STEAMSHIP FRESHSPRING MAGAZINE

Preserving the past to inspire knowledge for the future

£4.00 WHERE SOLD

NO.38 SPRING 2024

STEAMSHIP FRESHSPRING TRUST

Registered charity, No.1151907.

Objects of the Charity

To advance the education of the public through the preservation and operation of a historic steamship, and the promotion of maritime studies particularly amongst young people for the public benefit.

Key Contacts

Keep up to date with progress/news via the Trust's website or Facebook page:

www.ssfreshspring.co.uk

www.facebook.com/SSFreshspringTrust

Membership Enquiries:
Please send an s.a.e. for a form to: Steamship Freshspring Trust, c/o Little Cleave, Lower Cleave, Northam, Devon, EX39 2RH, or you can join online.

Volunteering on the ship:
The ship is closed for the winter but if you can volunteer, please call Peter Gillett, our Ship Manager, on 01237 237 183 peter.gillett@ssfreshspring.co.uk.

Registered Office:
Little Cleave, Lower Cleave, Northam, Devon, EX39 2RH

Heritage Fund

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Trust Management

FRONT COVER: In his report, John Puddy mentions the delights of steam boating, so here is a picture of member Kevin Slater and his wife Gillie with their boat *Zara Finn* enjoying a weekend on the River Wey at Guildford in July 2023. *Brian Gooding*

From the Chair

I hope you all had a good Christmas and new year. We certainly did. We drove down to Valencia to meet up with our daughter who has been working there. What a beautiful and historic city. The river Turia, which completely flooded the city in 1957, was diverted away from the population. The old riverbed, which runs right through Valencia, is now a long park with no traffic for seven miles. The traffic, of course, still uses the old bridges. The waterfront has many heritage buildings, some sensitively utilised and some awaiting a purpose. Along with the tideless blue sea. Read on!

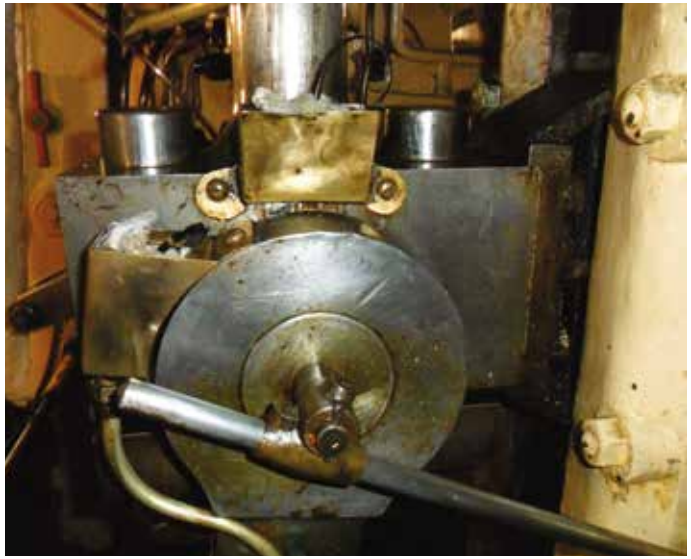
Locally we have an outward bound centre that provides a range of activities in the River Torridge. I met with a trainer and chatted with him about events planned for the season. Skern, the centre, operates all year around and at all states of the tide. The conversation brought it home to me just how much tides mean to us here. Every day is different and the centre uses the currents, the sand bars, the islands, and children learn about the huge variation in wildlife. Would I change this for the Mediterranean? No I would not. When I am steam boating in the river, I have to plan my start and finish in some detail,

A blast from the past. SS *Freshspring* enters Sharpness docks in early 2016 for survey and hull plating works.

or I could end up sat on a sand ridge for 12 hours. With planning, a journey upstream is a joy, with the tide carrying the boat, the swirling water on the bends, the shallows marked by overfalls. Turning at the top of the tide brings a reverse flow and a whole new experience; however, one of caution, as running aground now means a very long wait. All the learning on the flood tide (that means taking marks and remembering features) is now essential for safe navigation on the return. It's another world, with trees dipping into the water, an abundance of wildlife, occasional Otters, Kingfishers and so much more. Travelling by water makes everything look different, the Town of Bideford is best seen from the water, and this applies to most places. For me, navigating by steam adds an extra dimension as I already explained after my Thames trip last year.

The Trust has had a challenging year, with a great deal of work linked to our National Lottery Heritage funding. We are a small team, and we relish the challenge. It makes us stronger and more determined to progress towards an operational ship. On that front, we do need to recruit more Trustees as the workload of the Trust is consistently more onerous on a few people.

As you will read from Mike Teare, alongside our *Freshspring* work, much has been done to elevate the status of the area. The designation of Bideford as a Heritage Harbour as a major step in recognising how important the area is historically and how positive the future is. This reflects on the future of SS *Freshspring* too, as the area's valued heritage ship. We have also worked to create a whole new group, The River Torridge Heritage Group, the aim being to bring organisations together to collaborate and share. It means we have a stronger voice, new opportunities and, potentially, more funding.



An engine close up: the crosshead joint with manual oilers and the rod which connects to the revolution counter.

We are preparing for the coming season with real enthusiasm. Already many events are booked, mostly regular events and some new. The Rosemoor Vintage Day will be a first for us and last year some 6,000 people visited on each day of the weekend. Our aim is to pull all the stops out and provide steam rides, Virtual Reality, rope making and, perhaps even Morse code.

