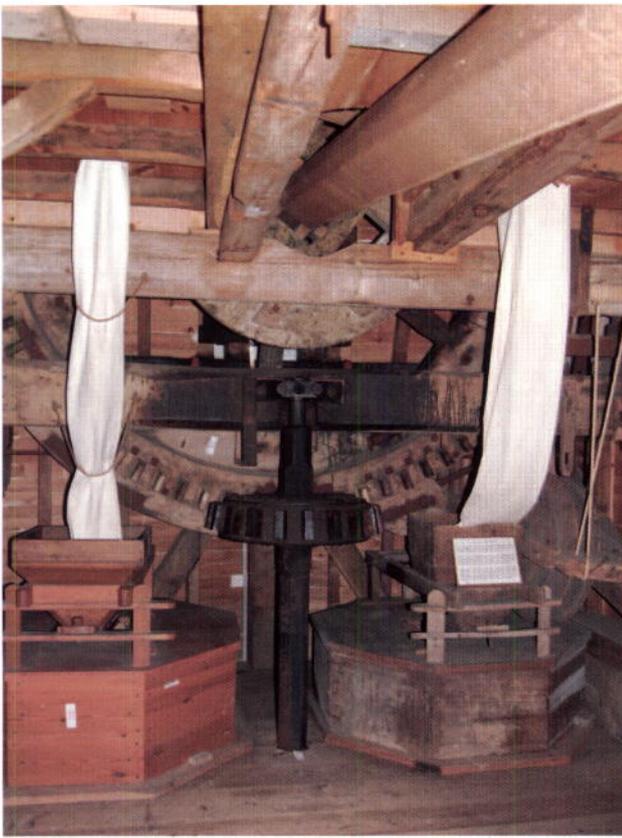
Listed houses in Silver End



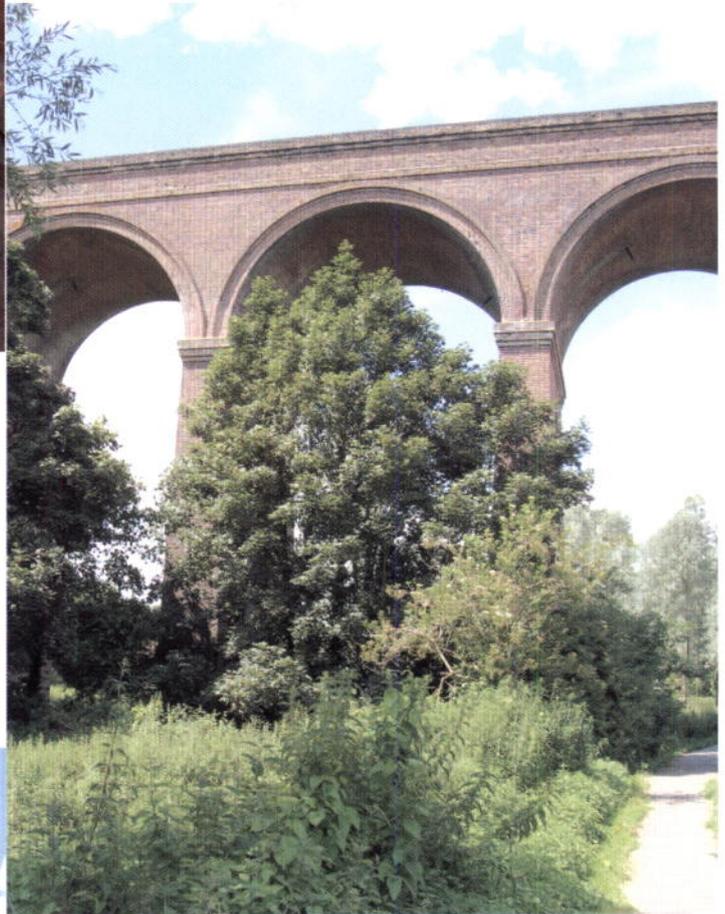
Maldon oyster smack MN12 'Polly'



Thorrington Tide Mill



*The Stone floor, Aythorpe Roding Mill
Note the unusual square section windshaft*



Chappel viaduct



*Water tower at Hunts of Earls Colne.
Now a small museum of the works and village*

Halstead and District Local History Society

TEXTILES IN HALSTEAD & THE SURROUNDING AREAS

Today we think of East Anglia for its agriculture, fishing and holiday areas, as well as a dormitory area for those working in London, however, textiles have been associated with Halstead and the surrounding areas for hundreds of years.

