

WASC 2297

Historical Development  
of the Port of  
Faversham  
1580-1780



EXTRACT FROM:

## The Historical Development of the Port of Faversham, Kent 1580-1780

### The Kent Archaeological Field School

Director; Paul Wilkinson, PhD, MifA, FRSA.  
The Office, School Farm Oast, Graveney Road  
Faversham, Kent. ME13 8UP  
Tel: 01795 532548 or 07885 700 112. e-mail: info@kafs.co.uk  
www.kafs.co.uk

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“With the start-up of a government gunpowder works at Waltham Abbey, material, personnel and ideas were exchanged.

In 1788 William Congreave, the Deputy Comptroller, wrote to the Duke of Richmond: “In obedience to your Graces orders I desired Mr Crew to inform me who the Board chose to employ to build the barges for Waltham Abbey, that I might get a design from the said builders for barges upon as large a scale as the navigation would admit of but I am not yet furnished with the information”. Later Congreave reported back to the Duke that Mr Crew had “made his observations on a barge (he has not shown it to me) he says that he cannot make the drawing of it here, but will do it at Woolwich, I wish I could have given you a more satisfactory account, but he will not be communicative, or do anything if he is looked at.... P.S. I took the draught of water of a Ware barge lying at Kings Arms Bridge, she was loaded with 20 chaldron of coals she draw 1 foot 10 inches.”<sup>20</sup>

Two examples of punts have now been excavated and recorded from Waltham Abbey and the Faversham Gunpowder Works (Figs. 76, 77). In September 1994 the N.A.S. (Nautical Archaeology Society) was invited to visit Waltham Abbey Gunpowder Works to comment upon the significance and possible fate of the remains of 12 wooden vessels. The team, directed by Gus Milne and Colin McKewan, along with Paul Wilkinson, were then granted permission to record five of the vessels which needed to be moved from a silted-up canal.

The recording work was concentrated on the one swim-headed barge (R.C.H.M.157) that had sunk cheek by jowl with three double-ended vessels (R.C.H.M. 158-160). Its size and dimensions were uncannily like its 18th-century Faversham counterparts. The vessels had been left in a waterlogged condition for at least 50 years and below the “wind and water” boundary the timber was very sound and solid. Indeed, the leather lining to the floor has survived complete and undamaged. Its overall dimensions are length 8.5 m (27 ft 6 ins) width 2.1 m (7 ft) and depth 0.8 m (2 ft 7 ins). The bottom is constructed with longitudinal boards, edge-positioned by ten transverse members which should be called “rungs” to differentiate them from floors. Floors are usually associated with keels and composite frame structures (Wilson, 1987:13). The chine on this form of construction is where the lowest strake of the side is fastened to the bottom plank, on this particular punt by bronze screws of 100 mm (4 ins) length. The planks of the punt’s flat bottom will be much thicker than the 38 mm (1 1/2 ins) of the sides. In this case a tentative measurement is 76 mm (3 ins). The planks of flat bottoms need to be thicker than in a similar round-bottom craft. This is because they provide all the strength in one direction and take the chine fastening on the edge.

The next most important longitudinal member is the keelson, 228 mm x 76 mm (9 ins x 3 ins) which rests directly on the runs above the longitudinal bottom planks. The bottom is longitudinally and transversely curved or “sprung”; a flat bottom with straight sides and ends can be loaded much deeper, but one without

a curve is very hard to move. A curved or sprung flat bottom is easier to propel and turn than a completely flat bottom. This curved flat bottom construction technique can be seen in the drawing of a small boat or punt found alongside the ancient barge found under the River Rother in 1822 (Rice,,1824: et passim). A curve or camber can be obtained by shaping the rungs, placing the longitudinally run planks so that their annual rings follow the curve or by steaming or warping the planks. Once in place the locked-in stresses of both planks and rungs combine to form a rigid structure (McKee, 1983: 55).

Both ends of the punt are raked at 32° to enable the craft to pass over waves and debris. This L-shaped chine is in effect a transverse ile (Lehmann, 1978: 259). The ile, possibly derived from dugouts, is extravagant both in time to build and materials (Sorokin, 1994: 129 and Arnold, 1990: 167). Reinforcing both the edge chines of the punt is the lowest of two elm bilge strakes. This important member protects the vulnerable edge fastening and is akin to the meginhufr strakes found on some Scandinavian boats (Cluness 1967: 27). Elm of course is an ideal timber for rubbing strakes; it doesn't splinter (a feature utilised on Nelson's fighting ships) and if rubbed or worn is reduced to a dusty powder. The longitudinal side strakes of the punt are in one piece, machine-sawn of radially cut oak, 38 mm (1 1/2 ins) thick by varying widths. Transverse oak stiffeners are joined by a natural curved oak knee which acts like a bracket where the bottom and sides meet at an angle. This form of construction will allow curvature in two planes