Our first event is Northam May Fair. It's always a hit and our steam rides are one of the most popular activities. I have given *Lady Edna*, our little engine, a real spruce up over the winter. She now sports a new paint job, an overhaul of many parts and is ready for busy season. Steam engines love work, and oil! *Edna* is no exception and she performed impeccably last year, often carrying very large numbers of people. The only real incident was when the key came out of the flywheel, sending the engine into an erratic spasm. Amazingly, I thought I saw the key fly past and picked it up just a few feet away. I would really like a new passenger trailer but time is just not available to make one. The aim would be to carry even more people.

Although in practical terms we had a good year, apart from Restricted Lottery support and other, much valued smaller grants, our reserves have considerably diminished causing some concern. Our end of year was 31st January and we are planning a budget for this year, which will include gaining funds for the general overheads of the Trust. Any ideas are welcome. Maybe you have unwanted items that you could sell and donate the money to the Trust? We will keep you abreast of funds and it may be we will launch an appeal for support.

As part of our review, we will be overhauling our membership scheme. For many years we have adjusted and made changes to the scheme, but in order to make it efficient and fit for the long term, we feel we need to, almost, start again. I hope you can bear with us during the process or even provide advice to help us get it right. Members are so vital to the Trust and

The ship's bell.

so a priority is to make sure all are kept up to date and feel involved. At present membership fees are mostly absorbed by our high quality magazine. We know it is important to many of us but for some, an emailed version might suffice. We have been thinking maybe we have two types of membership, standard with an emailed magazine and premium with a mailed hard copy. This Trust is run by members and so we would like to know what you think, whatever it may be.

We have now completed our feasibility study and it shows that there is an operational future for SS *Freshspring*. This is positive news but we still have a way to go. Ken Thompson, our Technical Director, has been speaking to classification societies as, without classification, the ship cannot sail. I am pleased to say the with Ken's diligence and the feasibility report provided by BMT, he has found two societies who will take the ship on when we are ready.

The National Lottery Heritage Fund project ends in October and then we will focus on the next stage both for the ship and the Trust. Ideally we would like to progress to creating working drawings of the works required to bring the ship to operational status and then gain some quotes from shipyards for the work. This should be the final stage before we apply for the major funds to restore the ship.

Do come and see us this year, maybe at an event or at the ship. If you have a few hours to spare, please consider volunteering. There is always a job to do and most are fun!

John

New members

We welcome the following new members of the Trust:

Ms Amanda Yates	*Westward Ho!, Devon*
Mr Martin Cox	*Los Angeles, USA*
Ms Annemarie Munro	*Bideford, Devon*
Mr James Craigie	*Bideford, Devon*
Mrs Leslie Moores	*Bude, Cornwall*

Ship Report

Since the last report in November, we have hopefully got through the worst of the winter weather.

We had a good turnout for the "Christmas Bash" at the ever-welcoming Pannier Pantry. Volunteers, Members, Trustees and friends of the ship turned out for an evening of good food, drinks, a raffle stuffed with prizes and the always eagerly anticipated speech by our Chairman, all accompanied by the cacophony that is the ship's band.

Our focus in February is to get the ship ready for visitors on board. We are working with our new Community Development Managers, Sadie and Bracken, who are bubbling over with ideas and suggestions to improve and enhance the experience for all.

The repainting of the Foc'sle is almost complete although there remains work to be done on the Welfare Room and the forward storage area.

Given reasonable weather, we're hoping to repaint the Foredeck and clean the Canopy before the first open day on 17th March.

In the Engine Room routine maintenance and inspection continues while plans are being drawn up to do some very necessary work in the Boiler Room. The engineers are currently involved in the installation of the mast for the new Wind Turbine Generator as part of the upgrade to our renewable energy system.

We are looking at ways of improving storage conditions in the Galley Store where we keep a lot of the resources for Open Days and Outside Events. The ever cheerful Lou Boulter spent a day sorting and checking the items we use and made some helpful suggestions.

The refurbishment of the Aft Store is complete, and the "editing" of tools and equipment is well underway; who knew we had so much junk!

In the Wheelhouse we're taking the opportunity to remove, refinish and repair the sliding windows, about halfway there at present.

We now have the large print plans of the Ship's Tender which give us a better understanding of the additional materials we need and hope to start construction soon, whether on the Foredeck or up on the Boat Deck.

We may be able to use the building of the Ship's Tender to engage small groups of youngsters (or others) in the appreciation of woodworking and the safe and appropriate use of hand tools.

Pete Gillett

Education report

2024 has started with a bang – Literally!

Thanks to a counsellor grant allocated to the Trust to use in local schools, we engaged Peter Wright, a Devon based Science whizz, who took his amazing workshop to Monkleigh School and the pupils were inspired – in the words of the Science Lead teacher,

'*We had a wonderful morning with Peter and we definitely achieved some incredible awe and wonder. The children were really focussed on what Peter had to tell them, from Reception through to Year 6. One Year 6 child was able to share with Peter what he understood about compressed air. The children showed some great team work, problem solving and resilience when making their rockets and building the fan powered cars. They had to think about the size and shape of the fins on their rockets and what would help their fan powered car travel further.*

Not from Monkleigh School, but this picture from Peter Wright shows the awe and wonder on the children's faces during his activities with schools!

I had parents message me to explain that their children had been full of information about the day when they got home.'

The grant covered the day with Peter from Wonderstruck and will also cover a further workshop with Seadream, an education charity based in Kingsbridge, Devon. The children will learn about the marine environment and take part in activities based around our coastline and marine life.

Both of these workshops are helping the school to increase the enrichment of the curriculum for their pupils and would not have been possible without the grant, so we will continue to work with counsellors and local providers to deliver experiences for local children.

Another local school is keen to partner with us and we are currently looking at ways in which we can use the ship as a resource to support their delivery to the pupils from age 5 to 11. Topics we are looking at range from 'We are engineers' to projects on local history and rivers. It is hoped that the children can build a boat of some description, subject to time and budget constraints, and this is something we are working on with the Science coordinator of Westcroft School.