It was during the Bronze Age that the first known weaving was carried out in East Anglia, but this was linen rather than wool. For the period from the ninth to the nineteenth centuries our area was the economic centre of England, built primarily upon wool, both as a raw material and woven into cloth. Because of the closeness to the east coast, by the 11th-century trading links had been established to mainland Europe, especially the Netherlands, but also with the Baltic, Scandinavia and the Rhineland.

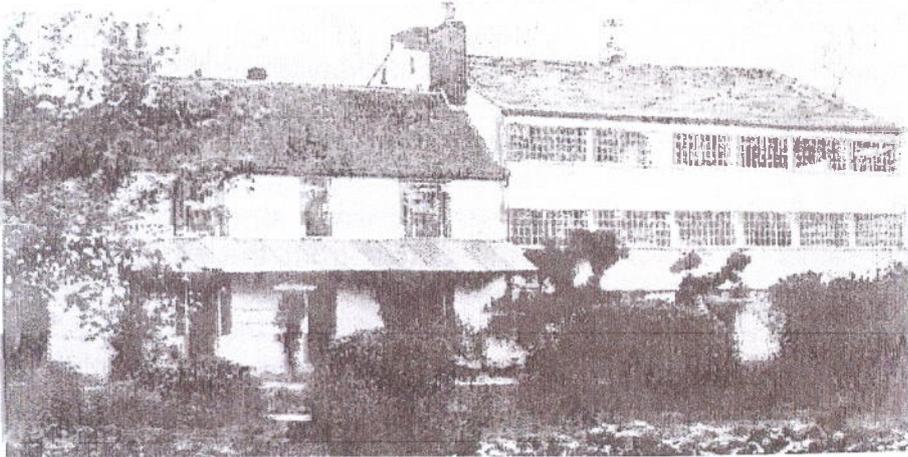
The 18th-century saw many changes in the UK economy that were incredibly detrimental to the East Anglian textile industry. The most important of these was the introduction of machinery into the manufacture of textiles, but this was not the only reason for the decline in our area. There was stubbornness by the industrialists, who for so long had led the textile industry, but now refused to adopt new methods. Then there were the clothworkers, weavers and other craftsmen who whilst for generations had been famed for their skills, now were adamant in the rejection of new ideas, and were also unwilling to accept lower wages. Their tragedy was that sometimes the solution was amongst them and yet was still rejected. For example, Robert Kay, one of the leading Coggeshall clothmakers who tried to revive the declining industry by introducing a fancy cloth. This aroused such a storm of opposition that he moved to Manchester. On his death the business passed to his son John who in 1733 had drawn up plans for a mechanical device to help the weaver. The "flying shuttle" would mean that a weaver could produce wide cloth without the need of a boy to retrieve it. John Kay's weavers in Coggeshall, to where he had returned following his father's death, refused point blank to use such an invention, so he sold up and moved north again. The Lancashire weavers took up the idea, which revolutionised the northern industry, especially after James Hargreaves invented the "spinning jenny" in the 1760's.

So these attitudes along with the lack of fast flowing rivers with which to efficiently run wool winding and weaving machinery, meant that here in East Anglia the decline took hold with a vengeance. The Essex industry had been forced to rely upon Colchester and with the decline in that town, clothmaking fell away rapidly in the rest of the county. By the early 19th-century only bays were being made in Essex, but not in Halstead, however, the next stage in the history of textiles in our area had already started.

