XI

The Newburn wherries: remnants of the River Tyne's industrial past

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SUMMARY

At least ten disused wooden vessels were hulked on the foreshore of the River Tyne opposite the village of Newburn between the 1940s and 1960s. They are seen in a series of photographs taken in the 1960s which show substantially complete vessels, including pontoons and wherries. The assemblage was archaeologically recorded in 2009, by which time the site consisted of five very reduced hulls and a dispersed scatter of parts; this reduction was a product of time, ship-breaking, and the removal of valuable copper clench nails and roves from clinker-built wherries. This paper describes the remains, concentrating on the construction, development and use of the predominant type on the site, the Tyne wherry, a generally unsung but vital player in the busy life of the river.

INTRODUCTION

THE COMMONPLACE CAN ALL TOO QUICKLY BECOME THE RARE, then the unique, and finally the non-existent. For instance, of the thousands of keels which ran on the Tyne ebb from up-river coal-staiths, beneath the arches of the old Newcastle Bridge and to waiting colliers, not a single example now remains (Stammers 2008, 33). For the wherry, that other ubiquitous historic working boat of the River Tyne, this transition has been curtailed at the unique. Just one complete example, *Elswick No 2*, survives at Beamish Museum in County Durham (fig. 15).[1] The vast majority of the obsolete vessels — the victims of increasingly efficient road haulage — were either broken up, and their timber hulls and copper and iron fixings recycled, or summarily taken out beyond the mouth of the Tyne, holed and sunk. However, a number of wherries were simply hulked and left to decay along the riverside, and at one of these sites, at Newburn, substantial remains of wherries have survived (fig. 1).

Many vessels, not only wherries, were hulked on the foreshore opposite Newburn between the 1940s and the 1960s. Some vessels may have been local, whilst others were floated from workplaces nearer the mouth of the river by the Tyne Improvement Commission or the Port of Tyne Authority, responsible for maintaining the unhindered navigability of the waterway. Photographs taken of the site from the mid 1960s catalogue the rapidly dwindling resource. Figure 2, from *c.*1964, shows many complete vessels, whereas today, viewed from the Newburn (north) bank of the river at low tide, the remains have substantially merged into the muddy riverbank. Only when standing on Newburn Bridge, above and to the east of the site, are the outlines and frames of a number of hulls clearly visible (fig. 3).

The ravages of time have, of course, been responsible for some of this loss at Newburn; many thousands of tides have pushed and pulled timbers out of place, but much of the decay,

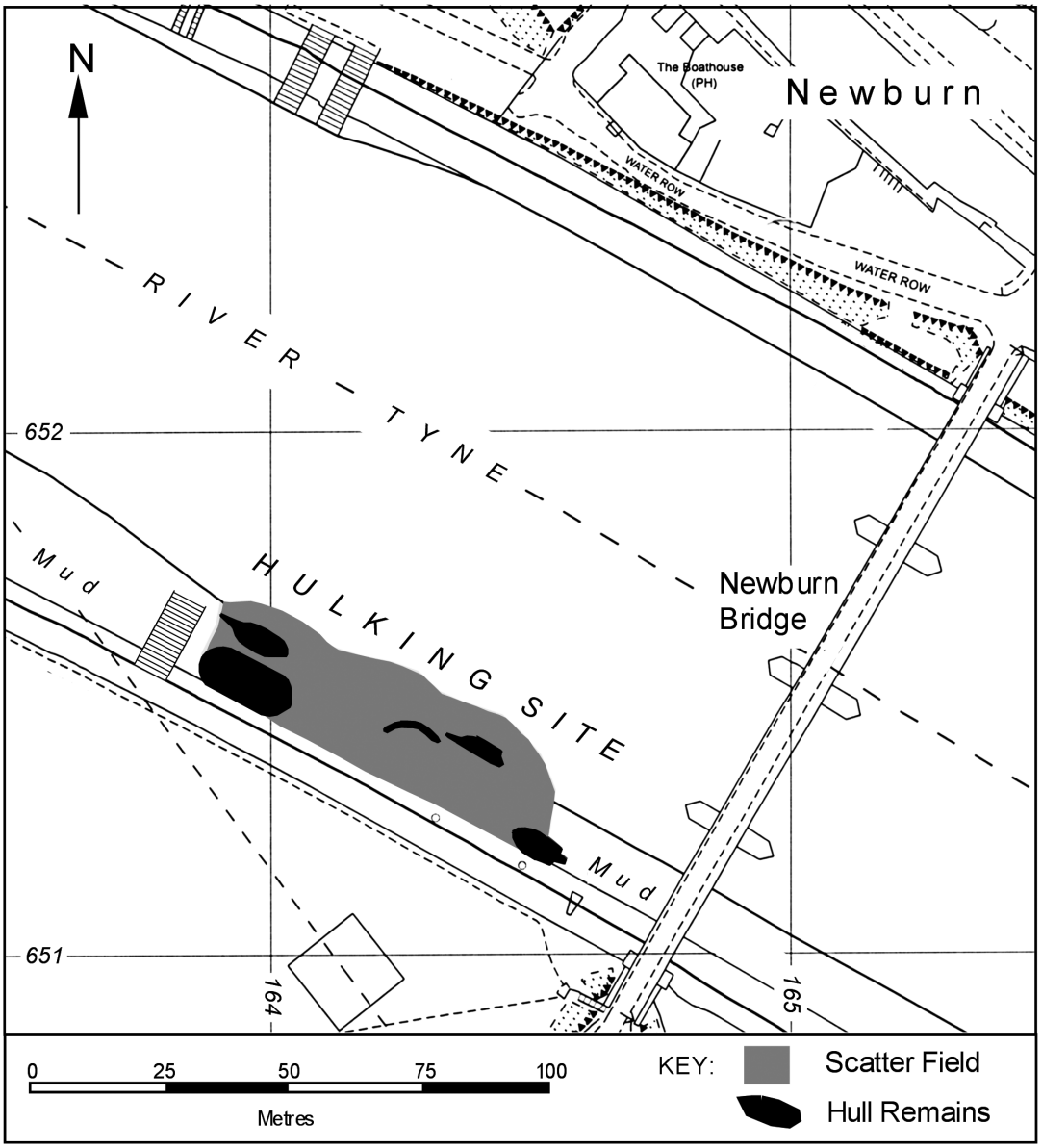

Fig. 1 The hulking site on the south bank of the River Tyne and west of Newburn Bridge.

or more accurately disassembly of the vessels, has been by human agency. This is certainly true of the wherries, held together with thousands of large copper clench nails, their heads turned over against copper washers or roves, a signature of their clinker construction. Cyclically, since their abandonment, the price of copper has fluctuated, making the removal and sale of these items a worthwhile occupation. The result is that although the surviving hulls are drastically diminished, the foreshore around them is covered in a dense scatter of frames,

Fig. 2 Looking west across the hulked vessels at Newburn *c.* 1964. The three at the front are wherries. The vessel furthest to the left in the frame is H1. (Copyright Beamish Museum. Reproduced by kind permission of Beamish Museum. Photo No: 1200).

planks, knees and other parts which went together to make the wooden vessels. The oak from which most of the pieces were fashioned has ensured that many are still in good condition. The scatter is a very valuable part of the remains. Whilst the surviving wherry, *Elswick No 2* contains many of the same types of component, most are securely locked away within the structure and well nigh impossible to access without major, potentially destructive, disassembly. The timbers spread out on the river bank, albeit muddied and frequently partly submerged, are freely available for inspection, artefacts of a tradition of shipbuilding which stretches back to Anglo-Saxon times.

The Newburn hulks have been looked at and commented on over the years. Norman McCord and Stafford Linsley have taken photographs of them[2] and a collection of photographs showing them, donated by Frank Atkinson, is also archived at Beamish Museum. The programme of recording described here continues this interest by attempting to establish the number, location and structural character of vessels on the site and the potential of the surrounding scatter field.

The work has been a joint effort by the writers,[3] supported by the Archaeological Officers for Tyne and Wear, Jennifer Morrison and David Heslop. Ian Whitehead, Curator of the Maritime Section at Discovery Museum, Newcastle upon Tyne facilitated an inspection of *Elswick No 2* at Beamish Museum and provided much useful information. Paul Castrey of Beamish Museum kindly located photographs of the hulks at Newburn and of *Elswick No 2*; Phil Lynch of the Port of Tyne Authority supplied background information on the likely procedure behind the hulking of vessels at Newburn as well as sourcing photographs of the area. Fred Cowell and Nigel Gray, both boat-builders, advised on technical issues. The Northumberland Estates made all the work possible by allowing access to the site. As ever, any errors in the paper can be attributed to the writers alone.

Fig. 3 The Newburn site in 2009. Recording wherry H1.

THE SITE AT NEWBURN

The hulks and the scatter of vessel parts lie on the south bank of the River Tyne in the parish of Ryton, opposite the village of Newburn at NZ 1643 6513 (fig. 1), 18 miles from the mouth of the river and on land owned by the Duke of Northumberland. They are not protected by any statutory designation. Remains extend for nearly 100 m along the bank between Newburn Bridge to the east and the steps of a local rowing club to the west and represent at least ten vessels abandoned between the 1940s and 1960s. Major hull components of five vessels can still be seen, although more may be buried in the scatter and the river mud. All remains lie within the gently-sloping intertidal foreshore: between the shingle of the river channel, exposed at low water, and the man-made revetment bank to the south which is formed from dumps of rubble and concreted slag. At points, the revetment has either tumbled over a number of the hulks or material has been dumped from the bank to pin them.