Teachers from the school have visited the ship and were excited by the possibilities, so we will work on these plans with individual teachers. It would also be fantastic to link this with Way of the Wharves and local history, and teachers are keen to work with all of us.

We have some other interesting projects coming up – we continue to work with young people in alternative educational provision. Two of our local schools for these pupils have been working with the Trust for several years now and this year we will be offering days on the ship with one of our engineering volunteers for young people interested in finding out more about careers in the industry. These will start in March, so look for an update in the next magazine!

The Head of STEM at Kingsley College is currently planning a scheme of work based on Maritime History. A collaboration with SS *Freshspring* is an excellent start to the scheme of work for the pupils, so we are hoping to work with the college on this during the Summer.

Sam Roberts

Happy volunteers – and a gathering of Petes…

Lou Boulter provided a few pictures of some of the hard working volunteers on *Freshspring*… Thanks for all you do, gents.

Pete Gillett.

Pete Peaty and Pete Fish with Pete Harvey.

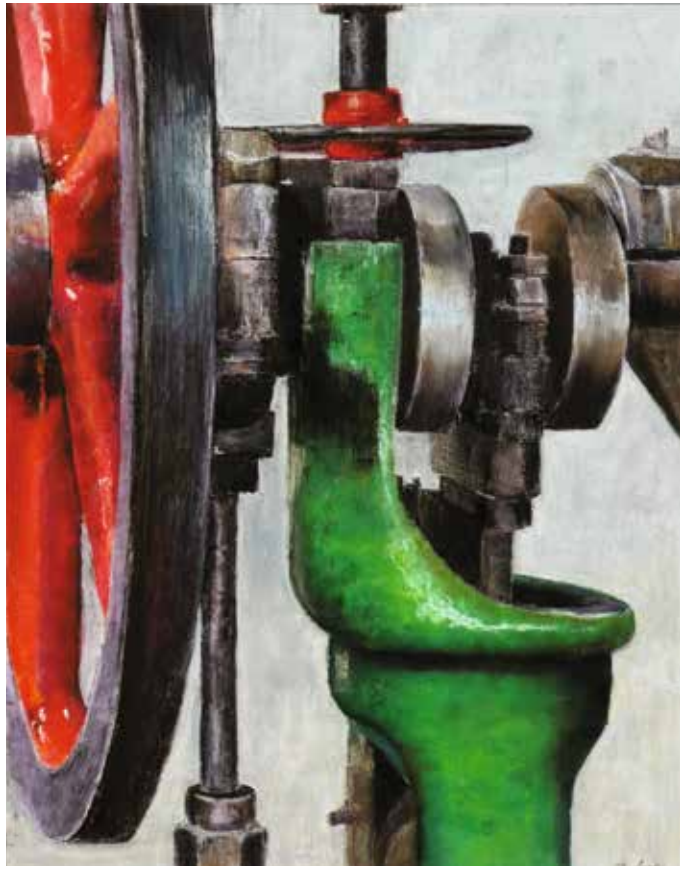
Richard Slack.

Neil Rice.

The Reversing Engine

A small but important part of the engine of a steamship…

Painting by Rob Reed



The engine on a steamship is connected directly to the propeller. Thus the engine needs to run both ways to achieve ahead and astern. The engine has two sets of eccentrics, one for ahead and one for astern. In order to align the appropriate eccentrics, a Stephenson expansion link is used. This slides from ahead to astern positions, aligning the appropriate eccentric via a valve rod connected to the valve.

As the engine is large and very heavy, it would be very hard for the engineer to physically move the link into the correct position, therefore the single cylinder steam engine depicted does that job. The engineer opens a steam valve to apply steam to the engine and then pulls the flywheel over to start the engine. The flywheel is shown on the left. Once the valve is in the correct position the steam is shut off. Instructions from the bridge could be fairly constant when berthing and the engine depicted ensures that instructions can be followed smartly. **JP**

Why Have a Steam Condenser and What if You Didn't?

Richard Slack
CEng FIMechE

In the last edition I mentioned we were working on a pump aboard *Freshspring* called an Edwards Air Bucket pump. This takes water from an engine component called a condenser and pumps it back into the boiler feed water tank or hotwell. Work on this pump is now complete, it has been rebuilt and given a good coat of grease and oil to preserve it.

What is a condenser? This is a piece of equipment that takes steam and cools it until it turns back into water creating a partial vacuum. The water is very pure and has hardly any contaminants so does not produce scale (like the fur you can get in a kettle). It takes quite a bit of treatment to get the pure water to make good steam so condensate water is quite precious in steam systems and should not be wasted but recycled back to the boiler. *Freshspring* was built to deliver pure quality water to warships after the Second World War, which were then mostly steam powered.

After the air bucket pump restoration work, we moved on to another pump related to the condenser. This pump takes seawater from a connection under the waterline and pumps it through the condenser tubes and back to the sea, this causes the engine exhaust steam to condense. So what if the condenser lost its cooling water supply or fails?