SILK & THE COURTAULD FAMILY

Since the arrival of the Huguenot refugees in England in 1689, the main centre of silk weaving had been in the area of East London known as Spitalfields. There had been many disputes between the masters and the silk weavers, and so in 1773 an act of Parliament was passed that empowered the City Aldermen and Magistrates to fix

wage rates. The London employers immediately set about looking outside their own area for places where the silk business could be carried on. The earliest references to the silk industry in Essex are in 1793, in both Colchester & Epping.



The image above shows the silk throwing mill in Pebmarsh, just northeast of Halstead, set up in 1799 by Witts & Co., with the help of George Courtauld I. Witts were a London firm who engaged George to convert an existing water powered flourmill.

George was born in 1761 and had been apprenticed to a Spitalfields silk throwster called Merzeau in 1775. Throwing is the name given to the process of combining the raw silk threads to form yarns that can be used as warp and weft. Samuel Courtauld III started work with his father at the age of 14 in 1807.

They worked here until March 1809 when George, in partnership with Joseph Wilson, of Remington, Wilson & Co., London silk manufacturers, acquired a former flourmill at Braintree. George Courtauld once again oversaw the conversion to a throwing mill. However, Samuel had disagreements with his father and left for London at the end of 1811, returning again in the summer of 1814.

Samuel set up his first silk throwing business in Panfield Lane, Braintree in 1816, and in November 1819 secured a lease, with an option to buy, a former wool fulling mill in Bocking Church Street. The Halstead connection came about in 1825, when Courtauld agreed to convert the water corn mill for the throwing of silk. This was to be done in conjunction with Stephen Beuzeville, a Spitalfields silk crape manufacturer, who was to supply the necessary capital as well as supply the raw silk yarn. The winding frames were made by the firm at their Bocking factory, and can be seen in the image below.



The wooden bobbin was turned by the roller beneath, which in turn was driven by a belt. The belts were powered initially by water, then by steam engines, and eventually by gas engines.

Silk Mourning Crape

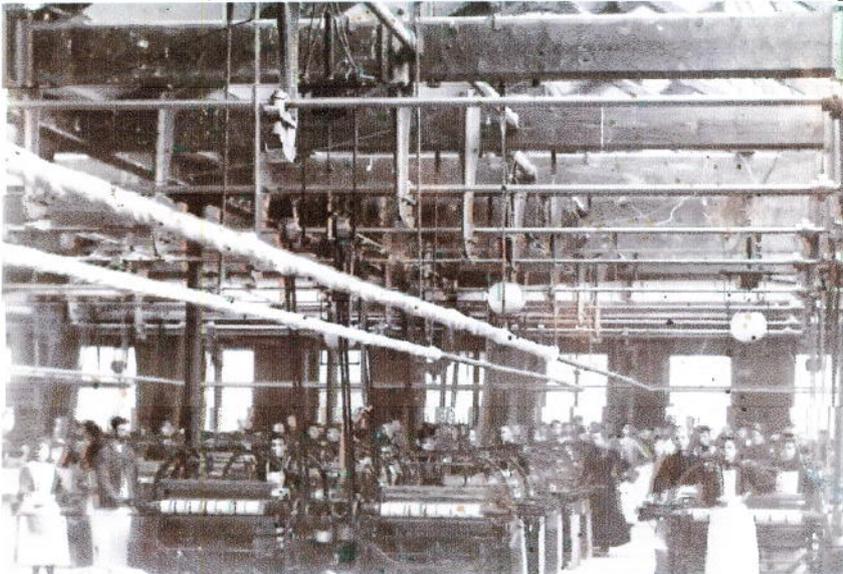
Samuel Courtauld & Company was primarily known for the manufacture of this specialised textile. Halstead Mill was initially used solely for the throwing of silk, with fabric being hand-woven in homes. The first 8-10 power looms were installed in about 1828 and the number rapidly grew until in 1850 there were 570 in place.

Demand increased steadily, with thousands of yards being bought by the Royal Household following the deaths of George III in 1820, George IV in 1830, Princess Augusta in 1840, the Duke of Sussex in 1843, Queen Adelaide in 1850, and the Prince Consort in 1861.

