WIN

Billing Boats' 1:40 scale Waveny Class lifeboat kit

www.modelboats.co.uk
August 2025
Vol. 75 No. 897

model Boats

The Flying Bus

1930s' *Popular Mechanics* front cover artwork finally brought to life!

Getting it right

Square rigger rookie mistakes corrected

Readers' models

Brilliant work showcased

Fifie **Amati's 1:32 Scottish fishing boat kit reviewed**

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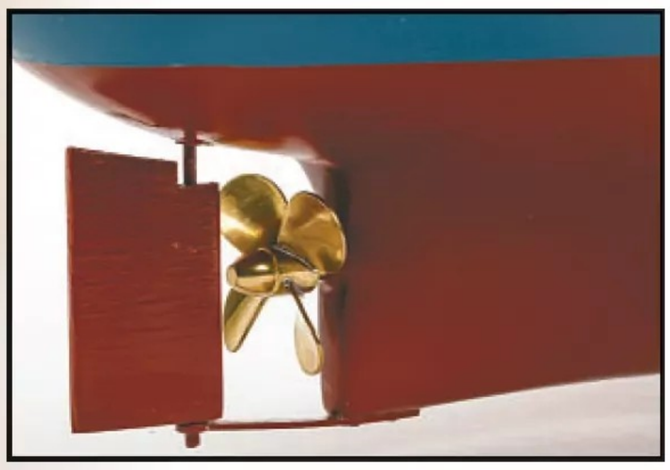

424 MERCANTIC

Wodden Hull 1:50
L. 96 W.18 H. 36cm

Updated lasercut construction

- **Added deck for RC equipment**
- **Improved**
- **Photomanual with detailed photos**

M/S M/S Mercantic (build no.84) was built in 164 by H. C. Christensens Staalskibsværft, Marstal, Denmark, ordered by Per Henriksen and was the Mercandia shipping lines first ship. LOA 48,01m, Beam 9,10 Draft 3,33 m. Brt. 299 Nrt. 200 Tdw 625. Call signal OZHA. Main engine B&W/Alpha 405-24VO. HK: 425 bhk. KW: 313. Speed 10 knots. M/S Mercantic was a traditional freighter and her kind was very common in the 1960's up to the 1990's. M/S Mercantic was sold and renamed several times. In 2004 she was sold to Wade Group, Portsmouth, Dominican republic and renamed to "Love Divine". Run aground on August 22th 2012, West Indies and declared CTL.

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EDITORIAL
Editor: Lindsey Amrani

Illustrator: Grahame Chambers

Publisher: Tim Hartley

By post: Model Boats, Kelsey Media, Media Centre, Morton Way, Horncastle, Lincs LN9 6JR
Tel: 01507 529529 Fax: 01507 371066
Email: editor@modelboats.co.uk

CUSTOMER SERVICES
General Queries & Back Issues
01507 529529 – Monday-Friday: 8.30am-5pm
Answerphone 24hr
help@classicmagazines.co.uk
www.classicmagazines.co.uk

Archive enquiries: Jane Skayman
01507 529423 jskayman@mortons.co.uk

ADVERTISING
Advertising Sales Executive:
Mason Ponti
mason@talk-media.uk
Tel: 01732920499

Karen Davies
karen@talk-media.uk
01732 442144

By post: Model Boats Advertising, Kelsey Media Limited, Media Centre, Morton Way, Horncastle, Lincs, LNP 6JR

PUBLISHING
Sales and Distribution Manager: Carl Smith
Head of Marketing: Charlotte Park
Commercial Director: Nigel Hole
Publishing Director: Dan Savage
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NEWSAGENT RESERVATION (SEE PAGE 82)
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contents

WELCOME TO THE AUGUST 2025 ISSUE OF MODEL BOATS

As you may have noticed, the dimensions of the mag have recently been slightly reduced, but rest assured that doesn't change the amount, and variety, of content we're able to pack into every issue.

This month, for example, you'll find everything from a review of Amati's 1:32 kit for a traditional Scottish fishing vessel to a feature focusing on the scratch build of a World War II US Seabee's-engineered pontoon (sorry, Mike, aircraft carrier!), and from an unusual steam-powered RNLI lifeboat project to some square rigger retrofitting, artwork for a very art deco looking transatlantic craft design concept featured on a 1930s' edition of *Popular Mechanics* magazine finally brought to life, and a completely digitally designed, 3D-printed dinghy. That's before we even get to the articles entitled 'Self-Centred' and 'Smoking pot' – which kind of sounds like we've diversified into lifestyle choices counselling, but as you will see from the Contents listing, both in fact provide some helpful 'how to' model boat-related guides.

Then, thanks to the ongoing support of the generous crew at Billing Boats, we're able to you offer you the chance to win a 1:40 scale Waveny Class lifeboat kit (see the centrespread of the mag for details), which, although marketed as a static display build suitable for the novice modeller, can, if you have the know-how, also be fitted out for R/C operation.

It's always a joy to be able to surprise the entrants drawn in our exclusive prize draws, and indeed three more lucky winners (one from *The World at War* prize draw courtesy of Old Gold Media/Richard Leon PR, as featured in our May 2025 issue, and two in the Japanese Dozuki Razor Saw prize draw courtesy of www.toolnut.co.uk that was run in our June 2025 edition) are announced on the pages of our Compass 360 news section in this issue.