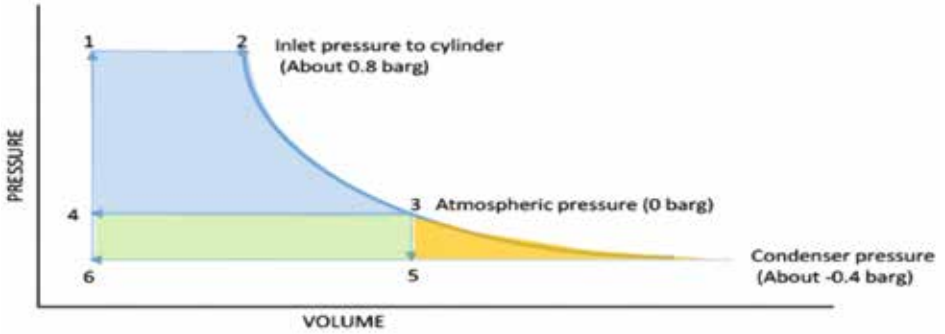
Firstly why have a condenser? As mentioned above, it turns steam into water but it also improves the overall efficiency of the engine. To understand the effect let me try and show what happens in a single acting piston of an engine during one turn of the crankshaft, see Figure 1. Importantly note that the work output from the piston is shown by the shaded areas in the graph (top of next page).

This cycle is known as the Rankine cycle, named after William John Macquorn Rankine a Scottish professor (1820-1872).

(For information 1 bar is 14.5psi. The 'g' stands for 'gauge' and indicates this is what you would see on a pressure gauge.)

The *Freshspring* engine is double acting (that is, it has a power stroke on the upwards and downwards strokes), it's a triple expansion design with steam entering the first stage at about 12.4 barg, second stage about 4 barg and the final stage about 0.8 barg. In theory the last stage could exhaust to atmosphere but this would have disadvantages:

Figure 1



STEAM PISTON CYCLE WITH NO CONDENSER
1 to 2 Steam enters the cylinder pushing the piston
2 to 3 Steam inlet valve closes and piston keeps moving
3 At this point with no condenser steam goes to atmosphere
3 to 4 Piston moves back up the cylinder pushing steam out
4 Piston at Top Dead Centre (TDC) Steam inlet valve opens
4 to 1 Pressure rises rapidly at TDC
Work done is BLUE area

STEAM PISTON CYCLE WITH A CONDENSER
1 to 2 Steam enters the cylinder pushing the piston
2 to 3 Steam inlet valve closes and piston keeps moving
3 to 5 Exhaust valve opens into condenser
5 to 6 Piston moves back up the cylinder pushing steam out
6 Piston at Top Dead Centre (TDC) Steam inlet valve opens
6 to 1 Pressure rises rapidly at TDC
Work done is BLUE and GREEN area

- A big cloud of steam.
- Lots of valuable water lost to atmosphere.
- Loss of engine power and poor efficiency.

So a clever person (Marc Brunel) thought why not capture the steam, turn it back into water and improve engine efficiency and thus the marine steam condenser was born. In fact it was born way before that as the Cornish Engine by Thomas Newcomen used condensing steam as its total energy source.

You can see from the above using a steam condenser enables more power to be obtained from the engine (GREEN and BLUE areas).

If you're wondering about the YELLOW area, theoretically more work would be gained in the cycle if the exhaust valve didn't open at point 3 and the steam kept expanding down to condenser pressure but this work is negligible and may not even be enough to overcome friction so it is not designed for.

In the *Freshspring* case, the condenser is a large vessel mounted next to the engine through which the exhaust steam flows and is cooled back into

water by passing over tubes which are seawater cooled. The tubes are of admiralty brass for corrosion resistance and good heat conduction. Nowadays exchangers would probably use titanium tubes which are thinner, have good resistance to seawater corrosion and are better at heat transfer. The downside is they are more expensive.

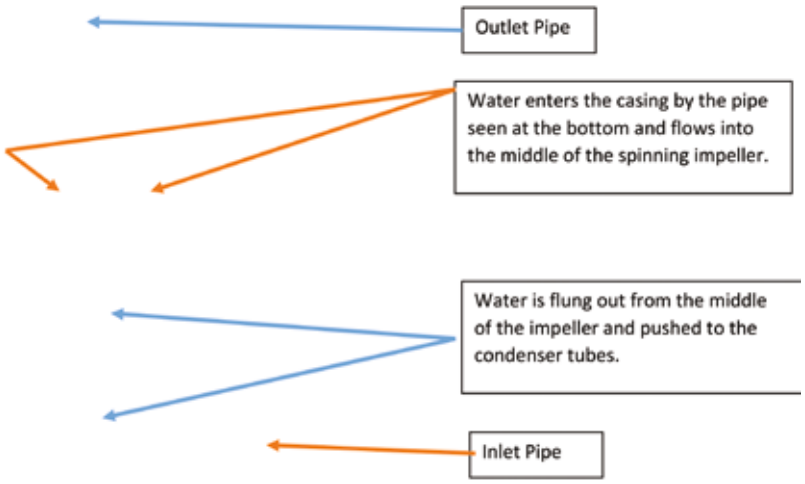
It would be ideal if the condenser operated with a full vacuum (-1.0 barg) and overall engine efficiency would improve; however, this is not very practical. The lower the vacuum the harder it is to stop the ingress of air which reduces the condenser thermal performance. The main problem is the amount of steam cooling is limited by the seawater temperature and a practical physical size for the condenser.

At sea level water boils at 100C but if you go up a high mountain and the air pressure drops, you will find water boils at a lower temperature (by about 1C per 100m, and your tea doesn't brew properly!) The condenser uses this phenomenon. At -0.35barg water boils at 88C so it won't turn to water until it is cooled below this temperature. I don't know the exact condenser design operating pressure for the *Freshspring* system but it is probably around this pressure.

There is one other benefit to this closed system. I earlier mentioned the hotwell; this takes water from the condenser and, as the name implies, the water is hot, thus hot water is returned to the boiler further improving efficiency.

Recently the seawater cooling circulation pump was inspected and cleaned. The pumps is a centrifugal type and has a bronze casing for corrosion resistance.