Most of the vessels were deposited here by the Tyne Improvement Commission or its successor, the Port of Tyne Authority (responsible for the navigability of the river), at a point above the head of navigation of the river where anything abandoned would present no hazard to shipping. However, some of the wherries abandoned may have been from the fleet operated by Kirton's Brickworks across the river in Newburn.[4] No absolute evidence has come to light to confirm this idea or to identify any of the vessels individually.

RECORDING THE REMAINS

Recording took place during the Spring and Summer of 2009. Of the surviving vessels (fig. 4), three were recognized as wherries (H1, H2 and H5) because of their proportions and clinker or lap strake construction. Other types of vessel on the site include two pontoon-shaped hulls (H3 and H4) quite possibly floating ferry-landings. These last vessels are described below but their interpretation will be taken no further in this paper. Most of the component parts within the scatter field are from wherries, many of them frames with their characteristically stepped, clinker-built profile.

To record the vessels, the simplest approach was to set out an overall site grid (20 m by 20 m, recurring over the area). Within this framework, base lines were run along the keels of identified vessels. Offsets or triangulations were then made to any key point on the vessels which were drawn to scale on draughting-film on site. The plan of each hull was interpreted as it was prepared, any *ex-situ* overlying timbers being excluded. No attempt was made to clear the hulls of river mud which would have been a very time-consuming process with uncertain implications for the preservation of the structures.

In addition to the vessels, a representative sample of components of the extensive scatter field were also recorded and located within the site grid. These included four rudders — or visible parts of these rudders — a section of a stem, a sample of the many framing timbers, a number of attached clinker-fastened planks, and a variety of metal fixings, both copper and

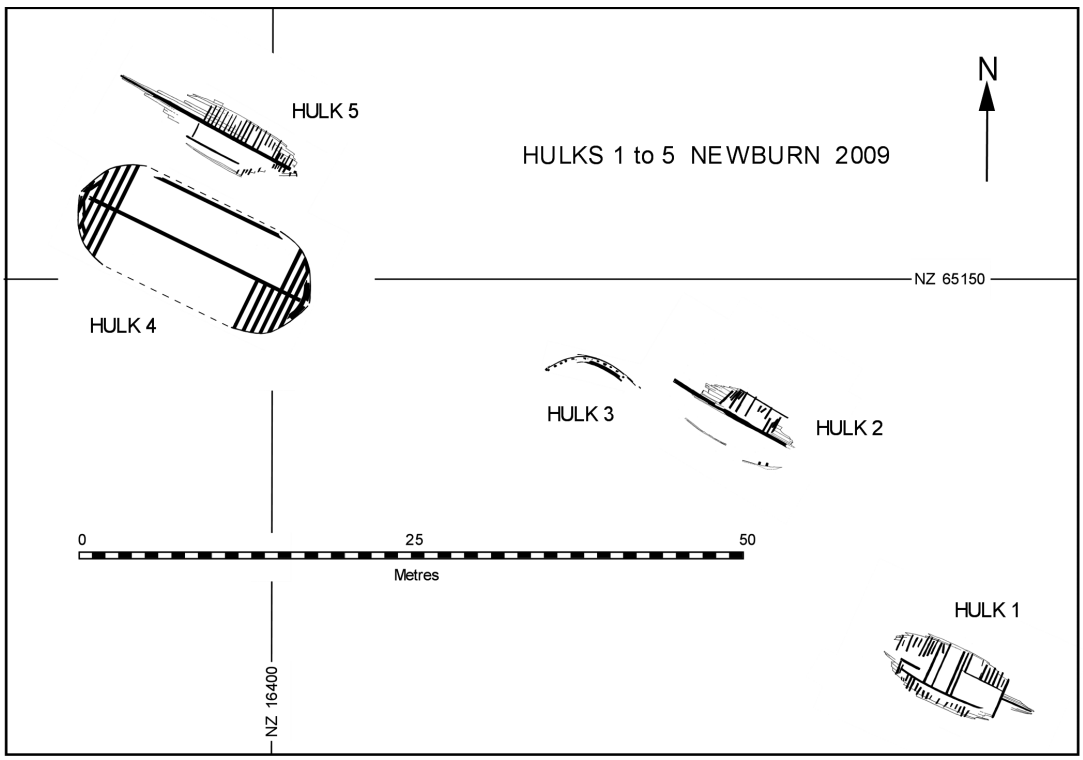

Fig. 4 The surviving hulks at Newburn. 1, 2 and 5 are wherries, 4 and 5 are pontoons.

iron. An outline of the extent and density of the scatter field was also prepared. Detailed survey of the scatter awaits greater resources to capture what is a complex and entangled picture.

THE HULKS (FIG. 4)

Hulks H1, H2 and H5 are wherries, exhibiting typical features of this type of boat, including clinker planking and frames cut to fit these planks. Hulls H3 and H4 are pontoons and of carvel construction, flat-bottomed and slab sided structures of considerable strength.

Hulk 1. Wherry. Surviving/visible length 12 m; surviving/visible width 4.8 m; likely maximum depth 0.5 m (fig. 5). This hull remnant lies against the revetment bank along the river. About 20–25% of the vessel, just about the whole of the floor planking, survives and has fairly minimal overlying scatter. The structure retains a curve to north and south and much of the interior has been overlain with river mud. The keel is visible to the east and probably survives throughout. There is no evidence for either hog or centre keelson (see glossary). There are remnants of four side-keelsons (two per side) fastened to frames by hexagonal-headed bolts with square washer plates. Three survive in part: the most northerly was the most complete; the most southerly was represented only by one attachment bolt. Some 25–30 frames survive in part. Planks are visible to north and south and alongside the keel to the east, and are obscured within most of the hull by mud, but around 18 to 20 probably survive across the floor. Numerous copper clench nails and roves also survive, fastening both plank to plank and frame to plank.

Hulk 2. Wherry. Surviving/visible length 10.4 m; surviving/visible width c. 4.4 m; likely maximum depth 0.4–0.5 m (fig. 6). The hulk lies 14 m to the north-west of H1 on the northern edge of the foreshore about 10 m from the exposed shingle of the river channel. About 20–25% of the vessel survives. Only the northern side of the hull is visible, although the south side certainly survives under the river mud, tested by probing. Planks and frames shown on the plan to the south of the keel may be detached fragments. The hog is visible and is presumably underlain by a surviving keel but there is no evidence for a central keelson. The hog has had 16 fixings to attach the central keelson with bolts, all of which have been removed. Visible components of the hull to the north of the centre-line include eight planks and 13 partial or complete frames, a number of which have been fixed to the planking with bolts. The ends of two planks had been scarfed and riveted to adjoining planks, but the rivets and the other planks are now lost. There is no evidence for side keelsons. Numerous copper nails and roves survive, fixing plank to plank and frame to plank.

Hulk 3. Pontoon. Surviving/visible length 13.5 m; surviving/visible width c. 0.8 m; depth uncertain, but visible height of carvel planking 1 m (fig. 4). The very partial, visible, remains of this vessel lie close to the centre of the site. Its original form and type is uncertain although it would appear to have strong affinities with the more substantially surviving H4. It consists of a curved length of carvel planking (two full planks with the top of a third plank or floor timber below) with projecting rubbing-strakes attached, fixed to ten upright internal frame timbers. A substantial horizontal and curving beam sits internally alongside five of the uprights. This is broken at the west but is jointed to receive another beam, now lost, at the east. The channel formed between carvel hull and the beam has been filled with concrete. A stem or stern post