The making of this crape was peculiar to England and for this reason was known as *crepe anglais*, with the silk weavers of France unable to produce an acceptable version. Courtaulds were able to gradually improve and perfect their production methods and by 1896 were exporting more crape than they sold at home. In 1901 they claimed to be the largest crape makers not only in England but also in the world, and to have a production greater than all other makers combined.

Elaborate mourning became less well observed in the UK following the death of Edward VII in 1910, when Queen Alexandra decided it would not be worn by the Court. Production declined until the last piece of crape was made on June 20th 1940

Throughout the 19th-century the business continued to expand with new mills opening in Earls Colne, Chelmsford and Braintree, and new buildings here at Halstead.



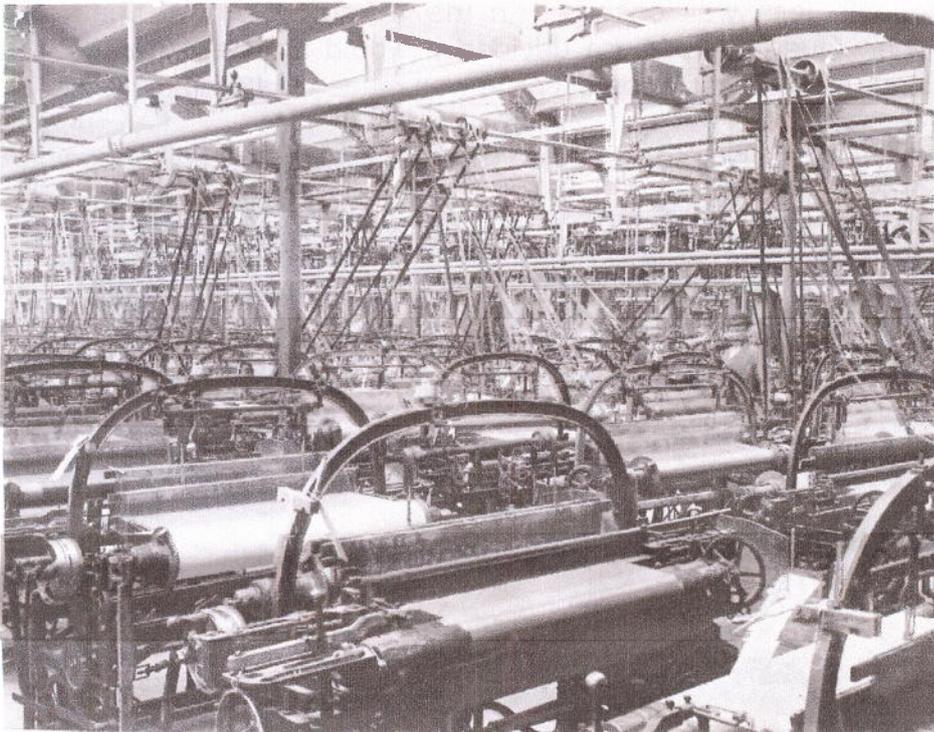
This image shows what seems to be a number of new crape looms recently installed, since no warps can be seen in them. The photograph was probably taken in the mid 1890's when the central areas of the mill named California and Crystal Palace were built. The looms were designed and built by the company at Bocking, and it is thought

that Rayne Foundry carried out the castings for the frames, but there is no definitive proof of this.

By the early 1890's sales were beginning to drop, and production of coloured silks in addition to the black mourning crepe had started. In August 1893 two looms were ordered from Hattersley & Son of Keighley, Yorkshire, especially designed to weave crepe. These were built with much stronger frames than the Courtauld ones and were able to run faster. They obviously were a success since in 1894 a second order was placed for 48 circular box looms. These were multi purpose and enabled the company to weave other light silk textiles as well as silk and wool mixtures.

At about the same time H. G. Tetley, who had been head of the silk manufacturing department for Lister & Co at Manningham Mills in Bradford, was employed to reorganise the production side of the business. In November 1895 he proposed the building of a new weaving shed, the one that we came to know as the North Shed, which was completed in 1905.