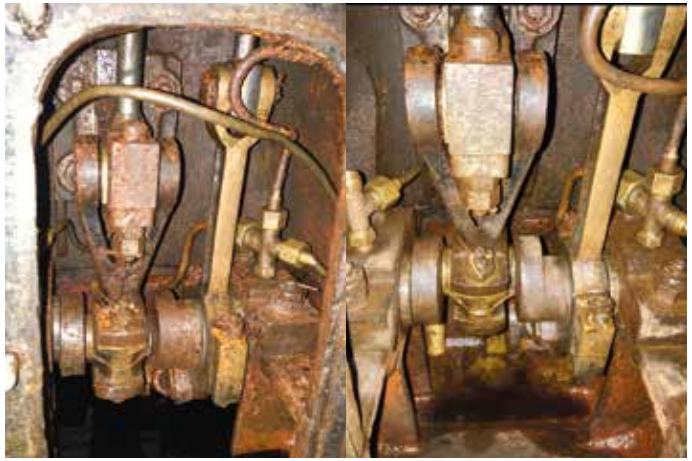
The steam engine internals have been cleaned. Mainly surface dirt, light



This pump is driven by a single cylinder reciprocating steam engine.

corrosion and smelly oil in the sump. It was decided not to fully dismantle it as its condition is fairly good and it was not wanted to disturb the asbestos insulation on the steam piping.

The pump top casing has been cleaned and refitted.



Before. **After.**

Nowadays a centrifugal pump like this would probably use a small steam turbine drive or even an electric motor, much simpler with fewer components to maintain, wear and fail.

So this is an important pump, if it doesn't operate, engine performance will be significantly affected and precious water will be lost.

Unfortunately we can't operate this pump until we have a steam supply so here it will sit waiting for the great day. Hopefully someone will remember to put oil in the sump and fit shaft packing in the pump otherwise there will be a lot of seawater everywhere in the engine room and a failed pump!

Bideford and River Torridge Heritage Harbour

Mike Teare
Chair Way of the Wharves and River Torridge Heritage Group

William Blake is credited with saying ‘Great things happen where men and mountains meet’ but in this case it was more a case of men and coffee with a dash of salty water.

About 12 months ago, John Puddy and I were sitting in a local café enjoying coffee and a chat over things maritime when the topic of heritage harbours came up. This scheme is run by the Maritime Heritage Trust along with National Historic Ships and Historic England.

At that time there were only four ports registered as heritage harbours: Medway, Faversham & Oare, Maldon & Heybridge and the most recently listed, the Port of Exeter.

Bideford from Upcott Hill 3rd May 2023. *Graham Hobbs*

So, we started to think about the idea of trying to make Bideford the fifth? We were confident that with the work already achieved by Way of the Wharves on the history of East the Water and *Freshspring*, part of the national historic fleet, and the *Jane Hannah MacDonald III* lifeboat both being restored here, then surely, we could justify the inclusion of Bideford on the scheme.

The outcome was that Way of the Wharves charity took the lead to explore how we should go about applying to become a heritage harbour and what we would need to do in order to qualify.

The Heritage Harbour concept started in northern Europe as a way of providing free or low-cost mooring to historic vessels in exchange for public display. In the UK, the idea has evolved to include a wider range of local community links such as encouraging heritage skills e.g., wooden boatbuilding and cultural heritage activities as well as maritime festivals and events which benefit traders and visitors.

The aims of Heritage Harbours are to help safeguard the harbourside, buildings, facilities and businesses that are vital to support our working maritime heritage vessels. Supported by The Maritime Heritage Trust, National Historic Ships UK and Historic England, local communities in each location are developing outline plans to maintain and enhance the historic port area, its environmental features and the facilities such as shipyards and drydocks which vessels need to operate.

Within a couple of weeks, we had contacted our nearest heritage harbour neighbour in Exeter. We presented the idea to the Bideford Harbour Board and the chair of the board joined our meeting in the *Freshspring* wheelhouse, with John Monks from Exeter, to learn more about the scheme and Exeter’s experience. The outcomes of these meetings were all very encouraging and started discussions and an email chain with the Maritime Heritage Trust.

Bideford Long Bridge, seen on 20th July 2014. *Graham Hobbs*

I won’t bother to list all the details

but needless to say there was a lot of back and forward, questions to be answered and clarifications made. At the same time, we engaged with local stakeholders; making presentations to Bideford Town Council and Torridge District Council – we wanted them onside for now and into the future.

Chudleigh Fort in August 2023. *Graham Hobbs*

In September we had the first meeting with a group of local heritage organisations from all along the historical navigable extent of the river Torridge – from Appledore at the mouth of the estuary, through Bideford and upstream to the entry of the Sea Lock into the Rolle Canal which terminates in RHS Garden Rosemoor, Torrington. Suddenly our scope was much larger than originally conceived but also much more powerful. The River Torridge Heritage Group came into being with the ten partner organisations between them representing some 2,000 members/supporters and 200 active volunteers – the stewards, painters, engineers, carpenters who keep all the projects going and open to visitors.

The Maritime Heritage Trust added a further three harbours and three inland ports on canals to their list during 2023, taking the list to ten. So, we weren't going to be number five but still part of an exclusive club. Originally the Maritime Heritage Trust was discussing with four potential harbours but it became apparent in the late autumn that two were not ready and now it was Bideford and Ipswich who were likely to be the next ports to be added to the list.

On Christmas Eve we got notification that Bideford and Ipswich would be added to the list of heritage harbours on 5th January 2024. That didn't give a lot of time with Christmas and many people away on holidays. Much background work had been prepared but it was still a lot of hard running to pull together pre-notifications and press releases for the media launch and get a website on line and newsletter out to our supporters for launch day.