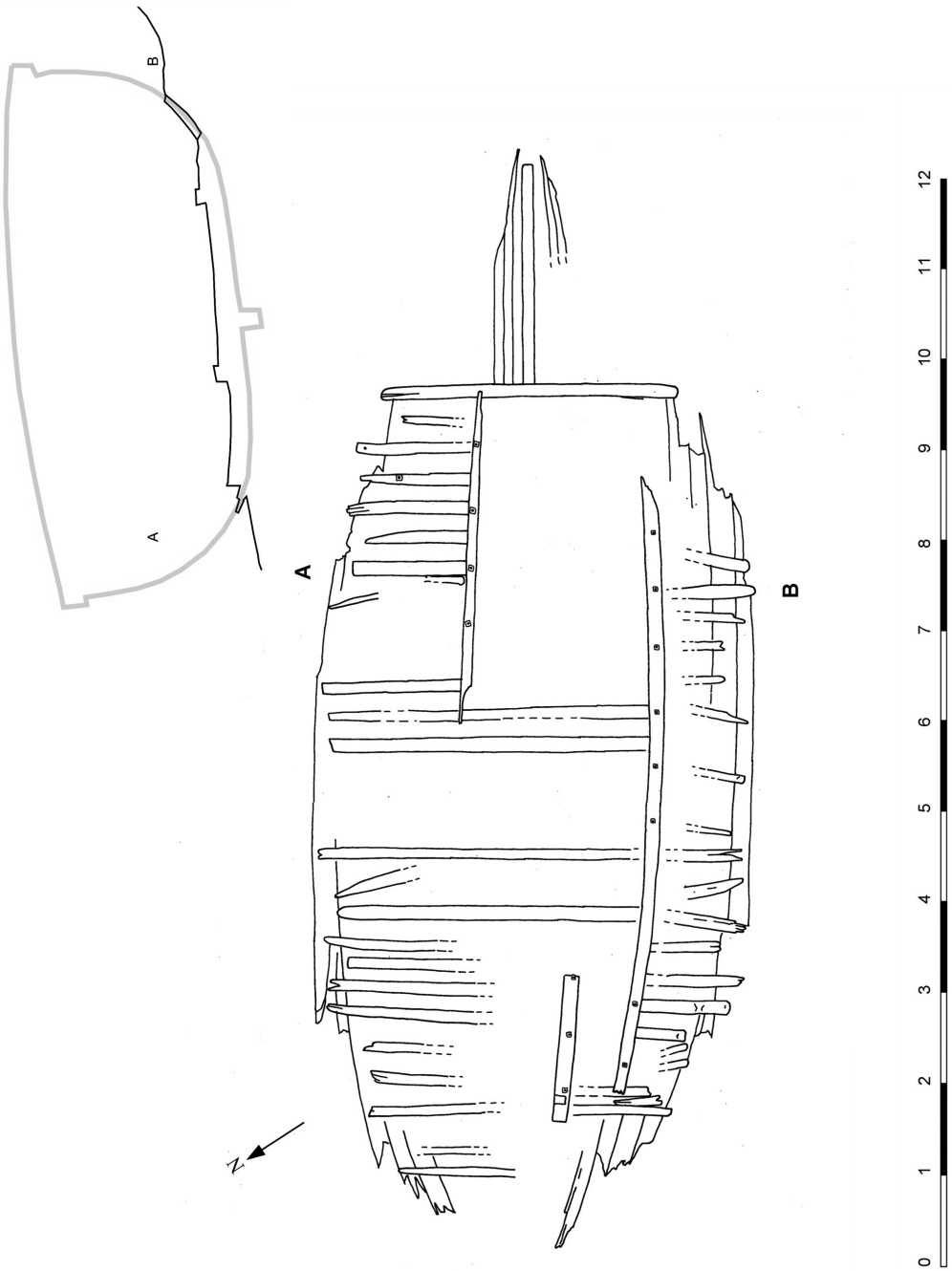

Fig. 5 Hulk 1. Plan and transverse profile at A-B. The toned outline represents the likely original section of the vessel. 1:80.

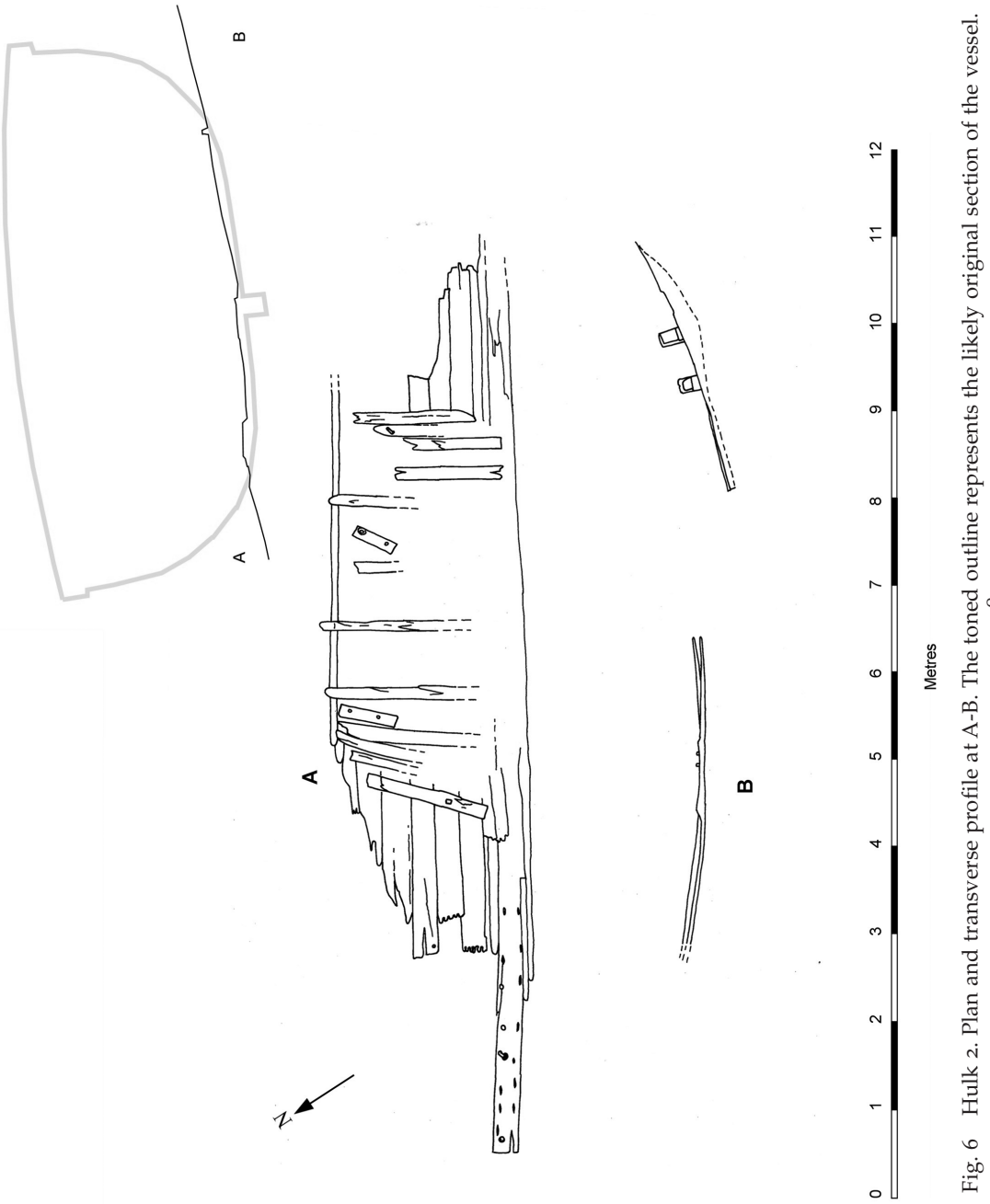

Fig. 6 Hulk 2. Plan and transverse profile at A-B. The toned outline represents the likely original section of the vessel. 1:80.

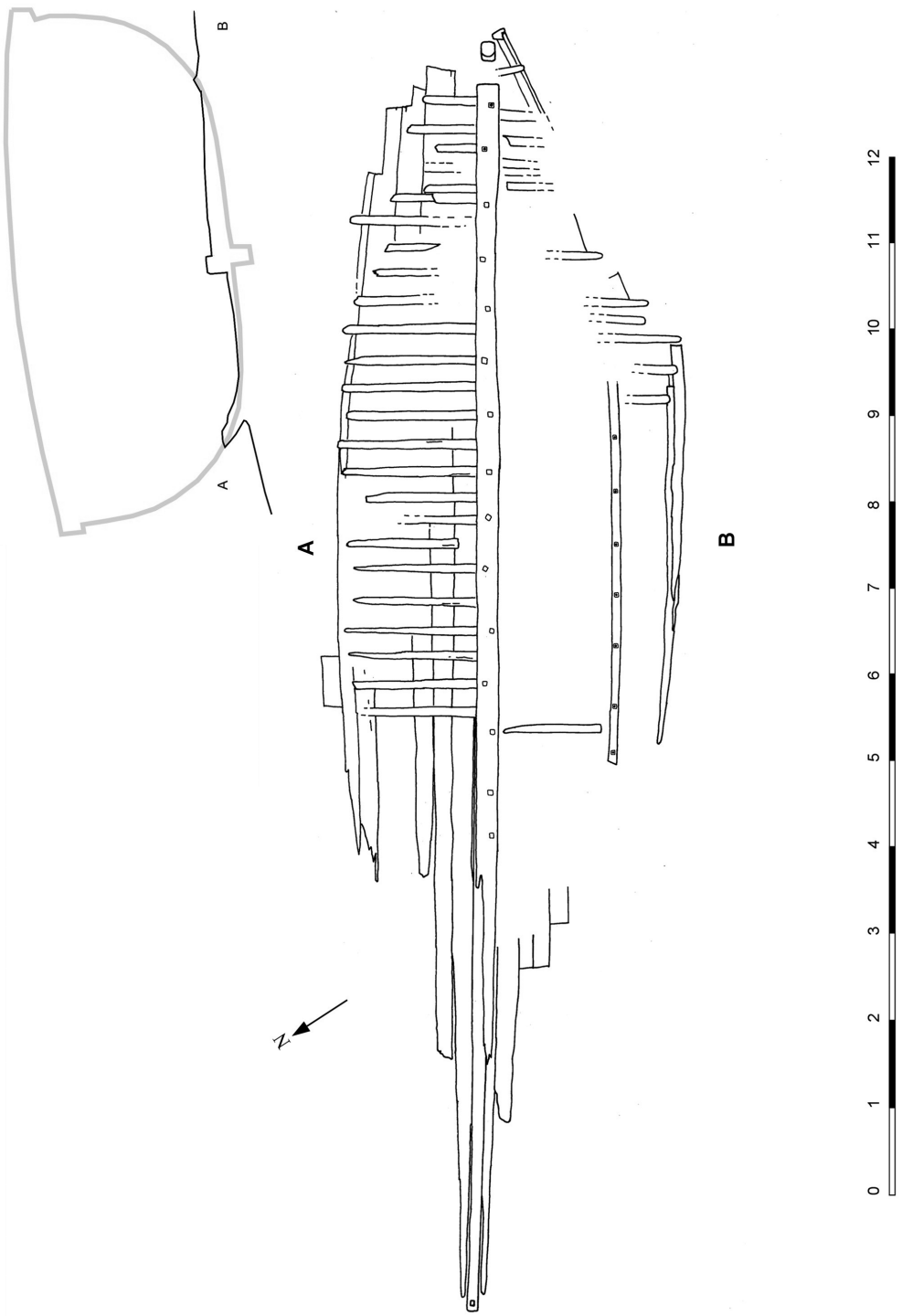

Fig. 7 Hulk 5. Plan and transverse profile at A-B. The toned outline represents the likely original section of the vessel. 1:80.

lies at the western end of the planking. No planking is visible extending beyond this post to the south. Fixings include metal pins and spikes and wooden dowels. The scatter field is very dense to the north of H3 and would seem to include considerable material from the vessel including carvel planking and a substantial section of beam of a similar form to that remaining within the hull.

