



WIN

Billing Boats' easy-build 1:60 scale shrimp cutter kit

Tŷ'n Llyn

The pretty R/C yacht scaled up from one of MB's free plans



model

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August 2023

Vol.73 No.873

PS Bilsdale

Part 1 of a step-by-step guide to building a working paddle steamer



Retriever



How to get yourself out of deep water with this nifty airboat recovery vessel

HM Trial



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Never built an R/C model boat before? Fear not, as complete novice Tim Logan is about to reveal how adopting the RNLI's "... nothing is impossible" approach inspired him to rise to the challenge



Firstly, a big thank you to the amazingly generous crew at Billing Boats for once again providing another fantastic kit for this month's prize draw. Included in Billing Boats' 'Beginner' series, Rainbow is ideal for novice kit builders, but for those of you looking for a more challenging project it is, as demonstrated in a YouTube video (search 'Diane - scale model RC fishing boat - VMK') possible to motorise this charming 1:60 scale 1960s' shrimp cutter and get her out on the water. For some of you, this would be a breeze, for others an interesting challenge, but as demonstrated by both Tim Logan (see With Courage... starting on page 18) and Haydn Foulkes (see Ty n' Lyn, starting on page 30), where there's a will, there's always a way! Never forget that even the most experienced and inspirational of modellers, such as Colin Bishop (see Part 1 of his paddle steamer project starting on page 40) and Allan Grafton (see the Flying Phantom feature starting on page 24), were newcomers to the hobby themselves once upon a time.

Of course, no matter how many years of modelling you have under your belt, considering how much time and effort gets put into building a fabulous working model, it makes sense to have a back up plan in place just in case things should go wrong during a sailing session. Regardless of individual thematic preferences then, perhaps a recovery vessel should be on every working model boat builder's 'to do' list, and Glynn Guest's nifty airboat designed for this very purpose (see the Retriever feature starting on page 14) is certainly worth considering.

Naturally, we haven't forgotten that some of you prefer to focus on fine scale static modelling, and completely understand if you feel your chosen discipline has been a little neglected of late (although you will find some magnificent new kits from Vanguard Models flagged up in this month's Compass 360 section – see page 10). The thing is, being a specialist title, articles need to be written by enthusiasts (rather than freelance journalists) for enthusiasts, so we're hugely reliant on the community Model Boats serves for feature submissions. There genuinely isn't any editorial bias. We're always keen to welcome new contributors aboard, especially those passionate about subjects/aspects of the hobby currently under represented in the mag, so please either pitch your potential feature ideas or simply spread the word.

Enjoy your read,
Lindsey



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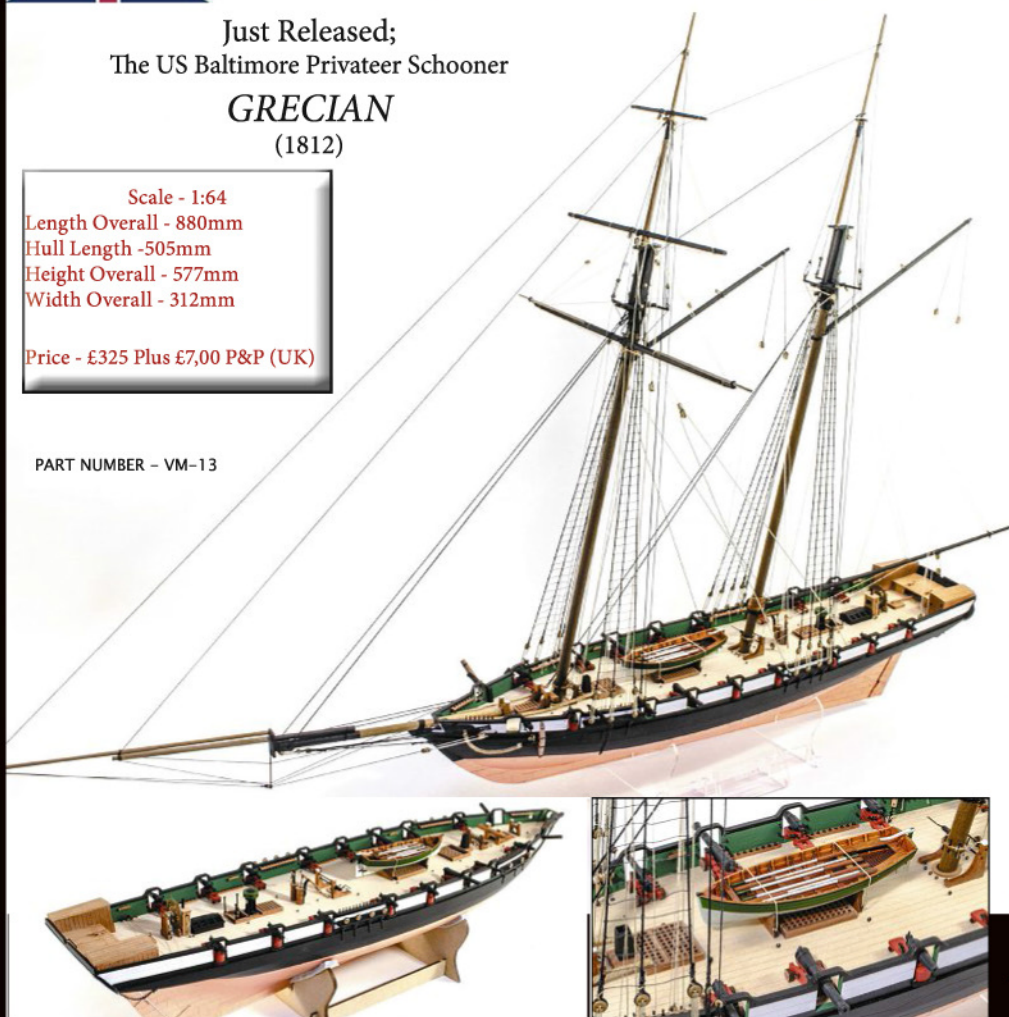
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The "Trial" was built by Thomas Dufterville of Plymouth to the designs of Captain John Schank.

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Hull Length - 895mm

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Width Overall - 500mm

Weight of Kit Box - 15kg

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Kit With Machined Pear wood Blocks - £1,490 Plus £12,00 P&P (UK)

Exact scale model of the 44gun Fifth Rate designed by Thomas Slade and launched in 1784 - But was not operational until cut down to a razeed Frigate in 1794

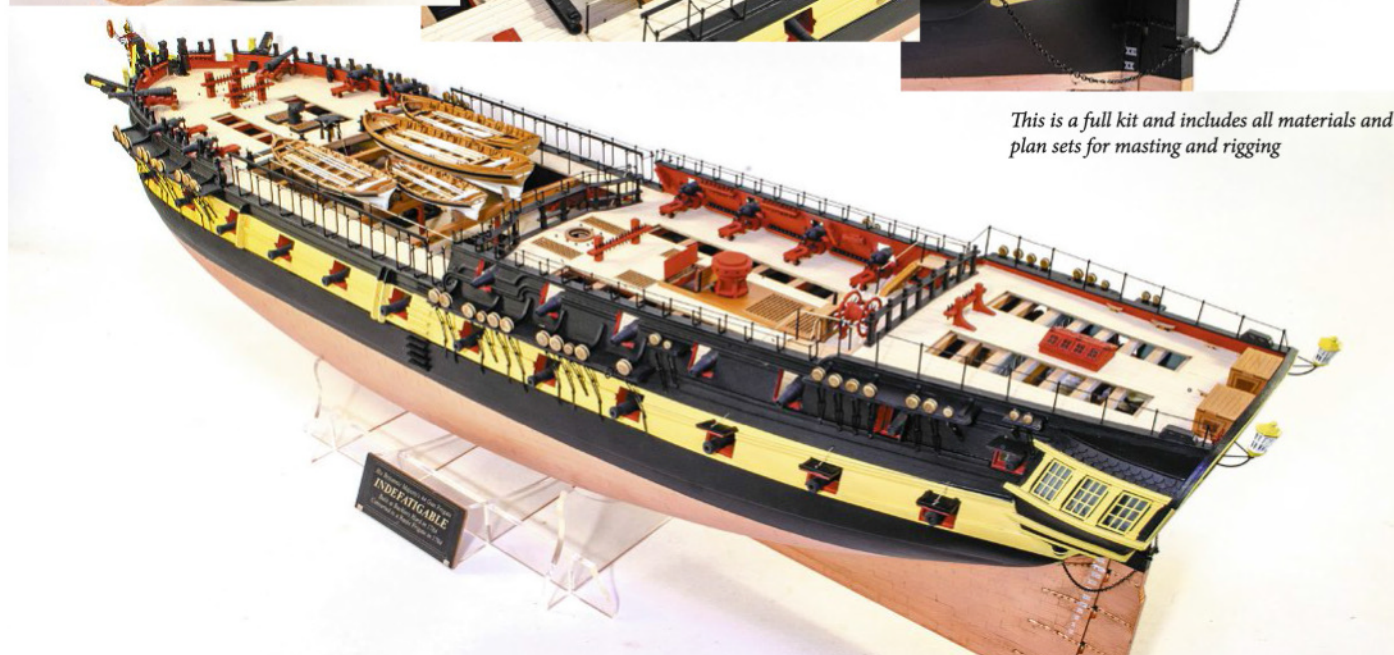
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VANGUARD MODELS

BY CHRIS WATTON

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Compass 360

If you have a news story for these pages, please contact the Editor, Lindsey Amrani, via e-mail at editor@modelboats.co.uk

1:64 SCALE KITS

New to the Vanguard Models range

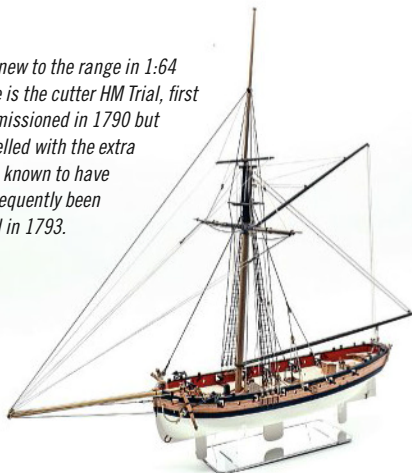
Two 64 scale period ships have been added to Vanguard Models' prestigious range of high spec kits.

The first of these two kits, resulting in a model of 880mm in overall length, 577mm in overall height and 312mm in overall width on completion, is the Baltimore privateer schooner *Grecian* (1812), priced at £325 (plus shipping).

This kit includes:

- Laser cut and engraved parts in MDF and pear wood.
- Laser etched and cut lime wood deck with treenail detail
- 3 sheets of photo etched brass
- High resolution 3D-printed parts.
- 20ft cutter boat for the modeller to build up from 3D-print and wooden parts.

Also new to the range in 1:64 scale is the cutter *HM Trial*, first commissioned in 1790 but modelled with the extra guns known to have subsequently been fitted in 1793.



- Double planked hull in limewood for first planking and pear wood for second planking.
- Walnut dowel for mast, gaff, and boom.
- Multiple sizes of both black and natural rigging thread, along with all necessary blocks and deadeyes
- A comprehensive, full colour instruction manual, along with eleven plan sheets which include all masting and rigging drawings.
- Eduard-printed custom waterslide decal for *Grecian's* stern, with options for both white and ochre.

The second, measuring in at 570mm in overall length, 285mm in overall length and 312mm in overall width on completion, and priced at £220 (plus shipping), is *HM Trial*, a cutter built by Thomas Dusterville of Plymouth to the designs of Captain John Schank.

When first commissioned in 1790, *Trial's* main armament was 8 x 3-Pounder carriage guns. In 1793, 4 x 12-Pounder carronades were added, and Vanguard's kit is modelled with these extra guns, giving the model



A finished build resulting from Vanguard Models new 1:64 scale kit for the Baltimore privateer schooner *Grecian* (1812).

12 guns in total. Although *Trial* was fitted with stocks for swivel guns on the gunwale, research suggests that these were never once used during her long career, so no swivel guns have been included. It's important to note that once carronades were added to a ship's armament, the need for swivel guns was completely negated, as carronades did the same job, but much more effectively. This kit includes:

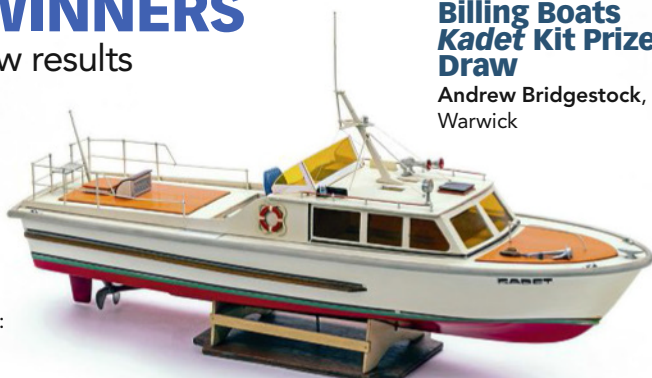
- Laser cut and engraved parts in MDF and pear wood.
- Laser etched and cut lime wood deck with treenail detail
- 2 sheets of photo etched brass
- High resolution 3D-printed parts.
- 3 historically accurate drop keel sections, with winches.
- Double planked hull in limewood for first planking and pear wood for second planking.
- Walnut dowel for masting.
- Multiple sizes of both black and natural rigging thread, along with all necessary blocks and deadeyes
- Comprehensive, full colour instruction manual, along with plan sheets that include all masting and rigging drawings.
- Plus (featured for the first time in a Vanguard's kit) there are laser-engraved treenails on both inner and outer bulwarks.

To order, visit www.vanguardmodels.co.uk

LUCKY WINNERS

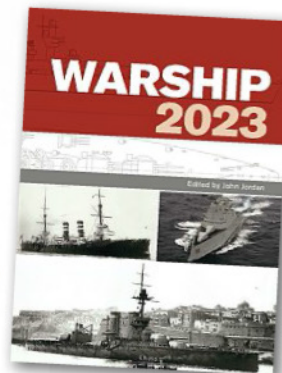
June Prize Draw results

Thanks to the kind folks at Billing Boats and Osprey Publications, in the June 2023 issue of Model Boats we were able to bring you two exciting prize draws and are now delighted to announce the winners as:



Billing Boats Kadet Kit Prize Draw

Andrew Bridgestock,
Warwick



Warship 2023 Prize Draw

Stephen Randles,
Banbury
Brian Hall,
Bradford
S. Dunkerley
Hayling Island

Congratulations
to you all!

OUT AND ABOUT



Chariots of Steam

An Exhibition of Model Ships by Lachie Stewart

If you're within striking distance of Dumbarton in Scotland, don't miss your last chance to visit the Chariots of Steam exhibition running until September 3, 2023, at the Scottish Maritime Museum Dumbarton at the Denny Ship Model Experiment Tank Castle Street, Dumbarton G82 1QS.

The exhibition, open from 10am to 4pm Monday through to Saturday, features the work of Lachie Stewart, who began modelling at just 16 years old and whose spectacular collection of 75 model ships, many of which are held in private and public collections, range from elegant paddle steamers to the lifeline Clyde puffers, and from simple half-hull design models to magnificent display models.

Models on display include PS *Caledonia* which was built by William Denny and Brothers Shipyard in Dumbarton in 1934 and NLV *Pole Star* and *Flying Phantom* both of which were built by Ferguson Brothers in Port Glasgow. The other vessels are PS *Maid of the Loch*, *Volcano*, the *Kathleen M Stewart* and *Sealight Greenock*.

Entry to 'Chariots of Steam: An Exhibition of Model Ships by Lachie Stewart' is included in museum admission price, with up to three children admitted FREE of charge with each adult (£5)/concession (£4) ticket.

For further details visit <https://www.scottishmaritimemuseum.org/exhibitions/chariots-of-steam-an-exhibition-of-model-ships-by-lachie-stewart/> or call 01389 763444.



The Sealight Greenock, just one of puffers modelled by Lachie Stewart and featured in the Chariots of Steam exhibition at the Scottish Maritime Museum Dumbarton. Image courtesy of the Scottish Maritime Museum.



Rawdon MBC August Open Day

Following on from its incredibly successful event in June (see the Your Letters section of this issue), Rawdon MBC will be hosting its second Open Day of 2023 from 10am to 4pm on August 19. The club would like to point out that everyone will be most at this family-friendly,

fun days out, where all visitors (even the little ones) will be able to have a go at sailing a model boat or yacht on the club's beautiful private lake at Larkfield Road, Rawdon, LS19 6EQ. There will also be model boats for sale and on-site facilities will include refreshments, WCs, etc.



Rawdon MBC's beautiful lake in the quiet of the morning.

The Southern Model Show

Scheduled for September 2/3, this year's Southern Model Show at Headcorn Aerodrome (Shenley Road, Headcorn, Ashford, Kent TN27 9HX) will once again see numerous model boats and watercraft, including everything from battleships from paddle steamers, being demonstrating on the water (in the show's large purpose-built tank).

The show encompasses numerous spectacular displays relating to all of the major modelling persuasions, plus there will be trade stands to browse and plenty of family-friendly entertainment. Visitors can choose to purchase either a one-day ticket or a weekend pass, and camping, caravan and motorhome sites are available to book in advance. For further details, visit <https://www.headcornevents.co.uk/Events/Southern%20Model%20Show/>



Dartmouth treasure trove

If you live in, or your holidays this year take you to, glorious Devon, and you have a fascination for all things nautical, recommended is a visit to Bonds Nautical Antiques at 2 Pottery Cottages, Warfleet Creek Road, Dartmouth, Devon TQ6 9GL. Established by former Royal Navy clearance diver and nautical/maritime antique specialist, David Bond, this is a family run business, with David now assisted by his daughter,

Suze. Visits are by prior appointment only but can easily be arranged by emailing bondsnautical@gmail.com or by calling either 01803 835007 or 07778 594856. If, however, this sounds a delightful way to spend an hour or two but the West Country is sadly not on the cards for you this summer, then you can always enjoy a virtual browse through the company's extensive online catalogue at <https://www.bonds-nautical-antiques.co.uk>

WIN!

CATCH OF THE DAY



This month, courtesy of the generous crew at Billing Boats, we're able to offer you the chance to win this easy build 1:60 scale kit (Ref. BB201) for the *Rainbow Cutter*. On completion, the model represents a typical cutter used for catching shrimp off the German, Dutch and Danish coasts during the 1960s, and the kit includes all the onboard equipment that would have been carried, such as the shrimp sieves and cookers for immediate preparation of the catch.

Billing Boats' extensive range has something for everyone, with kits divided into four different skill level categories, aimed at the 'Beginner', the 'Advanced Beginner', the 'Experienced' and the 'Expert'. The *Rainbow Cutter* is included in the 'Beginner' series, so would make an ideal first project for any newcomer to the hobby. However, even the most experienced amongst you will be charmed by the beautifully detailed model that results from this build!



To further explore the Billing Boats range visit,
www.billingboats.com

Modelboats  Fittings  Accessories  Tools 

THE DAY

Billing Boats' superb 1:60 scale Rainbow Cutter kit!



HOW TO ENTER

To be included in the draw, all you need to do is complete the entry form included on this page, cut it out (photocopies of the form will be acceptable for those of you who do not wish to deface your magazine) and mail it back to us at:

BB RAINBOW CUTTER PRIZE DRAW Prize Draw
 Model Boats,
 Mortons Media Group,
 Media Centre,
 Morton Way,
 Horncastle,
 Lincs LN9 6JR

Please note, the closing date for entry submissions will be August 25, 2023.

Good luck, everyone!

TERMS & CONDITIONS

Competition closes August 25, 2023. There are no cash alternatives available. Terms and conditions apply. To view the privacy policy of MMG Ltd (publisher of Model Boats) please visit www.mortons.co.uk/privacy

BB Rainbow Cutter Prize Draw

Name: _____

Address: _____

Postcode: _____

Tel No: _____

Email: _____



RETRIEVER

Want to avoid getting into deep water should things go wrong?
Glynn Guest shares details of how to build a nifty airboat recovery vessel

There can be few readers who haven't witnessed or even experienced a model unexpectedly stopping during a sailing session. If lucky, the model will drift back to safety; if not, it will drift into an inaccessible place. At this point any nearby modellers will usually leap into the Samaritan role, requested or not, and attempt to use their models to push the errant one back to the lake/pond side. What follows can be highly entertaining – well, to any spectators, but probably not to the owner of stricken vessel.

The tactic most salvors appear to employ is to aim the rescue vessel at the largest target, which means trying to push the model sideways. However, since most models have rounded if not pointed bows, this causes problems. Unless the recovery model manages to place its bows on exactly the right place, it will immediately cause the stranded model to rotate (see Fig 1). The Samaritan then starts to push the rudder and throttle sticks about on the transmitter in an attempt to return to the desired course. This often results in the rescue model scraping down the side of the stricken model, something that can upset its owner for some reason. This 'good deed' may even generate a few expletives if accompanied by the sound of breaking and snapping.

The salvor may, of course, recognise this problem and decide to back off and take

another run at the model. However, one model backing off for a renewed attempt can be taken as an invitation for other models to try their hands at this recovery game. The result can easily become chaotic, and you could be forgiven for thinking that the objective is not to save a model but ram it into submission. This, too, may further upset the stranded model's owner, who'll understandably be distressed by the sound and sight of these impacts.

Better ideas

It's not hard to come up with better ideas for the rescue of a model boat. One is to attach a line to the recovery model with a suitable float on the other end (a cork from a wine bottle works well); the idea being to sail around the stranded model and wrap the line round it (see Fig 2). With luck, the line will snag the model, possibly on rudders and/or propellers, and allow it to be towed back to safety. Care is needed to avoid getting the line entangled with recovery models propeller though – this would leave you with two models to recover, which reminds me of the fairy tale about someone who swallowed a fly...

A somewhat safer method, which has been described before, is to make a frame that can be temporarily attached to the recovery model. This can scoop up the stranded one, hold it safely and allow a controllable

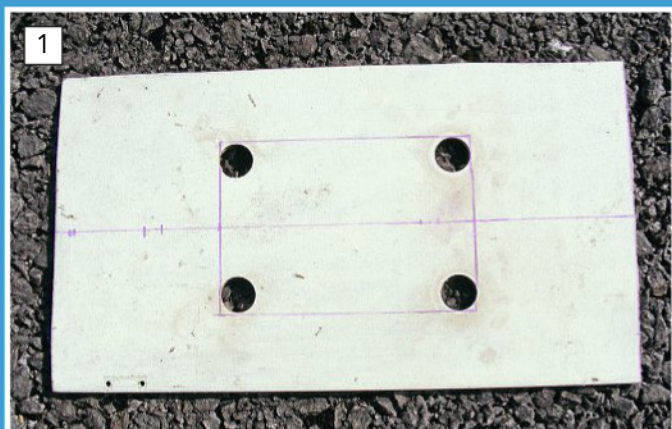
recovery to be made (see Fig 3). The only problem could be the size of the frame, as one that could cope with a modest cabin cruiser model might be overwhelmed by a larger model.

Flotsam frustration?

The idea of using other models for recovery has one potential drawback: it's not unknown for our sailing waters to contain water plants or even plastic bags and these can become wrapped around a model boat's propellers and rudder. If this is the cause of a model becoming stranded, then sending other models into possible danger seems unwise.

I have heard of people putting a protective screen around the propeller and rudder of a model to avoid this problem. But, as I've seen how determined some things are to get through screens, I'm not 100% confident in this method, and even putting the propeller inside a tunnel, water-jet style, would still need a screen to keep things out. If, therefore, the propeller and rudder underneath a rescue model's hull could be at risk, it's doesn't take a great leap of imagination to come up with the idea of lifting them out of the water – that is, to use an airboat to recover stranded models.

But, having built and run a few airboat models myself, I realised this idea could be problematic. Full size airboats are usually built to skim over the water at speed and



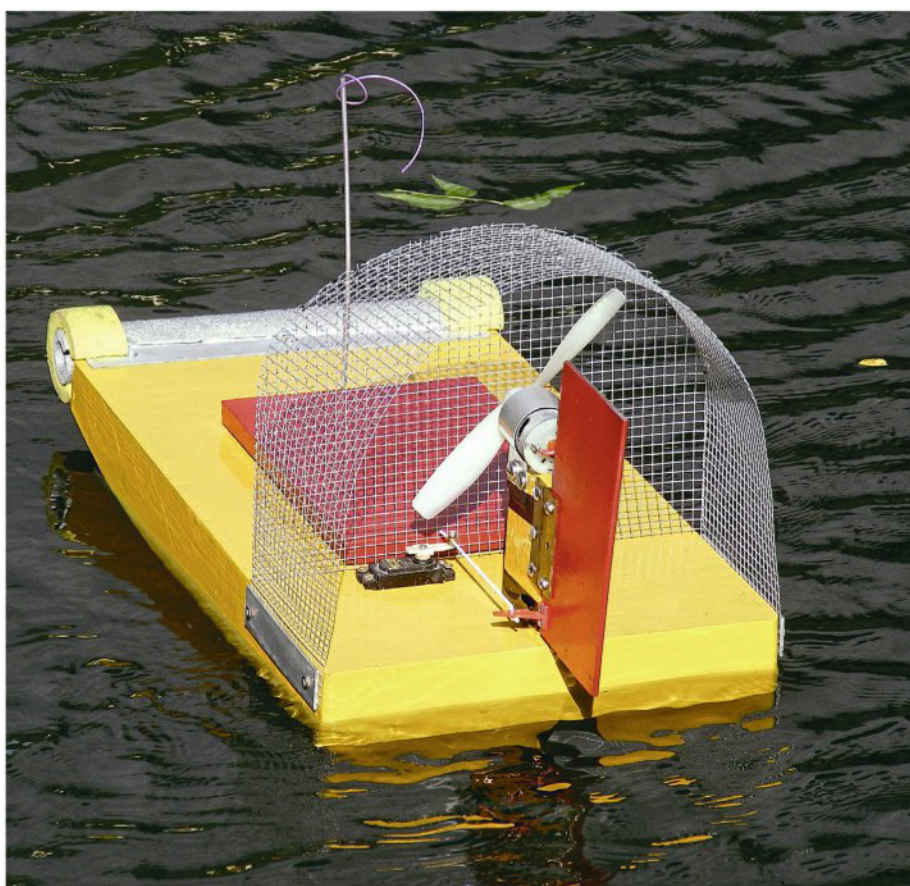
models tend to do the same. This means that they have a lightweight construction along with generous power; not exactly ideal for gently approaching a stranded model to give it restrained push.

Airboat solution

Having given the thought of using an airboat to recover a stranded model some more thought, the idea still appealed to me. A hull with a smooth underside ought to enable it to slide safely over the most weed or debris filled waters. In addition, airboats usually have a wide and blunt bow, so pushing the stranded model anywhere approximately amidships ought to avoid any unwanted rotations. The only challenge might be the making the sailing characteristics gentle and reliable enough to push models with no damage. The answer, I decided, was to design something hefty with modest power and hope that an air-rudder would prove effective.

Economical build

A few pencil sketches and calculations suggested that something using a 6-volt lead-acid battery and a standard 550 brushed motor looked promising. A model about 20 inches (50 cm) long with a beam of 11 inches (28 cm) could be made from items already in my lumber stock. The final weight would be a shade over 7 pounds (3 kg), which





Unwanted Rotation

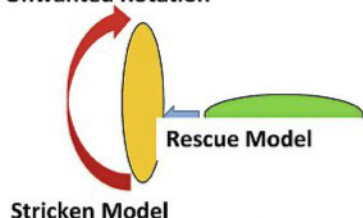


Figure 1

ought to produce a sedate airboat rather than the usual high-speed craft. The design I eventually came up with is so simple (the proverbial engineer's 'back of the envelope' type) that the accompanying construction photographs are all that's needed if you plan to build something similar.