During the late 1890's new looms were installed and by 1898 of the 1000 or so at Halstead, about 740 were Courtauld looms, modified in various ways, and 260 Hattersley or Hodgson looms, many fitted with Jacquards so that complex designs could be woven.



The image shows a view, once again probably the same area in the central part of the mill, where looms with Jacquards may be seen in the background. Courtauld's own crepe looms in the foreground are possibly being de-commissioned since there are no driving belts attached.

This aerial photograph, taken on 3 June 1965 shows the extent of the site at that time.



During the 20th-century various changes took place with the types of loom changing and being updated. Viscose rayon, as well as other artificial fibres was replacing the use of silk. However, as late as 1953, there were still one or two looms weaving silk.

A range of looms was installed over the years, including Banzet from France, Butterworth and Dickinson from the UK, Gusken from Germany, Crompton and Knowles from the USA, and Dobcross, once more from the UK. These latter machines were installed in the North Shed to weave furnishing and ecclesiastical fabrics, including those for collaboration with Arthur Sanderson & Sons known as The Ancestral Range. Launched in the late 40's/ early 50's, the designs for the textiles in this collection were based upon examples in various historic houses around the UK. Sadly it was short-lived, and this venture into furnishings was terminated.

The next decade saw major changes with Crompton and Knowles S6 looms from the USA being installed in the early 1960's, only to be replaced in 1968 by Kovo Waterjet looms from Czechoslovakia. This turned out to be the last major change in machinery.

The S6 was used to weave a large range of different apparel fabrics, almost all using primarily man-made fibres. The water jets however, could only weave very basic plain fabrics, and in the last years Halstead was only producing textiles using Celon, Courtaulds own version of nylon, and Tricel, a type of acetate fibre.

In 1982 the mill closed for the last time, ending not only 156 years of Courtaulds, but also 900 years of continuous textile manufacture in Halstead.

In addition to their industrial interests, the Courtauld family were also active in the building of various dwellings for workers both here in Halstead as well as in Bocking. Samuel Courtauld III, when asked for what he wished to be remembered, said, "*that I built good cottages!*"

The Causeway is usually shown looking towards Townsford Mill and so the image below is rare, in that it shows the houses, completed in 1886. The property on the far left, which is now the British Legion Club, was originally built as the Dining Room for the Mill.



The Essex architect George Campbell Sherrin (1840-1909), designed the houses, and his other commissions for the Courtauld family included the Cottage Hospital at Halstead and the Working Men's Hall in Bocking. He also collaborated with John Clarke, another Essex architect in the design of The Kursaal in Southend!



**Association for Industrial Archaeology
Essex Conference**

***Tour of the Industrial Heritage of Maldon & Heybridge
Sunday, 12th August 2012 (4.15pm-5.15pm)
with Local Historian
Stephen P. Nunn***



Context

In 1909 Maldon was rightly described as "one of the most ancient towns and Boroughs in Essex". But for all that heritage, even at that stage Maldon was a modern commercial place and, thanks to a number of early entrepreneurs, a centre of industry and employment. The River Blackwater was an important factor in all of that. The **shipping trade** was still very much in existence, as were the **fisheries** - oyster and otherwise - and the town had its own active fleet of **fishing smacks**. Then there was **boat and yacht-building** - traditionally by John Howard (d.1915) and Cook and Woodard down at the Hythe - and the associated trades, like **sail-making** by Taylor's (Arthur G. Taylor took over the business from Joseph Sadler in 1914). There were convenient river to land links via the **Chelmer and Blackwater Navigation** and out to sea by way of the estuary. Although not in any way as lucrative as it had been a century earlier, there was also **farming** in the surrounding countryside and across the Dengie.

Maldon and Heybridge were also the location for **iron-founding** and the manufacturing of agricultural equipment, the major player being **Bentall's** 'Heybridge Works'. Bentall's began in the late-18th century with the invention of the famous 'Goldhanger Plough'. By the early 20th century they were employing 700 hands and the business covered an area of about 14 acres. At the outbreak of the Great War a large proportion of the output switched from agricultural equipment (and a short and unsuccessful venture into motor-car production) to the manufacture of shell cases. Many millions were made in Heybridge, with women being engaged to work as 'moulders'.