In less than twelve months we had gone from coffee discussions to having heritage harbour status for Bideford and the River Torridge. The press release below gives more details and in the next newsletter I'll start to explain what heritage harbour status means and some of our plans for the future.

Press Release issued on 5th January 2024

Bideford and Torridge achieve Heritage Harbour status

Bideford & the River Torridge has been granted Heritage Harbour status by the Maritime Heritage Trust, joining eleven other ports whose contribution to Britain's maritime history has been officially recognised.

The announcement comes as a result of a campaign by ten local heritage charities, led by Bideford-based Way of the Wharves, and supported by local councillors and businesses, the education sector and other stakeholders. The vision is to see the ongoing preservation and development of buildings and infrastructure along the whole waterfront from Appledore to Torrington, bringing to life stories of the maritime history of the whole Torridge Estuary.

Mike Teare, Chair of the charity Way of the Wharves, said:

'*This decision is of huge significance for our area, not only for highlighting our magnificent maritime heritage, but for developing Bideford and Torridge as an attractive place to live, work, and visit. The award of funding to create the Clean Maritime Innovation Centre in Appledore already shows how important a strong sense of heritage and identity is for attracting new investment with skills and jobs for the future. Heritage Harbour status is good news for anyone who cares about our past and wants to see us thrive in the future*.'

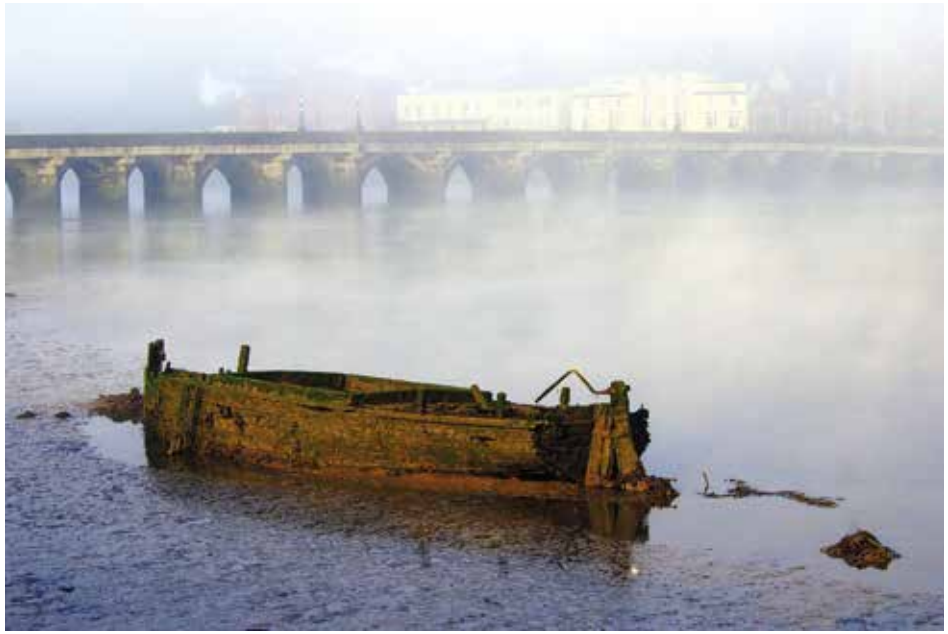
Adrian Wills, who is a trustee of the North Devon Museum Trust and a committee member of the Rolle Canal & Northern Devon Waterways Society, added:

Steamship *Freshspring*, 27th April 2021. *Graham Hobbs*

'*This is an exciting opportunity to promote, showcase and develop features of the rich, historic past and future of Bideford and the River Torridge. Historic events in this area have been felt across the world as a result of its shipbuilding, as well as within the trade of importing and exporting goods such as tobacco, coal, limestone, codfish, timber and clay. All of these activities helped bring in a wealth of skilled and unskilled employment to this region. History is not just about what has happened in the past but what has shaped our way of life. Our heritage has to be preserved, treasured and held in trust for future generations to appreciate what we are and why we are*.'

In addition to developing its website at **www.barthh.org**, which will bring together information about heritage vessels, museums, buildings and heritage sites along the river, the Bideford and River Torridge Heritage Group plans to launch guided walk maps that will help local residents and visitors discover these attractions. There will be a public meeting in the near future to celebrate the Heritage Harbour status and lay out more of their plans and vision. They will be looking to the community to help uncover and tell more of the maritime stories from along the river. Mike Teare said:

'*Whether it's something from your family history or an old boat or artefact you've got hidden in your garage or discovered in a field, please get in touch with us*.'



The hulk of gravel barge C26 *Rowena* taken in 2006. *Graham Hobbs*

A Severnside Journey

Article and images by Tony Nicholls, Rolle Canal Society

Last year I made a brief foray into deepest Gloucestershire to cycle the Sharpness-Gloucester Canal. I stayed in the little village of Purton on a farm camp site with great views over the River Severn. The campsite was very peaceful (I was the only one there!) but it was not just the tranquillity that influenced my choice – the great advantage of the site was that the canal was no more than a dozen yards from the farm gate.

The Gloucester & Sharpness Canal.

The canal is a proper ship canal and is still used by narrowboats and pleasure craft, although the days of sea-going ships steaming up to Gloucester Docks are long gone. That said, the canal is still very impressive – around 30-40 feet wide for most of its length and well maintained.

It runs pretty much parallel with the Severn estuary on a gently winding course and, because the land here is flat, there are no locks, just a series of swing bridges where the canal intersects with various minor roads and access points. At each bridge there is a bridge keeper's cottage – all constructed in the same elegant style, complete with classical Greek columns either side of the door (pictured right).