The deck was made from 1/4-inch (6 mm) plywood, with an access-opening cut in the centre. Drilling holes at the corners and then running a jigsaw between them created the opening (see Photos 1 and 2). Some wood

strips were cut to match the deck (see Photo 3). The side pieces were shaped so that the hull bottom would rise upward and be clear of the water at the bows; this was to avoid the bows pushing a mound of water ahead of the model – something which might prove a nuisance when approaching a stranded vessel.

A slot was cut into the deck for the motor pylon before the hull structure was glued to the underside of the deck (see Photos 4 and 5). Some 1/8-inch (3 mm) plywood covered the hull bottom. The same wood strip as used for the hull structure made up the motor pylon. Its height allowed the propeller to clear the deck. I used an 8- x 4-inch propeller from my box of aeromodelling kit spares. I thought that with this motor and battery combination it would provide an adequate but not excessive draft.

An aluminium strap and a couple of bolts secured the motor to the pylon (see Photo 6). My plan was to hinge the rudder to the rear of the motor pylon, so simplest way to install the rudder servo was into a cut-out through the deck. To keep water at bay, a coaming was added around the edges of the deck access opening and a simple lid built to fit over it.

After painting, the motor was refitted, and the rudder secured to the pylon with a brass hinge. This hinge was intended for fitting on a piece of furniture, but it was handy, did the job and its weight really didn't matter in this model. The servo rudder linkage needed careful fitting to avoid fouling the propeller (see Photo 7). At this stage, I realised that a propeller guard was needed. Some modellers seem quite happy to operate unshielded airscrews on their airboats; I can only hope they have adequate insurance cover for this risky practice! I, however, just made a simple cover from a sheet of wire mesh cheaply bought at a local DIY store.

The internal items were fitted and held in place with some blocks of foam plastic (see Photo 8). The boat's final ready to run weight came out a little heavier than expected (8 pounds/3.6 kg) and a trial float on the garden pond showed it to have a draught of about

Wrapping Line around Model

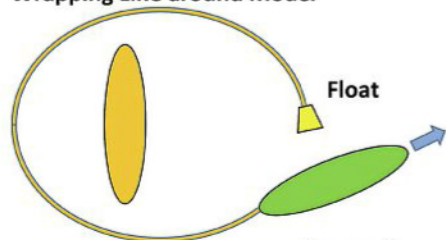


Figure 2

Recovery Frame

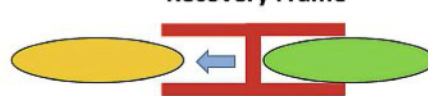
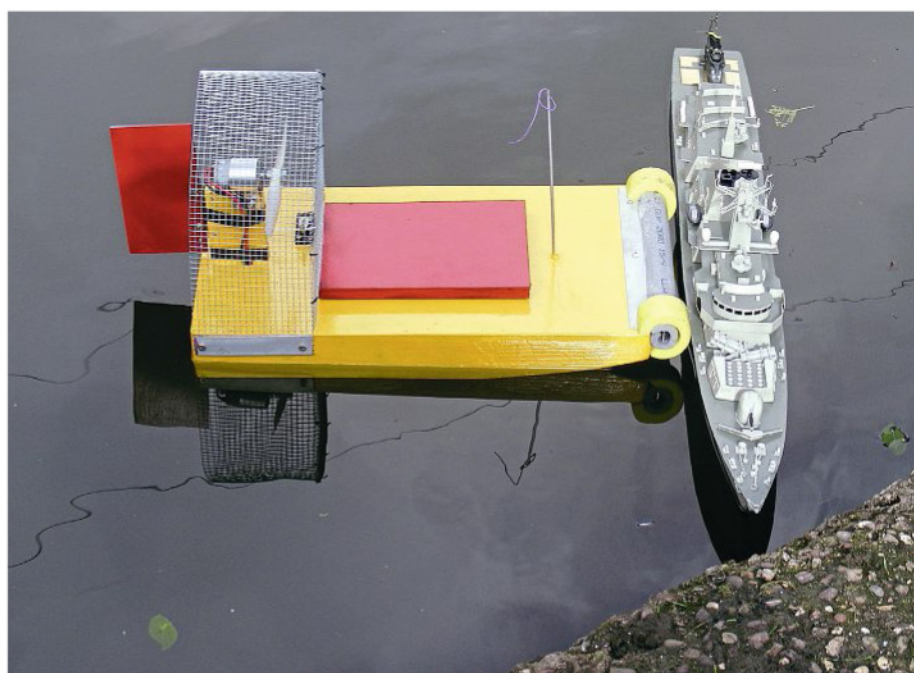
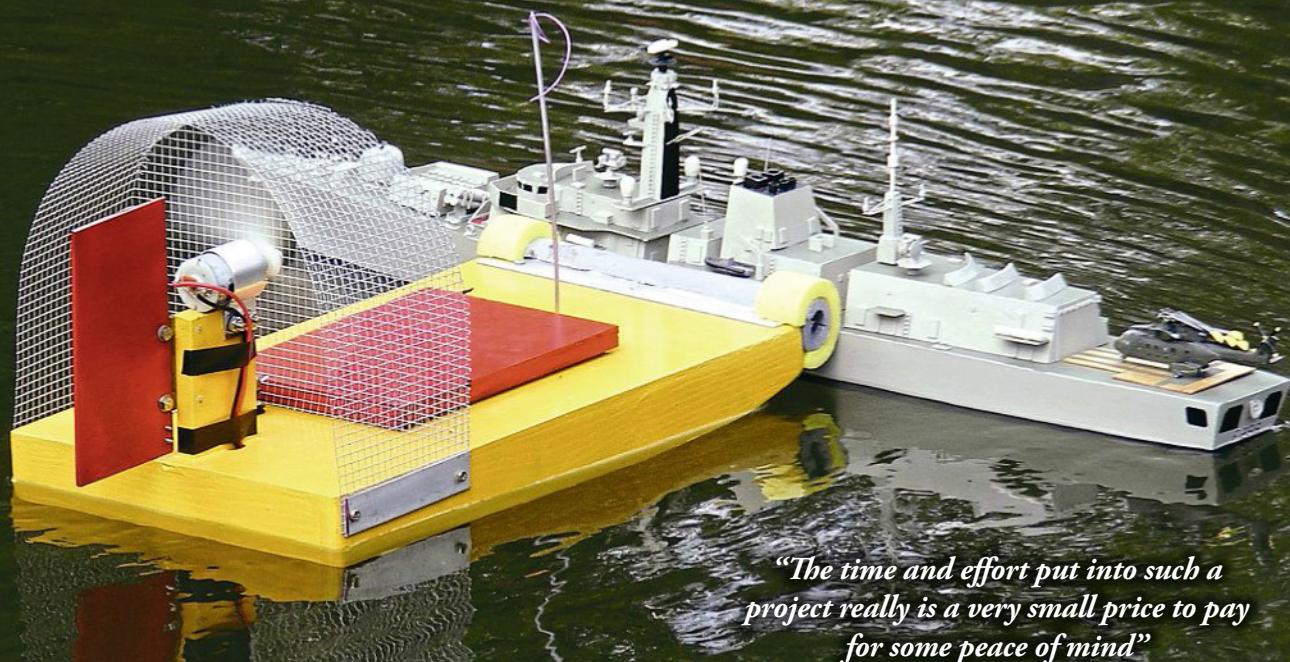


Figure 3





1-inch (25 mm). An experimental twiddle on the transmitter sticks couldn't be resisted and my airboat was found to be quite easy to control in such a confined space. Even better was the discovery that, with a rudder throw of some 45 degrees either way, it was possible to make the boat rotate with little forward motion.

A last-minute addition was a bow bumper. I felt that something was needed on the bows to avoid damage and, if possible, create a firmer grip during the recovery operation. Amongst the items littering my workspace were some lengths of foam plastic tubes intended to insulate domestic water pipes. One piece was slit and then glued to an aluminium strip that was screwed to the bows. Two larger diameter pieces of foam tubing were added to the ends of this tube. The hope was this would be more secure when pushing against the curved side of a model.

Proper trials

The wind was modest but variable in strength and direction on the day of the recovery trials. I almost, therefore, had second thoughts as I had brought my new warship model to act as the stricken vessel, but fortune is supposed to favour the brave! I just hoped that I'd be able to operate the transmitter with crossed fingers...

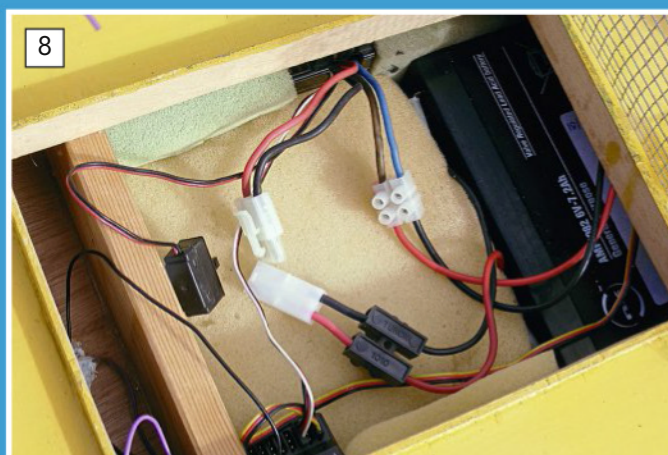
The first thing noticed was that *Retriever*, my name for this airboat, could move at a respectable pace – not hurtling across the water like my other airboat models but certainly fast enough to please the owner of any vessel that needed recovery. My second observation was that, despite the wind, it ran a reasonably straight course, needing only modest rudder corrections. Last, but not least, the rudder response proved immediate.

The warship model was approached with

caution, allowing it to drift into contact before the airboat gently started to push it sideways. After a few experiments, I found that the combination could be steered around with total confidence, more than enough precision and with the absence of any scraping noises.

Sail with confidence

I now have a good way to recover stranded models safely. *Retriever* even has the potential to slide over any dreaded patches of weeds that are just waiting to snare passing models. It's no hassle to slip into the car whenever I take another model or two out for a sailing session. Fortunately, since building *Retriever* I've never had to use it in earnest but, the way I look at it is, the time and effort put into such a project really is a very small price to pay for some peace of mind. ●





The 1:12 scale Waveney class lifeboat kit for the Scout (#44-018), which Tim ordered from Dave Metcalf of Metcalf Mouldings in the UK.

"With courage..."



The St. Patrick. Image courtesy of Joe McCabe

Never built an R/C model boat before? Fear not, as absolute beginner **Tim Logan** is about to demonstrate the RNLI's "... *nothing is impossible*" approach

Golly, where do I begin? How is it that a fellow living in a tiny hill town in Western Massachusetts, USA, came to build his first scale R/C boat – let alone a model of a RNLI lifeboat? It's hard to believe I'm actually sitting here, sipping my coffee, fending my Siamese kitty Gracie off the keyboard, pondering an article about it! What do I want to accomplish here? After all, the idea of writing an article for an international model boat magazine whose pages are full of exquisite examples from veteran model builders is, to say the least, just a bit daunting! Well, I guess that's the point – every journey starts by taking that first step, so the aim of this article is to encourage others new to the R/C side of the hobby to do just that. In particular, I want to

emphasise points which I believe will help first time modellers and make for a rewarding experience. The message, in a nutshell, is: "You can do it!"

My recently completed Waveney 44-014 St. Patrick was my very first R/C model boat build. I had absolutely no previous scale boat building history. Almost every step of the project represented a new experience/challenge. 'Build logs' for various kit or scratch-built models are abundant in Model Boats magazine and on forums and other social media R/C groups. Many build logs are shared to reflect the museum-level quality, ingenuity and creativity of remarkably skilled modellers. I am in awe of such folks. I, however, am a beginner. This is my beginner's story.

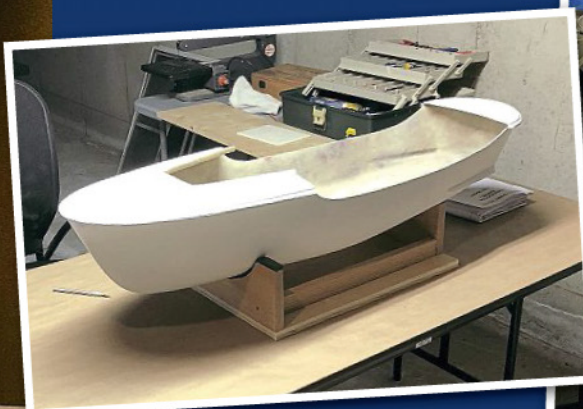
"Many build logs are shared to reflect the museum-level quality, ingenuity and creativity of remarkably skilled modellers. I am in awe of such folks. I, however, am a beginner. This is my beginner's story..."

Learning about superheroes over a cup of tea

On a rather stormy day on the West Coast of Ireland, some years ago, my wife Nancy and I walked along the shore and spotted some individuals scrambling around a rather formidable looking orange and blue boat. It appeared to be a rescue boat. I remember looking at the choppy foreboding water under the dark clouds and shivering a bit in the cold. What kind of superheroes, I wondered, would have the phenomenal courage to risk their lives in a sea rescue? I was soon to find out.

A few minutes later we arrived at a nearby friend's home to have tea. I mentioned the orange and blue boat. She told us the boat was a lifeboat in service for the Royal National Lifeboat Institute (RNLI). As it turned out, our friend, whose family members were fishermen, had been a volunteer with the RNLI for some 50 years. With great pride she began pointing out the many articles and awards adorning her walls and shelves concerning the local fishing industry and the RNLI. She explained that the RNLI boats and stations are crewed by everyday men and women from all walks of life who are on call 24/7. All are unpaid volunteers.

Right: The hull with decks installed.



Tim's stand prepared and supporting the fibreglass hull supplied in the kit ready for the build ahead.



Be they clerks, bankers, construction workers, accountants, bakers, all RNLI volunteers are of one mind when a callout occurs – to save lives at sea. When their pagers sound for a callout, they crew the lifeboat and launch within minutes. Constant training and maintenance of the lifeboat, the equipment, and the station is all part of the volunteer's commitment.

I was incredulous. These were indeed superheroes. Thus began my fascination and admiration for all things RNLI and the seeds were sown for my first R/C scale boat. Being an avid 'stick and tissue' aircraft modeller in my younger days, but never having built a scale R/C boat, I decided that one day, when I retired, I would build working models of RNLI lifeboats stationed in Ireland. I would begin with the St. Patrick, Waveney class #44-014 – stationed in Dunmore East, Ireland

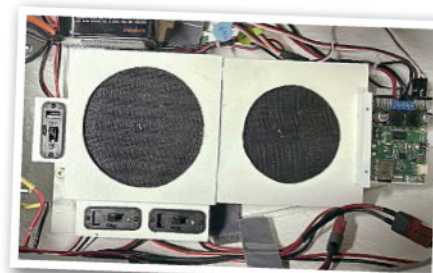
Doing the research

The first step in building a scale model boat is deciding which 'real boat' most interests you and doing the research to learn about the construction and operational history of the vessel. This enjoyable, educational adventure costs nothing – unless you become addicted and start buying reference and history books like I did! During the research, a myriad of questions will no doubt arise. Do I want to be a 'rivet counter' or 'stand-off scale' modeller? How big should the model be to reflect a reasonable amount of detail? Do I want to model a specific boat or a generic 'type of boat'? What scale are similar boats usually modelled to? How easy is that scale to transport? I found it was helpful to start jotting down questions.

From my research I learned that RNLI lifeboats have developed from the oar-

powered craft of the 1800s to modern state-of-the-art all-weather craft. Each successive class has improved speed, range, utility, and safety. The Waveney class boats were produced from 1964 to 1982.

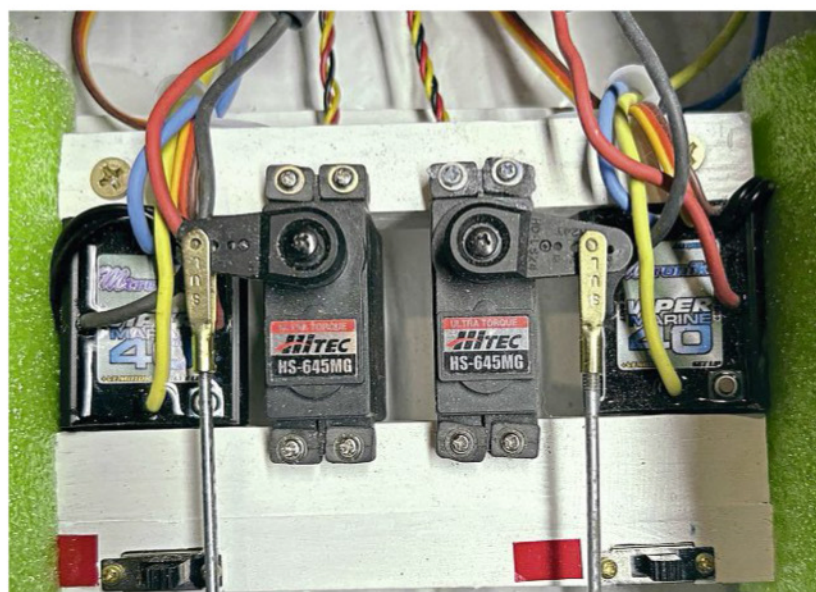
The St. Patrick was built in 1974 by Graves & Guttridge Ltd, Cowes, England. In March



Dual 4 Ohm speakers wired in series on a 6S lipo.



The well deck with additional fittings.



Dual rudder servos and ESCs.



The aft cabin constructed and, subsequently, painted.



Work begins on the deck railings and fittings.

1974, the St. Patrick sailed from Cornwall to Dunmore East with Stephen Whittle, a Dunmore East coxswain since 1959, at the helm. Two weeks later she took over as the Dunmore East station lifeboat. Here she served with great merit for more than 20 years until sold out of service in May 1999 to the Royal Volunteer Coastal Patrol in Australia.

An excellent source of information on the Waveney class lifeboats is Nicholas Leach's *The Waveney Lifeboats*, Bernard McCall, 2001, while a very fine reference on all RNLI lifeboats is Nicholas Leach's *Powering to the Rescue - a history of RNLI steam and motor lifeboats*, Lily Publications, 2019.

Joining a club

I firmly believe the single most advantageous thing a first-time modeller can do is to join a club. I cannot emphasise this enough. The expertise and sense of community will be motivating and supportive. My experience is that scale boaters love to help.

Since I knew I would benefit from the advice of experienced scale boat modellers, I made the 90-minute drive to Lake Massapoag on the opposite side of the state in Sharon, Massachusetts. There I received a very warm welcome from the **Marine Modellers Club of New England (MMCNE)** and joined up right away. MMCNE has been in existence since 1990. The club has some of

the most highly skilled modellers I have ever met. Some members have had fascinating seafaring careers, whether it be in the Navy, Coast Guard, or commercial vessels. Their real-life nautical knowledge has become invaluable to a landlubber like me!

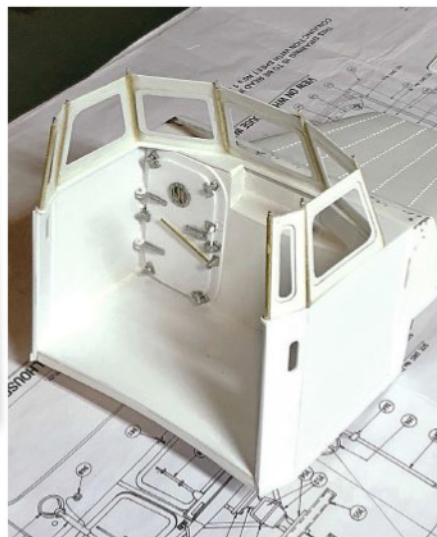
I cannot say enough good things about my newfound fellow club members. Over the last two years members have patiently helped with building questions, equipment selection, making machined parts, and custom artwork. Event Officer Frank Cook recently inspired me to volunteer as Publicity Officer! **Discovering MMCNE turned out to be my single best decision in the whole building process!** If you are in the New England area, I recommend you check us out at www.marinemodelers.org.

"I firmly believe the single most advantageous thing a first-time modeller can do is to join a club"



Above: The fore cabin interior hatch.

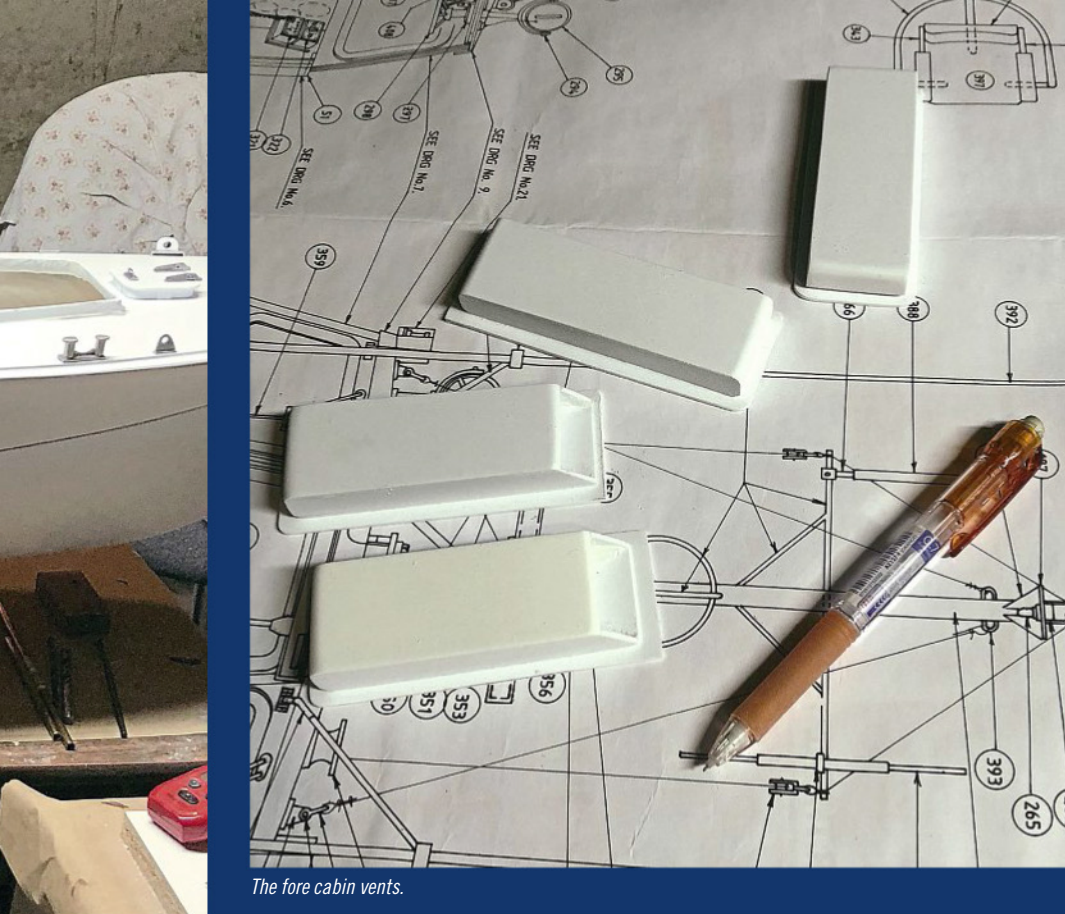
Right: The fore cabin with work on the side walls and windows in process.



Locating a kit/scratch-building materials

After you've finished your research and received advice from experienced club members, you'll be ready to purchase a kit or locate plans and scratch-building materials. Here is where your research and club membership will reap rewards. You will also, of course, find the internet indispensable.

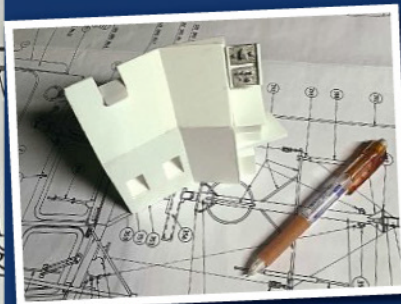
Scale model boaters are, in the grand scheme of things, a relatively small segment of the hobby world. Manufacturers and suppliers who support the hobby are often small, specialised businesses which, initially, may be difficult to locate. Many of the suppliers may be in different countries. In my case, the majority of bits and pieces came from the UK. I have found that these small suppliers all have superb customer service and a genuine willingness to help. Your fellow club members can provide you with the names of many of these suppliers. As you proceed you will no doubt start to make a list of favourite



The fore cabin vents.



The fore cabin with its roof fitted.



Tackling the instrument console begins.

suppliers for the plethora of bits and pieces needed to complete a boat – including tools that you won't find in your garage!

Early in the process I discovered I was sorely lacking in the small tools, bits and pieces, glues, raw materials, et al required to build the *St. Patrick*. It seemed as though every step I took required a new tool or material to proceed, which was frustrating and considerably slowed down my build. Two years later, it's a delight to now have all these items at my disposal, and, provided they're well-looked after, they will probably last a lifetime.

Skills you can master along the way

Building scale model boats requires a variety of skills. These skills may include:

- Reading plan sheets
- Understanding a variety of adhesives for diverse types of material bonding
- Working with fiberglass and epoxy resins
- Placing electro/mechanical equipment for easy access and trouble-free operation
- Matching props to motors
- Using tool and die sets
- Soldering brass and creating metal working jigs
- Planning efficient building and painting sequences
- Using a variety of paint types and painting methods
- Airbrush techniques
- Understanding radio control systems and transmitter programming
- Using a voltmeter
- Ballasting a model for true scale operation
- Asking for help when stumped
- And, most importantly, accepting that the list of vessels you want to model next will

likely grow faster than you can build!

Beginners may have all or none of these skills but developing them is all part of the fun and satisfaction. The primary requirement is patience. Like me, you will probably make mistakes and have to 're-do' some things. I found that learning when to step away from a problem and 'sleep on it' was most beneficial.

To repeat: you can do it!

My build

It was during my research that I first heard the words 'rivet counter' – a term used to describe modellers who are keen on incorporating every possible minute detail into their builds. The results such builders achieve are jaw dropping. Not a natural rivet counter myself, I decided, however, that my first priority would be easy access plus reliable and 'scale-looking' operation. As a newcomer, I think it's important to be aware of what kind of builder you are and stick to a style and level of detail that gives you the greatest satisfaction.

In early 2021, following a bit of searching, I ordered a Dave Metcalf model kit of the *Scout*, Waveney #44-018, which was shipped all the way from England. The Waveney kit had been out of production for some time, and I felt fortunate to locate one in the inventory of *Tony Green Steam Models* in the UK, a company that made the purchasing process easy and kept the shipping as low as possible. In 1:12 scale, this kit results in a very large model, measuring 44-inches in length on completion, but the huge package arrived



The completed instrument console.

safely, and I was on my way.

The Waveney's essentially all looked similar, although each crew were given a bit of leeway to modify equipment so as to suit their lifeboat station's location and needs. The limited number of *St. Patrick* photos extant did not suggest any significant modifications from the *Scout*, although I did notice that over time lettering and no-skid areas seemed to vary, as did searchlight arrangements. Thus, for the *St. Patrick*, I would only have to order custom decals and vinyl to change the name and number and make some minor detail modifications.