Hulk 4. Pontoon, possible ferry landing. Length 18.7 m; width 8 m; depth uncertain (fig. 4). This lies at the western end of the site, just a little to the east of the new steps for the rowing club and south of wherry H5. It is the most extensive vessel of the assemblage. It retains its full planform but is of uncertain depth, although it seems likely that it has been stripped down to its floor or base timbers. The vessel has been partly obscured by a covering of slag and rubble which has been dumped across the centre of the hull, possibly to pin it to the foreshore. Substantial flat floor beams run beneath a central keelson with a side keelson surviving along the north side of the vessel. Shaped horizontal beams survive at both stem and stern (which is the stem and which is the stern is uncertain), but stern and stem posts are missing. Carvel hull planking can be seen at both stem and stern but is lost in the rubble and mud between. A rudder lies at the eastern end of the hull (catalogue no. 11) but is probably not associated.

Hulk 5. Wherry. Surviving length 14.9 m; surviving/visible width c. 4.2 m; likely maximum depth of vessel 0.4–0. 5m (fig. 7). This vessel lies at the western end of the site and close to the river channel to the north of H4. It is the longest of the surviving wherries, at just under 15 m. About 20–25% of the vessel survives. It has only limited overlying scatter. The hull to the south of the keel is largely obscured by river mud although probing has shown that much still survives. The keel itself is visible at its western end, where there is a mortise hole for the attachment of the stem post, and probably survives throughout, although it is obscured by mud over the eastern part of the boat. Part of the stern construction, fixed to the keel, can be seen at the eastern end of the hull. A hog survives above the keel fixed with square-headed bolts and washer plates, but is very decayed to the west. A side keelson runs to the south of the keel and is also fixed with square-headed bolts. There is no evidence for a side keelson to the north. Forty frames were identified, mostly to the north side of the keel where mud has not obscured them. They will certainly survive in greater numbers than can at present be seen to the south of the keel. Planks are visible to north and south of the keel. Although obscured by mud, especially to the south, probably 15 to 16 survive across the base of the vessel. To the north and west, the planks are being eroded by proximity to the river channel. Numerous copper roves survive, fastening both plank to plank and frame to plank. A complete and substantial rudder (catalogue no.13) lies immediately to the north of the stern. It is probably, but not certainly, from this vessel.

THE ASSOCIATED SCATTER FIELD

The hulk remnants represent only a part of the foreshore site at Newburn. Much boat-related material is dispersed across the area in what is termed here the scatter field. Its approximate extent is as shown on fig. 1. The reason for the presence of the field is noted elsewhere in this paper. In brief, the site became for a time a breakers' yard. The breaking of the vessels was not primarily for timber — although no doubt much timber was reused or simply burnt — but mainly for the valuable copper nails and roves, the usual fixings in the wherries. This disassembly led to the dispersal across the site of component parts, including frames, knees,

planks, and more sizeable timbers such as keels, keelsons and hogs. The most substantial compound components of the scatter field are rudders, four of which have been identified and all are largely complete, no doubt because they are fastened together by iron bolts and straps, not the valuable copper nails and roves which would have been removed. The following catalogue provides a sample of the components of the scatter field.

Frames (fig. 8)

Catalogue numbers 1–5 (below) are component parts of frames from clinker-built wherries. They are the internal strengthening ribs of a vessel, each stepped or joggled to fit to clinker planking which formed its shell. The parts catalogued here are from the lower portions of wherries: the floors, or the sides, known as futtocks.

1. Floor frame: 3.6 m long by 0.15 m wide and maximum 0.15 m deep. This floor is bilaterally symmetrical and cut to fit across the keel of a wherry. The central rectangular slot was probably seated over the hog — which ran above and along the keel. In turn, the centre keelson, which also ran along the spine of the vessel, would have been fastened to the top of the floor. The piece curves at either end, marking the change in profile of the hull. Six steps for planks per side, one nail-hole per step.

2. Floor frame: 1.55 m long by 0.15 m wide and maximum 0.18 m deep. Short floor. Not curved, from close to the keel. Six plank steps and one nail-hole per step.

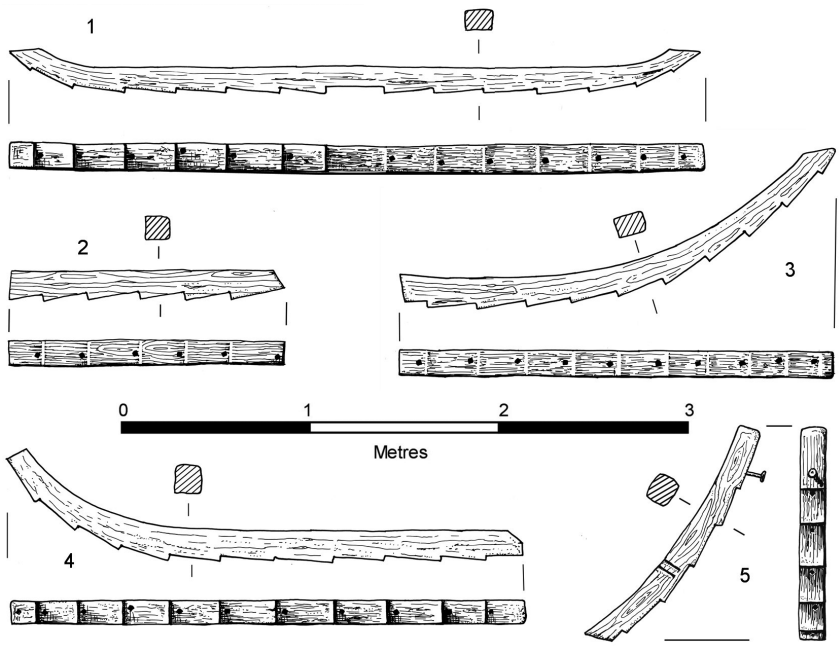

Fig. 8 1 to 5, wherry frames from the scatter field. 1:40.

3. Floor-futtock frame: 2.6 m long by 0.14 m wide and maximum 0.18 m deep. A long, curving floor set across the bottom and part of the side of a vessel. Eleven plank steps and one nail-hole per step.

4. Floor frame: 2.85 m long by 0.14 m wide and maximum 0.18 m deep. Long floor. The slot to right probably fitted over the hog. The piece curves at its left end, marking the change in profile of the hull. Ten plank steps with one nail-hole per step.

5. Futtock frame: 1.42 m long by 0.14 m wide and maximum 0.16 m deep. A short, curving side timber with a protruding iron spike/bolt close to the outer top; this last possibly originally fastening a rubbing strake. Six plank steps with one nail-hole per step.

Knees (fig. 9)

Knees were used to strengthen joints between vertical and horizontal timbers within a vessel or at the stern and stem posts. They are a variety of shapes and dimensions. No attempt has been made to interpret their orientation as originally fixed.

6. Knee: 1.4 m long by 0.57 m deep by 0.13 m wide. Substantial knee formed from a naturally curving piece of timber. One attachment bolt (on curving neck) remaining with two holes for bolts in the upright. Uncertain function.

7. Knee: 0.98 m long by 1.02 m deep by 0.18 m wide. Substantial knee formed from a naturally curving piece of timber. Three attachment bolts with washer plates remaining. Uncertain function.

8. Knee: 0.55 m long by 0.48 m deep by 0.05 m wide. Small knee with curved grain. Pierced by bolt and with augured cavity along one face.

Planks/Boards (fig. 9)

A great many planks or boards lie within the scatter field, most are thin and riveted, certainly from clinker-built vessels. A number are as much as 0.35 m (14 ins) wide others narrower (frequently 0.30 m (12 ins) and as little as 0.025 m (1 in) thick. A few planks are probably from carvel built vessels — they are thicker and pierced with augured cavities for dowels or to retain bolts. None of these last were suitable for illustration.

9. Attached clinker planks: each c. 0.3 m wide by 35 mm thick. Uncertain length but over 2.10 m. A block of four attached planks retaining their nail and rove fixings in neat columns. The planks have been sawn through on the left side presumably during the disassembly of a vessel.