The horizontal surface of the knee lies on top of the rung fastened with copper clenched nails. The sides are carvelbuilt, caulked with twisted strands of Stockholm tar,<sup>21</sup> impregnated oakum,<sup>22</sup> luted and payed with coal tar putty,<sup>23</sup> coal tar being a by-product from cylinder-produced charcoal and coke and sold as such by both Faversham and Waltham Abbey Gunpowder Works. The side strakes are fastened to the transverse stiffeners by through fastened oak treenails, 25 mm (1 in) thick, end-wedged outboard on the strakes. Longitudinal members such as gunwales, rising and rubbing strakes are built in to distribute the shocks of normal day-to-day wear. Bottom boards of 25 mm (1in) pine are fitted with two hatches fore and aft to allow access to the bilges. Amidships between the two fore and aft doored bulkheads the floor is covered with complete skins of tanned leather held in position by copper tacks. The use of a leather floor in areas where gunpowder is kept isn't unusual; some magazines at Faversham were covered with tanned leather, as were some magazines on His Majesty's ships:

"whereby the space between the powder at the ends of the barrels will be sufficient to allow the grains to be separated from each other when a barrel is rolled upon Tanned Hides, which may be a good temporary expedient for preserving the gunpowder on board His Majesty Ships of War, when it may be inconvenient to open the barrels and shift the powder, Office of Ordnance February 1790."<sup>24</sup>

The cargo area of the punt was covered by a rounded canopy, constructed of streamed ash stringers and fastened inboard to the side planking by copper clenched nails. It is obvious from the haphazard siting of these stringers that the canopy was a later addition to the main building phase of the punt. The ash stringers were covered in light 12 mm (1/2 in) tongued and grooved pine boarding covered with flax canvas and painted with at least 11 coats of red oil paint. The four corners of the canopy were protected by angled "rubbers" of elephant hide (Per. corres, G.Milne). Amidships, port and starboard, is an oak loading cill some 1.5 m (4 ft 11 ins) long, which allowed up to 40 barrels of 100 lb (44 kg) gunpowder to be loaded. The gunpowder barrels were transported upright with the one open end covered by a fitted leather cap to prevent spillage and water ingress (Crocker, 1986: 25). Towing posts, kevel-shaped, were fitted for and aft, port and starboard, and immediately fore and aft are two seating thwarts butting up to a raised boarded punting platform situated at both ends of the vessel. All of the boat furniture, corner rubbing strakes, handles, latches, mooring rings were manufactured in bronze. This was a safety precaution to alleviate any danger from "sparking" and as shown in the 1785 works regulations:

3. The hinges of all doors are to be copper or bronze and kept well oiled, the cogs, axles and other parts to be kept well soaped and oiled as has hitherto been the custom.
4. Sheaves of pulley if made of wood must be altered, so that the ropes may rub against copper, and the sheaves be made of the same material.
7. When barrels of gunpowder are lifted out of boats to be stored in the magazines or powder vessels, the strictest attention must be paid to have them brushed all over with a soft brush to prevent any grit hanging to them. The wheelbarrows on which they are to be carried, the hold of the vessel in which it is to be laid to be cleaned in the same manner"

(Percival, 1967:L 13 and Smith, 1871: et passim).

The four towing posts and tracking rings indicate this particular craft was towed, although later photographs show punting or quanting<sup>25</sup> was the preferred method of propulsion. Certainly at Faversham in 1776 tow paths were already in use: "gravel from the canals to be employed in raising the towing paths, and are of opinion that the said 10 men and the 4 horses will be able to complete the towing tracks before the winter sets in."<sup>26</sup>

If the tow is taken forward, a partly sideways pull is exerted on the punt, tending to bring the punt towards the towpath, the actual impact however is forestalled by a build-up of a cushion of water between the punt and the bank. Lengthening the tow will reduce the sideways pull but may be inappropriate round bends. In a punt, with its double ends, the tow can also be from either end, as it is often impossible and unnecessary to turn the boat end-forend in a narrow canal or waterway. The optimum point for towing is quickly found by experience and is called the Centre of Lateral Resistance (CLR). On the Waltham Abbey punt the method of construction indicates the four towing posts were fitted after "sea-trials" and when the correct CLR had been found. Sooner or later a towed punt will run out of tow path, usually because the canal has widened into a lake, estuary or marsh. She must then have some method of propelling herself and the most convenient in a working boat is a pole. A pole can be used to punt: the user needs to stand still facing forward with his feet apart. He then lowers one end of the pole, normally on the port side, down to the bottom, rather astern of where his hands are grasping the pole, at a height where a pull can be exerted. This forces the foot of the pole aft and the boat forward, so he take up the slack, hand over hand covered for the next cycle (McKee, 1983: 133). When too deep for punting unlucky enough to lose his pole, a rope and weight can be used to propel the craft along by the simple method of throwing the weight forward into the water and hauling it on the rope, and repeating the cycle till the shore or safety is reached.