Few would consider this kit for the Waveney

"As a newcomer, I think it's important to be aware of what kind of builder you are and stick to a style and level of detail that gives you the greatest satisfaction"



The end result! Impressively built, detailed and finished, who would ever guess that this magnificent 1:12 scale RNLI Waveney class lifeboat represents Tim Logan's first foray into R/C model boat building?



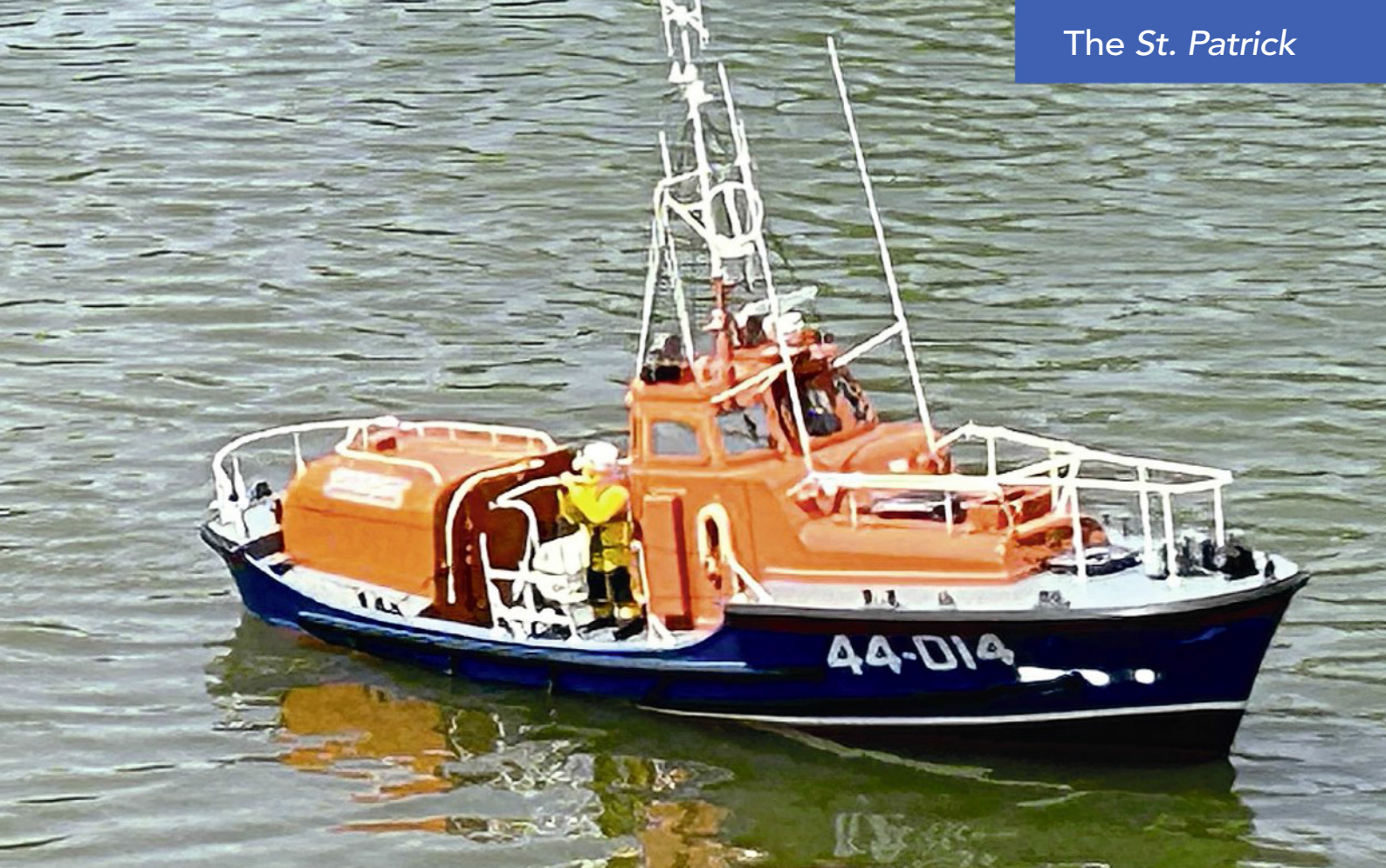
a beginner's model, but bearing the RNLI's motto "With courage, nothing is impossible" in mind, I was ready to accept the challenge.

The kit contained a fibreglass hull, fore and aft cabins, high impact styrene part sheets, white metal deck fittings, and miscellaneous bits. The instructions were voluminous and required several read throughs, but after a thorough study of the instruction manual, photo disc and three plan sheets I was ready to begin. While the instruction manual contained a numbered parts list, there was no accompanying pictures for each numbered part, so I did have to spend a significant amount of time identifying and matching parts to the three plan sheets.

The first item on the agenda was to build a stand and set up a work area in my basement.

Twin motor and drive shaft installation was straight forward using two MFA Torpedo 850 brushed motors powering 40mm three-blade props. Next was fitting the high impact styrene deck cross beams, main deck, well deck, and cockpit 'infills', or flanges, to hold cabins in place. I wanted a little more strength (that's just me!), so I re-made many of the pieces out of 1/16th and 1/8th plywood. Once these were installed, much fine tuning was required to get a perfect fit for the removable fore and aft cabins. The boat has a central hatch cover, to aid access,





which I secured with magnets.

Rudder servos and ESCs came next as well as a dual speaker sound system from a great little Canadian firm called Model Sounds Inc.

At this point I abandoned the building order suggested in the instructions and proceeded to completely finish the aft cabin sans decals as detailed in the photos. Decals were custom made and applied later on in the building.

Various hull/deck fittings and railings were then made and installed. I didn't use any of the white metal railings provided, instead making all of the railings out of brass. My first attempts at soldering were a complete failure as I was using an electronics soldering iron from my ham radio building days. I discovered that the type of soldering iron used by stain glass artists was the appropriate tool and that jigs were essential. Making brass fittings then became one of my favourite tasks. At this stage, the hull was painted.

Building out the main cabin came next. Many of these fittings were made from scratch, just as a personal preference.

The last step, painting the interior and exterior of the fore cabin, required careful planning and masking. Making the mast fittings, windshield wipers, etc, from scratch proved one of the more enjoyable parts of the build. A crew figure was added and one more crew member is still in process.

Ballasting

After any model is complete it will need to be ballasted by adding and distributing weights to allow the boat to float at the waterline and stably cruise across the water – a topic



I know has been covered by those with a lot more experience than me in past issues of this magazine, but if in any doubt, consult a fellow club member.

In summary

The *St. Patrick* build was a success and I'm quite proud of my humble efforts – so much so, I have become a diehard fan of scale R/C boats. The combination of researching the history, learning building techniques, relaxing at water's edge in the company of fellow club

members has been great fun.

My next RNLI lifeboat model will be the Liverpool twin-engine class ON 877 *George and Caroline Ermen*, stationed in Clogher Head, Ireland. After that will be the *Alan Massey* Tamar class 16-22, stationed in Baltimore, Ireland. I now have both kits to hand after much searching.

I hope sharing my first R/C experience will help inspire others trying to summon up the courage to delve into this marvellous hobby. Go on, take the plunge – you can do it! ●

THE FLYING PHANTOM

Allan Grafton, Eastleigh & District Model Boat Club member, shares some of the highs and lows of this epic build

The idea of scratch-building a model of the ill-fated (more on this later) diesel tug the *Flying Phantom* first took root after admiring an example built by Sandy Cousins and featured in *Marine Modelling* magazine back in 1984. Who could not be impressed by the tall tripod mast with the three monitors standing proud over the superstructure and the old-style design of the large single cort nozzled hull shape? I was less enamoured, though, with the chocolate brown 'Clyde Shipping' colours the vessel carried. It wasn't until years later (when I began to dip my toes into the Interweb/Net thingy) that I came across photos of this tug in three or four other colour schemes (resulting from business takeovers and mergers). The best (although probably hardest to apply) in my mind was that of Cory Towage Ltd. Oh yes!

As it happened, this newly rekindled interest coincided with having damaged my hand at work (clumsy oaf!), thereby freeing up time to mull over the possibilities of a project like this. Then, in the August 1990 issue of *Marine Modelling* there were drawings for the *Flying Phantom* and an accompanying article by Jim Pottinger (thank you, Jim, for all of the inspirational articles you've written over the years!). However, being to a scale of 1:50, the plan seemed a bit too small for what I had in mind – after all, bigger is better, right? So, to help me decide on the scale I wanted to work to, I looked to my stash of figures. I had some 1:20 scale Tamiya 1970s' rally mechanics which looked about right, so off to the printers I went. I returned with a giant set of drawings which when spread out covered the entire lounge floor. I remember

Right: Allan and the finished model on display at the Blackpool Model Boat Show.



"Off to the printers I went. I returned with a giant set of drawings which when spread out covered the entire lounge floor. I remember standing over them in complete shock and thinking 'Good grief! What have I done?'"

standing over them in complete shock and thinking "Good grief! What have I done?". But, after a few weeks of constantly worrying and wondering whether I should concede defeat and go a bit smaller, they finally grew on me, and I committed to the build.

What follows is not going to be a blow-by-blow account of the build (which, on and off, took more than seven years to complete) I'm just going to cover some of the more interesting aspects of it.

Fibreglass hull & deck

With my hand finally back in action, the first thing to tackle was the hull. This was achieved by forming a plug, fibre-glassing to create a mould and then casting my hull from that mould. I'll admit I encountered a bit of reaction with the laying up procedure (I think because I didn't allow the paint on the plug to vent for long enough!) but, with a bit of filling and sanding, after six months work the hull was finished and looking good.

Next up was the upside-down cambered

fibreglass deck. I didn't want to create a mould for this, so I formed a cambered deck out onto the hull using some thin MDF cut into narrow strips running side to side. These bent easily over the timber framework set out underneath with the required camber affording the double compound curves on the deck. I fibre-glassed onto this to give me the upside-down deck (rough side up). The timber and MDF were removed once this fibre-glassing had been completed.

Plasticard deck, bulwarks

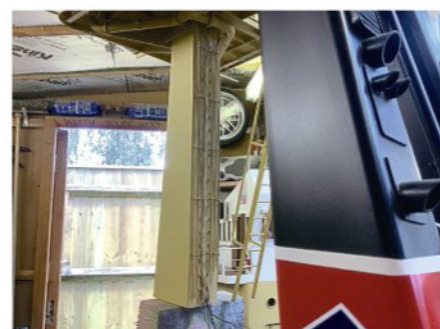
Normally the bulwarks on a tug hull are part of the fibreglass hull moulding. Inside, the bulwarks have to be filled and sanded down to remove any rough fibreglass. It is, however, hard to glue the capping and bulwark supports onto the filler and the fibreglass bulwarks edge and I didn't want to fiddle around with this, so I built mine up with Plasticard, meaning everything stuck together easily and I could be confident nothing was going to fall off! Here's how...



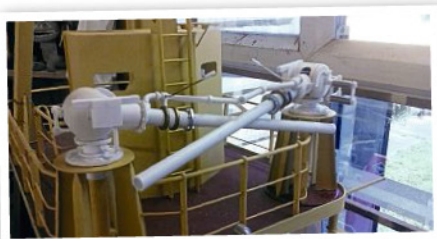
The hull after removal from mould; lots of sanding and filling were needed!



Around 550 pieces made up deck vents and doors.



Detail to rear of forward tripod leg.



Monitors under construction.



No resistors: lights running on 6-volt battery using voltage booster.



The heart of the lighting system, also showing the two fobs that control the relays.

I worked access hatches into the hull with the deck plating I had in mind, so as to form a lip with the Plasticard over the fibreglass deck, keeping everything flush. (The Plasticard runs up to the bulwark position and stops (except where it runs up to the deck edge through the openings in the bulwarks) The Plasticard bulwarks were then glued to the Plasticard deck edge. Outside the bulwark is another piece of Plasticard that fills the gap from the outside of the bulwark to the deck edge, so in effect 'sandwiching' the Bulwarks. The bulwark supports and capping were easily fitted and all glued together nicely.

Running gear

Simon at the Prop Shop supplied the running hardware, a beautiful 150mm 4-bladed contra-rotating style propeller which runs inside an aluminium steerable cort nozzle; this I had to extend by about an inch to achieve the correct shape. The prop shaft is of 1/2-inch diameter. I've installed a servo to the cort nozzle but as yet no motor and speed controller. The *Phantom* should also have a retractable steerable azimuthing thruster in a position directly under the

bridge, I have shown mine in the 'up' position (not fitted one yet!)

Reference materials

Along the way I picked up the Tyne Models 1:32 scale kit of the *Flying Phantom*, as I thought the drawings included may help with my build. Comparing the Tyne Models and Jim Pottinger drawings revealed a few variances here and there. Both sets were useful, but I referred mainly to the onboard images to obtain details and positioning of the fittings. Here I must also gratefully thank Lachie Stewart and Jos Van Putte for kindly sharing their images of the *Flying Phantom* with me. Without these photos the model would not be anywhere near as accurate and as detailed as I have managed to make it.

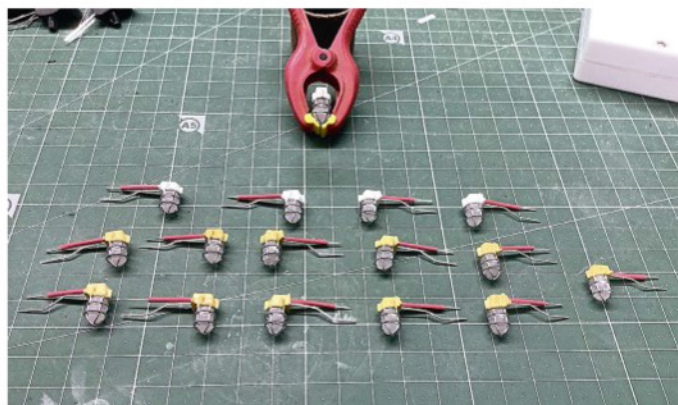
Superstructure and fittings

With the exception of the lower superstructure (which was built up with thin MDF, sealed to stop any water ingress and covered with Plasticard) and the bollards

and hoops on the deck (which are metal), everything else (including the winches, fire monitors, tripod mast and fixtures and fittings) was built using Plasticard, evergreen strip rod and box sections. The bridge interior is fully fitted out, too. There are, admittedly, a few shop-bought items, including life belt rings, horn, bell, handwheels, navigation light covers, flags and vinyl lettering.

The tricky tripod mast

Now, this, for me, had the potential to be a real deal breaker. If I got it wrong, it was going to stick out like a really big sore thumb. So, to get the correct angles of the tripod I used the three white towing lights at the top of the forward leg as my reference point. These are vertical to the waterline (the supporting brackets for these protrude further out from the mast as they go up). I then, by referencing one of the side-on images of the *Phantom* drew an imaginary line up through these lights to the top of the



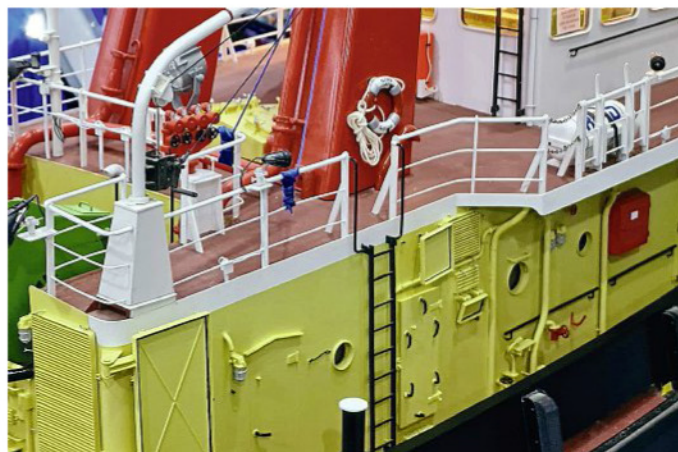
The bulkhead lights ready to go on.



The deck spotlights in their protective cages.



The two-tone yellow paint and winches.



Superstructure detail, with a new coat of yellow paint.

mast. I then measured the gap from the line to the front of the mast and scaled up the size of the gap to my requirement.

The rear of the lower foremast is vertical – it's only the front that's angled. The panels on the lower rear legs taper slightly on side and rear elevations, being smaller at the top, and the corners are rounded off. The top portions of the three legs are rectangular in section and do not taper at all. Each leg was built up as a single unit.

With the front leg of the tripod figured out, it was just a matter of looking at the drawings to see where the rear legs came into the upper platform and then setting out the start point of the legs so I could be sure of getting the angle of the rear legs right. (N.B. the front face of the forward leg and the

rear face of the rear legs are straight from top to bottom). With the top platform and legs in place I measured up to the lower platform from the superstructure; this gave me the positions and sizes of the openings for the legs to go through this platform (again, please note, the lower and upper platforms are parallel to the waterline). With the five items for the mast, I was able to assemble the tripod by feeding the top portion of the legs through the rectangular holes in the lower platform and locking them together with the top platform (to help me build the tripod I employed a laser level that I use at work).

Fire monitors

With the images available to me I was able to faithfully reproduce the fire monitors very accurately from Plasticard and plastic tube. These monitors can be elevated and turned by hand. When not in use the lower two monitors are in a criss-cross position with the stirrups coming up from the handrail, while the monitor at the top slopes down into a 'U'-shaped cradle between the handrail supports pointing at the foredeck.

The silicone tubing for the fire monitors runs up from the hull and inside the water uptake pipework, in the same location as on the original *Phantom*. The plastic tube I used for this has quite a few bends in it. I formed these by cutting a series of 'cheeses', or 'wedges', and gluing them together to make the bends, which needed to be sanded around after the glue had set. The plastic tube pipework had to be built up over the silicone tubing, starting at the bottom with each bend (after being built up, glued on and left to set overnight). This was necessary so as not to disturb the positioning of the (bends. The brackets that hold the pipework onto the tripod legs and platform were made from brass strip and box section; these were attached using small machine screws. The port side pipework supplies the top fire monitor only, and the starboard side the two lower monitors. The single uptake pipe splits into two pipes under the platform with a 'T' fitting. I made mine up by silver soldering some brass tubing together.

Bow fendering

The varying height rubber fendering on the bow is not just stuck on with glue – oh, no, no! There is supporting bracketry that holds it all on. I built mine by making small metal flat plates. The top plates have holes in them for the metal pins to go through, while the lower plates have holes with threads cut into them to receive the end of the threaded pins. These plates protrude through the hull and have been fibre-glassed into position. The metal pins have a slot cut into the top so that they can be screwed down. The hollow neoprene rubber fendering has a sleeve fixed into it to allow the fender to 'roll' on the pins.

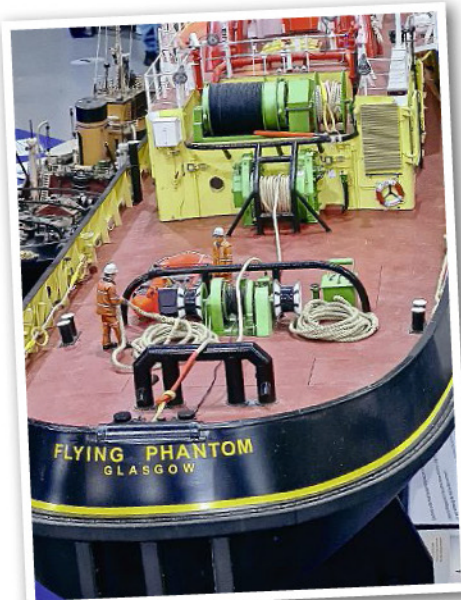
There are flat 'V' shaped vertical surfaces between the fenders; these support the fenders when an off-centre or slight sideways load is applied. A smaller diameter rubber fender runs around the top of the main fenders and covers the top of the pins and the wire that runs from port to starboard. This wire runs through holes in the top of the pins to stop the pins unwinding.



Left: Lengthened cort nozzle, with extra detail added.



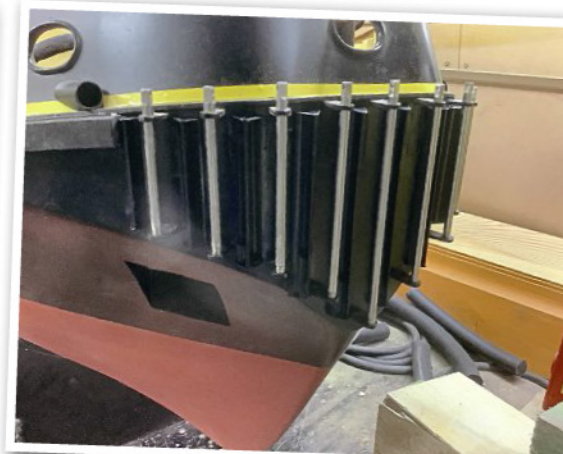
Lights on at the Blackpool Show.



Stern deck detail.



Shaping plastic tube into bends.



What lies beneath the bow rubber fendering.

Lighting

Right from the word go I'd known this was going to be the single most challenging task of the whole project. Considering the tug's tall tripod mast, attempting to get all lights working was a very daunting prospect indeed for this wiring novice. Somehow, I had to not only keep all the wiring tidy and hidden from view but also work out how I was going to feed the wiring down through the bridge.

My other large scratch-built tug *Cook*, now owned by my good mate Rob Fowler, was my first venture into putting LED lighting into a boat. The wiring cables were far too large for what was needed, and I had negative and positive wires (including resistor) for each of the 50 odd LEDs. Manual switches that were dotted around the boat disguised as vents or positioned in hatches, etc, turned the various circuits on and off. It all worked but it was clumsy and untidy (Rob is going to rewire this boat!)

Obviously, I wasn't going to get away with numerous wires running up and down the *Flying Phantom's* tripod mast, or indeed with feeding wires down the outside of the restricted manoeuvrability masts – there had to be a better way.

Thank goodness for the guys and girls at Component Shop. With their help and advice, I discovered just what can be done with voltage boosters, reducers and remote relay switchers – all with not a single dreaded resistor in sight! I learnt you can just 'daisy chain' your LEDs together; depending on the number and different colours being used, it's simply a matter of adding up the voltages of each LED in the chain. The remote relay switchers run on 12v, so this dictates the following. If the figure is less than 12v a voltage reducer is used, while for over 12v a booster is used. For example, if you have two white LEDs and one red LED these will add up as follows – $3.3v + 3.3v + 2v = 8.6v$. I used the boosters and reducers with the LED displays built in to make it easier to adjust the units. Otherwise, you will need to use a multimeter – I really must work out how to

use mine one day!

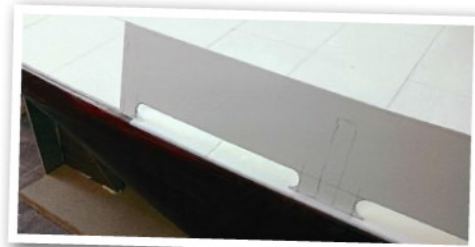
I have a P107 power distribution board running off a 12v lead acid battery with power switch and B.E.C. installed. The switch is hidden under a hatch between the rear tripod legs. This turns the whole system on and off. The two remote relay switches powered by the P107 turn the voltage boosters or reducers (or anything else you want to supply power to) on and off via two key fob switchers, like you have to lock or unlock your car. (You can get 2-channel, 4-channel and 6-channel remote relay switchers as well). 0.20 diameter wire runs to all the LEDs via 'daisy chaining'; this drastically cuts down the number of wires necessary and being of such small diameter actually looks scale-like.

The wiring for the LEDs runs in the same areas as it visibly would on the full-size vessel: up the back of the posts for the restricted manoeuvrability lights (red, white, red), and up the back of the forward leg of the tripod to the towing and mast head lights.

The wiring for the tripod runs up from inside the superstructure, through the cavity in the bridge walls and stops on the bridge roof. When the tripod was connected to the superstructure the wiring from the tripod was fed through the roof and popped up through the two hydraulic boxes on the bridge roof. This was then connected to the wires that had been fed up through the superstructure. The joins inside the boxes are hidden by the hydraulic box lids.

Bulkhead light cages

These are worth a more in-depth mention, I think. With the scale of my model, 5mm LEDs were about the right size. I started by using fine wet and dry to diffuse each bulb and give a key for some plastic rod to be glued to it. When sanding the LED, I rounded off the lip at the bottom slightly to make it easier to paint later on, and to stop the light from emitting through on the sharp corner. I kept the flat on the LED lip (this is on the



Sandwiching bulwarks between deck plating using Plasticard.

side of the negative terminal) at what will be the back of the light against the bulkhead. I superglued two pieces of 0.64 mm plastic rod to the LED in a criss-cross form of four equal sections, one overlapping the other. To form hoops, I used some brass tube of the same diameter as the outside measurement of the plastic rods on the LED, gluing on one end of the same diameter plastic rod with superglue, then coiling the rod around the brass tube keeping the coils tightly together. I also superglued the other end on.

Using a heat gun, I heated up the rod (don't burn your hands!) on the brass tube until I thought the plastic rod would hold the shape. This took a few attempts to get it right. It depends on how hot and how far away your heat gun is. You will know if you've been successful when you release one end by cutting the plastic rod; the rod needs to stay tightly coiled around the brass tube. To keep the diameter of the hoops correct I cut the plastic rod while still on the brass tube. I found it a good idea to cut through the 'tail' of the plastic rod at the same time as the next hoop to keep the joining surfaces the same angle. Having followed these instructions, you should now have what looks like a spring washer. With a careful twist this will disappear, and you'll have a nice plastic circle. Now glue the ends together and leave overnight to set. You are now ready to slip the rings over the plastic rod on the LED and glue in place. I am not going to lie; these are a devil to paint! If you do get paint on the surface of one of your LEDs it's easiest to scrape it off with a scalpel once the paint is dry. As noted, this is a real pain of a task, but so worth the effort!

"Right from the word go I'd known this was going to be the single most challenging task of the whole project"



The early stages of construction for the rear superstructure.



The winches under construction.

The yellow paint saga

My plan was to brush paint the inside of the bulwarks and spray the superstructure and mast. But try as I might, I couldn't find a commercially available yellow that I thought looked right for the Cory livery and didn't have the RAL numbers, so I had to mix up some paints myself (all Humbrol enamels) until I finally achieved a shade I was happy with.

I mixed up enough of this paint for the inside of the bulwarks, with a little left over to produce a test piece; the intention being that I would take the latter along to an automotive paint specialist that I know of and get it colour matched so some aerosol cans could be made up. Unfortunately, however, they couldn't produce an exact match, it was slightly darker. I went away with what they'd

Model Dimensions

Length: 75-inches/1.9m

Width: 19½-inches/0.5m

Height from keel to top monitor: 55-inches/1.4m

"There was now just a couple of little, but important, last touches to add..."

mixed for me, accepting that I may have to adjust the colour of the bulwarks later on. Back home, I sprayed the superstructure and mast and carried with on the build, but the more I looked at the colour the more I didn't like it. What had I done!

I had a real dilemma on my hands. Now at the end of the build, the 2022 Blackpool Show was coming up and the *Phantom* was going to exhibited be there. Should I take the model 'as is' in the hope no-one would notice? No, of course they would! Hmm... The bulwarks could be painted to match the superstructure and mast; that would be easy to do – but I still hated the colour. The only way to get it right and be happy with it, I decided, was to bite the bullet and repaint the superstructure and mast in a lighter shade of yellow.