Part of stem, including keel, stem post and knee (fig. 9)

10. Stem post: 0.85 m long (cut away to top) and 0.21 m (longitudinal) by 0.13 m in section with square rebate (45 mm) down right-hand face. Keel: 2.49 m long by 0.275 m deep and tapering in section from 0.13 m at top to 0.07 m at base with square rebate (45 mm) along upper edge. Knee: vertical leg 0.9 m, horizontal leg 0.55 m by maximum 0.13 m wide. This is a compound piece, comprising a straight stem post attached to a keel, both held fast by a knee. No fastenings through the knee

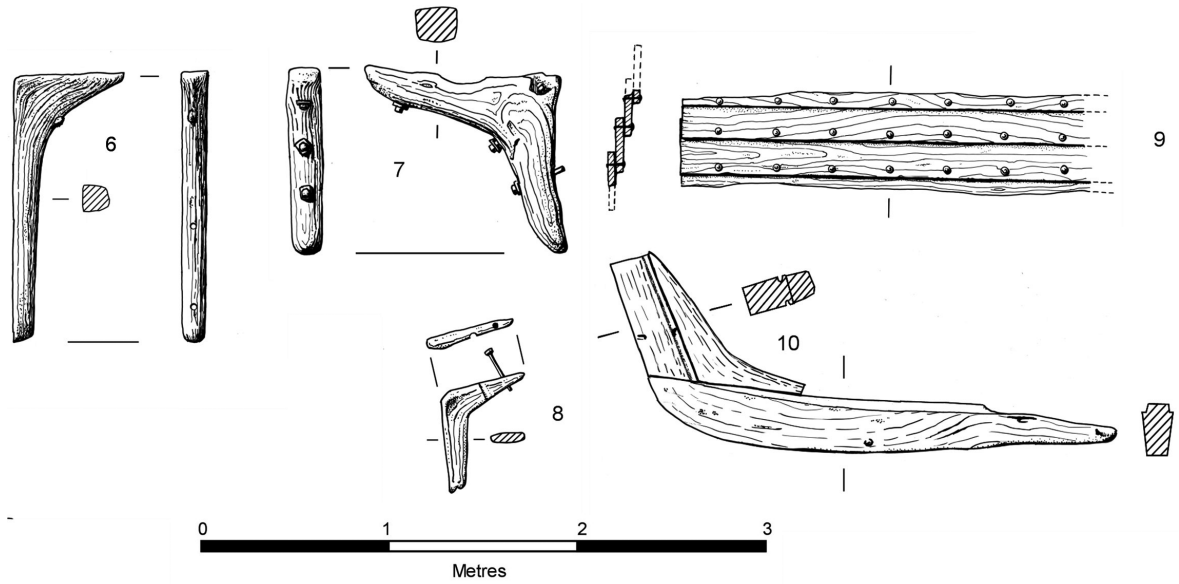

Fig. 9 Knees (6 to 8), planks/strakes (9) and a section of a stem-post and keel (10). All from the scatter field. 1:40.

were identified as the piece is embedded in river mud. The stem post has been sawn through and the right-hand end of the keel eroded away so the original length of either timber is not known. The keel and stem post have been rebated (rabetted) on adjoining edges to locate planks. A hog overlying the keel would have butted against the knee. The original size of the boat represented is uncertain but its interpretation as part of a small wherry would seem likely.

Rudders (fig. 10)

Two rudders (11 and 13) are completely exposed within the scatter and two (12 and 14) are partly obscured. Ascription of a rudder to a particular hulk is feasible on the grounds of which vessel they lie next to, but — given the amount of disassembly going on in the area — has to be treated with caution. Numbers 12 and 13 are almost certainly from wherries; their equivalents can be seen on numerous old photographs of vessels. Rudder 11 sits next to H4 but was probably not attached to this vessel. Rudder 14 is an odd example, with gudgeons on two edges, but is only partially exposed. The upper gudgeons may have been for lifting the rudder if it were damaged.

11. Rudder: 2.72 m high by 0.96 m wide by 0.10 m thick. Rudder post attached to three planks forming rudder by two bolted, iron gudgeon-straps (lower broken). A third gudgeon runs around the top of the rudder post over an iron plate attached to the side face. Top of the rudder flap is cut down obliquely from the post. Lies to the west of H4.

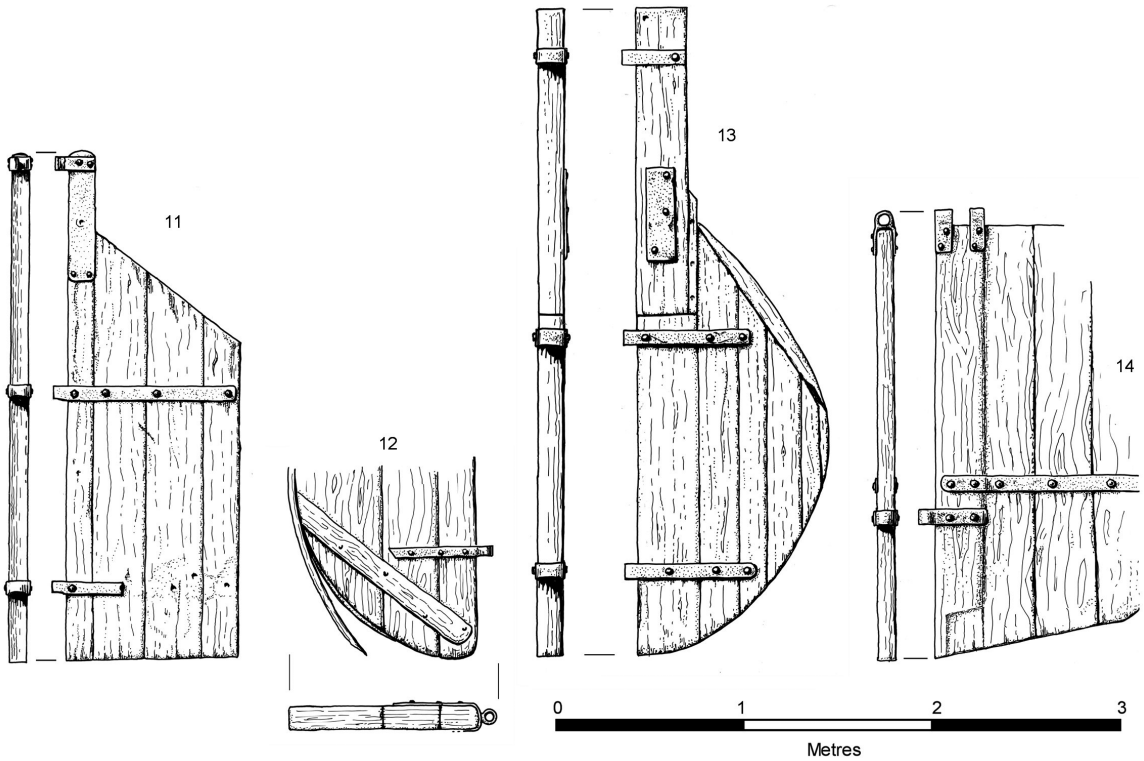

Fig. 10 11 to 14. Rudders from the scatter field. 1:40.

12. Rudder (partly exposed): 1 m wide by 0.14 m thick. Two planks and post cut to curve at rear, with thin plank strut obliquely across exposed face. Timber strapping around curved edge now broken away at base and length above pulling away. An iron 'shoe' of indeterminate form (obscured by mud) exposed at bottom. Bolted iron gudgeon-strap fastened to two planks but not the outer third. Lies to the north of H2.

13. Rudder: 3.47 m high by 1.03 m wide by 0.14 m thick. Formed of nine timbers of varying widths and a post in two pieces with narrow insert on rear edge of upper piece. Five vertical planks forming rudder are sawn obliquely at top with sixth plank laid over this angle and then all cut to form semi-circular flap. Three bolted gudgeon straps. Lower two straps fasten three planks, upper strap runs across post. There is a small iron plate on the flank of the post. Lies to the north of H5.

14. Rudder (partly exposed): 2.4 m high by 1.2 m wide by c. 0.10 m thick. Formed of four planks, all cut obliquely at base and with curving edge seen on right-hand plank. The plank at the gudgeons is thickest and recessed at base, possibly to hold a shoe. Two bolted gudgeon-straps seen. Possibly a third obscured by overlying scatter. The lower strap only runs across the first plank, the higher runs across all four. Two short iron gudgeon-straps are bolted to the top of the first plank. How this rudder functioned is uncertain. Lies to the north-east of H4.

Metal Fixings (fig. 11)

Metal fixings were used extensively in all of the vessels; they included iron bolts between the keel, keelson and frames, and through knees on the wherries. Heavy iron pins are also scattered around the site and were possibly a feature of the carvel vessels. The usual fixing on the wherry was the copper, square-sectioned clench nail. This was hammered plank to plank or plank to frame. A washer or rove — square or diamond shaped, was then fitted over the exposed point of the nail which was hammered down over the plate to securely tie the components to one another. Many thousands were used on each vessel. Sizes of nails varied. It is likely that the copper fixings as seen universally at Newburn, replaced iron nails and roves around the turn of the nineteenth and twentieth centuries (Osler 2008, 201).