Although we were well into Autumn at the time of my trip, the weather was reasonably good so I was able to explore the full length of the canal – some 16 miles in total. I started by cycling down to Sharpness which was the original entry point to the canal from the Severn. The sea lock is still there although no longer used as access to the canal is now via Sharpness Docks. However, there is a very impressive circular pound here with the old administrative building which now houses the Severn Rescue Centre. The views over the river here are wonderful and on a clear day you can just make out the Severn Bridge in the distance. Sharpness Docks themselves are interesting although maritime activity here has largely moved down river to Avonmouth with the result that the docks are now rather run down. The only activity I saw during my stay was the loading of a freighter with scrap iron but it is clear that the docks were once a busy port. (For any railway enthusiasts, there are quite a few old goods wagons shunted into one of the dock sidings – all sadly rotting away.)

About a mile upstream from Sharpness there are the imposing remains of the Severn Rail Crossing. This was constructed by the Severn Bridge Railway Company in 1875 and was designed to carry freight and passengers from Sharpness over the river to Lydney (thereby saving a 40 mile round trip via Gloucester). The bridge was almost a mile long and must have been a magnificent structure in its day.

Unfortunately, in 1960, two barges carrying petroleum overshot the entrance to Sharpness Docks and, in thick fog, collided with the bridge, badly damaging two of the piers. Reconstruction of the bridge was proposed but another accident in 1961 this time involving a tanker, badly damaged another pier and it was decided that it was uneconomical to repair the bridge so in 1970 it was demolished, other than two of its stone built supports – a great pity as this was another superb example of Victorian engineering at its best.

The Severn Rail Crossing before demolition (left) and the piers as they are today on each side of the canal (right).

At Purton itself there is an intriguing feature known as the Purton Ships' Graveyard. This is a two mile stretch of the riverbank where, between 1909 and 1970, dozens of redundant barges were deliberately beached on the foreshore. This was done to prevent the western bank of the canal from being eroded by the river. Many of the barges were filled with concrete and earth to ensure they stayed in place. The hulls of these vessels can still be seen in many places poking up from the sand and the area is now designated as a site of historical interest. Walking along the riverbank of an evening, the place has a slightly eerie feel and reminded me of Dickens' description of the hulks on the Thames in 'Great Expectations'.

From Purton, the canal meanders through pleasant countryside, passing the Slimbridge Wetland Centre before reaching Saul Junction. This is a fascinating part of the canal and is the point at which it intersected with the old Stroudwater Canal which – as its name suggests – ran from the Severn to the town of Stroud.

One of the concrete barges beached at Purton to shore up the bank of the canal.

The canal was opened in 1779 and was designed to allow the shipment of goods from Bristol and the Midlands to Stroud and further inland. The canal was initially profitable but, as with so many canals, became unviable with the advent of the railways and was finally closed in 1954 – a remarkable lifespan. A good stretch of the Stroudwater canal from Saul Junction to the east is still in water but after that it becomes overgrown and disappears into the nearby fields.

From Saul Junction, it is another six miles or so to Gloucester Docks. Anyone who has visited the docks will know how impressive they are. The vast red brick warehouses are almost cathedral-like in their size and appearance. The old Llanthony Warehouse contains the National Waterways Museum which features life on waterways between Bristol and the Midlands.

These two replica wagons mark the site of the old tramway between Gloucester and Cheltenham.

Within the docks are the remains of an old horse-drawn tramway opened in 1811 which connected Gloucester with Cheltenham. The railway – later upgraded to steam – carried coal and roadstone from the docks and played an important part in the development of Cheltenham as a spa town. Two replica wagons mark the site of the old railway line.

The scale of the dock complex is staggering and demonstrates the former importance of Gloucester as a maritime city and Britain's most inland port.

As you would expect, given the proximity of the canal to the Severn, there is a lot of bird life on the canal – masses of Swans, a few Canada Geese (I think), Little Egrets, Moorhens and Coots, and on my return trip from Gloucester Docks I had the good fortune to be accompanied by a Heron who flapped along in front of me for several miles before becoming bored with my company and disappearing into the nearby fields.

The canal is another fine example of the country's once-extensive waterway network and well worth a visit. Apart from the canal itself, there are a number of other places of local interest such as Berkeley Castle and Edward Jenner's house (in Berkeley village) so there is plenty to do and see in this interesting corner of Britain.

The National Waterways Museum at Gloucester Docks.

Tales from a Model World

Kevin Patience

David Hunter's reminiscences of building model boats in the Winter edition No.37 of the *Freshspring Magazine* takes me back to my brother and me building our first model Keil Kraft Hurricane fighter out of balsa and tissue. With its rubber band, it flew quite well – twice – then hit a tree and that was that. They were very fragile. After this we turned to boats and had a wind up submarine called an 'Unda-Wunda'. It worked well diving in the swimming pool until one day the rubber bung fell out and it sank. A wash out and oil saw it working again but it was never quite the same. From there to plastic kits of HMS *Victory*, *Cutty Sark* and the *Great Western*, but these were static, but the lore of boats was strong. We lived at the time in Kenya and had a dam close by so it wasn't long before we built a small plywood boat with oars. It was wheeled to the dam on an old pram and launched with my brother Colin stepping gingerly into it. Being flat bottomed, it turned turtle and he fell in the water. Not a good idea as there was bilharzia water disease prevalent in the dam. Another try and he succeeded in paddling it around but its day was over; we were not destined to be boat builders and we moved on.

Years later I had watched a programme on large manned models and visited the Portsmouth group who had built four 16ft replicas of Royal Navy and a German pre-Dreadnought battleships that fought each other with miniature guns fired with black powder. They staged a WW1 sea battle with all guns firing and simulated hits on both ships and a commentator describing the scene. All very dramatic. I was invited to command one which was a fascinating experience, lying back and viewing the world through a narrow slit in the bridge superstructure. A large panel of electronics controlled the guns and firing sequences.