With the model being totally finished, however, it would be nigh on impossible to mask and spray, so brushing the paint on

was going to be my only option. Oh dear! Envisaging the disaster of brush strokes being clearly visible everywhere, I tried my best to match the inside bulwark shade of yellow when mixing up my new lighter yellow with Humbrol enamels, thinning it down 25% in an attempt to lessen the chance of any brush strokes showing. With bated breath I applied my new yellow mixture with a wide, flat, soft brush, making sure to only go up and down with the brush strokes. The thinned paint didn't cover very well, so I had to apply a second coat, but I was relieved to find I didn't have any brush marks.

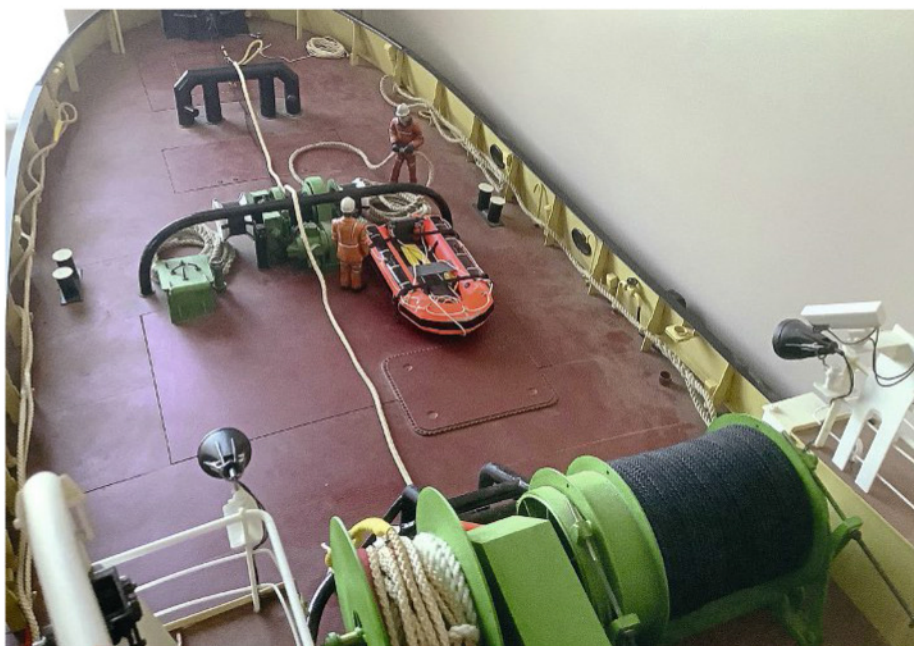
Very pleased with the new finish to the superstructure and mast, there was, however, still a noticeable difference in shade with the bulwarks. So, in for a penny in for a pound, two coats on the inside of the bulwarks went on. Success! Now, unless you looked very hard, you would just assume the yellow has been sprayed on.

Gone but not forgotten

There was now just a couple of little, but important, last touches to add... On December 19, 2007, the real *Flying Phantom* was girted while assisting the bulk carrier *Red Jasmine* and sadly three of the four crew lost their lives (a documentary on this tragedy can be viewed online at <https://www.youtube.com/watch?v=pozPUn9FPp8>), so I felt it only fitting to put the three Saltire flags flying from the top of the tripod and a sign on the side of the companionway inside the bridge as a memorial to them.

Blackpool and beyond

The *Flying Phantom* was finally ready for the 2022 Blackpool Show (where it was very well received). I had planned on weathering the model, but I'd spent so long it I felt it was time to move on to something else. I don't hang on to my models. I enjoy the build rather than the sailing, so it doesn't faze me that I haven't got this one out on the water. Maybe the next owner will do that, or perhaps it will just be put on display in a museum somewhere, we will see... ●



A dusty stern deck view.

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HTL500

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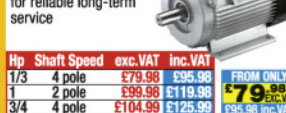
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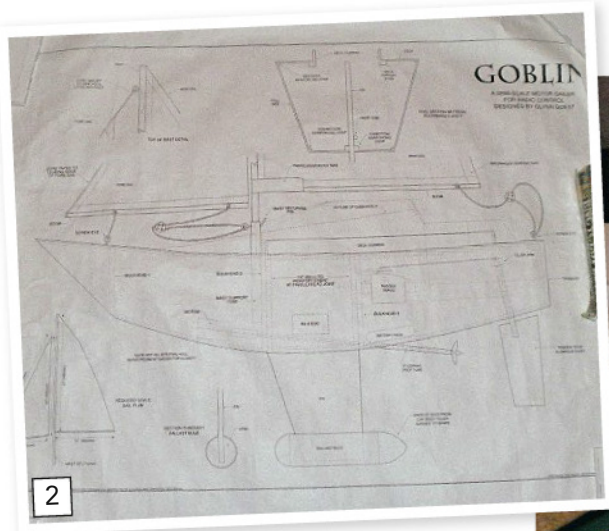
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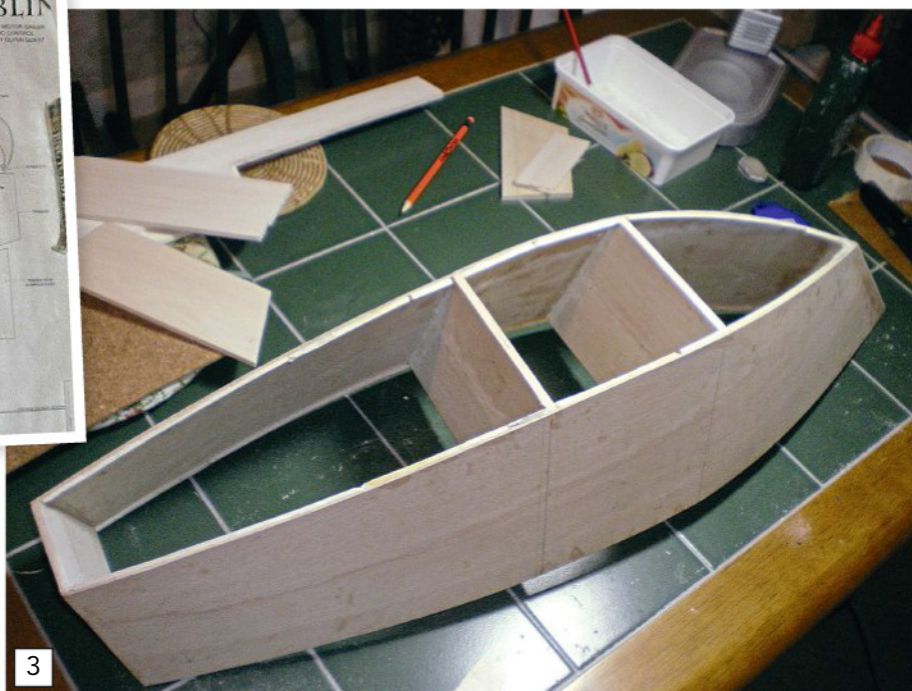
Tŷ'n Llyn

Haydn Foulkes flies the flag for Wales with his first ever R/C yacht, based on Glynn Guest's plan and build guide for *Goblin* featured in the April 2009 edition of *Model Boats*



My latest model boat was finished this spring (see **Photo 1**), but its genesis goes back to a plan and build guide called *Goblin*, designed by Glynn Guest (see April 2009 edition of *Model Boats*). I have built six models designed by Mr Guest in the past 20 years. I have a broad range of tastes in model boats but if there's a common thread that runs through them, it's that I prefer large scales where figures on board will be visible. You won't see me construct a model ship of 1:300 scale or smaller. A large-scale model boat without at least one figure visible can, in my opinion, appear sadly empty. Figures bring a model to life and possibly weave a story. They can, in my opinion, add interest, and this often bears out when fellow modellers or passers-by opine or end up asking as many questions about my scratch-built figures as they do about the model boat itself.

The first thing I did when I started *Goblin* in 2013 was to magnify the plan (see **Photo 2**) by 33% because I felt I had the capacity to work on a bigger model and wished it to be the largest yet in my collection. Its length grew from 25 to 33 inches and it's



*"Apart from an electric drill and jigsaw, I worked only with hand tools.
No fancy woods were used either, only balsa and ply"*

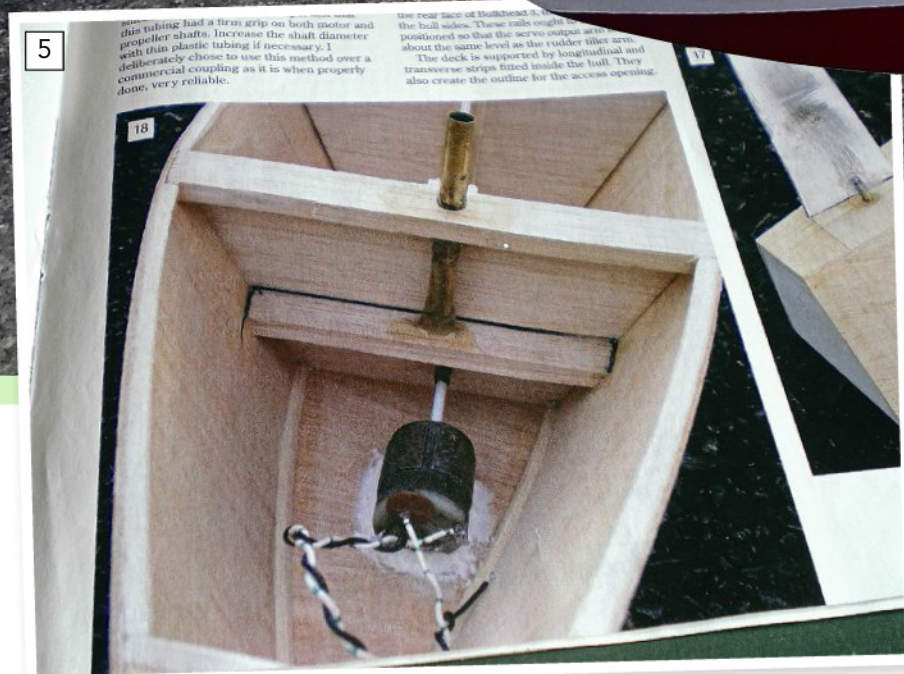
about 1:12 scale. Apart from an electric drill and jigsaw, I worked only with hand tools. No fancy woods were used either, only balsa and ply. Due to the boat's increased size (and eventual weight), I used thicker balsa wood for the bulkheads for strength but kept the same thickness for the ply skins (see **Photo 3**). The deck clipped down and was completely detachable, although this would be changed later. I covered the hull in doped tissue.

Twin keel

A major deviation from the plan was to change from a single keel to a twin-keel. Twin

keels or bilge keels are two keels that emerge at an angle from the hull of a sailboat (and some ships), at or near the bilge. The angle allows the boat to have a shallower draft while still allowing for minimum leeway while sailing. The placement of the twin keels also allows the boat to stand upright when out of the water without additional support, as opposed to a single-keeled boat that would fall over if water levels dropped. These facts are also true of twin keel model boats, and it was very convenient for me that *Goblin* was self-standing when I was working on it (see **Photo 4**).





“Another deviation from the plan was to give the model three R/C channels instead of two, adding sail control to that of speed and steering”

I made the keels out of ply and attached them to the hull bottom, where I had cut slits to fit them through. The keels' top edge protruded about an inch into the interior, giving enough surface for the car fibreglass resin to grip onto. I poured the resin into the interior and the cavity around the keels, and this has proved to be a very strong bond. Later, I strengthened the keels below the hull by double skinning them, and sandwiched Gorilla glue and scraps of balsa inside. The ballast tube stops are made from Milliput.

Three-channel model

Another deviation from the plan was to give the model three R/C channels instead of two, adding sail control to that of speed and

steering. The purpose of the motor was to help get the boat out of difficulty, say, if it was stuck in reeds or there was no wind, and it also gave me the option to use her as a motorboat without the sails. I fixed a brushed motor to a wooden stand and inserted it as low as I could in the hull (see **Photo 5**), and I fashioned my own rudder made from brass. While the motor and rudder were installed early in the construction, everything to do with the sails were left till later, nine years later in fact.

The cabin

Straight after completing the hull came the cabin, and I deviated from the plan with what I hoped would be a sleek modern design.



I gave it a sloping roof which resembled a modern yacht, but I don't know where I got the idea for the greenhouse-like structure at the front (see **Photo 6**). A sliding door at the back of the cabin allowed me to see much of the interior (see **Photo 7**). I soldered handrails together which encircled the deck. Like the deck, the cabin was completely detachable. As things turned out, this wasn't going to be the final cabin and deck because I wasn't happy with them, but they remained in situ until I returned to *Goblin* nine years later in



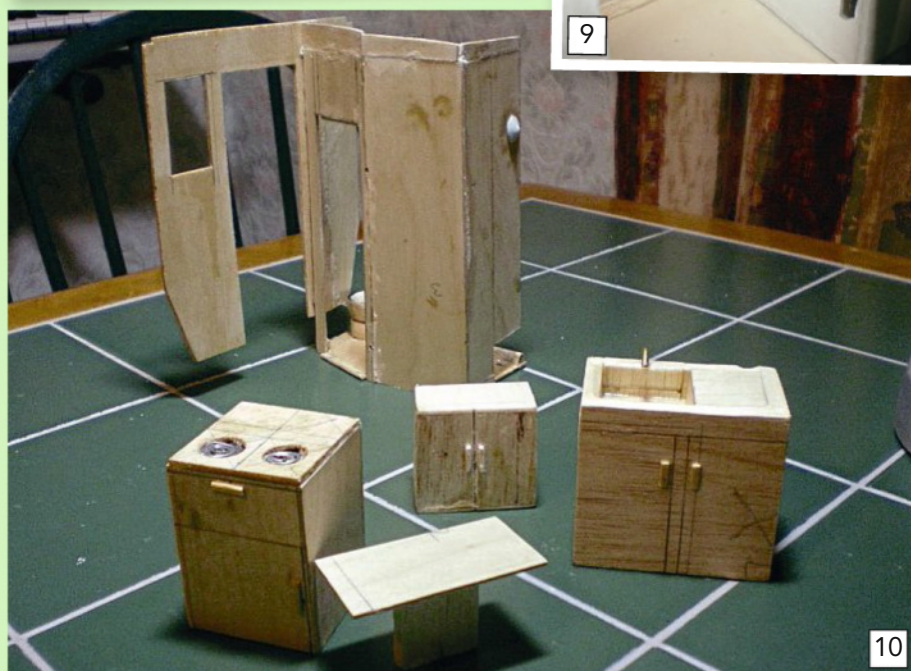
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2022.

Interior overload

Putting the cart before the horse, in 2013 I divided the boat's interior into different compartments like a real yacht, where I had a wheelhouse, lounge, galley and bathroom, and fitted them with units and appliances, all made from balsa. I made an oven, kitchen base and wall units, coffee table, beds, shower and toilet (see **Photos 8, 9, 10 & 11**). I hasten to add that none of these worked. At that point, I was enthused with wanting to make a scale interior, even though it could hardly be seen with the cabin in place. I heard my mental chatter telling me to get my priorities right, which was to fit the R/C equipment first, but I ignored it. Big mistake! When I took my boat to a model shop in Holywell in North Wales to buy a R/C set, the shop assistant was astonished when I took the cabin off, and he looked inside. 'What's all this you've got here?' he said doubtfully. I had assumed that there was enough space for the radio control under the floor of the cabin and out of sight, but that proved to be incorrect. Sadly, all this embellishment was thrown away.

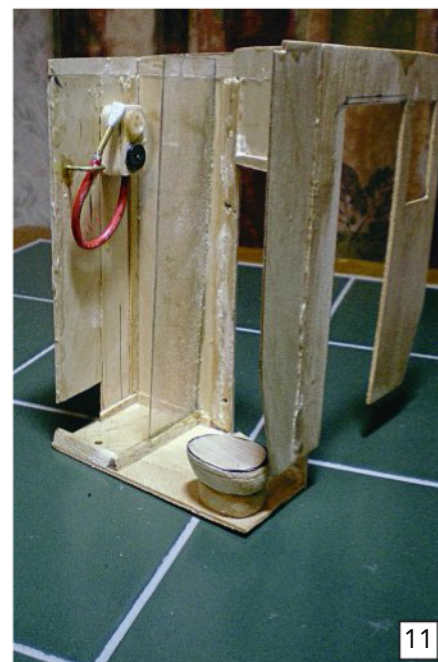
Taking a break

I intended to carry on working on *Goblin* until it was finished but a short break turned into a nine-year absence that lasted from

2013 to 2022. During the intervening years I was preoccupied a lot by work and caring for my elderly parents, and I also worked on other model projects - radio control and static model kits, or went walking or running, or simply watched more TV or read more books. Eventually my parents passed away, then came the Covid lockdown, I changed job, relocated, and was made unemployed six months later. During the lockdown I made another R/C model that came from a plan and build guide feature in *Model Boats*. Since being made unemployed in 2022 - not an entirely bad experience - I had time on my hands to return to *Goblin*.

Winch line

One of my biggest remaining challenges with *Goblin* was how to create a sail winch system that enables the sails to be pulled in and let out in a R/C model yacht. The winch is connected to the sails with threads called sheets, of which there are two, and these are called a jib sheet and a mainsheet. The winch line is usually driven by an extension arm, or a drum fixed on top of a servo. The servo I have installed is a Hi-Tec HS-785HB winch servo. I bought an extension arm and a drum and tested which was best. Despite quite a voluminous interior, I found that the arm touched the walls whichever way I tried it. I chose the drum instead because it fitted

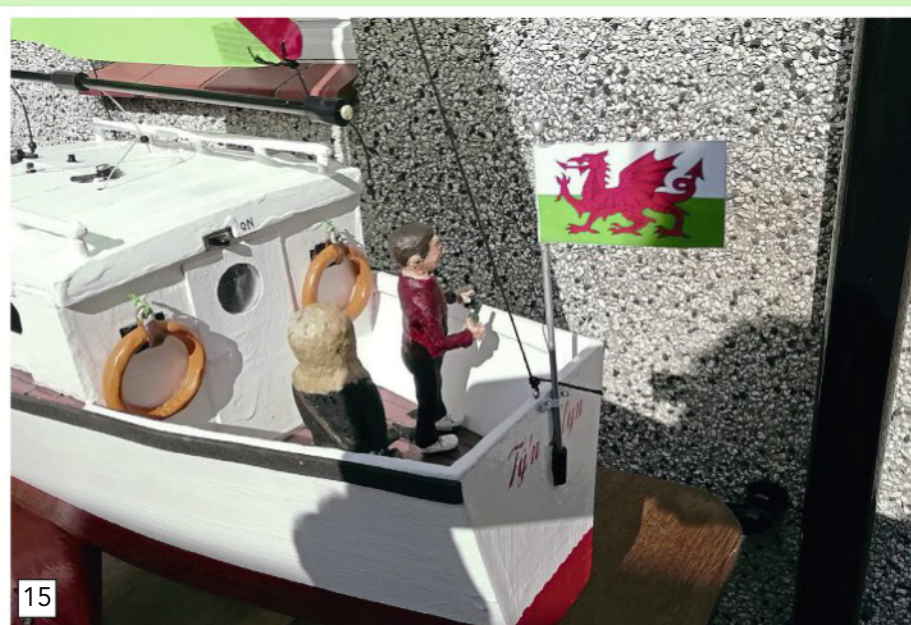


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"I heard my mental chatter telling me to get my priorities right, which was to fit the R/C equipment first, but I ignored it. Big mistake!"



“Throughout this project, I sought ideas and inspiration for nearly all aspects, but especially when considering the sails and sailing, as this was new territory for me”



compactly and was impressed by watching videos about it.

A winch system needs something to keep it tense and a popular method is to use a spring loader. This avoids the risk of the winch rigging getting entangled in the drum or something else. I was going to fix a spring loader until I saw an alternative device in a video on YouTube. The video is called ‘RC sailboat build detail - sail winch system’ and is part of a series called *Sail Tails* by a presenter called Gary, who demonstrates his model sailing creations. In this video Gary demonstrates a sail servo mounted on a wooden base which is fastened to stringers. He slides the servo base along the stringers to tighten the winch, before fastening down with screws (see **Photo 12**).

I copied his winch system and experimented with it before inserting it in the boat. I observed how far the drum made

the winch line travel and marked on it where the two sheets (jib and mainsail) were to be attached. Then I cut the line in two places where I had marked it and tied two home-made bowsies there. Next, I tied one sheet to each bowsie. At the opposite end to the drum is a pulley and the line travels back and forth between them in response to my transmitter stick (see **Photo 13**). When fully extended, the sheets allow the sails to open to 90 degrees angle from the centre line of the yacht.

Restructuring the cabin and deck

I returned to the cabin which I hadn't been happy with the first time and made a new one, which was squarer and more robust. The cabin has two levels, each with its own detachable roof. Only the cabin roofs are detachable, not the sides. The cabin side/deck joint is fixed and waterproof (see **Photo 14**). There is a

hatch on the foredeck to access the pulley, which is part of the sail winch. I decided not to cut out the windows in the higher cabin in case it weakened the structure, and instead fitted sticky back plastic made to look like windows. The lower cabin, on the other hand, has purchased portholes. The roofs have an inside groove that squeezes snugly on the uprights when pressed. For quick access to the R/C equipment, I have made two hatch doors in the roof of the higher cabin. There was no point putting scale detail inside when you can't see it, and the handrails were discarded as well. The plan didn't have a rear deck, so I created one (see **Photo 15**). All the wood was brushed with sanding sealer ready for painting.

After constructing the cabin, I installed the sail winch and the remaining R/C equipment. I'm using a 2.4ghz transmission and a 1600 mAh (7.2V) battery. I realised that the



"I had decided on completion to rename Goblin. As already mentioned, I chose my colours based on those of the Welsh flag, and the boat's new name is Welsh too"

17

motor made too much noise at one time, but I couldn't see the cause of this. Other members at my local model boat club solved the mystery when they spotted that the prop shaft wasn't aligned properly and the screws on either side of it needed adjusting. Putting a bit of grease inside the shaft helped as well.

The sails

Throughout this project, I sought ideas and inspiration for nearly all aspects, but especially when considering the sails and sailing, as this was new territory for me. I found several useful online and printed sources of information, and one of them was an article called *Building Bobin* featured in the May 2021 edition of *Model Boats*, where Steve Whitelock described his build of a simple little R/C micro yacht. My mast and spars are made of bore carbon tube, and the crane at the top of the mast is made from piano wire (see **Photo 16**). I paid a blacksmith to make the crane and the keel tubes (which hold some of the ballast), and a seamstress stitched the luff hem of the jib sail; I thank David and Iona for their work. In case the plastic mast tube holder got broken under wind pressure on the sails, I epoxied a brass tube over it.

As I was going to paint most of the yacht white, I was reluctant to have an all-white sail but was conflicted by the fact that most real yachts are chiefly white and being traditionalist by nature I found it hard to deviate. Being Welsh, I planned that my yacht would have a Welsh theme to it, which included using the three colours on the national flag: red, white and green. As most of the yacht was going to be white and the hull beneath the waterline red, I chose green for the mainsail.

I opted to make my sails out of Ripstop,

which I purchased from the sailmaker, Nylet. I also had the pleasure of chatting with Frank Nylet on the phone about sails and sailing while putting my order in. Since I had enlarged the size of the yacht, I had to, of course, enlarge the sails accordingly. After some to-ing and fro-ing, I settled on the right shapes and sizes. Using the straight edge of a template as a guide, I cut the Ripstop with a hot soldering iron – an idea copied from the above-mentioned feature *Building Bobin*. I found that the first jib sail I cut wouldn't hang square next to the mast due to the tension of the rigging, and this left too much gap between them. So, I cut a second jib sail with its leech edge tapered at an angle towards the mast, and this looked neater.

A host of other tasks came with the sail making; attaching eyelets to the sails; attaching the sails to the mast and spars, screwing on the gooseneck, creating bowsies for the rigging, and sticking patches and battens to the sails to stiffen them. The sails are attached to the lower spars with slices of silicon tubing, which need to be a tight fit but still able to be moved to set the sails. As hinted at above, trimming the sails proved a bit tricky; often an adjustment made in one corner had an undesirable affect in the other, causing the sails to either move too high or too low, or suffer a crease, etc. So, there was a lot of tweaking before I got it right. The purchased brass gooseneck was pushed onto the end of the mainsail's boom, but its pin kept popping out of the hole in the ring on the mast when under pressure. This pin could have done with being longer. I fixed this with a blob of thick epoxy glue on the end of the pin to make it too wide to pop out of the hole. The jib sheet exits the roof of the lower cabin and the mainsheet the higher roof,



joining the jib and mainsail respectively on their booms.

Painting

I painted the hull white with a high-quality acrylic paint left over from a domestic job last year. The red waterline was finished with Hammerite, and the decks painted brown with Humbrol enamels.

Renaming

I had decided on completion to rename *Goblin*. As already mentioned, I chose my colours based on those of the Welsh flag, and the boat's new name is Welsh too: I've called her '*Ty'n Llyn*,' after my late mother's childhood home, which translates to 'house in the lake'. A yacht can be a form of house and it's on water, hence 'house on a lake', or *Ty'n Llyn*. I ordered an ad hoc template for the name and sprayed it with a red rattle can on the hull sides (see **Photo 17**).

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Sailing

I tested *Tŷn Llyn* for the first time on water as a motor yacht, without the sails, as it was easier to trim her. On the day of her maiden voyage, the weather was too blustery for comfort when I tried her with her sails for the first time, but I didn't want to return home without doing this. So, I asked an experienced model yachter at my local club if he would sail her and he kindly obliged. He was very satisfied with the performance but suggested that a longer rudder would improve response. When I first sailed her myself on a calm day, I felt that she could do with more ballast to avoid over keeling in the wind. After adding a longer rudder and more ballast (internally and externally), she now weighs about 6kg, and her height from the ground to the top of her mast is 5 feet. She sits level in the water and tacks and steers wonderfully (see **Photo 18**).

Figures

I have created two figures made from a mixture of polystyrene, balsa and Milliput, and named them Jack and Jill. I have a good idea in my head as to how I want my figures to look but, as I don't usually draw them to design, it still leaves a lot to chance. While I know my figures are not going to look realistic, I aim for reasonable anatomical accuracy. Jack and Jill are on the short side and if they were scaled up to real size, they would be about 5'2" tall. But what do they care, they are having fun sailing and drinking beer (see **Photo 19**).

Ready to set sail again...

Most of my shopping for material was done online and it wasn't always easy to find the right stuff. I'm no expert, this was my first R/C yacht, but I have since learned a lot about model sailing, largely thanks to several of the lads at Colwyn Bay Model Boats Club. I'm delighted with how my yacht has turned out – so much so I am now thinking it would be nice to build a sister ship for *Tŷn Llyn*. I've got enough Ripstop left over to make more sails for a start! ●



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PS *Bilsdale*

Colin Bishop takes on a paddler project

PART
ONE

I had always fancied the idea of building a paddle steamer and tackling the unique challenge that a paddler model represents, but for a long time (bearing in mind I've been a modeller for 50 odd years now!) other projects always seemed to end up taking priority. During 2021, however, the opportunity arose to have a closer look at this type of model, and PS *Bilsdale* is the result.

Paddler history

Apart from some 18th century experiments, steam powered paddle vessels were progressively developed in the early 19th century, initially as an auxiliary source of propulsion to sailing ships, until superseded by the more efficient screw propeller for ocean going vessels in the second half of the 1800s. However, the paddle remained a common means of propulsion for smaller vessels up until the 1950s and beyond in the

form of the elegant excursion vessels, which enjoyed their heyday in the 1920s and 1930s. PS *Waverley*, the world's last sea-going paddler was built in 1946 and remains in service to this day. Elsewhere, the Swiss and Italian lakes still support a fleet of vintage paddlers, some dating back to 1901. I've travelled on them and they are great!