15. Iron bolt: 0.38 m (15 ins) long by c. 12.5 mm (½ in) diameter. This heavy bolt has been twisted out of shape, presumably as it was removed from a vessel during disassembly. It has five rectangular washer plates and hexagonal head. Possibly a keel bolt. Within scatter but not attached to any timber.

16. Iron pin: 0.3 m (12 ins) long by c. 12.5 mm (½ in) diameter. Large iron pin, twisted out of shape during disassembly of a vessel. It has a domed head and a short length of square shank below head, then a rounded section. Loose within scatter.

17. Copper clench nail with domed head and rove: originally 0.215 m (8½ ins) long by maximum 9 mm (⅜ in) square-sectioned shank; rove c. 23–4 mm (c. 1 in) square. A typical clench nail with its rove still attached. Used for plank to plank and plank to frame fixing. Loose within scatter.

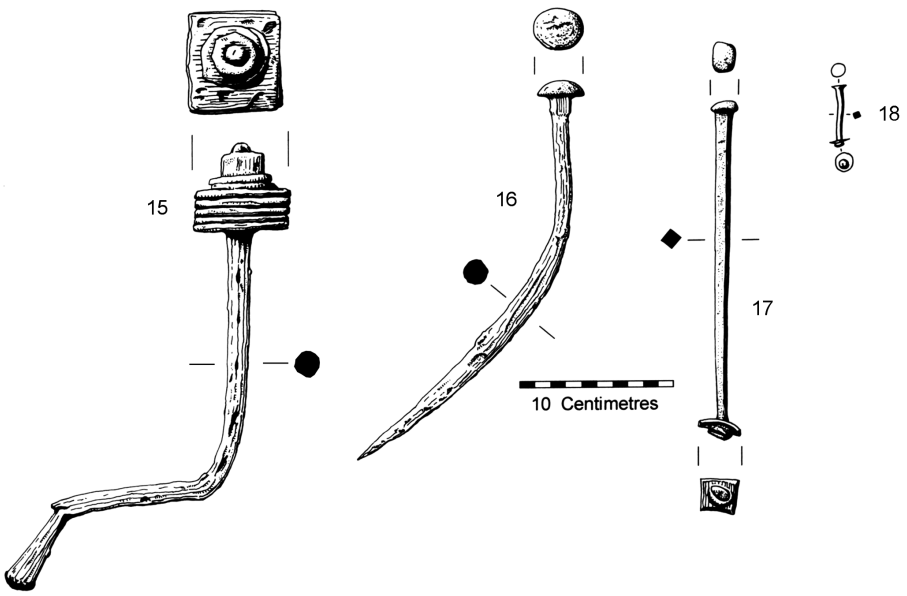

Fig. 11 15 to 18. Metal fixings from the scatter field. 1:5

18. Small copper nail with round flat head: originally 38 mm (1¼ ins) long by 3 mm (⅛ in) square-sectioned shank with round washer. This was loose in the scatter. It is small and must have been used for very minor fixings in the vessels. No in-situ examples seen on site.

TYNE WHERRIES

It is beyond the scope of this paper to provide any lengthy discussion on the development, use and demise of the Tyne wherry. However, a number of areas which may be developed in the future are raised below.

The wherry family

The etymology of the word wherry is uncertain, but may have the same root as ferry; the words appear in certain early usages (all High Medieval or early modern) to be related (Barnhart 2005). As far as denoting a particular type of vessel, the name is, to say the least, generic. Wherries were usually double-ended (often sharp-ended) river-bound vessels constructed by the shell first or clinker method, and of solid construction, making them suitable for the constant groundings of estuarine work. There are exceptions to all these characteristics amongst the group and it is certain that wherries have been very different things in different places and times. Geographically, there were vessels known as wherries along both the western and eastern seaboards and rivers of England and western Scotland (Greenhill and Mannering 1997; Stammers 2008). These include the Norfolk Wherry, a double ended, almost universally clinker-built cargo vessel that generally traded between Norwich and Yarmouth; the Thames Wherry, a fairly small, double-ended clinker vessel used mainly for passenger transport which was common on the Thames from the seventeenth century but had fallen out of use by the nineteenth; the Gravesend Wherry, a sturdier version of the Thames Wherry and single-ended. The Thanet Wherry was a narrow clinker-built fishing vessel which could venture out into open sea and was, structurally, another variant of the Thames Wherry (*ibid*. 97–9). Spithead Wherries operated from Southampton and Portsmouth and came in two classes: First Class were double-ended, clinker built and with two masts. They sailed well in most weathers, even making smuggling trips to the Channel Isles. Second Class were smaller with a single mast and mostly worked out of Portsmouth harbour, running personnel between naval vessels. Their heyday was over by the later nineteenth century (*ibid*. 119–20). The Irish Sea Wherry, double-ended and of clinker construction, was sea-going — mainly a fish carrier, and had the widest distribution of any of the group, operating from south-western Scotland, the Isle of Man, the Cumbrian ports of Allonby and Whitehaven, and down as far as the Mersey and into North Wales. The hull form of this wherry was distinctive, making it very fast under sail. It was common over the eighteenth century but had completely disappeared by the mid nineteenth (*ibid*. 215).

Wherries on the Tyne

There were certainly boats referred to as wherries on the Tyne by the first half of the seventeenth century. An early mention is within the accounts of the Masters and Mariners Society which includes an entry for the hire of a wherry amounting to 9s and 6d on 14 September 1635 (Mackenzie 1827, 681). In 1684, court records note that seditious words had been spoken

against King Charles II by Mary Darley and Peter Rayning on a wherry running between Newcastle and Shields (Andrews 1861, 268). However, both almost certainly refer to fairly small passenger boats like the wherries used over the same period on the River Thames (Marsden 1996, 156). Where the stories of the development of the early passenger wherry and the later 'cargo' wherry meet is still uncertain and further research is needed to clarify the picture.

The Tyne wherry — as exemplified by the surviving *Elswick No 2*, by many others seen in photographs taken over the nineteenth and the first half of the twentieth century, and by vessels H1, H2 and H5 at Newburn — was a capacious, generally river-bound, lighter and cargo vessel, responsible for moving a broad range of goods, both raw and fabricated, from point to point as well as servicing ships anchored on the river. It was a jack-of-all-trades, co-existing alongside the much more specialized — and legally restricted — Tyne Keel for many years and ultimately outliving it by nearly a century. *Elswick No 2* is notable for its beam-to-length ratio (just about 2:1) and for its depth. Figure 12 shows longitudinal and transverse profiles of a wherry, based on the surviving remains of Hull 5 and the adjacent rudder (catalogue no. 13) at Newburn , and on evidence from *Elswick No 2*, including drawings prepared in 1981 by Tyne and Wear Museums.

Building wherries: the clinker tradition

Wherries on the Tyne were almost universally built using the clinker or lap-strake method. It is an ancient tradition. There is nothing about the construction, or indeed the form, of these vessels which would have raised an eyebrow if they had floated down the Tyne in the thirteenth century. Much about their construction would have been familiar to boat builders of northern Europe in the fourth century AD.

Two fourth-century boats found at Nydam in Schleswig, north Germany in the 1860s (Crumlin-Pedersen and Rieck 1993, 246–89) are early examples of this north European clinker tradition and are considered ancestral to those vessels that brought the Anglo-Saxons to Britain in the fifth and sixth centuries (Christensen 1996, 77). The earliest physical tie to bind this tradition to England is the ship discovered at Sutton Hoo in Suffolk in 1937. Although the timbers of this vessel had rotted away by that time, leaving only an imprint in the sandy ground, many thousands of the iron clench nails and roves used to tie the planks together remained. It was a vessel estimated to be 27 m in length (Greenhill and Morrison 1995, 180), dated to between AD 600–625, and directly comparable to the earlier Nydam vessels (McGrail 2001, 210–1). From this period to the sixteenth century, the clinker tradition predominated in northern Europe and parts of Scandinavia, progressing chronologically and technologically through the classic Viking (Norse) ships to the cog and the hulk.[5] Apart from its curving stem, the thirteenth-century Kalmar boat, classed as transitional between Norse type vessels and the cog, found in 1934 during harbour renovations at Kalmar, in Sweden (Unger 1994, 23), is not very different from the Tyne wherry. It is broad in the beam, double-ended with a stern rudder, flat bottomed and with stepped frames just like those seen in the hulls and the scatter field at Newburn. The clinker tradition probably peaked in England with the building of the royal warship *Grace Dieu* around 1416–1420 for Henry V. The remains of this vessel, submerged in mud on the River Hamble in Hampshire, has a keel 38 m long and triple-layer clinker planking (Hutchinson 1994, 29). Henry VIII re-introduced the carvel method of construction for the large ships of his navy in the early sixteenth century. From this time onwards,