John Sadd & Sons Ltd the **timber** and builders' merchants, was trading in Maldon from as early as 1729. Sadd's was, until quite recently, a leading firm in the town, importing timber from Europe and, at one time, slate from Wales and supplying cement, lath and Stockholm tar to the trade. They were also corn merchants, warehousemen and early providers of Maldon's electricity (which they generated by burning vast amounts of their sawdust!). So successful were they that they became the second biggest employer in the area. From 1831 their busy saw mill, wharfs and sheds were established on the north side of Fullbridge, where their own fleet of **sailing barges** (complete with distinctive blue and white house flags, or 'bobs' aloft) off loaded countless cargoes. The Sadd barges included the Maldon built 'James & Harriet' (1864), 'Oak' (of 1881) and 'Cypress' (1887). They also had the 'Falcon' (built in Paglesham in 1868) and, after 1919, the 'Record Reign' (Maldon 1897). Barges were key to their business and from 1921-1936 the firm even sponsored a challenge cup as part of the annual Maldon Barge Race. Always astute in their business dealings, their houses, including 'Mount View' in London Road and 'Hill House' on Market Hill were equipped with belvederes to enable regular observation of their Fullbridge works, the barges and other river traffic.

The **brewing trade** also operated in the area - **Gray & Sons** had their 'Maldon Brewery' in Gate Street from 1865 to 1952. In fact there have been brewers here from as early as 1446 - some familiar names like Petchie in 1569 and some "foreigners" such as a group of Dutchmen in the 1550s. Others were based in the pubs - John Wells down at the White Hart, Fullbridge (1605) and Francis Syritt at the Queen's Head (1820s). And that tradition continues to this day, not least with the Maldon Brewing Company at the Blue Boar.

There is an awful lot more to Maldon's industrial story than these brief examples but we cannot leave the subject without mention of **Maldon salt** - Delia's favourite! Salt extraction (through evaporation) has taken place in the area of the River Blackwater since Roman times and a commercial enterprise - the 'Maldon Salt Works' - was established here as early 1777. The '**Maldon Crystal Salt Company**', a successor business, started in 1882 and still operates out of Maldon today, panning the crystals in the time-honoured way.

Our Tour

This brief coach tour aims to highlight the landscape features associated with the Industrial Heritage of Maldon and Heybridge, from the town's former Railway Station to the Lock Basin of the Chelmer and Blackwater Navigation:

Start in Station Road - 1). The Combined Military Services Museum

2). East Station and the Maldon Branch Line

Built 1848. Line closed in 1966.

Turn onto The Causeway - 3). Maldon Iron Works

Built 1875. Closed as a works in 1981.

4). The railway line crossing

Track once crossed road to bow-string viaduct (of 1899).

5). The Causeway/Potman Marsh

Pass through Heybridge - 6). Heybridge Creek/the Mill

Mill last worked 1942. Demolished 1955.

7). Heybridge Church

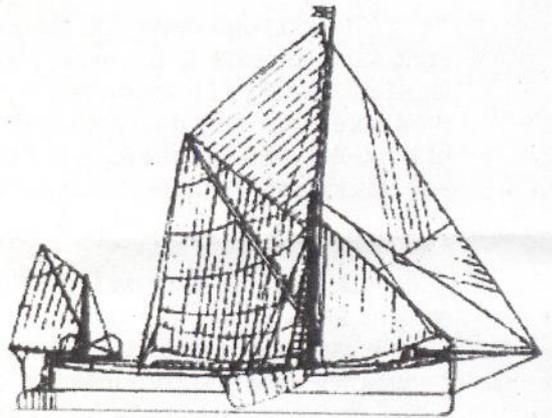
12th century building. Tower collapsed 15th century.

8). The Bentall Warehouse

Built 1863.

9). The Towers Mansion

Built 1873. Demolished in 1950s.