Paddlers also found a niche as tugs and, remarkably, diesel electric naval versions were built in the late 1950s to handle the Royal Navy aircraft carriers.

"You don't see many working models of paddle steamers, which are probably rarer than steam powered models, and there are good reasons for this"

The problems with paddler models

You don't see many working models of paddle steamers, which are probably rarer than steam powered models, and there are good reasons for this. If you choose the mid- to late-1800s' prototypes you will find yourself building a sailing ship with paddles attached. But the elegant Edwardian and later excursion ships present other difficulties. They may look wide but, in reality, they have very slim, shallow draught hulls with heavy paddle boxes and wheels slung on the sides, both of which introduce stability and weight carrying issues in model form.

The tugs are more practical propositions and the RN Director class of the 1950s has often been the choice of modellers, with David Metcalf's comprehensive plans and hull at 1:48 scale being available from Sarik Hobbies.



The other big issue with constructing a paddler is the type of wheel. The alternatives are to use fixed float wheels which are not really scale, or feathering wheels which use a mechanism to ensure that while the floats are in the water they adopt a vertical position for maximum thrust. This latter option usually requires model engineering skills as they are not commercially available these days.

So, if you are thinking of building a paddler, you need to consider carefully just what you want.

Choosing a subject

In my case this was to be an experimental model and the incentive for the project was fellow contributor and friend Ron Rees offering to provide me with a set of 3D-printed feathering wheel components. These would use nuts and bolts of the type used to hold spectacles together, which

would be very fiddly but hopefully doable. How robust they would be in action was obviously open to speculation! I didn't want to go to the trouble of building the model only to find the wheels were too fragile, so I needed a Plan B as well. A solution presented itself in the form of Glynn Guest's *Eccleshall* free plan published in the June 2014 issue, which used robust fixed float paddles welded in plasticard. OK, not to scale, but when they are working you don't actually see much of the paddle wheel itself, just the wash. So, if the feathering wheels turned out to have problems I would still have a decent working model. Due to eye problems, described later, Plan B displaced Plan A in the interests of completing the model over a reasonable timescale. The photos show the construction of the Glynn Guest wheels.

The next job was to choose a prototype. As a newcomer to this type of model I

reluctantly ruled out the graceful excursion steamers as introducing too many potential practical problems. A bit of checking through old plans catalogues brought up PS *Bilsdale* drawn by P.N. Thomas and originally published in the December 1972 issue, a copy of which is in my collection. This looked promising. The ship was built in 1900 and although an excursion steamer, she was based on a paddle tug design which gave her a fairly 'chunky' hull with a high block coefficient that would improve stability no end! The original vessel was also fitted with independently engined paddles, unlike the later excursion boats, which would facilitate steering as a model. A big problem with both full size and model paddlers is that the rudder does not become effective until the vessel is moving through the water and often not much even then, as there is no 'prop wash' over it.

At 1:48 scale *Bilsdale* comes in at around 35 inches (0.9m) long, which is a manageable size. The later excursion vessels would typically need around 48 inches (1.2m) for a workable model.

I could have enlarged the plan from the magazine but, being lazy, ordered one of the 'bootleg' plans of old designs available online, in this case from Canada. *Bilsdale* is no longer listed by Sarik, otherwise I would have placed an order via its website. The plans arrived promptly but I subsequently found that some distortion had occurred in the reproduction process, so there were some inaccuracies discovered during the build. Fortunately, these were not too difficult to compensate for using the magazine plan as a reference.

I also found that the drawn plans by Phil Thomas were, in some of the details, at odds with the illustrations of the ship I was able to find online. I don't know what information he had at his disposal back then, but it would

probably not have included some of the photos now on the internet. However, the discrepancies are minor and not significant when building a semi scale model.

As a bit of additional insurance, I scanned in the body plan lines and used Photoshop Elements to add half an inch (12.5mm) to the bottom of the hull to give some extra displacement when constructing the model.

The specialist internet model paddler forum Paddleducks, <http://www.paddleducks.co.uk/smf/>, is a useful source of general information, although some of it can be contradictory!

Building criteria

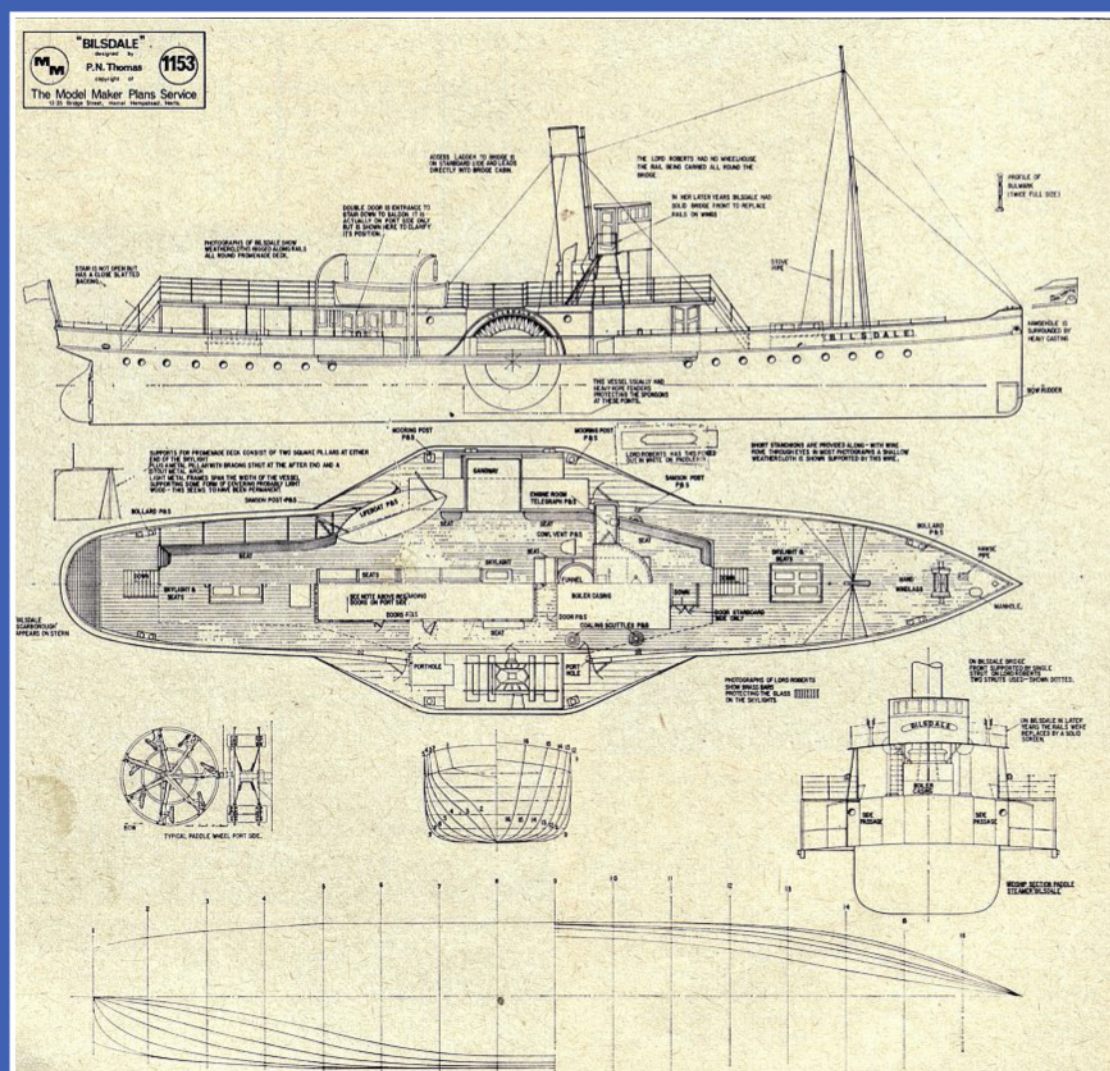
As an experimental project, I decided that I would construct *Bilsdale* as 'semi scale'; this would allow some changes that would facilitate the construction of a practical model and yet one that would nevertheless look fairly authentic when viewed from a short distance away. Minor modifications

could be made and I could take short cuts when rendering detail, such as using a computer to print out windows and panelling rather than cutting out apertures for glazing. Some framing to the deckhouse would be added to enhance the 3D appearance. Likewise, the decks would be printed and varnished over rather than individually planked. This was a compromise, but in the event looked acceptable for semi scale purposes.

Some other trade-offs were necessary to accommodate the drive and rudder mechanisms but are not immediately obvious when the model is afloat.

Most significantly, the paddle boxes needed to be easily detachable to facilitate easy swapping of feathering and fixed float paddle wheels when evaluating performance.

As with all my models, *Bilsdale* was built on the principle that what goes in must be able to come out, preferably without too much trouble – although *Bilsdale* pushed



The original plan reproduction published in 1972.

"A bit of checking through old plans catalogues brought up PS *Bilsdale* drawn by P.N. Thomas and originally published in the December 1972 issue"

this principle close to its limits! I've seen too many models where built-in equipment has failed and major surgery has been required to replace it.

The hull

The hull features my usual composite construction. The bow and stern are of solid balsa blocks and the mid section planked. All this sits on a 1.5mm plywood bottom with a 'bread and butter' step to accommodate the curve of the bilge. This enables the batteries to be carried as low as possible.

Mechanism

A paddle vessel is a very different proposition to a propeller-driven one and requires a different approach when tackling the mechanics in the model. A good deal of thought and research was needed, the latter drawing on Glynn's experience and the information on the Paddleducks website. The diameter of the paddle wheel and its width are pretty much fixed by the drawings you are working to, but thereafter the variables begin. Small variations in the depth of the individual float blades are possible but unlikely to affect performance much. However, the number of floats on full size vessels can vary; PS *Waverley* has eight, some Swiss lake steamers ten, while my *Bilsdale* drawing shows seven. The printed wheels Ron sent me have eight. The logical decision for my simplified wheels was to go with Glynn's eight float *Eccleshall* design, on the basis that I knew it would work and eight floats makes the geometry much easier, 45 degrees between each arm compared with 51.42 degrees for a seven-arm wheel.

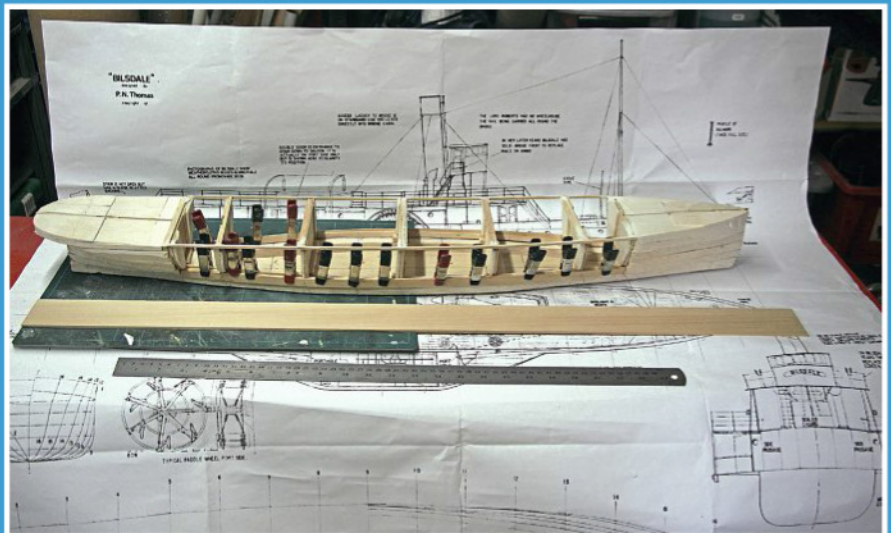
So far so good! The next decision was to decide on rotational speed and here the answer was not immediately clear. Glynn reported that his *Eccleshall* performed adequately at between 150-200 RPM but his wheels as fitted were 4 inch (100mm) in diameter while those on *Bilsdale* are 3.5 inch (88mm), and *Bilsdale* is a bigger, heavier boat. This suggested that higher speed would be needed. Opinions varied on the Paddleducks site, with a range of 200-300 RPM being mentioned for boats roughly comparable to *Bilsdale*'s size and weight.

Obviously, it was very important to get this right. Too fast and you could end up with a floating food mixer, with much noise and thrashing but not much forward motion. Worse, if things went the other way, I had an unlikely vision of the boat skittering across the water like a duck taking off – something Ashley Needham excels in with his more unconventional models but not appropriate for an Edwardian excursion vessel. On the other hand, too slow a speed could see the model waddling listlessly around the lake being pushed off course by wind and wave. The conclusion was clear enough though, I needed power for 300 RPM, on the basis that while you can ease up on the throttle if it is

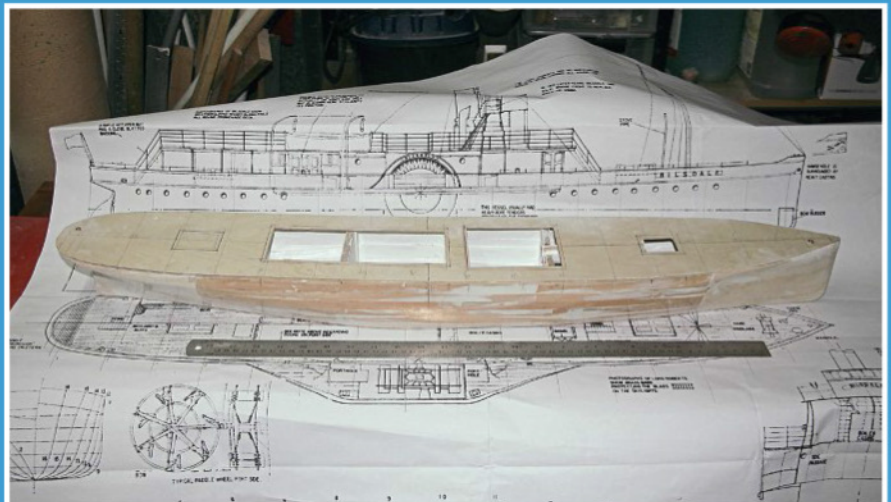


Bilsdale in her heyday from an old postcard.

"A paddle vessel is a very different proposition to a propeller-driven one and requires a different approach when tackling the mechanics in the model"



The hull, showing composite construction with planking started.



Planking completed and deck fitted.

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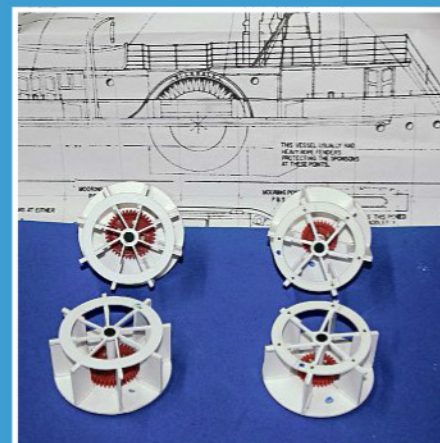
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The hull being 'plated' with gumstrip paper and sealed with acrylic resin.



Two sets of Glynn Guest design plasticard paddle wheels. The eight-float version was fitted to the model. A set only takes a couple of hours to make.

too much, you can't conjure up extra revs if it is insufficient.

So, how to get that 300 RPM when a motor normally turns at several thousand? I'm a modeller not a model engineer, so building my own gearbox wasn't really an option. However, it is possible to buy model-sized motors with fixed ratio gearboxes, perhaps the best known manufacturer being MFA Como Drills, whose products are widely available. After a bit of checking through the various catalogues and motor datasheets I found an 11:1 gearbox mated to a RE 385 motor, which is a popular low drain choice for small to medium sized scale boats. The MFA part number is 950D111. The output speed of this motor at different voltages can be seen in the next column.

Nominal motor output

Volts	RPM
4	429
6	572
9	858
12	1145

A quick graphical sketch indicated that an input voltage of 7.2v would correspond roughly to 630 RPM. The final reduction would be taken care of using a pulley drive between the motor and the paddle shaft. Different sized pulleys could be used on the paddle shafts to vary this if necessary. 2.5mm nitrile O rings would be used as the final drive belts.

My setup is approximately a 2:1 final reduction and on checking with a cheap digital tachometer, the maximum paddle

speed was 315 RPM, exactly as expected.

The last part of the equation was to get all this stuff into the model, bearing in mind that I had made a rod for my own back by wanting independent paddle control and therefore needed to shoehorn two of everything into the hull. Mounting the motors proved to be a bit of a headache initially. They needed to be as low as possible in the hull for stability, and their length with the gearbox mounted meant they would be a tight fit across the hull. A further issue was that I needed to be able to swap alternative paddle shaft pulleys if necessary, which would involve moving the motors fore or aft to keep the correct tension on the drive belts. After an unsuccessful attempt to fit a homemade clamping mechanism I chanced upon the

"As an experimental project, I decided that I would construct Bilsdale as 'semi scale' which would allow me to make changes to facilitate constructing a practical model and yet one that would nevertheless look fairly authentic when viewed from a short distance away"



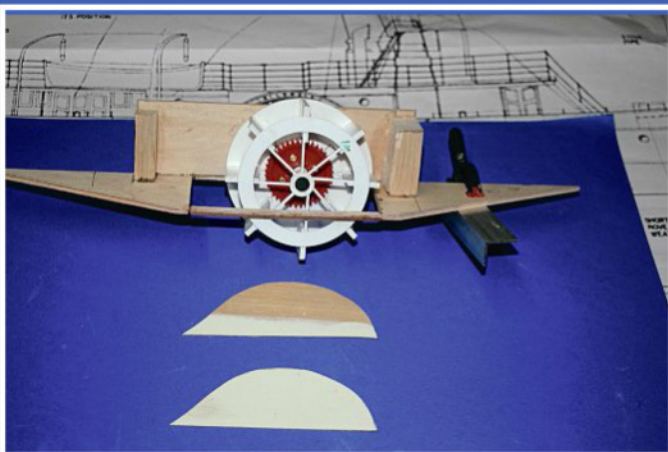
The geared MFA motor fitted to the adjustable Maker Beam mounting. The motor can be slid along the tracks and secured to adjust belt tension.



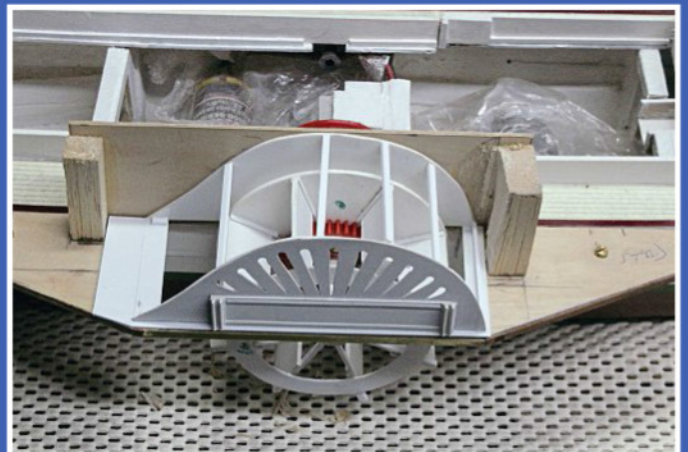
The two motors and final drive take up a lot of room in the central hull.



The hull progressing, with detachable paddle box under construction.



Checking the fit and clearances for the paddle wheels



The paddlewheel casing is constructed from plasticard.



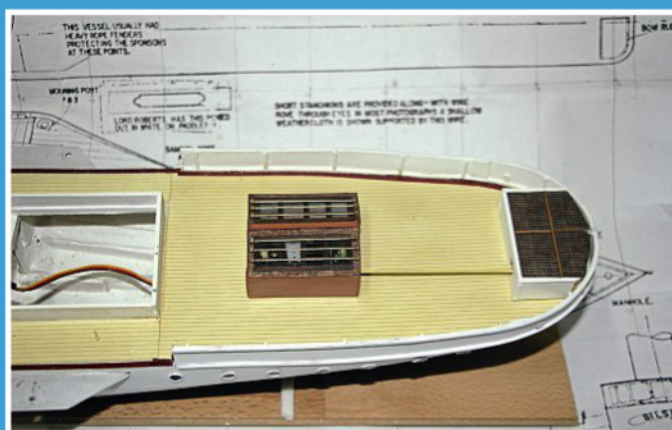
The completed paddlebox is held on by two bolts to brackets on the hull side. The portholes are for the lavatories, entered from the upper deck and which discharge into the paddle wash!



The deckhouse is made up of one unit and fits over a coaming on the upper deck. The forward part is the boiler casing with the saloon behind. It seems likely that part of the engines would have protruded through the upper deck into the accommodation, similar to PS Waverley.



The cross-deck steering linkage (see text)



The skylight and grating largely conceal the steering link. The plan doesn't show the actual steering arrangements.



"It all looks very complicated at first glance and perhaps it is, but in practice it's quite easy to access any of the internal areas for maintenance or repairs"

miniature (10mm) Maker Beam T slot system from Technobots which proved to be the ideal solution, as can be seen from the photos. The motors can be easily adjusted and secured with a hex key.

There are two paddle shafts which run in plain bearings in the hull sides and in a central support. They are secured in place with collets but can easily be withdrawn when the paddle boxes are off for maintenance or changing the drive belts. The paddle wheels are also removable once the boxes are off without disturbing the shafts.

Power and Radio Control

Along with the motors, the drive batteries are the heaviest items in the boat. As the centre of the hull was largely taken up with the drivelines, the battery capacity had to be distributed fore and aft in the form of two 6AA cell 7.2v 2600NiMH packs, which sit snugly on the 1.5mm thick hull bottom – you can't get any lower than that. The two packs are effectively combined to make a single 5200MAh battery using an ACTION Electronics P103 Parallel Power Board. This protects against mutual back charging, as a single DC supply is needed for the mixer unit.

A separate low self-discharge AA NiMH pack is used to power the radio receiver and sits on top of the aft battery pack.

By now most of the space in the main hull had been taken up and there was still a lot to do. An ACTION P94 combined twin-speed controller and mixer unit was placed above the receiver battery. For the remaining wiring and components, the only solution was to use the space above main deck level under

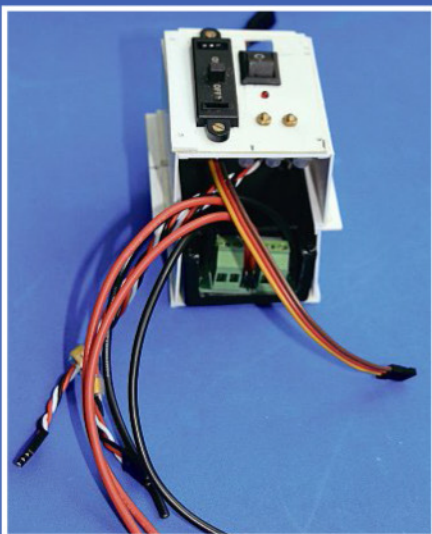
the deckhouse and between the paddle shaft pulleys. A narrow platform was built to accommodate the Parallel Power Board, radio receiver, fuses, battery charging sockets and additional wiring. At the aft end a plasticard 'tower' raised the power and radio switches to just below the level of the promenade deck so it is possible to switch the model systems on and off by removing the promenade deck skylight. It all looks very complicated at first glance and perhaps it is, but in practice it's quite easy to access any of the internal areas for maintenance or repairs.

The rudder servo is accommodated in a recess under a skylight on the main deck, with an above deck actuator arm going to the covered tiller at the stern. The linkage couldn't be run below deck as the hull there is solid and there's insufficient space to carve out a channel for it. It is therefore partially disguised with seating and passengers and not noticeable at a distance.

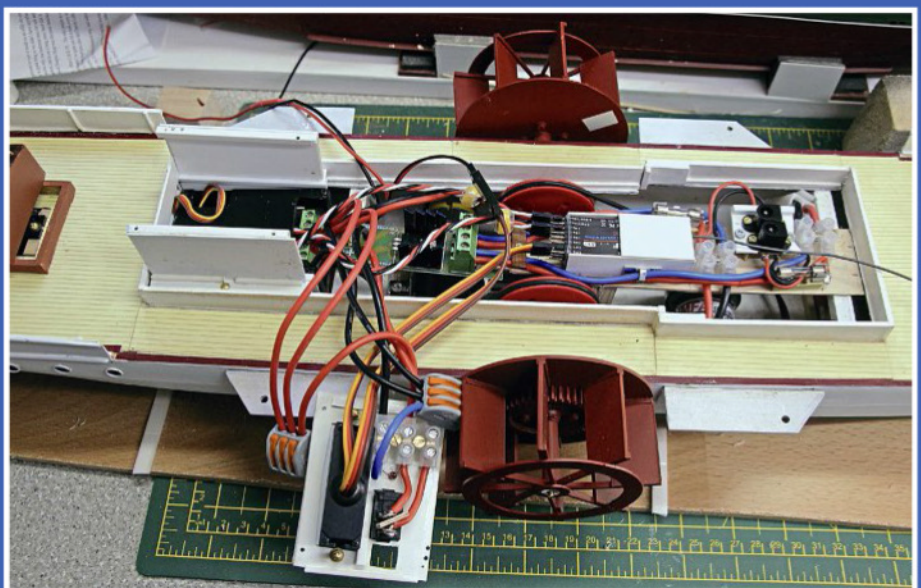
The ACTION P94 Mixer unit offers four options, three of which are relevant to this model, the other, **Mode 2**, is intended to control bow and stern thrusters.

Mode 1: Dual electronic speed controllers – each ESC works from a separate channel to give 'Tank Steering' using both TX sticks, with the right hand stick being used for the independent rudder.

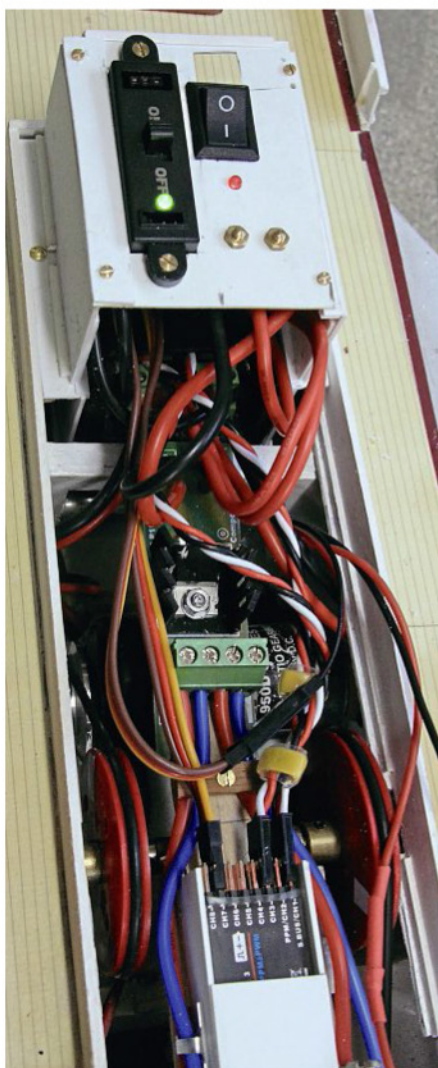
Mode 3: 0%-100% Mixer (similar to aircraft W-Tail). Applying the rudder causes the outer motor to speed up and the inner one to slow down and go into reverse. The degree of opposite rotation can be adjusted via a variable resistor. A rudder command without any throttle causes the motors to go to full



The P94 twin speed controller and mixer which sits on top of the rear main battery and RX battery and is topped by the RX and power switches operated from the promenade deck.