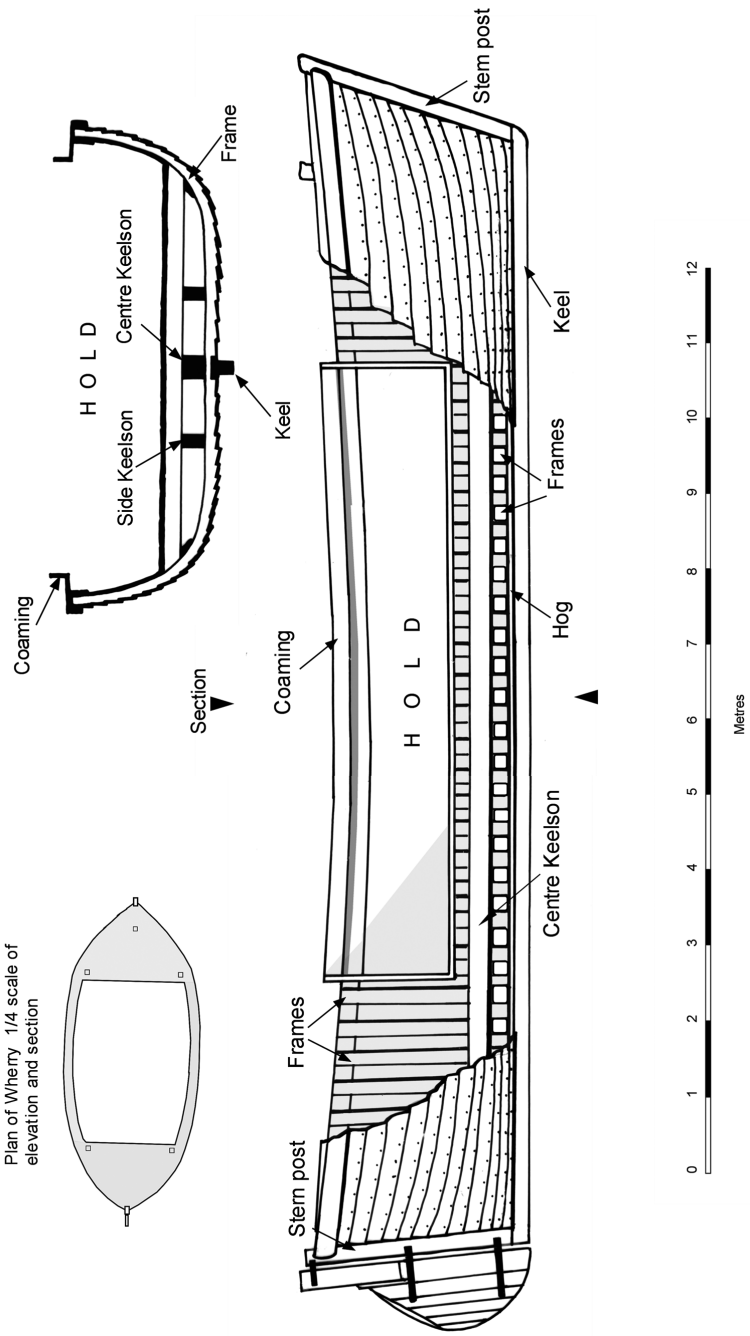

Fig. 12 Cutaway elevation, section and plan of a wherry. Based on drawings of *Elswick No 2* prepared by Tyne and Wear Museums in 1981, and on Hull 5 and rudder (catalogue 13) from the Newburn site. 1:100.

clinker construction was seen as generally appropriate only for smaller or less prestigious vessels.

Because there was never any great pressure to change, constructing clinker-built vessels remained a craft skill. Long past the time that mainstream yards had turned from wood to iron and then to steel — and the trades needed to build a ship had become too numerous to mention — a wherry was built in the same old way. The following description of one part of that construction is by Ernie Keedy, a member of the family firm of N. Keedy and Sons, eventually the owners of the largest fleet of wherries on the Tyne. He is talking of a time well into the twentieth century: '… in those days there was no power tools, it was an auger with a wooden handle was the only way you could put a hole in [the plank], there was no power. The planks were copper fastened, with square nails and roves. The shipwright would drill a hole … Then he'd hammer, tap it in. Then, on the inside, you could buy a copper washer with a square hole. You'd fit these over — your copper nails would protrude through the timber — you put a copper rove on with a square hole, cut it off and rivet it over' (Bath 2005).

This repetitive, slowly cumulative procedure had been carried out by shipwrights on the Tyne for going on a thousand years. The rest of the job of building wherries was just as stark and simple and intensely skilful; the tool kit used by a shipwright in the twentieth century to build a wherry, like the vessel itself, would have been familiar in the thirteenth century or even to a Roman shipwright.

Wood & Skinners Shipyard was one of the yards at Bill Quay known for constructing wherries.[6] The timber they used was sourced locally. Again, Ernie Keedy: '… these wherries were made of English oak, copper fastened. What used to happen, the yard that used to build wherries, a way before my time, was a firm called Wood Skinners, round about Bill Quay near Richardson's slipway. There was a train service used to go from North Shields to Newcastle, and under one of the viaducts there was two men there, the Lindsey brothers, who actually owned part of an oak forest or plantation. They used to plant trees and watch them grow … They used to grow their trees as near as they could to the shape of the ribs — being what you call cross-grained — the natural growth of the bough. They used to build and repair wherries' (Bath 2005).

The wherry afloat

Many industries working along the Tyne owned fleets of wherries including. Armstrong-Vickers and Cookson's Lead Works. Kirton's Brickworks in Newburn, just over the river from the site, had a number of wherries. Others were owned by the equivalent of hauliers, such as Keedy's. Many wherry companies were based on Newcastle Quayside (fig. 13). Some wherries were owned by individuals. Like tugboatmen and pilots, wherrymen on the Tyne provided a competitive service and had to struggle to get their trade. This was particularly the case when wherries functioned as lighters. A local riverman, Mr B. Robson, remembered: '… a ship would come in with cargo and I've seen about twenty wherries around it. It was a fight for who got there first. The one who got there first got back quickest and got more work. And the language used to be nobody's business, they were squeezing in to try and pinch a turn … But it was a neighbourly life too. It was an understood thing, no holds barred but no offence taken. They were rough fellows, but I found them good sorts as a boy' (Bath 2009).

The only certainty was that the life and the work would be hard:'… a huddock [low under-deck cabin] at each end, one for living in, the other for keeping gear in. Two huge oars and a

Fig. 13 An advertisement for the Tyne Wherry Company Ltd. Most wherries were based on the Newcastle Quayside.

tiller at the end, and the big hand pump for the bilges. Two men on each [wherry] and it was all shovel work — a hundred tons of coal, deliver it to a wharf … I've seen them shift it in a tide to get the boat back out again — two men shovelling a hundred ton of coal … Fancy shifting a hundred ton, and practically non-stop except for a bite and then away again' (Bath 2009). Loads varied considerably. The sheer versatility (and stability) of the wherry is summed up by a glance at fig. 14.

The use of oars to propel wherries was by no means universal. Many operating in fleets served as dumb barges, towed up to five in line-abreast by steam vessels and needing no independent means of propulsion. Others used simple sails to carry them along. Eventually, steam engines and diesel motors became common. Dumb, sail and steam wherries worked alongside one another on the river. By the time *Elswick No 2* had finished her working life in 1976 she had been fitted with a diesel motor and screw propeller (fig. 15), removed after its donation to Tyne and Wear Museums.

Unsurprisingly, in a competitive business, wherries' holds were overloaded and their decks over-stacked. They frequently sank (there are many references to this in the Port of Tyne Occurrence Book) and they and their loads had to be salvaged. Keedy's were a major salvage company on the river as well as wherry-owners. They used wherries to salvage wherries. Ernie Keedy, who worked as a diver, recalled one salvage job (shown to him on a photograph): 'That [wherry] there is one from Cookson's Lead and Antimony Works based in Northumberland Dock … they made paint and chemical stuff and they had their own fleet of wherries. That wherry there with the crane on, there's a sunken wherry down below with a load of lead. I don't know whether it was going or coming … there's a basket you would put a dozen ingots in [from the sunken wherry]' (Bath 2005).

Maintenance and repair was constant. Unfortunately, wherries were not easy to fix. Ernie Keedy was responsible for some repairs: '… you'd get a wherry damaged, a bump or collision. If you took the top plank off you damaged its leading edge underneath because it was fastened. And you could actually go three or four planks down. You got to the stage where, if you had a craft that got damaged, you put a doubler on. A doubler — a patch of timber, not

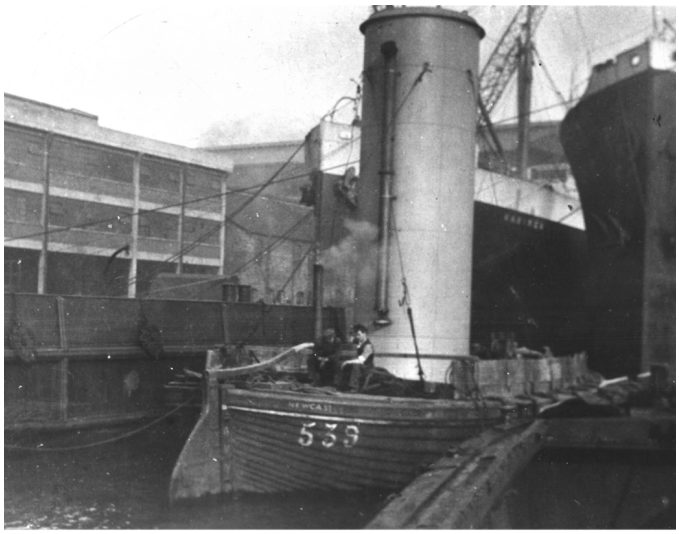

Fig. 14 The crew of Forsters Bros.' wherry Newcastle 539 take a break before unloading the funnel of a steam ship, a rather unwieldy cargo. (Copyright Beamish Museum. Reproduced by kind permission of Beamish Museum. Photo No: 164699).

necessarily oak, redwood was preferable to white wood, it had more resin in it, mostly from Canada, Oregon. You put a patch on instead of taking that plank off and renewing that plank.' A variety of concoctions was used to seal these doublers: blare, a mixture of flock (wool waste) and Stockholm tar was usual. But flock wasn't always available, so: 'My father would say to me, we need some horse manure. It's clean, it's only grass … On the workshop side of the floating dock [at Tyne Dock where Keedy's was based] we had a heater's fire and it was my job to dry this thing on a tin tray on a heater's fire … I used to mix all this up [with the Stockholm tar] and put it on the doublers' (Bath 2005).