This led to an opportunity to command a model tanker at the Warsash ship training lake. Here they train experienced deck crew how to command large ocean going ships and the handling characteristics of these very large heavy models replicates the real thing, having an electric driven tiny propeller and small rudder. As a trainee you sit in front of the instructor and relay your instructions to him who drives the boat accordingly. A misjudgement can have you aground quite easily in the narrow channels. This was an interesting hour on the water giving one an insight into the difficulties of manoeuvring large vessels in confined spaces without destroying the jetty.

Following the manned model experience, two of us decided we could also build a model warship and scanned the internet for plans and came up

with an easy build of a nuclear submarine also 16ft long, using two sheets of 15mm plywood as the base joined end to end. Having cut the hull frames, we covered it with very thin ply and fibre-glassed the joints. It took six weeks to build complete with conning tower, periscopes, rotating radar scanner, R.N. Ensign, dummy tail fin and powered by a 12 volt electric outboard engine tucked inside. One lay back looking out through a black gauze in the conning tower and steered using a hand wheel and throttle for speed. Being flat bottomed, it drew four inches when occupied and from a distance looked like the real thing and raised a few comments. It made its maiden trip on Poole Park boating lake and soon attracted the local media.

In due course, it moved on and was replaced by a radio controlled WW2 German Type VII submarine U-99 about five feet long. This proved to be great fun and dived and ran underwater until it lost the signal and surfaced again. However, the electrics, buoyancy tanks and pumps were often problematic and required a good workshop.

A little later a suitable offer of an r/c steam battleship was accepted and the submarine sailed away and HMS *Warspite* arrived also five feet long, fitted with a gas fired boiler supplying steam to twin engines each driving a

pair of propellers via a gearbox. The entire system was overhauled and a new nozzle was fitted to the burner and all four shafts and propellers replaced with newer items. Once again, it saw action on the lake in Poole, steaming for about twenty minutes before running out of gas. This was a great attraction especially to two retired naval officers who came to watch on a regular basis, one of whom had served on the original ship.

Poole Park had a regular model boat club meet on a Sunday with a varied collection of r/c models, one of the best being a large six foot motor torpedo boat with fine detailing. At the time I had an r/c British coaster which was rebuilt with new components and performed well. I was taken by the torpedo boat and asked who built it. A gent came forward and, on asking if he built other warships, replied, show me the plans and pictures and we will see. As I was writing a book on the WW1 German cruiser SMS *Königsberg*, I showed him a plan and photographs of the warship and he said you need a hull. As it happened one of the marine kits available was the German cruiser SMS *Emden*, a sister ship with a similar hull but different superstructure and deck layout. The kit was purchased and all the unnecessary bits rejected and a new build undertaken between us involving cutting out sections of the grp hull and inserting the new guns in casements, fitting a wooden deck, fabricating three new funnels from cigar tubes with funnel caps machined from block aluminium, building a new superstructure with deck houses, masts from aluminium tube and a new set of 3D printed four inch guns and shields. It was completed with a set of electronics comprising two six volt batteries, mast and navigation lights, three smoke units in the funnels and finally two brushless motors driving four bladed propellers and a rudder servo. The handset worked all four functions of forward and reverse, rudder, smoke and lights. When it was completed, the ship was taken to the lake again and watched

by the two naval gents performed faultlessly. This sails on a regular basis and travels around the country forming the centrepiece for talks on the subject.

Was this the end? Not quite, as I had written another book about a shipwreck in Cornwall, kindly reviewed by John Puddy, on the sailing ship *Hera* wrecked in 1914. As part of its commemoration, I decided to build a model of the ship. Easier said than done as I needed a four masted ship kit. Fortunately a French kit of the German barque *Pamir* was located in Poland, which after some major surgery, was rebuilt into an interpretation of the *Hera* in 1914. A wooden base with the ship's details and perspex box completed the model which went on display in Veryan church where the crew casualties of the wreck had lain before burial in the churchyard. It may well end up on display in the shipwreck museum at Charlestown, not far from Truro.

So back to *Königsberg*, now off the shelf and on the workbench. Both shafts are out together with the rudder for a grease and the four bladed props need a polish. A couple of plugs need replacing and the motors need tightening down while a search light needs renewing with some of the miniature wiring. A minor refit in preparation for the new season in the park.

Leaving a legacy to the SS Freshspring Trust

The Steamship Freshspring Trust has benefitted greatly from the generosity of its members and friends who have left or given money to the Trust.
Legacies provide very necessary financial support in helping the Trust to meet its stated objectives of preserving the past and inspiring knowledge for the future.
If you would like to think of giving the SS Freshspring Trust a legacy, it could not be easier: The following codicil can be completed by you, witnessed, and kept with your Will.

CODICIL
I (full name).....

of (full address).....,.....

.....,.....
declare this to be the (1st/2nd/other.....) codicil to my Will dated.....

I give, free of Inheritance Tax, the sum of

£..... (.....pounds)
to the SS Freshspring Trust of Little Cleave, Lower Cleave, Northam, Devon EX39 2RH (Registered Charity Number 1151907), absolutely for its general charitable purposes.
In all other respects I confirm my said Will.

Testator's signature:.....Date.....

Signed in the presence of:

First witness	Second Witness
Signature	Signature
.....	.....
Full name	Full name
.....	.....
Address	Address
.....	.....
.....	.....
Occupation	Occupation
.....	.....

Note: The witnesses must not be your executor, your executor's spouse or a beneficiary of your Will.

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