Most of the electronics have to sit centrally within the deckhouse at upper deck level. The white rectangle on the port paddle disc is used to check RPM using a tachometer.



The inside of the boat is very crowded but adjustments to the mechanism are possible without taking everything out, preferably not at the pond side though!



Nearing basic completion, with detail being added.

speed in opposite directions allowing the model to spin on its axis.

Mode 4: 0%-50% Mixer. This applies differential speed control to the motors automatically as a rudder command is given. Adjustable from 0%, where there is no mixing of rudder and throttle signals, up to 50%, where the inboard motor just stops at full rudder command.

Mode 3 is recommended for scale type models and bath tests suggested it to be the correct option for the paddler, but initial pond trials have put this in some doubt.

At this stage it's probably worth mentioning the TX/RX, a Radiolink T8FB-BT which offers eight channels and top end features at a budget price. It does this by using an app on your smartphone to control the settings, which

saves the cost of building the screen and hardware into the TX itself. The connection uses Bluetooth and I was very impressed at just how slick it is in taking advantage of the phone's features and graphics to make everything simple.

The parts

You may want to know which parts are required to put all this together. There are of course many possible sources of general modelling materials, plus the specialist suppliers mentioned below.

* Paddle shafts: 4mm brass tube. I used tube as the outboard ends of the shafts needed to be 3mm to allow for the mounting of the printed wheels later on. The thinner tube is inserted into the 4mm to give it more rigidity.



The promenade deck can be removed once the fore and aft stairs are unplugged and the lifeboat falls unhooked.



- Paddle wheel discs and floats: 1.5mm plasticard sheet
- Central wheel spindle: 7mm plastic tube
- Spokes: 3mm x 2mm plastic strip
- Motor pulley: 31mm with 6mm bore, from Amazon BQLZR store.
- Selection of 4mm bore brass hub plastic pulleys for paddle shaft final drive. I actually used the 55mm size, from Technobots. <https://www.technobotsonline.com/>.
- 40mm brass hub pulleys or gearwheels for mounting the paddle wheels to the paddle shafts, again, from Technobots.

Note that these inexpensive pulley wheels and gears are not always drilled totally dead centre and can oscillate when turned. This doesn't matter with the shaft drive pulleys but can be noticeable on the paddlewheels

themselves, although it should not affect performance.

- M3 or 6BA brass nuts and bolts for attaching the paddle wheels to the pulleys/gearwheels.
- Miniature 10mm Maker Beams and fixings for motor mounting, from Technobots.
- 2.5mm Nitrile O Rings in the appropriate size for final drive belts.
- Plain flanged 4mm bearings for paddle shafts from Motionco (<https://www.motionco.co.uk/>)

Part 2

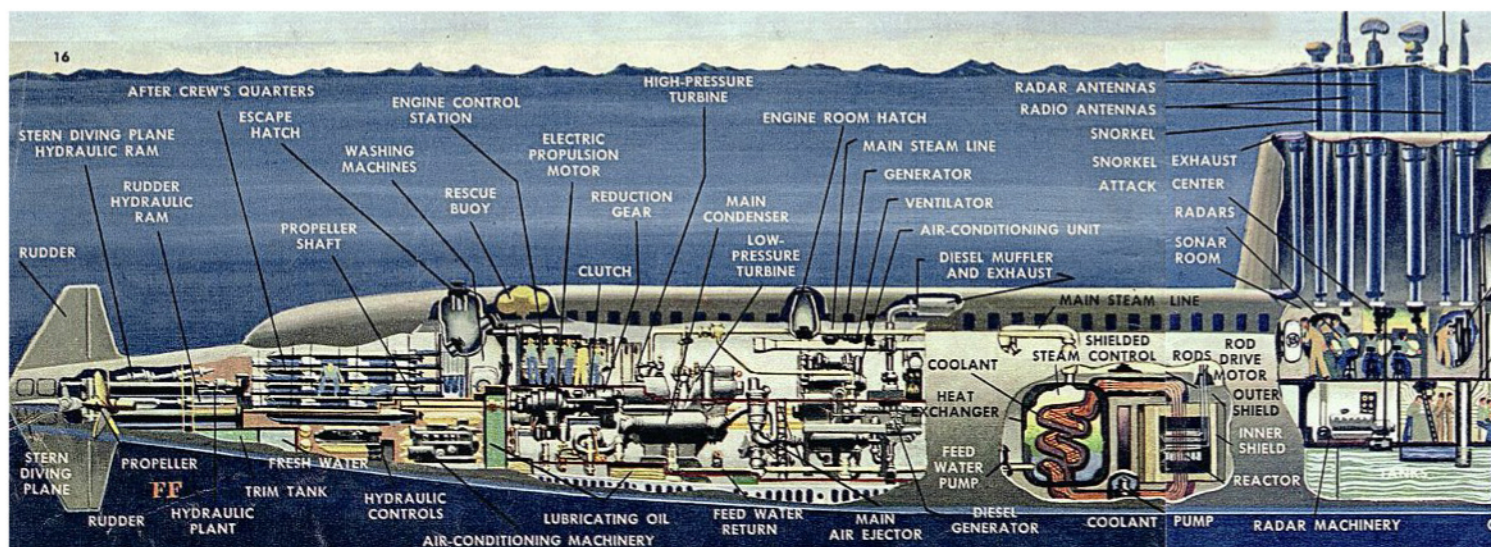
Having now covered the hull construction, mechanism and electronics, next time we will be looking at the completion of *Biltsdale* and her performance on the water, and I'll be sharing some reflections and conclusions. ●



The clever Radiolink eight-channel TX can be programmed via an easy to use smartphone app.



Biltsdale complete but looking bare without passengers.



Noteworthy Nautilus

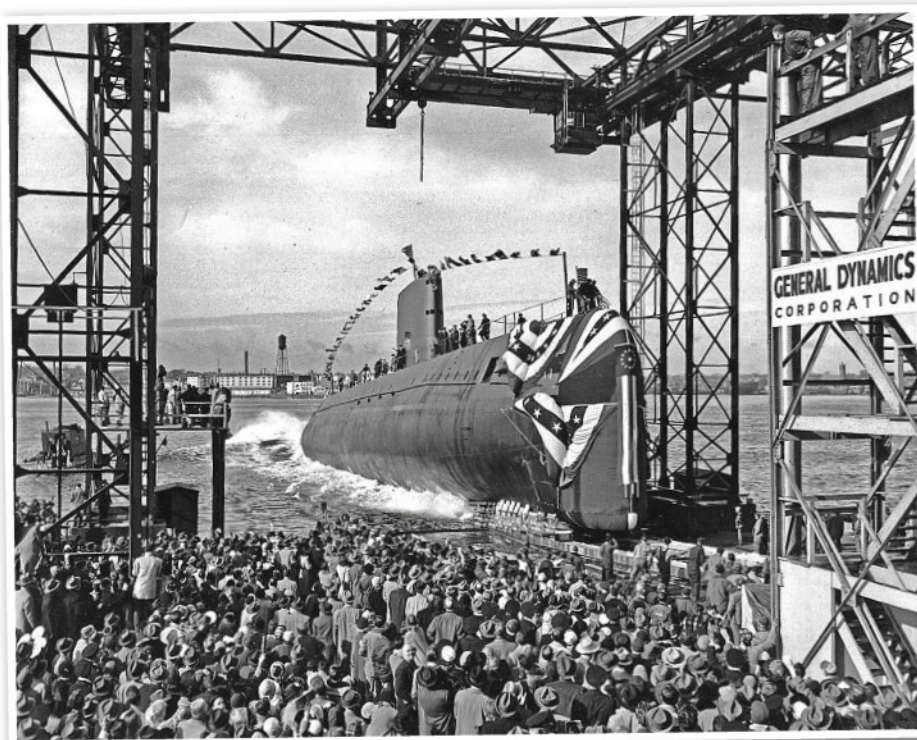
John Parker dives into the history of the submarine that championed nuclear propulsion against all early critics and the early plastic kits and plans produced, before flagging up a far more accurate option for today's modellers

The first ever nuclear propelled vessel, the SS571 *Nautilus*, was launched in January 1954 and commissioned the following year. It immediately began to break all records for submerged speed and endurance, its nuclear power plant making it free of the need to re-surface for air and able to realise for the first time the dream of unlimited underwater travel that fiction writer Jules Verne wrote of in 1869 when he penned *20,000 Leagues Under the Sea*.

Design

In 1946, when it began to look as though a nuclear power plant might be possible for a submarine, a proposal was put forward to base the design of the submarine on the Type XXVI advanced German U-boat, an unfinished World War II project (see *Flotsam and Jetsam*, June 2023 issue). This started the ball rolling, though it was soon realised a much larger boat than the Type XXVI would be needed to house the nuclear reactor with all its shielding.

When authorisation for the construction of the *Nautilus* was given in 1951, engineering specialist Hyman G. Rickover was made head of design, and he soon became known for his somewhat eccentric personality and mania for quality control. To minimise risks, he insisted there would be nothing of experimental nature to its design apart from its power plant. So, the *Nautilus* emerged as a largely conventionally shaped submarine that drew from the navy's learned experience with the GUPPY program, with some influences from the World War II German Type XXI, including the twin propeller shafts enclosed within horizontal stabilisers.

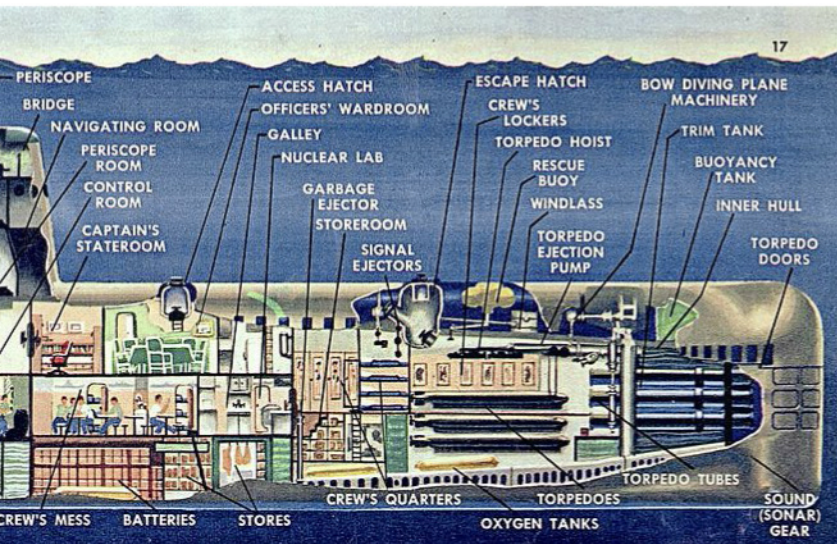


Above: Launch of the USS 571 *Nautilus* on January, 1954 (US Navy photo).

Originally the *Nautilus* was to have a more efficient single screw, but Rickover insisted on twin screws for redundancy. In the same vein, a complete auxiliary diesel-electric drive system was fitted to enable recovery of the submarine if the reactor failed.

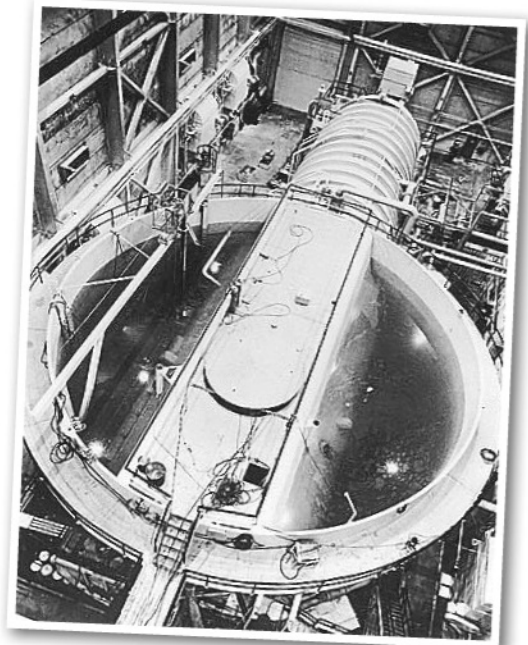
Underway on battery power?

History records that the first commander of the *Nautilus*, Eugene Wilkinson, flashed the message 'UNDERWAY ON NUCLEAR POWER' as the boat moved away from its pier for the first time on January 17, 1955. But an ex-serving crew member has claimed that there was a last-minute hitch in bringing



Left: The cutaway illustration of the Nautilus from the December 20, 1952 edition of Collier's magazine.

Right: A land-based prototype of the nuclear power plant (US Navy photo).



"The Nautilus was a remarkable achievement, carried out in very short time and with a perfect safety record"

the reactor on-line, and that the *Nautilus* made its initial moves, for the benefit of the assembled crowds, on the power of its back-up battery.

The reactor plant was known as a pressurised water type, built and tested in the Idaho desert and first achieving criticality (self-sustaining operation) in March 1953. A second version, the Mark 2, was fitted to *Nautilus*. Essentially it acted as a source of heat that produced the steam to drive the boat's main steam turbine. Rated at 13,500 horsepower (design target had been 15,000), the S2W plant could propel the *Nautilus* at a submerged speed of 23 knots. A turbogenerator supplied all the boat's electrical needs, from the plant that produced oxygen and fresh water from seawater through the navigation and weapon systems (the *Nautilus* was armed with six torpedo tubes) to essential life support services such as the air conditioning, ice-

cream machine, coin-operated juke box and Coca-Cola dispenser. The latter were considered vital to crew comfort and morale on the extended underwater travel that the *Nautilus* was capable of.

Amongst the many achievements of the *Nautilus* was the first submerged passage of the North Pole under the ice by its second captain, William Anderson, on August 3, 1958. This was on its second attempt in a top-secret mission named 'Operation Sunshine', and the announcement of its success via the message 'NAUTILUS 90 NORTH' was welcome news at a time when Russia had launched *Sputnik* and was leading the space race. It received a celebratory welcome upon its return to New York harbour.

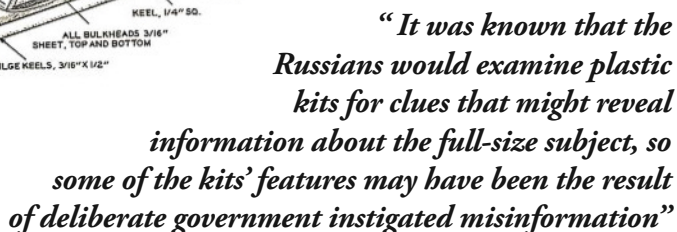
The public acclaim that accompanied the polar and other record-breaking voyages tended to disguise the fact that the *Nautilus*, as might be expected of a revolutionary first-of-type, did have some problems. For

one thing, it was very noisy. The sound of its machinery and flow noise made normal conversation impossible in the torpedo room and negated the use of its own sonar beyond a speed of four or six knots. More serious was a structural problem with the deck casing, possibly involving acoustic coupling with the sail at resonant frequencies, that at times placed the vessel in peril.

Overall, though, the *Nautilus* was a remarkable achievement, carried out in very short time and with a perfect safety record. For his role in attaining this and for championing nuclear propulsion against all the early critics, the controversial Rickover was promoted to Admiral and is considered the 'Father of the Nuclear Navy'. The *Nautilus* was decommissioned in 1980 with about 500,000 nautical miles on the clock after 25 years of pioneering service. Today it may be seen on display at the Submarine Force Museum at Groton, Connecticut.



Revell's Nautilus box top illustration.



Many Americans first became aware of the *Nautilus* when the popular magazine *Collier's* ran an illustrated article on it in its December 20, 1952 edition. The details it revealed were carefully censored in the interests of national security, as the world was feeling the new chill of a cold war. A reasonably accurate side outline of the submarine was cut-away to show a stylised interior. Plastic model kit manufacturers seized on this, sensing that a model *Nautilus* would be a huge hit if they could beat their competitors to the market, and quickly set their tool makers to work. Lindberg, Revell and Aurora all produced kits with a passable hull side profile but went astray where there hadn't been a *Collier's* illustration to follow.

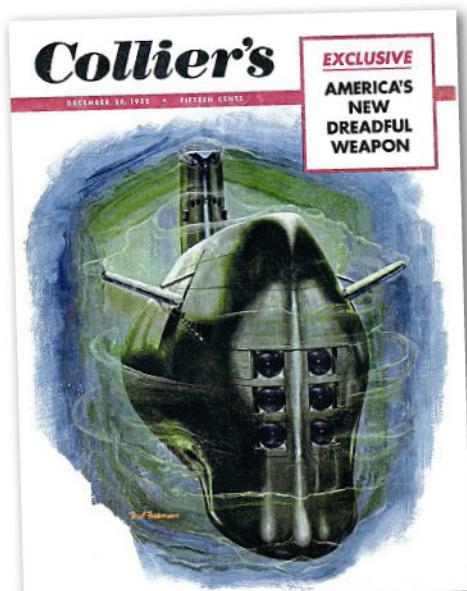
watertight hangar mounted on the rear deck casing. None of these ever appeared on the full-size *Nautilus*. It was known that the Russians would examine plastic kits for clues that might reveal information about the full-size subject, so some of the kits' features may have been the result of deliberate government instigated misinformation.

September 1955's *Air Trails* magazine carried plans for an R/C model of the *Nautilus* in planked balsa, for surface running only. This had to make provision for a 45-volt B-battery for the valve receiver and a rubber-driven escapement to operate the rudder via a linkage above the tail. The shape was more accurate than earlier attempts because General Dynamics, the builders of the submarine, had by this time been allowed to release some drawings, though details were fudged and things like the overall length still classified.

Tavaard, using information supplied by the Electric Boat division of General Dynamics and the American Information Service. This set the standard for *Nautilus* drawings for a long time, and many models have been (and continue to be) built from it. But there are problems. One example: the forward hydroplanes are shown as opening into a flat, horizontal alignment. This would not be possible, for the hydroplanes would then foul the tapered deck casing. They in fact opened until they were at 90 degrees to the sloping



1956 Model Maker plan of the Nautilus.



The front cover of the December 1952 issue of Collier's magazine.



Nautilus today (US Navy photo).

sides, forming a distinct V-shape when deployed, like the illustration on Collier's cover.

Today's Nautilus modellers can enjoy a range of resources previously unavailable to them, although, surprisingly, given the vessel's historical importance, there appears to be no fibreglass hulls available.

Modellers can instead choose to make a hull from 3D printed sections using CAD files from Nautilus Dry Docks (<https://www.rc-submarine.com/product-page/3d-files-for-uss-nautilus-ssn571>).

At 1:72 scale the Nautilus makes an eminently practical model at some 1,355 mm long and with a beam of 119mm.

The twin screws will mean freedom from adverse torque effects, while having the rear hydroplanes in the wash of the propellers will ensure good pitch control. At 16% reserve buoyancy, safe submerging should be possible with a dive tank capacity of about one litre. The unadventurous hull shape will make it a better surface runner than more modern teardrop hull shapes while still performing well submerged. But be sure to trim it stern down, with the top rudder just breaking the surface – the nuclear reactor was a heavy unit! ●

"Today's Nautilus modellers can enjoy a range of resources previously unavailable to them"

Nautilus enters New York Harbor after crossing the North Pole (US Navy photo).

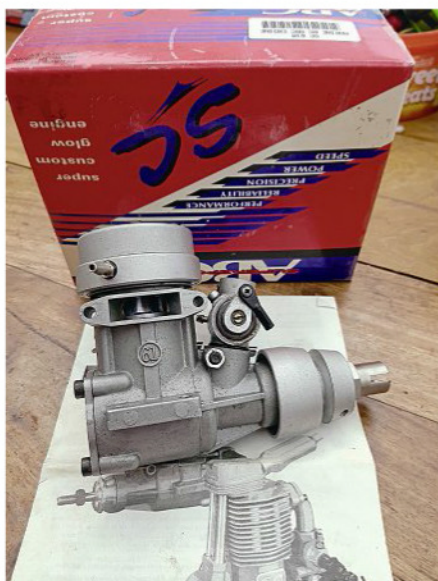


I.C. POWERBOATING BASICS

Derek Owen strips down a 2-stroke nitro engine in order to provide an 'in a nutshell' explanation of just what you're looking at, why it's there and how it works.

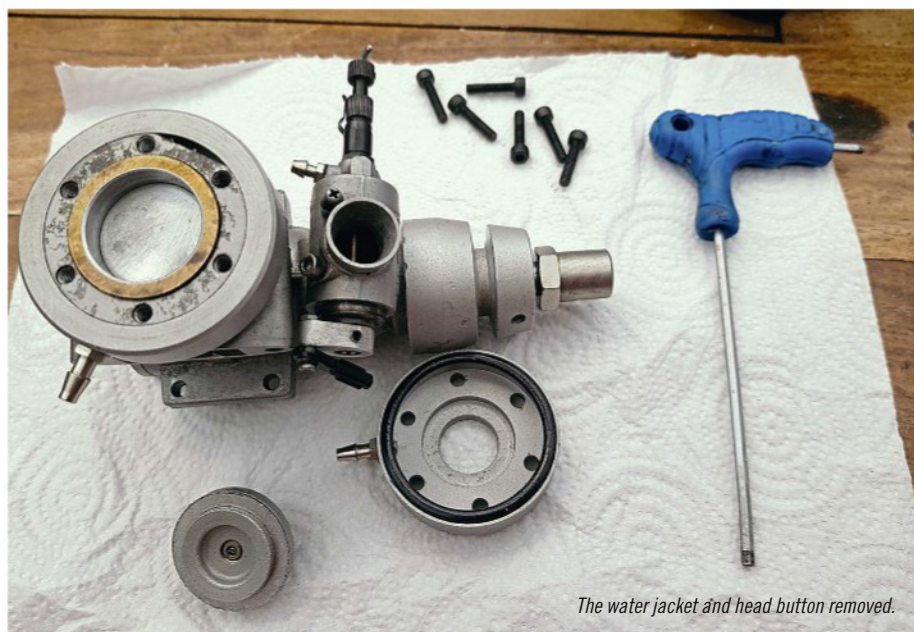
This month we're going to look at a nitro engine to give you a better understanding of how things work. I will give a brief description of each of the individual parts and their basic role within the engine. 2-stroke IC engines can look pretty basic, but each component will have technical and mathematical elements in their design! I am just going to be covering just the basics, as the truth is you can read pages of the theories that go into the design of these engines and the variables which determine their power and still not know all the 'ins and outs'.

"The engine I'm going to be using for the purposes of this article is one frequently used in the Sport 60 class (mentioned in previous articles): a Chinese-made sport engine with a side exhaust 61 size (10cc). This is very easy to strip down, so great for regular cleaning and repairs"



Derek's Chinese made sc 61 10cc sport motor: let's take a look inside this nitro motor...

The engine I'm going to be using for the purposes of this article is one frequently used in the Sport 60 class (mentioned in previous articles): a Chinese-made sport engine with a side exhaust 61 size (10cc). This is very easy to strip down, so great for regular cleaning and repairs. It may no longer be in production, but there are still plenty of examples, in both 'as new' and 'used but in good working order' condition, available to buy second-hand.



The water jacket and head button removed.

Unbolting everything for a better look

By unscrewing the bolts from the top of the engine, the water-cooling jacket can be removed to expose the cylinder head, which is a push fit into the top of the brass sleeve. When you pop off the cylinder head button you will see a very thin shim, which creates a safe clearance between the head button and the now exposed top of the piston. These shims are a crucial part of getting an engine



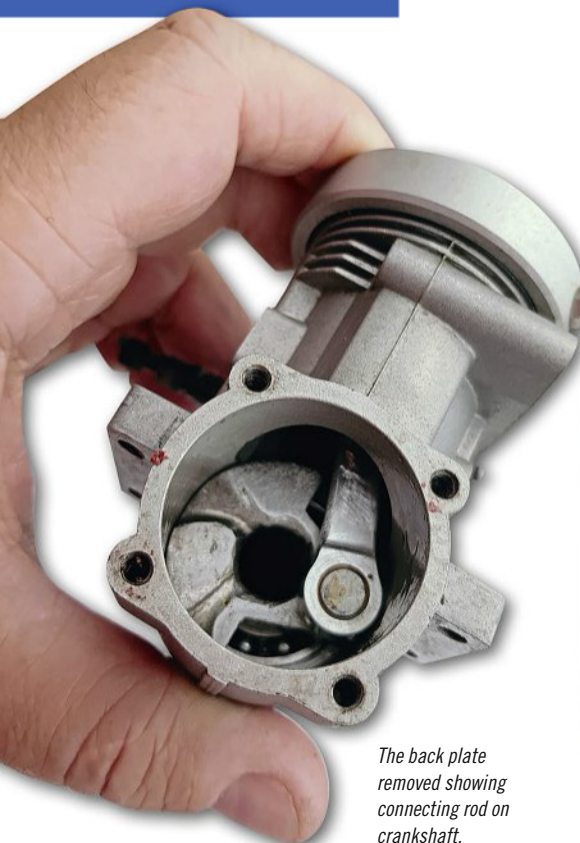
The brass sleeve, showing the exhaust port.



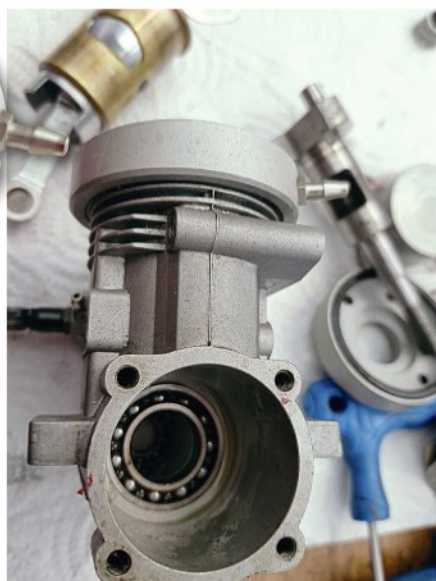
The head button with spacer shim.



The water jacket with O ring seal.



The back plate removed showing connecting rod on crankshaft.



The crankshaft out, showing internal bearing.



The second support bearing for crankshaft.



The piston and conrod.

to run at its best power without over stressing the internal parts of the engine.

Next, the four bolts on the back plate can be removed and the plate pulled away from the case. This done, inside of the engine case you will be able to see the connecting rod of the piston located on the crankshaft pin.

It's now time to remove the brass sleeve from the top of the engine; this may be a tight fit but can be lifted out by turning the crankshaft and using a wood or plastic wedge to the top of the piston locking into the brass sleeve. No excessive force should be needed here!

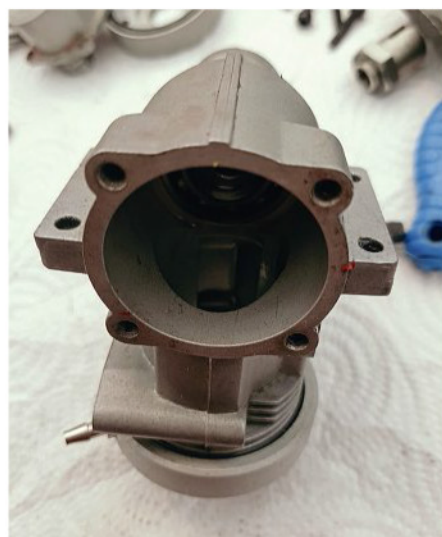
Once the sleeve is out, this will allow movement of the piston and connecting rod so they can be slid off the crankshaft pin and the piston lifted out of the case. It's advisable

to note which way the piston sits before removing it, just to that when you come to put it back you ensure it sits the same way.