By the turn of the twentieth century, at least 24 companies operated hundreds of wherries on the river (Groundwater 1998, 11). The last commercially functioning wherry, *Elswick No 2*, was only built in 1939. Wherries had played a vital part in keeping the industries along the river supplied, in distributing goods from ships and in servicing them. Particular stretches of the river and its tributaries, especially the Ouseburn, would not have prospered without the versatility of the wherry (Ouseburn Trust 1999, nos 5–6). But by the mid 1930s the wherry was dying. The Port of Tyne Occurrence Book (1931–67) records that in 1935 two firms on the Tyne, G. Dunne, and Clayton and Davie Ltd, were already actively breaking up wherries. All factors were against them — the rationalisation of cargo handling, the increasing capabilities of road transport and the gradual emptying of the river itself. *Elswick No 2*, long disused, was donated to the Maritime Trust and the Tyne and Wear Museums Service in 1976 by N. Keedy and Sons (Greenhill and Mannering 1997, 47–9).

CONCLUSIONS

Milne succinctly pleaded the case for the recording of foreshore sites: 'Hulks are seen by some as an adventure playground, a source of firewood or a navigational hazard … they are also archaeological sites which merit recording sooner rather than later' (Milne *et al* 1998, 2). Despite the somewhat dispersed nature of the site at Newburn, the writers would both strongly contend that the current recording is well within the realms of 'sooner'. Much has

Fig. 15 *Elswick No 2* at Tyne Dock, as donated to Tyne and Wear Museums in 1976. By this time she had been fitted with a diesel motor and a small wheelhouse aft. (Copyright Beamish Museum. Reproduced by kind permission of Beamish Museum. Photo No: 3746).

been learnt about the vessels on the shore during the current phase of work and there is much more to be learnt. The character of the site is rather akin to a series of giant wooden construction kits waiting to be rebuilt.

The site is of considerable local significance. Although of no great age — all of the wherries were probably built around the turn of the nineteenth and twentieth century — they are the survivors of a vernacular boat-building tradition which has been carried out for more than a millennium and is now all but dead. They allow the first-hand physical investigation of this tradition rather than the study of received opinion about it. The likely return from any detailed analysis of the hulks and scatter at Newburn is suggested by the results from specialist study of the remains of a North East collier (*Slufter 4*) dredged up off the port of Rotterdam in 1987 (Adams *et al*. 1990); this provided information on aspects of construction which were never written down, and on the realities — and sometimes the short-cuts — involved in the art of the shipwright.[7]

Until there is some agreement on the numbers of hulked foreshore vessels in England, and perhaps more importantly some consensus on what are the defining qualitative aspects of these vessels, it is difficult to assign a precise regional or national significance to the Newburn remains. English Heritage has begun to address this situation, spurred on by problems associated with the protection of the very extensive hulk assemblage at Purton, near Sharpness Docks on the River Severn (Nautical Archaeology Society 2009) and is assessing how legislation (the draft Heritage Protection Reform Bill, and the Marine and Coastal Access Act) might give greater consideration to such vessels. But this must be predicated on understanding and quantification of the resource, a process also in train. Nevertheless, the part played by the wherry in the broad historic narrative of the River Tyne — one of the world's pre-eminent industrial rivers — suggests very strongly that the Newburn site must be of national significance.

NOTES

[1] Elswick No. 2 was built in 1939, at Bill Quay, and was the last wherry to be constructed on the River Tyne. She was originally owned by Vickers Elswick works, within a fleet of wherries, and passed on to N. Keedy and Sons based at Tyne Dock. In 1976 she was donated to Tyne and Wear Museums by which time she had a diesel engine and a screw propeller (fig. 15). She is held in the large objects store at Beamish Open Air Museum, County Durham, and is not on view to the public. Her displacement is 50 tonnes, length 57 feet (17.37 m), width just over 23 feet 6 inches (7.21 m). Listed in Brouwer 1999, 149.

[2] Photographs of the Newburn hulks by Norman McCord and Stafford Linsley are included in the University of Newcastle upon Tyne's *Structures in the North East* website (SINE).

[3] Alan Williams was made aware of the Newburn site during a conversation with Jennifer Morrison, the Archaeological Officer with Tyne and Wear Conservation Team, and pursued the subject out of personal interest. Patrick Taylor, in 2009 an undergraduate student of archaeology at the University of Newcastle, carried out his placement with the Conservation Team, much of which involved recording the Newburn remains alongside Williams. The present paper is based on the subsequent undergraduate dissertation on the Newburn site prepared by Taylor.

[4] Originally Walbottle Firebrick Works, then Newburn or Kirton's Brickworks, this lay on the north side of the River Tyne to the west of the present bridge and near to the Union Pit. It operated between the later 19th century and 1965. The company owned a steam-powered dredger and barge which operated between Newburn and Ryton ferry during the 1930s (Davison 1986, 90). They also owned a number of wherries to transport the fired bricks downriver. It is possible that some of these vessels are included within the hulk assemblage.

[5] Succeeding the early-medieval clinker vessels such as those from Nydam and Sutton Hoo, maritime historians have identified a progression of clinker-built north European vessel types which include the Norse (Viking) family including those found at Oseberg and Gokstad, as well as the sturdier but less well-represented knar. The cog, which probably initially developed from simple log-boat technology, superseded the Norse vessels and became the classic sailing ship of the north European High Medieval period. The less well known hulk developed alongside the cog and eventually outlived it. Characteristics of this type are all established from iconography such as depictions on seals, from which it is frequently cited as having had a banana shaped hull, as no securely identified remains of a hulk have as yet been found.

[6] One of the few physical reminders of the wherry and of its construction on the River Tyne is included within the information on a blue plaque set up at Bill Quay by the then Tyne and Wear County Council and Gateshead Council in 1986: 'Wooden sailing ships and wherries, tugs and iron steamers have been built and repaired here since at least 1820. W. Boutland founded the yard and R. B. Harrison acquired it 80 years later' Parts of the yard under Boutland were rented out to other builders such as Robert and John Maddison and later to John Robson. Robert Maddison constructed at least eight wherries on the site between 1834 and 1852. Presumably, many were also repaired.

[7] Another investigation of a local vessel took place in 1986, within the former shallows of the then recently drained Gosforth Park Lake. It was excavated by Lindsay Allason-Jones and other staff and students from the Department of Archaeology, University of Newcastle upon Tyne; it was surveyed by Barbara Harbottle and Richard Fraser from the Planning Department of Newcastle City Council, and the structure revealed was interpreted by Adrian Osler of Tyne and Wear Museums. It proved to be a double-ended rowing skiff, just over 4.5 m long, probably of late Victorian or Edwardian date and no doubt used for wildfowling or fishing on the lake. At some point it had been converted into a sailing boat. Damage to the vessel suggested that it had been intentionally sunk. The investigation was a pioneering project and makes an interesting methodological comparison with the work carried out at Newburn, involving complete excavation of the vessel (Allason-Jones and Osler 1986, 17–29).

GLOSSARY

Carvel or frame-first construction involves the butting of hull planks edge to edge around a pre-existing frame. It is considered to be a Mediterranean import to northern Europe, having developed in late Antiquity from shell-first techniques where planks were mortise-and-tenon jointed one with another along their edges.

Clinker or lap-strake construction is generally considered a native north European technique of wooden boat and ship building whereby overlapping hull planks (strakes) were fastened together face to face with nails, the protruding ends of which (internal to the hull) were clenched (or clinked) over against usually square or diamond shaped washers known as roves. The hull or shell was formed prior to the insertion of any internal framing. The technique had probably developed, at least in its rudiments, by the second century AD.

Frame. A complete transverse structural element within a vessel; one of its 'ribs'. Usually, frames are built up of component parts which, from the bottom upwards, are referred to as floors, or floor timbers, and the side components as futtocks which are identified as they progress to the top of a vessel as 1st, 2nd and 3rd futtocks, etc.

Hog. A longitudinal structural member fastened above the keel to prevent 'hogging', that is the sagging of the ends of a vessel relative to the middle.

Hulk. An unserviceable vessel laid up or intentionally abandoned. Also, a medieval ship type (note 5).

Keel. The lowest structural member of a ship or boat's hull. The backbone of a vessel. Also, a type of boat, as in the Tyne keel, a sturdy carvel-built vessel used for carrying coal on the river.

Keelson (centre and side). A longitudinal structural member fastened above the floors of a vessel either centrally above the keel or alongside it.

Lighter. Literally, a vessel used to lighten the load of another larger vessel.

Strake. A single and complete run of planking from stem to stern of a vessel. Usually, this would be composed of a number of individual planks or boards joining end-to-end.

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