Along Goldhanger Road - 10). Goldhanger Road and Farming

Agriculture from 16th century and throughout 18th and 19th centuries.

11). Relocated Naval billets

Built 1918. Moved here 1926.

12). The Toll Cottage

Constructed in the 18th century. Ceased to operate 1836.

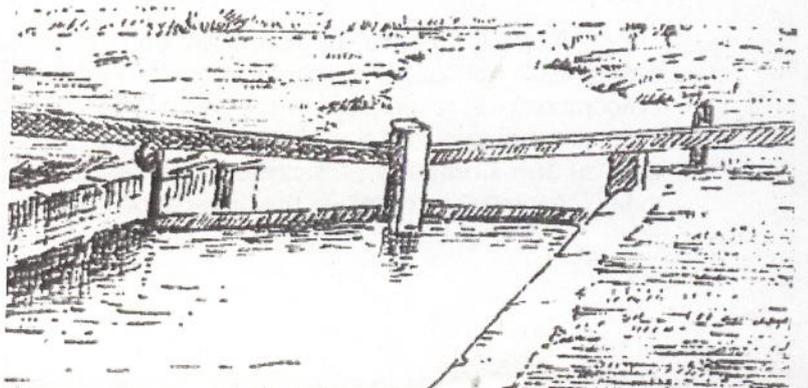
Proceed to the Basin - 13). Heybridge Basin

Began 1793.

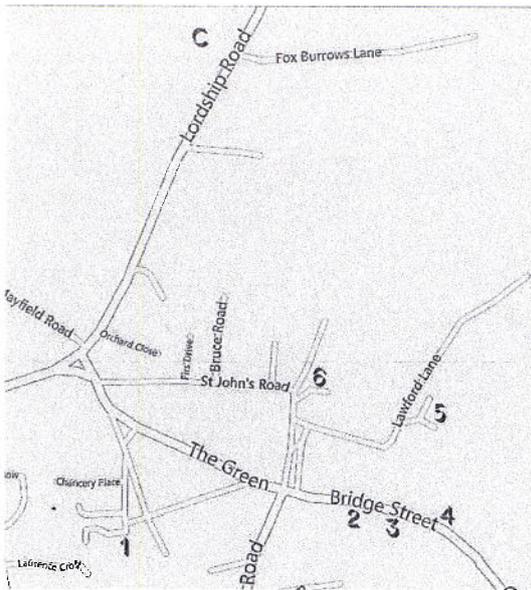
Leave the coach and walk to the Chelmer & Blackwater Navigation at Heybridge Basin Lock.

14). Chelmer and Blackwater Navigation

Ceased commercial use 1973.



An Industrial Archaeology stroll around Writtle



This stroll around Writtle starts at the College (C) and goes south down Lordship Road turning left at the petrol station to The Green. Pevsner declares that 'Writtle possesses one of the most attractive village greens of Essex. The best view is to the south with the church in the distance ...' The Green is surrounded by Georgian houses and in the right-hand (south-west) corner as you approach is a late C17th / early C18th malthouse (1). Now converted into a private residence, it is timber-framed, with brick walls to the kiln. The roof is of red tiles and the kiln's extant conical vent is similarly covered.

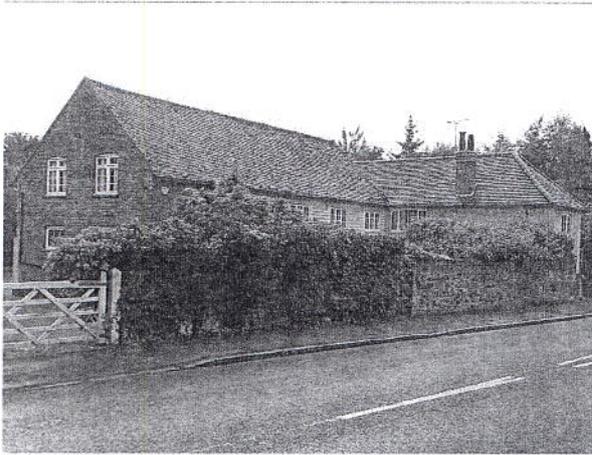
From this corner walk left (east) alongside The Green passed the pond to enter Bridge Street (formerly Workhouse Lane), passing the Cock and Bell public house on the right, which was once the tap house for the Writtle Brewery. The brewery site is now almost completely covered by the Co-op supermarket and its car park on the right. However, the three storey malt store survives as a private house (2).