You are now ready to remove the nut or coupling in front of the flywheel so that the flywheel can be pulled off the crankshaft. This done, the shaft can be removed from the case by pushing out of the bearings; sometimes a gentle tap with a wood mallet or similar will assist here. You should now be able to see the bearings which are housed in the casing.

Looking into the case you will notice machined grooves and cut-outs; these align with the brass sleeve cut-outs (ports) to allow fuel to enter the combustion chamber (the space between top of piston and the head button)

"No excessive force should be needed here!"



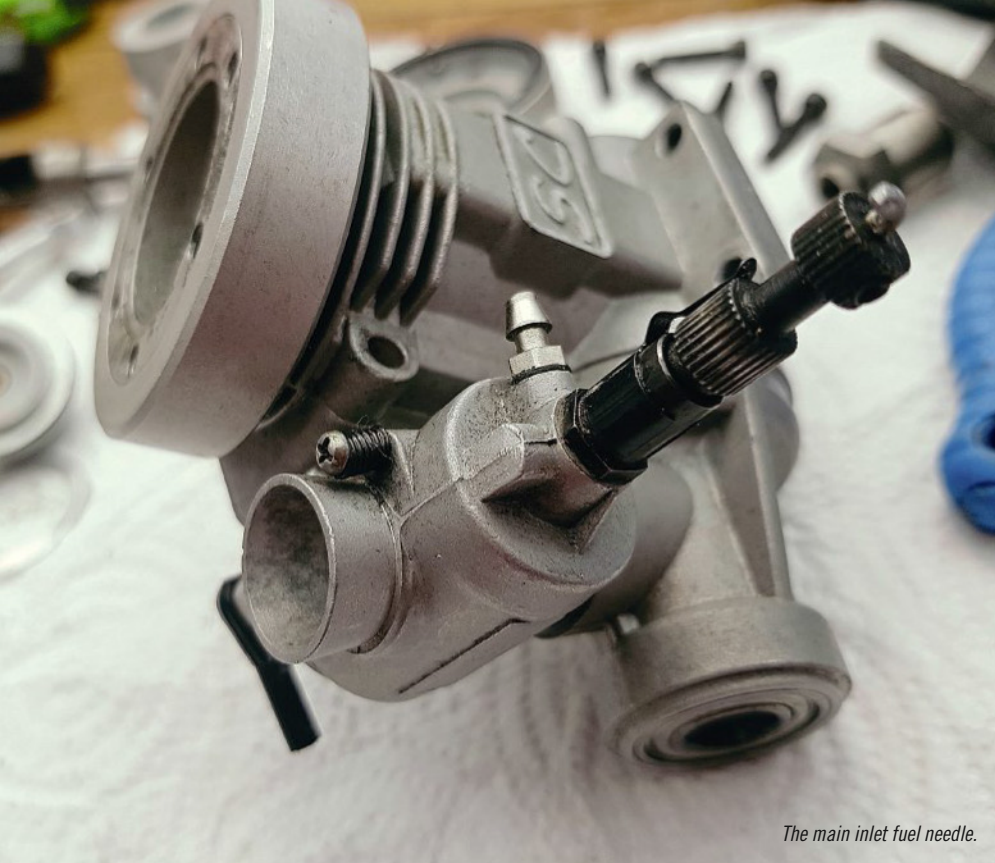
A view into the case, revealing machined cut-outs matching the brass sleeve.



A top view of machined cut-outs.



Small brass low end needle on the carburettor.



The main inlet fuel needle.

ABC liner

The brass sleeve, often called the liner, is usually made of brass with the inner section coated with a chrome face. Such sleeves are known as ABC liners. Again, I don't want to get too technical, but the A stands for the aluminium of the piston, the B for the brass and the C for the chrome coating. The sleeve in the pictures shows its slots and cut-outs. These allow fuel in and permit the burnt gasses to escape. Again, this is a bit of a black art and a topic in its own right – and there's no need to go there in this article!

The carburettor

The carburettor, which sits on the case, has two control needles; these both allow and restrict the entry of fuel to the engine. The small brass head screw is what's called the 'low end needle' and dictates the fuel flow at a lower RPM; the longer needle on the other side of the carburettor is known as the 'main needle' and allows the correct amount of fuel into the engine at faster speeds. Yet again, this is a topic that warrants an article all of its own for the more serious enthusiast.

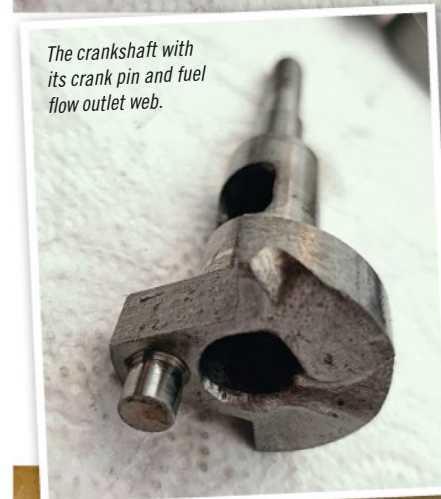
You will notice the crankshaft has a slot cut out in its shaft. This cut out sits below the carburettor, allowing fuel to travel along into the crankcase and up into the sleeve area. The cut-out acts as a valve, opening and closing the flow as the shaft rotates. This, of course is a very rudimentary description. To try and elaborate would, once again, require a lot more space than I have here and would risk getting way too technical.

To sum up...

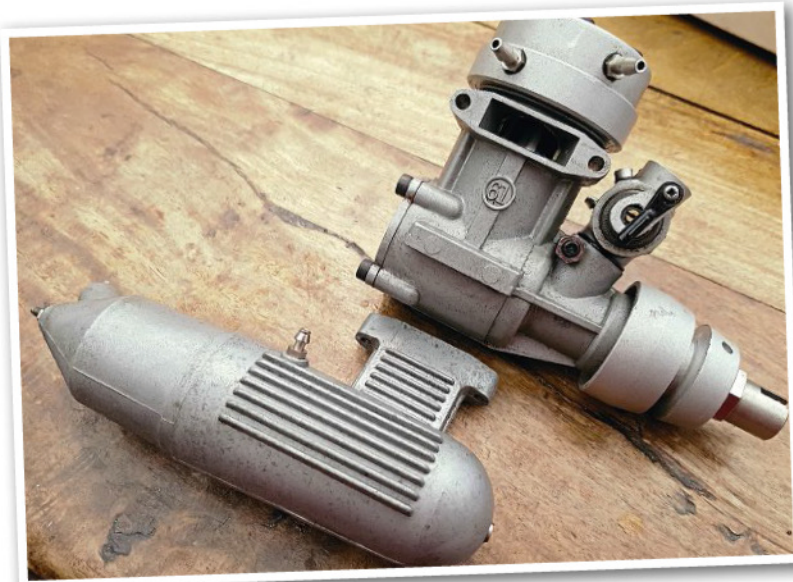
Most 2-stroke I.C. engines work on the same principle as the one we've inspected here, although some can, of course, get much more involved, depending on their make and performance output. The intention here, though, has simply been to provide an insight into what lurks within an I.C. engine and, very basically, how everything works. Hopefully, the accompanying photographs will assist in identifying the various components within the case. ●



The crankshaft, showing the cut-out in the shaft for fuel flow.



The crankshaft with its crank pin and fuel flow outlet web.



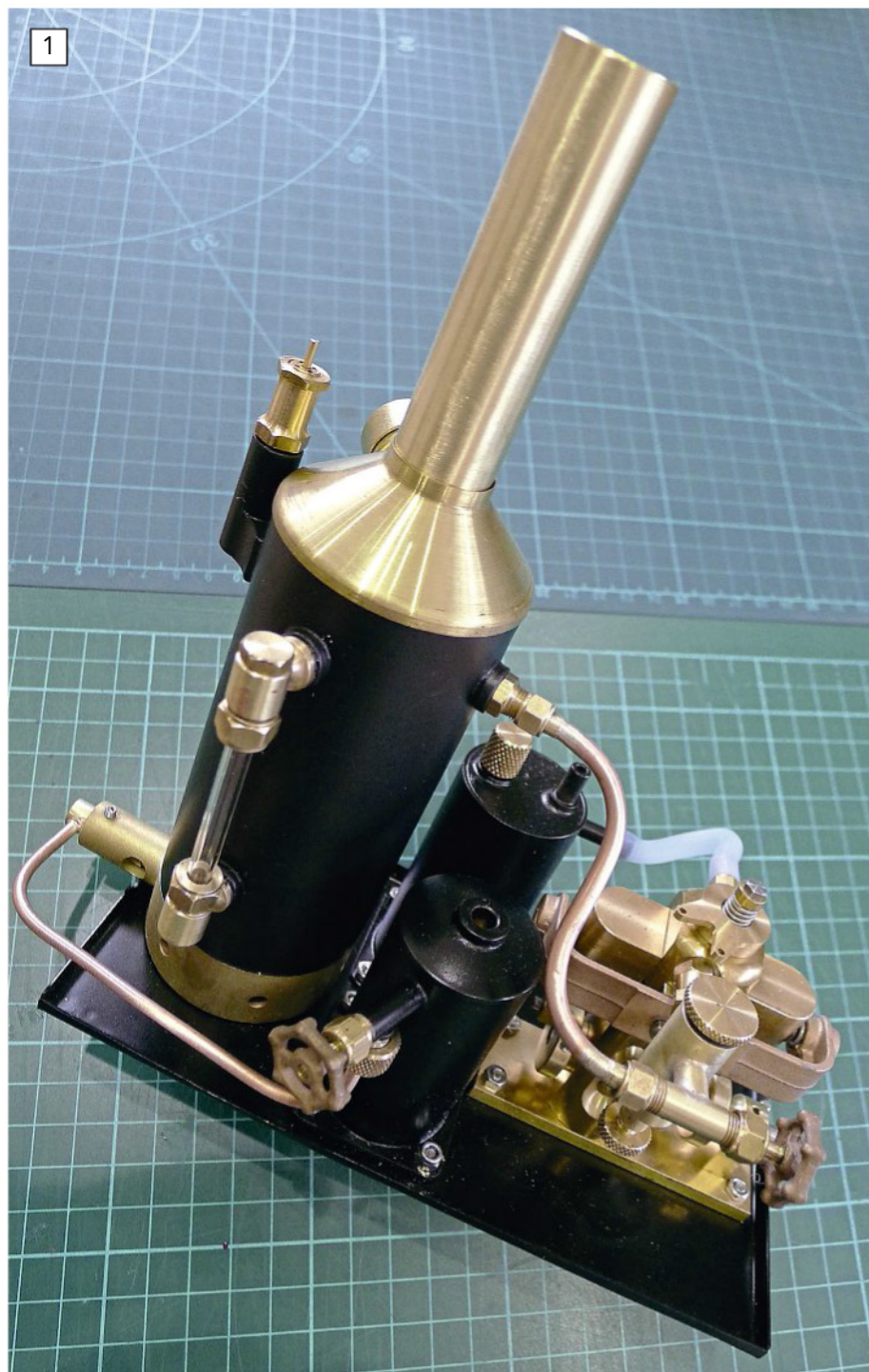
Left: The engine reassembled, along with a typical side exhaust for the sport engine.

Right: Ready to be reassembled, following a light coat of after-run oil.



BOILER ROOM

Richard Simpson bench tests Miniature Steam Models' new Entry Level plant



You may remember back in the February 2023 edition of *Model Boats* we looked at a new steam plant from Miniature Steam Models in Australia, named the Econo plant. While initially this could look to be an almost identical article, I can assure you it's not. Previously I covered the vertical 2-inch gas fired boiler with a twin cylinder Avon oscillating engine, all mounted on a common base with the gas tank and separator included: a very compact and lightweight plant suitable for a smaller model (see **Photo 1**). This was, and is, also available with the Tyne, single cylinder engine. While that plant is in a size range to be able to compete with many solid fuel fired boilers and still offers the flexibility and convenience of gas fired boilers with, potentially, speed and direction control if you go for the Avon engine plant, Miniature Steam Models has since decided to go all out and use this plant as the basis for one produced with a different customer in mind.

Some of you may remember how in the May 2017 to November 2017 instalments of *Boiler Room* I documented a steam powered model project that I designed specifically to be as cheap as possible to build. The completed model consisted, basically, of a Krick Anna kit fitted with a Tony Green Steam solid fuel powered boiler and a 'Tiny' single cylinder engine from Maidstone Engineering. If I remember correctly, the total cost for everything, including electronics, came in just shy of £400 (see **Photo 2**).

Miniature Steam Models has clearly also given thought to how we tempt more newcomers into the world of steam powered models, a serious challenge when entry level costs can very easily be well into the region of £1,000-£1,500 – and that's just for the steam plant alone. Consequently, it has developed two new plant based on a very specific design criteria, the aim being to offer its customers plant that includes a gas fired boiler, gas tank, separator and oscillating engine, all on a common base, for as competitive a price as possible. The current retail price of this new plant is £307 – a sum which, as it converts to above the \$500 AUD threshold, is eligible for free shipping to the UK. The price alone is obviously very impressive, but, no doubt, everyone will be wondering what you actually get for your money and where the savings been made. In this article I hope to answer those questions.

Reviewed in the February 2023 instalment of Boiler Room, the Econo Plant fitted with an Avon twin cylinder oscillator does everything a bigger plant can, but in a neat, compact package.



2

In 2017 Richard explored how a steam-powered model could be put together for as little cost as possible. The Krick Anna model was the result of that project, costing just under £400 at that time. To now be able to get a new, fully functioning, gas-powered plant instead, however, is something worth shouting about.

There are two new plant available: the 2-inch Horizontal Boiler Entry Level plant and the 2-inch Vertical Boiler Entry Level Plant. What follows is a comparison of the vertical plant with the previously featured Econo 2-inch Vertical Plant, just to see what is being sacrificed for the impressive price reduction.

Opening the box

There's always a slight degree of trepidation on opening a box that's been shipped from somewhere as far flung as Australia. I've seen the state that things can arrive in simply having gone through the domestic postal/courier system in the UK, so having been in transit all the way from the other side of the world only amplifies the opportunity for damage to occur. As always with plant from Miniature Steam Models, however, the packaging is superb, and the robust outer cardboard box is securely taped up (see

Photo 3). Inside, the plant comes affixed to a thick ply base by four stainless screws and nyloc nuts. The base itself is held down by extremely thick corrugated card inserts around the sides of the box to ensure the plant cannot move. All the accessories, including steam oil, engine oil, syringes and the funnel, are packed in a separate sturdy card box, which is then further protected by polystyrene packing being added to the compartment it sits in. The instructions and boiler and gas tank pressure test certificates are tucked inside the box in their own brown envelope. It is also worth noting here that there are additional guidance documents available for download on the Miniature Steam Models website for both beginners

and more advanced model steam users. Both are excellent documents and are well worth printing off and keeping within your folder of documentation.

On opening my box, everything was removed and laid out on the workbench for inspection (see **Photo 4).**

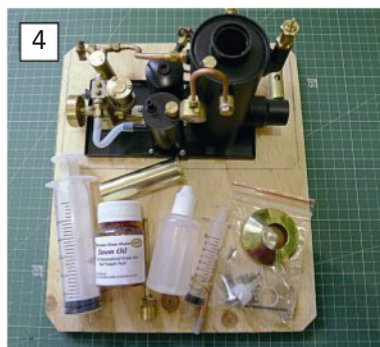
I recommend first checking all the bits and pieces for tightness. The pressure gauge, in particular, will require positioning and then tightening, as it comes loose and folded down for safer shipping. Also, to comply with current UK regulations, a red line must be applied to the face of the pressure gauge at the correct working pressure point of 2b or 30psi. Make sure all pipe fittings and boiler mountings are also tight at this point.

"The price alone is obviously very impressive, but, no doubt, everyone will be wondering what you actually get for your money and where the savings been made"



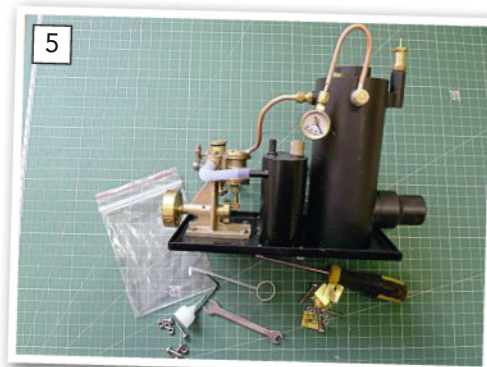
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Miniature Steam Models' new plant comes firmly screwed to a thick ply base to ensure nothing comes adrift during transit and that everything arrives safe and sound. Within the extremely robust outer carton, the accessories are packaged in a box of their own, which is surrounded by polystyrene chips for further protection.



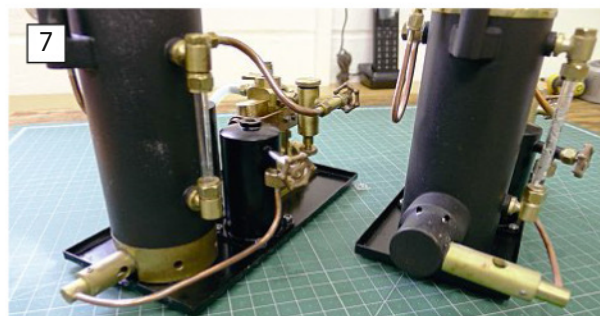
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All the bits and pieces you need to get the plant operational – just add gas and water.

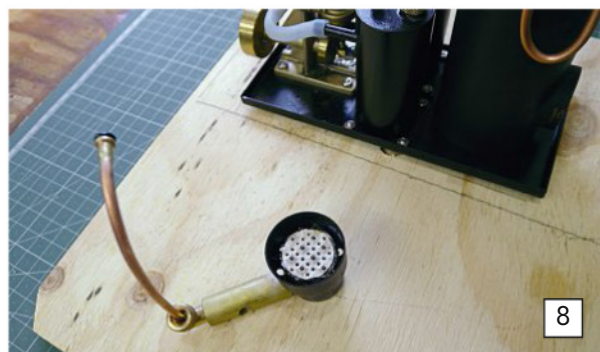


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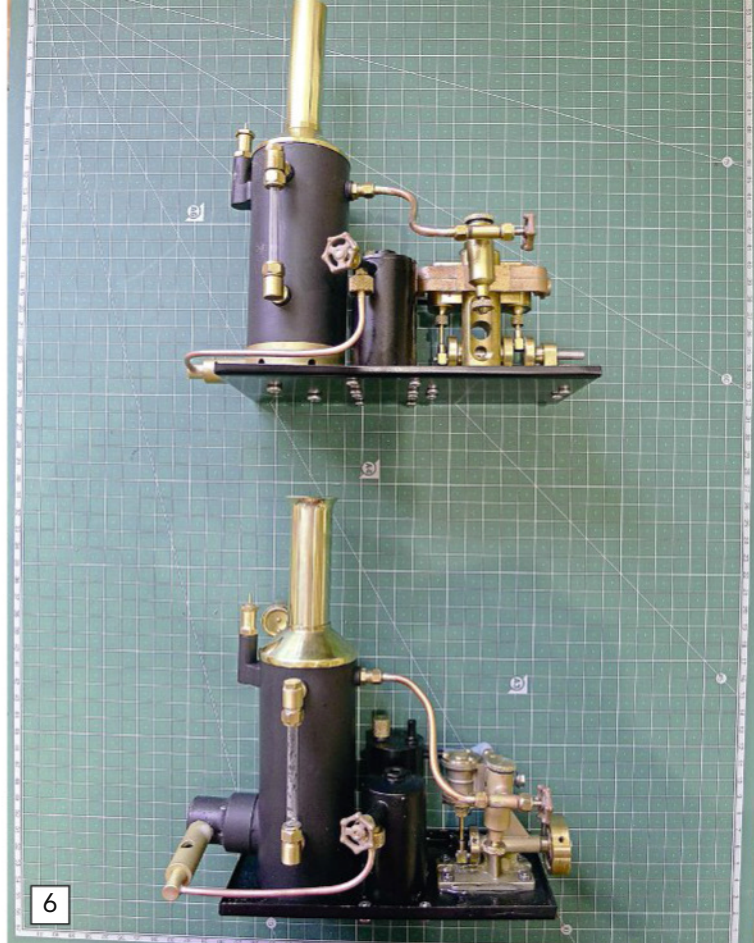
In order to get started, all you need to do is unscrew the base from the ply, reposition the pressure gauge and add a red line at the working pressure point, and check everything for tightness.



The main difference between the Econo plant and the Entry Level plant is that the Entry Level plant reverts to a standard side fitted burner arrangement. That's not a great deal of difference for such a significant saving.



Removing the burner reveals a Miniature Steam Models' ceramic burner with the bespoke hole arrangement, designed to give the maximum flame when the nozzle is set correctly. This burner has also been tested in the past (see the October 2019 issue) instalment of Boiler Room, and proved to be very effective.



Comparing the Entry level plant, Bottom, with the Econo Plant, Top, (although this one has the twin Avon Engine), both units are almost identical save for the boiler base and burner.

While doing this myself, I was pleased to see that all the parts included are of excellent quality. The surface of the castings on the Tyne engine are smooth and neat and the visible machining is of the same impressive standard I've evidenced on other products in range (see **Photo 5**).

Comparing the 2-inch Vertical Econo Avon Plant with the 2-inch Vertical Entry Level Plant

Considering that the price of the 2-inch Vertical Econo plant fitted with the Tyne engine is currently around £480, we're looking at just over £170 difference between this and the new Vertical Entry Level plant, the latter offering a pretty significant saving.



The bottle of Miniature Steam Models supplied. Despite being a sample, this will certainly last for some time when used in an Entry Level plant.

On viewing the two plant side by side, the first thing that's glaringly obvious is that the gas tanks and the separators for both are identical, so no corners have been cut there (see **Photo 6**). When comparing the Econo and Entry Level's respective 2-inch vertical boilers, I must admit to being surprised here: both are fitted with cross tubes. Cross tubes constitute a significant portion of the cost of manufacturing a boiler, so I wasn't expecting them to have been included in the Entry Level boiler. The mountings on the boiler, such as the sight glass, safety valve and pressure gauge, are also all identical. However, a noticeable difference becomes apparent when you come to the burners. One thing I particularly liked with the Econo boiler was how easy it was to set up the flame on the burner. This was because the burner is built into the base of the boiler, so the flame can be set up for the best possible combustion before the boiler is dropped in place on the base. With the Entry Level boiler, the burner is ceramic and mounted on the side of the boiler in a more traditional manner (see **Photos 7 and 8**). Consequently, setting the flame is not quite as easy or convenient. Having said that, I've found that with Miniature Steam boilers if you place the tip of the nozzle in the middle of the air holes in the nozzle holder, you're never far away from the ideal position anyway.

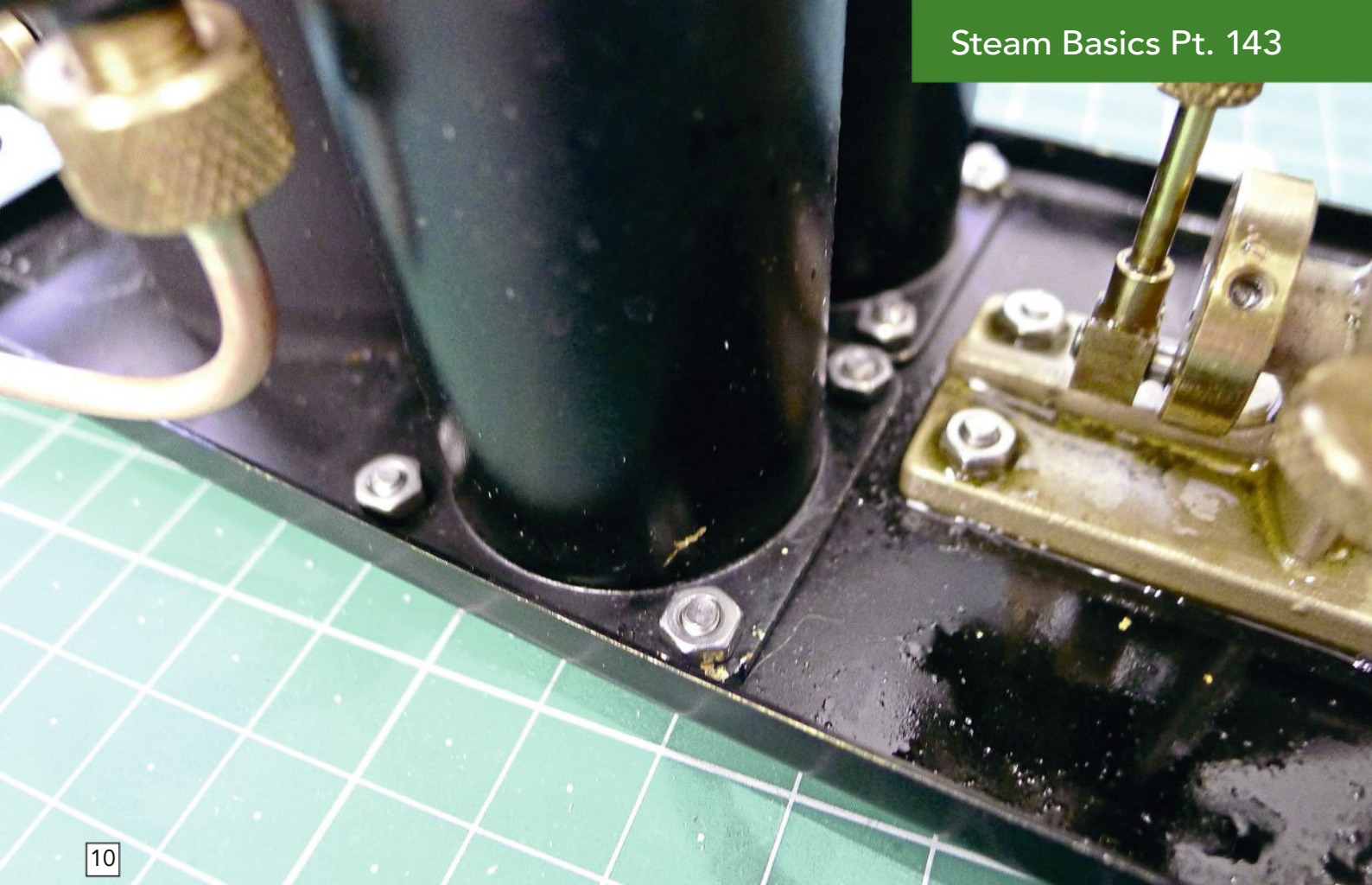
From there the only other comparison to make would be the engines, but they could both feature the same Tyne single cylinder oscillator.

The only real distinction between the two plant seems to be the boiler burner and the lack of ease in setting up the burner flame on the cheaper (Entry Level) option. I did wonder if having the burner on the side would prove less efficient, and as a result boiler performance might be compromised. It was, therefore, time to fire the thing up and see how it performed.

Preparing for a run

As described when I reviewed the Econo plant, my preference is to always run in the engine on air for a period of time, while frequently lubricating everything manually just to free things up. The instructions for Miniature Steam Models' engines do not recommend doing this, so I decided to follow the manufacturer's guidance to the letter. The engine did turn nice and freely, so I had no concerns about anything being too tight. My first job, therefore, was to fill up the lubricator with the supplied steam oil (see **Photo 9**). It still surprises me that Miniature Steam uses a steam oil that's noticeably less viscous than the type normally found in the UK. While this proves more than capable of doing its job, i.e., protecting the internal running surfaces, its most significant advantage is that it pours so much more easily. How many of us have wasted far too much time at the pond side trying to get the thick treacly oil into the displacement lubricator? I manually pushed the cylinder away from the port face on

"When comparing the Econo and Entry Level's 2-inch vertical boilers, I must admit to being surprised here..."