The punt excavated from the site of the Faversham Gunpowder Works was found by probing in the mill pond of Bonnett's Mills, the most north-easterly pond before the water enters the sluice into Faversham Creek (Fig. 78). There are at least two other punts sunk and covered by mud in this area of the Gunpowder Works. A team from the Nautical Archaeology Society (N.A.S.), directed by Colin McKewan and Paul Wilkinson and including other N.A.S. members and local archaeologists, located, raised and measured the punt which is a much simpler form of construction than the R.C.H.M. 157 punt measured at Waltham Abbey. A punt had been moored at this spot in the late 19th century to clear the weed from the mill ponds.

The punt is 3 m 70 cm (12 ft) long, with a width of 1 m 33 cm (4 ft 4 1/2 ins) and a depth of 33 cm (13 ins). Essentially of flat and square construction, the lack of shipwright skills indicates the craft was built by a works carpenter, but using the very best materials. The addition of four men reduced the freeboard by only 5 cm (2 ins). The bottom boards, 76 mm by 203 mm (3 ins x 8 ins), are straight cross-planked members of pitch-pine<sup>27</sup> through bolted by two longitudinal rods of wrought iron threaded, washered and square bolted at both the fore and aft ends. The side longitudinal strakes comprise one piece of radially sawn oak 3 m 70 cm (12 ft) long by 25 cm (10 ins) high and 6.5 cm (2 1/2 ins) thick. Both ends inboard are mortised to receive the single transverse strakes, again of radially sawn oak of similar specifications as the longitudinal strakes.

Large iron boat nails hold the assemblage together. The bottom boards comprise 12 full length pitch-pine P.A.R. (planed all round) boards of different widths, 110 mm (4 1/4 ins), 137 mm (5 3/8 ins) and 100 mm (4 ins). There is a gap of 50 mm (2 ins) running the full length of one side, which is filled with bitumen; under the bitumen a piece of flax canvas was noted, giving a bottom construction of timber, bitumen, canvas, bitumen and then the bottom boards. Both longitudinal strakes had a chamfered rubbing strake, again of elm, and this had been fitted using bronze 100 mm (4 ins) countersunk head screws. The longitudinal strakes extended 76 mm (3 ins) further fore and aft than the transverse strakes, obviously to give more strength to the mortise joint but also to act as "horns" or fenders to take any day-to-day shocks to the punt. Four bronze hooped "rowlocks" were fitted fore and aft, port and starboard, and wear to the outboard top of the longitudinal strakes indicated many years' use. With poles in all four corners it would have been possible to "anchor" the punt quite firmly to the mud whilst weed-clearing or repairs were carried out.<sup>28</sup> The only other furniture was one wrought iron blacksmith-made mooring chain (Fig. 79).

Part of the pitch-pine decking or bottom boards was covered with a piece of "modern" ply; once it was removed, a remnant of tanned leather, covering one corner of the bottom board and fixed firmly with copper tacks was noted. This indicates that at some time in its life the punt had been used to transport gunpowder around the many waterways of the Faversham Gunpowder Mills. After recording, the punt was replaced in its original find position and sunk under the mud (Fig. 80).

20 PRO: Supp. 5/67 p.138.

21 Stockholm tar: a natural wood tar, distilled from the pine tree of the family Pinaceae.

22 OED: Oakum: loose fibre obtained by unravelling old rope especially hemp. OED: Hemp, an annual strong-smelling Asian moraceous plant *Cannabis Sativa* (Old English haenep related to Old Norse hampr and Old German banaf.)

23 Coal tar putty: "A stopping made of whiting and warm coal-tar, worked up into the consistency of butter, too much whiting would make it crumbly, but without whiting it sets like stone" (Calude Worth, *Yacht Cruising* 1934 London p.487).

24 PRO: Supp. 5/111 no.48.

25 Quanting: the bargee starts at the bows, and after finding the bottom with his pole walks steadily aft and on reaching the bottom with his pole again walks steadily aft and on reaching the stern he recovers the pole and takes it forward again. This method of propulsion would have been used on the powder barge at Faversham.

26 PRO: Supp.5/115.

27 OED Any of various coniferous trees of the genus *Pinus* esp. *Pinus rigida* of North America.

28 When found in 1970 less than 4 miles away, the Graveney boat (late 10th century) was secured by a series of stakes pushed into the mud.