Writtle Brewery dates from the early C19th and brewing ceased in 1907. It was a major integrated brewery complex supplying its own tied estate of 80 licensed houses, which comprised the brewhouse, a malthouse, malt mill, cask room, three horse wheels to provide power, smithy, wheeler's shop, stables and cart shed. The extant three storey red brick and weather-boarded malt store has a mixture of tile and slate roofs.

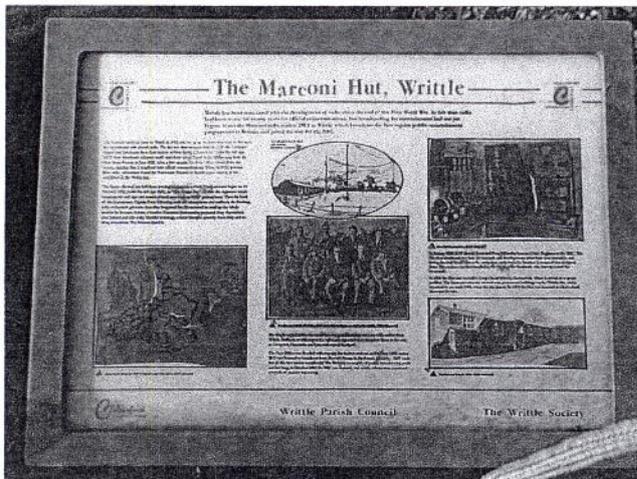
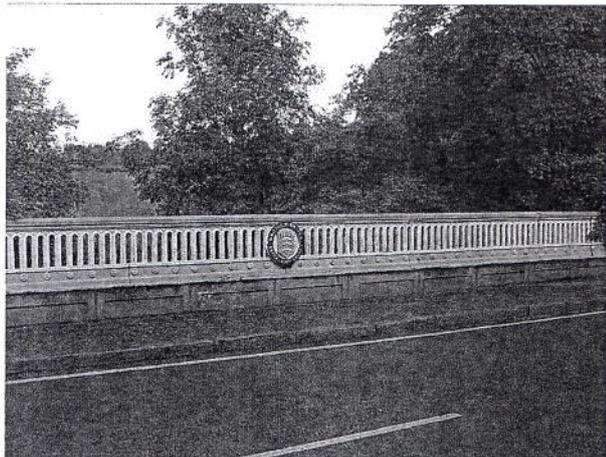


Further along Bridge Street on the right the malthouse (3) for the brewery survives, now a private house known as 'The Old Maltings'. It is a two-storey timber-framed building with brick and weather-boarded walls under a red tiled roof.



A little further along Bridge Street is the cast iron road bridge (4) which takes the Writtle to Chelmsford road across the River Wid and was erected in 1891. Circular cast iron disks on the inner faces of both parapets have the lettering 'Writtle Bridge Essex County Council' around the outside and in the centre the date 1891 within a shield with Essex County logo – a three seax device.

Returning along Bridge Street back towards The Green, turn right into St John's Road and then first right into Lawford Lane as far as Melba Court. On this site in 1919 Marconi established a small experimental station (5) to investigate the use of radios in aircraft. In the early 1920s it was developed as a radio station and from February 1922 the first regular public entertainment broadcasts were made from a timber hut here. When the broadcasts ceased the site was used for research. The hut has been moved to the museum at Sandford Mill, Chelmsford, and its original site is marked by an interpretation board in Melba Court.



Returning to St John's Road and turning right where the road bends sharply to the left, on the right-hand side is Guy's Farm (6). Here Marconi Specialised Components Division had a small engineering works until March 1965 when the operation was moved to a new site in Billericay.

Turn right at the end of St John's Road, right into Lordship Road to return to the College.