10

When the plant is unpacked, you'll find the gas tank is screwed to the base for safety during transit with four set screws in the base.

the engine frame against the spring to enable some steam oil to be spread on the port faces as well – I still don't like starting up metal to metal running faces with no lubrication! After that it was a general oiling of the external running surfaces with the supplied oil.

Next was water. I removed the plug at the top of the sight glass to squirt a little water through it and reassure myself it was clear before removing the filling cap on the top flange of the boiler and filling the rest of the water from there. I took the level up to just short of the top of the glass, as I wanted to get an idea of duration on such a small boiler. Both plugs then were replaced and gently nipped up.

Finally, it was time to fill the gas tank. The gas tank is fixed to the base by four screws when it arrives (see **Photo 10**); the instructions, however, indicate these should be removed. This allows good contact between the gas tank base and the plant brass base, which enables a little gentle warming of the tank to offset the gas cooling effect, while also facilitating easy removal for tank filling (see **Photo 11**). Having in the past had a plant that was getting a little too much waste heat from the base means I am familiar with another option, *i.e.*, putting the screws in the base and then sitting the tank loosely on the protruding screws. This lifts the tank off the brass base and reduces the heat transfer (see **Photo 12**). Being on the

bench I left the gas tank in place. If it was fitted in a model boat, I would remove it from the plant for filling; doing this requires the outlet pipe knurled connector to be removed by hand (see **Photo 13**). Again, I followed the instructions and, using the supplied gas bottle adapter, very slightly cracked open the tank outlet valve with the pipe disconnected. I then filled the tank until liquid could be seen coming out of the outlet. With the tank full, the outlet valve was closed, and the pipe reconnected.

I decided not to remove the burner to set it up. Instead, I simply ensured the nozzle tip was halfway across the air holes in the nozzle holder; the nozzle being locked in place with the supplied alley key.

“The instructions state that the safety valve is not set at the factory, so the first thing to do is to set this yourself”



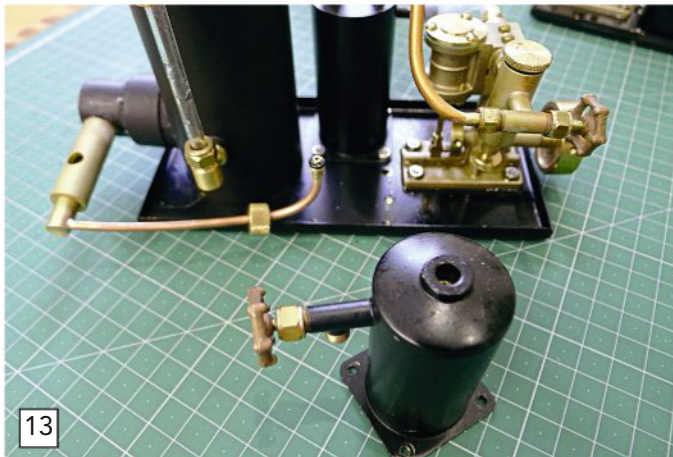
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The instructions advise that these screws be removed to enable the tank to be easily lifted out for filling while still allowing some heat transfer from the brass plant base to counteract the gas cooling effects.

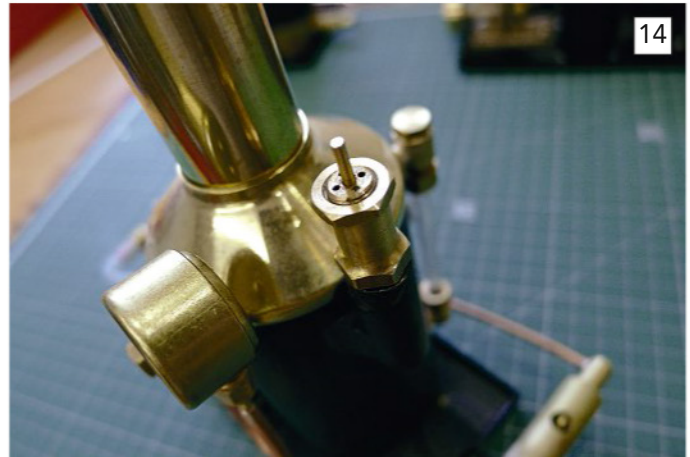


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If, however, in, say, elevated ambient temperatures the gas tank gets a little too warm, an alternative arrangement could be to fit longer screws into the base only and loosely sit the tank on the protruding screws. This still allows easy removal for filling.



Although filling in place on the workbench is safe enough, when the plant is fitted to a model it's a safer option to remove the tank from the plant. Fill with the valve just cracked open and close when liquid is seen at the outlet.



On most boilers of this size, you might expect to find either a non-adjustable safety valve or a valve that has to be removed to set it. Having a valve that can be adjusted externally makes for much easier adjustment.

Under starters orders

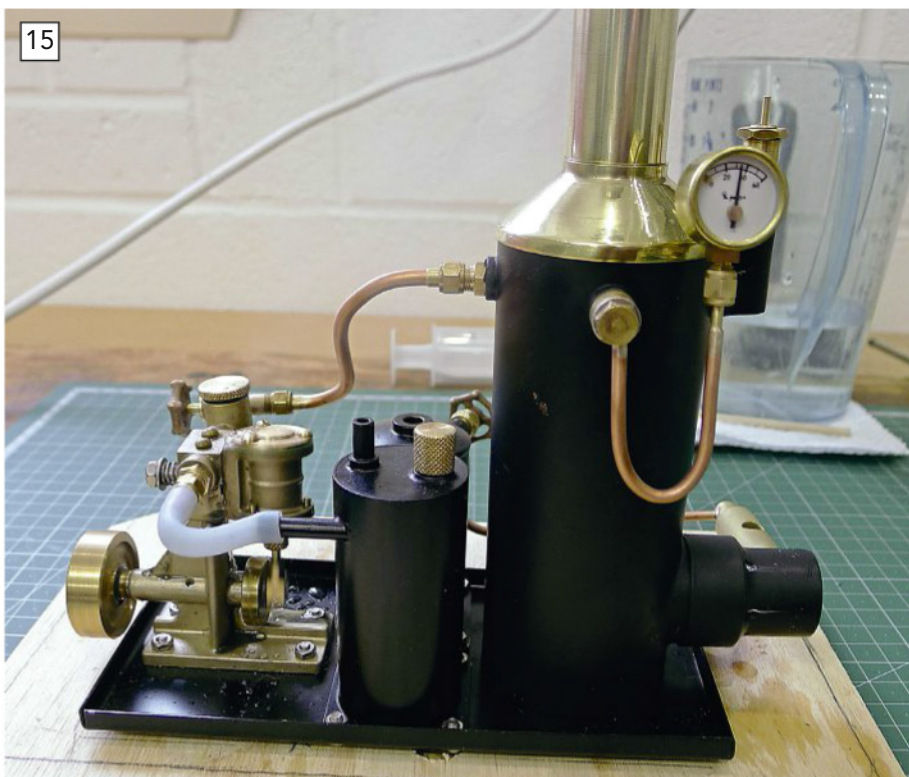
Having not bothered setting the burner, I was expecting challenges igniting the boiler, but I needn't have worried. The burner lit from the top of the flue first time and immediately settled into a steady burn. The gas valve was only opened a turn or so, but the flame could be heard very noticeably. After only a couple of minutes the pressure started to rise, and before I was even ready it was up to working pressure and above. The instructions state that the safety valve is not set at the factory, so the first thing to do is to set this yourself;

this can be done by bringing the boiler up to working pressure, then adjusting the safety valve until it just lifts at this pressure. Tightening the safety valve lock nut and then bringing up the pressure again verifies the valve is set correctly. Most boilers of this size have safety valves that are either non-adjustable or have to be removed for adjustment, so it's good to see that a quality safety valve that can be adjusted with the valve in place is fitted to this plant (see **Photo 14**).

With the safety valve set, it quickly becomes apparent just how effective the burner is. I turned the gas valve right down to almost off when I opened the steam valve to the engine and throughout the whole run it didn't need any more. The engine ran up after a flick and closing the steam valve right in gave more than adequate revs to push a small model at an acceptable speed. Apart from very slight adjustments to gas and steam I pretty much left it as it was for the duration of the water in the boiler. I would estimate the water was at the bottom of the glass after around 10 to 15 minutes but, as I plan on being better prepared next time, I expect duration can be increased.

Conclusion

As well as reviewing the 2-inch Vertical Entry Level plant in its own right, I wanted to compare it with the 2-inch Vertical Econo plant to see what you'd be giving up for the savings in cost – and I really can't say you'd be giving anything up. As previously mentioned, the burner is the biggest difference, but the one supplied with the Entry Level plant is more than capable of providing the steam required for the Tyne engine. When I think back to the plant I put together for the Krick Anna Model in 2017, I had to fit my own pressure gauge, steam outlet valve, separator tank and lubricator, on top of the original cost of the boiler and engine. All these items are included in Miniature Steam Models' plant. When you add to that the convenience of operating a gas fired boiler, it quickly becomes apparent that the Entry Level plant is really good value for money. It's ideal for newcomers to the hobby or indeed anyone that's looking for a simple to operate plant for a small model boat. Speed control could be incorporated, although I'd recommend that the speed is simply set at the bank with the steam valve and the model placed on the water with steering control only (see **Photo 15**). ●



The bottom line is that this plant (which boasts everything a larger sized all-inclusive gas-powered steam plant has, and at the same level of quality, but costs just a smidge over £300 – including free shipping) represents extremely good value for money!

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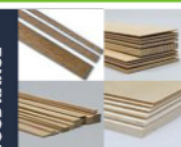
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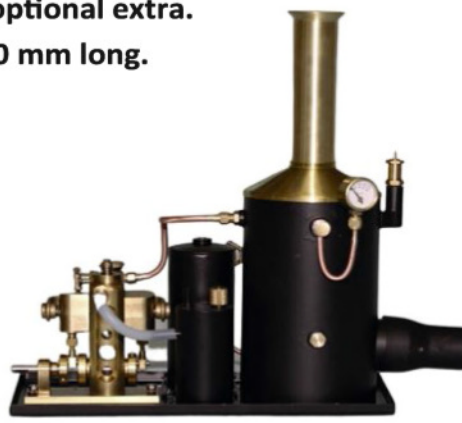
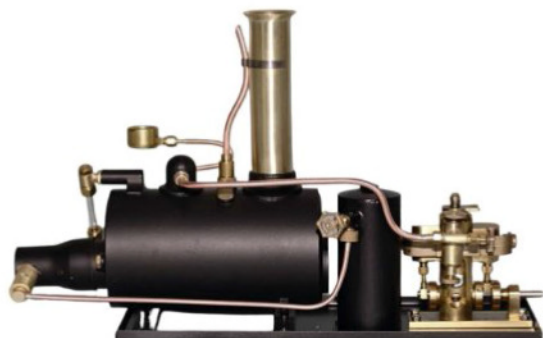
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Your Models

Whether you're highly skilled and experienced or completely new to the hobby, you're definitely invited to this launch party! So please keep the contributions coming by emailing your stories and photos to editor@modelboats.co.uk

Ian Thompson's impressive 1930s' open wheelhouse steam tugboat.



Open wheelhouse tugboat

I've just finished building a 1930s' steam tugboat model, complete with 3D-printed six-cylinder engine, boiler and crew. I designed this so that you can either put in a live steam unit or leave everything as is and go electric – it also has a smoke generator. It's modelled on an actual tug, which features an unusual 'wheelhouse', open to the elements and designed so the captain can get 360o viewing for hook up, towing, etc. My captain figures is positioned in this wheelhouse looking towards the stern so he can supervise his crew and hook up. The model measures 1100mm in length, with a 350mm beam. The hull and all the fittings, etc, were supplied by Float-a-Boat here in Melbourne.

The model is currently up for sale so I can start the next one!

IAN THOMPSON
EMAIL

Lovely work, as always, Ian. Thanks for sharing. Ed.





Rab Crow's newly built and very enviable 'dockyard', with lots of smart inbuilt shelving to house his incredible builds and plenty of space to work on adding yet more models to his fleet.



My new dockyard

I've just put down the July issue of Model Boats magazine after another good read. I have been modelling boats for near on 40+ years and usually my dock yard is the now packed to capacity kitchen bunker, but recently I finally got a new boat yard completed so that I can carry on building at ease. My interests are trawlers, paddle steamers, World War II craft, and sport cruisers, and, if honest, a few more besides, so I'm sending you some pics of my new dockyard.

RAB CROW
EMAIL

I'm not sure what's more impressive, Rab: your fab new workspace or all those fantastic models! You may have shot yourself in the foot here, though, as now you have room to expand, you've no excuse for not sharing more of your brilliant builds! Thanks so much, Ed.





Sunset sailing at the Park of Nations in Torrevieja, Spain



The Fairey Swordsman built by Trevor during the pandemic in 2020.

Carrier and cabin cruiser beauties

I always enjoy seeing fellow readers work in the Your Models section of the magazine, so I am sending you some photos of my own builds.

The carrier *Victorious* I built in 1975 using the Airfix kit to get the lines, which I multiplied by five to get a length of 60-inches for this plank-on-frame model sheathed in fibreglass. It includes many working features (an anchor, a ship's launch which can be lowered on the crane, a deck catapult, etc) and is a very reliable model; it just needs a bit of maintenance every year.

The Fairy Swordsman I built during the epidemic from a SLEC kit. Its performance is excellent.

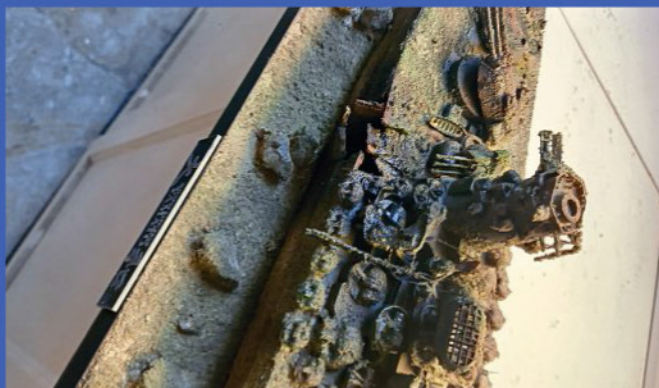
The boat club I am a member of uses the lake in the beautiful Park of Nations here in Torrevieja, Spain.

TREVOR BRUCE
EMAIL

Terrific work, Trevor, and what a fabulous sunset shot! Ed.



Trevor Bruce's splendid plank-on-frame build of the carrier Victorious.



Yamato

Having seen Simon Murphy's article in July's edition, I wondered if you would be interested to see my imaginary diorama of the Japanese battleship *Yamato* following sinking and many years on the seabed, done with sand, paint and a great deal of artistic licence.

JOHN UTLEY
EMAIL

Thanks for sharing this thought provoking alternative portrayal of Yamato, more usually modelled in all her glory before being sunk, with a dreadful loss of life, on her last futile mission. Ed.



Yamato portrayed by John Utley, broken into two main pieces, in her final resting place 80 miles southwest of Kyushu under 1,120 ft of water.



Your Letters

**Got views to air or information to share?
Then we want to hear from you!**

Letters can either be forwarded via email to editor@modelboats.co.uk or via post to **Readers' Letters, Mortons Media Group, Media Centre, Morton Way, Horncastle, Lincs LN9 6JR**

Bright idea

On reading Mike Payne's article in the June 23 edition, I was amused by one of his comments, and I quote "... masts and communications aerals (which always seem to poke you in the eye pond side)". So, I thought I would offer a solution to that problem I have employed for several years. I use table tennis balls (of the brightly coloured variety) with appropriate holes drilled in them to slip over any mast, aerial, etc. These balls double up as a way of protecting the masts, aerals and antennas from unintended damage while at the same time, because of their immediate visibility, saving me from sustaining a nasty self-afflicted injury! Polystyrene balls can also be used in the same fashion.

By way of illustration, I've demonstrated this on *Sweet Pea*, a model I made some 40 years

ago to entertain our son during a cold winter couple of weeks. I have some lovely memories of how he would sit intrigued for hours watching this model take shape. The model was scratch built from balsa to my own design but represents the type of fishing vessels that were seen here in Victoria and in Western Australia (while we were on holidays there). It's certainly not a scale model of a particular boat but was merely designed to look reasonably realistic on the water, mainly to put a smile on our son's face when we sailed it together on the Barwon River. Back then it was free running but about a dozen or so years ago I updated it for R/C operation.

**JOHN GRABYN
EMAIL**

Such a simple but great idea, John. Love Sweet Pea, too! Ed.

TIPS AND TRICKS



John Grabyn uses his charming fishing boat build, *Sweet Pea*, to demonstrate how you can save yourself from a nasty poke in the eye!

CAN YOU HELP?

Hull ID

Please could you or your knowledgeable readers identify this GRP model boat hull I recently acquired. It measures 35.5 inches x 7.5 inches, with a slight tapering to the stern. There are two moulding indentations for prop shafts positions and single rudder position.

The bow curvature is, to my mind, significant – but to what?

Any information will be greatly appreciated.

**ROGER FAIERS
EMAIL**

MB readers have an excellent track record when it comes to mystery solving, so I am confident someone will be able to assist here, Roger. Over to you, chaps! Ed.



Can anyone assist Roger by identifying and providing more information on this GRP model boat hull? Ed.

Manvers Open Day

At the Manvers Waterfront Boat Club Open Day on June 11, we were blessed with scorching hot weather and light winds, perfect for showing off our models! We put on static and sailing displays featuring everything from submarines and steamboats to yachts, tugs, hovercrafts and workboats. This was our second open day of the year and it proved a massive success. A huge thank you, therefore, to all who helped out and participated, enabling us, as a club, to demonstrate to the public just what our superb hobby is all about. We've already decided to put another such event on the calendar for 2024.

**STEPHEN PERKINS
MANVERS WATERFRONT BOAT CLUB**



OUT AND ABOUT



CAN YOU HELP?



Intriguing: the tiny Taycol TC/5 motor from Gordon McLellan's collection

Another Taycol targeted

I refer to John Parker's piece on Taycol motors in the July issue of 'MB' and attach a few images of the smallest in my collection, which, perhaps not being marine orientated (unless in a wee paddler!), did not feature. So, I'm just wondering if John (or other readers?) can shed some light on its provenance and/or production run, and if there are any other Taycol 'oddballs' out there? Presumably this was a short-lived dip to test the model railway market 'waters'.

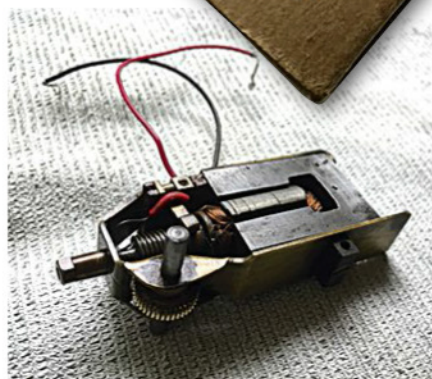
Looking forward hearing back in due course, and, as always, to the next enlightening Issue of Model Boats.

GORDON MCLELLAN
LLANTRISANT, S. WALES

I've run this very interesting query past John Parker, Gordon, who explains: "In 20 or more years of collecting Taycols, I have never come across this motor nor seen it referred to in print. It sent me scurrying to the 'archives' - my collection of magazine back issues and other material in dusty cardboard boxes - to see what I might find on it. There was nothing in the early post-war model boating press and alas my collection doesn't include any model railway material. But, would you believe, the March 1950 Aeromodeller carried an advertisement for it. Please excuse the poor reproduction of my digital copy.



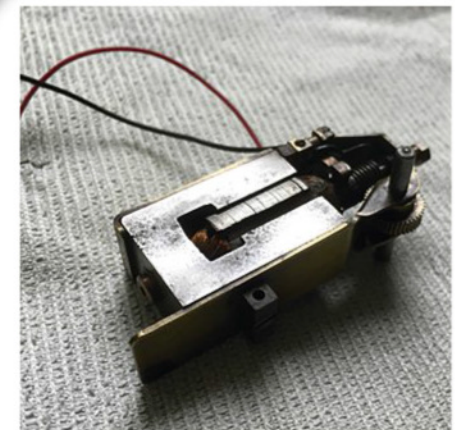
Although not previously aware of it, John Parker, contributor of last month's Taycols targeted feature, has been able to unearth an ad in the March 1950 issue of Aeromodeller in which its incorporated.



"The ad mentions the Comet and Star, as well as the 'Bee', another new one to me but one that can be soon dismissed - I think as a Star with a different wiring specification to suit lower drain battery applications.

"Looking at Mr McLellan's photos and reading the included instruction sheet, the TC/5 is in a totally different class to other Taycol motors, having a 5-pole armature, graphite brushgear, baked windings, phosphor-bronze bearings and nicely tooled brass frame - a world apart from the rather crude built-up nature of all other Taycol motors. It begs the question, why didn't Taycol apply this level of technology to its other motors?

"The reason, I suspect, is that the motor wasn't made by Taycol, but bought in and sold under its name to gain a foothold in the



burgeoning model railway market. Further evidence to support this comes from the fact that the dimensions of the TC/5 are quoted in millimetres in the advert, whereas all the other motors are in inches. I don't think the motor could have been very successful, for the price is quoted as 50 shillings on the front of the instruction leaflet (quite a bit of money back then) but Mr McLellan's example appears to have been reduced to only 35 shillings, as evidenced by the price marked on the end of the box in pencil.

"It would certainly help if someone else can shed some light, a railway modeller perhaps?"

So, as I know there are many readers who also are also model railway enthusiasts, maybe, someone can expand on the info John has kindly been able to uncover. Over to you, chaps... Ed.

Windermere wins

I am just back from the Windermere Model Boat Club regatta where my Amphicar won first place in the 'Electric Scratch Build' category and my slipper launch Rosemary came second in a field of 20 entries. Most embarrassing! My current project has a tough act to follow!

The timing of last month's article was great, as many visitors and members had just read about the Amphicar but did not expect to see it 'in the flesh'.

PETER KOCH-SMITH
EMAIL

Well deserved - congratulations! And wow, what a wonderful setting for a regatta. Yes, these beauties will be a tough act to follow, but I'm sure you'll go for the hat trick. You really have me intrigued now, and I, for one, can't wait to see what comes next. Ed.



Peter Koch-Smith's Windermere winners.

OUT AND ABOUT



One of the splendid A Class yachts takes to the water under the control of its owner.

Rawdon MBC June Open Day

On Saturday June 10, the Rawdon Model Boat Club (RMBC) held an open day (the first of two such events planned for 2023), inviting members of the public to come and 'have a go' at sailing model boats and yachts on our beautiful private lake.

The day started hot, bright and breezy, with our members arriving early to help set up marquees, erect safety barriers, arrange tables and chairs and generally get ready for an enjoyable day playing host to our visitors, as well as showing off our boats! Our kitchen volunteers, too, were busy getting ready to provide hot and cold food and drinks (having spent the previous two days baking as part of their preparation!).

The first visitors arrived 20 minutes or so before we officially opened at 10am. They were warmly welcomed and guided into the club enclosure where their eyes lit up when they saw our beautiful lake under a brilliant blue sky. The swans and ducks added to the peaceful ambience of our location on Larkfield Tarn.

There has been a model boat club on Larkfield Tarn since the 1930s. The tarn was built in the 1820s to provide water for a nearby textile mill, but the lake is now owned by Rawdon MBC.

By 10:30am, the visitors were arriving by the dozen! I've never seen the dockside so busy! Everyone was thrilled to see our boats on display just inside the gate. Little did they realise what other treats awaited them in the boat shed where all the 'A' Class yachts and other 'big' boats were stored.

We had visitors from all over the North of England. Lots of our 'neighbours' from Rawdon turned up, many of them had never seen or heard about RMBC before. We also had visitors from Hull, Ripon, Harrogate, Knaresborough, Manchester, Doncaster, Huddersfield and Malton, as well as many other places in West Yorkshire, especially the Leeds and Bradford areas. They told me they had seen our advertising on Facebook,



Several yachts and a schooner having fun on the Tarn.



Wall-to-wall sunshine at Rawdon MBC's fun for all June Open Day.

in the *Yorkshire Post*, *Yorkshire Evening Post* and *Telegraph & Argus* newspapers, and on Model Boats' online magazine forum. The *Yorkshire Post* even sent a photographer to record the event.

A 'Boats for Sale' marquee was manned all day by one of our members, and he was able to sell several boats on behalf of retired club members. He did a brilliant job for the club, despite having the wind blow away his marquee in the afternoon!

We all had a long, hot, but enjoyable, day in the sun. My car thermometer was showing 29c as I left just before 5pm. But I'm sure we all went home knowing we had made a lot of new friends. I didn't manage a head count, but I estimate there were well over a hundred guests or more, of all ages and backgrounds, during the day!

So, a big thank you to all our visitors for coming to see us, and an equally big thank you to all members who made our guests so welcome and turned the day into such a resounding success.

Before closing, I would like to pay tribute to David King, the well respected and valued club member we lost on the



Enjoying the spectacular displays on the club's gorgeous private lake: what better way to chill-out on a warm June day!



Borkum, one of the live steam-powered pleasure boats charming the crowds.

Wednesday before our June Open Day. He had been poorly for a long time, but it still came as a shock to hear that he had lost his battle. However, we felt that he would have wanted us to go on with the show. He was a keen model boat builder and dedicated member of Rawdon MBC, having previously served as Chairman for many years. Always enthusiastic, he was still posting photos on our Facebook page just days before he passed away. Our sincere condolences go out to his family.

MIKE CRITCHLOW
RAWDON MBC

A lovely tribute to David, Mike. I'm sure he will remain present in all your hearts and minds.

Thanks for reporting back on your June event. After all the hard work and prep, I'm so pleased the day proved such a resounding success for you.

For anyone who missed out, or for those simply wishing to repeat the experience, details of Rawdon MBC's next Open Day in August can be found in the Compass 360 news section of this issue. Ed.

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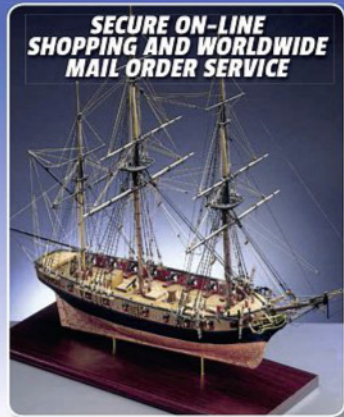
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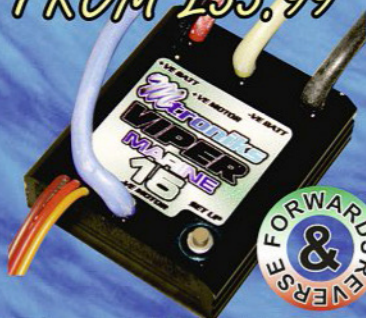


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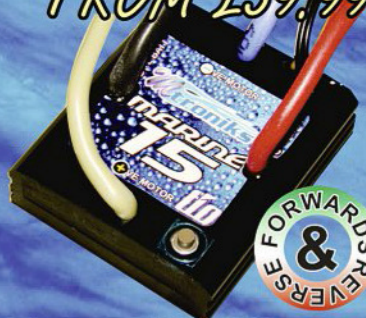


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