It's also a real pleasure to be able to celebrate the brilliant work of this readership in the Your Models section and, once again, there's a superb selection of builds to admire starting on page 76.

Before wrapping up (not literally, as I'm writing this mid heatwave!), I should point out there's lots more fantastic content lined up the September issue (which will go on sale from August 15, but will be delivered to subscribers up to a week ahead of that date), including a free plan and build guide for Ray Wood's lovely *Lysander* (see page 82 for a sneak peek), so don't miss it.

In the meantime, enjoy your read!

Lindsey

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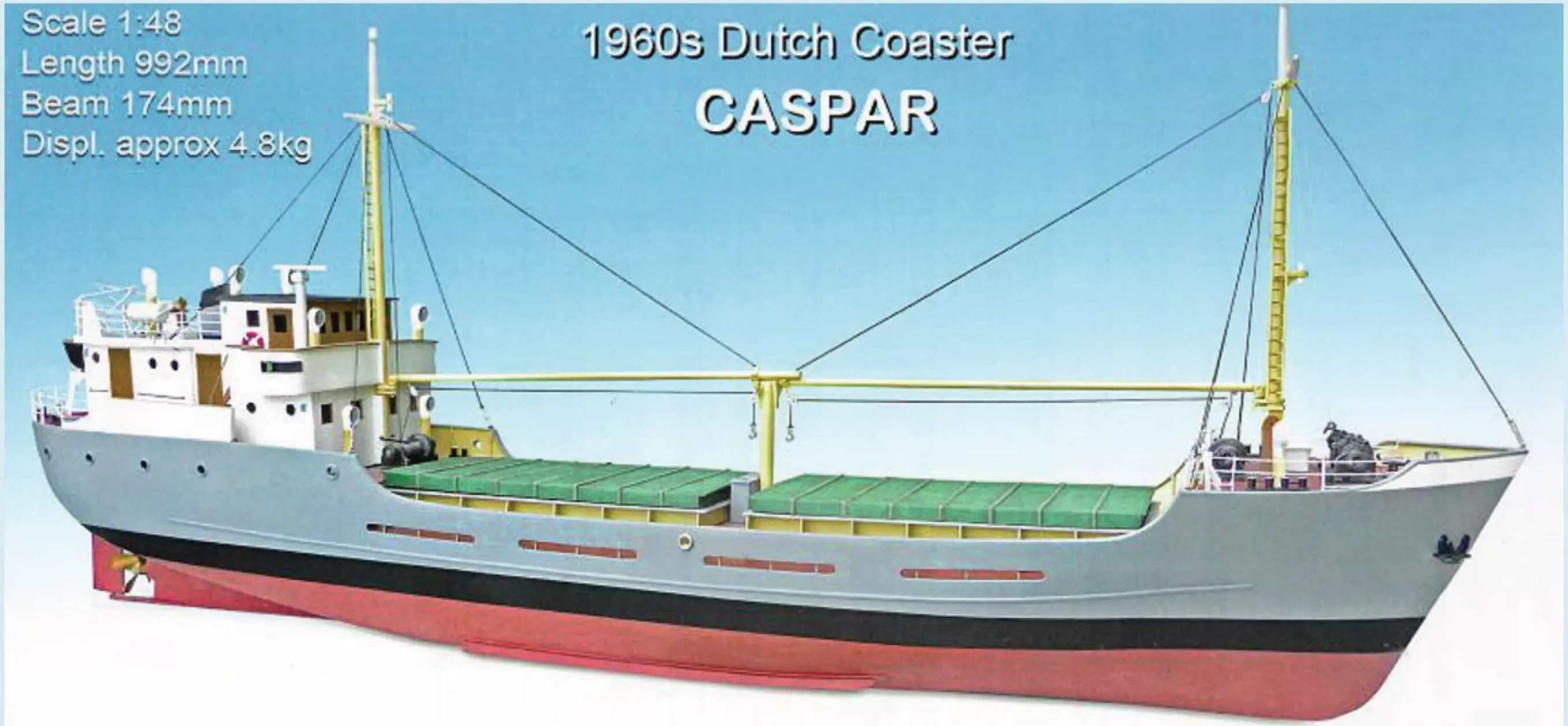


This attractive model is a representation of a 512ton general cargo motor vessel built in the Netherlands in the early 1960s.
There have been many vessels built to this basic design so you can invent your own colour scheme.

The kit is to the usual high standards and includes building manual, GRP hull, lifeboat, other materials; CNC cut styrene decks and superstructure, full size plan, resin and white metal fittings.

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

OUT AND ABOUT

Dover Transport Museum Model Weekend

The Dover Transport Museum in Willingdon Road, Whitfield, Dover CT16 2JX will be holding a Model Weekend over the weekend of **August 2/3** (10am to 4pm each day). This will feature all manner of working transport models, including model ships and boats (which will be demonstrated in a pool especially erected specially for the event outside of the museum).

Admission to the museum costs £12 for adults, with concessions, but tickets permit re-entry at no additional cost for 12 months after purchase. The wheelchair friendly venue offers free onsite parking and a café serving hot and cold drinks and light snacks.

For further information, visit the website at www.dovertransportmuseum.org.uk,

email info@dovertransportmuseum.org.uk or call 01304 822409.

Cwmbran MBC Open Day

On Sunday, August 10 the Cwmbran Model Boating Society will be holding an Open Day at Cwmbran Boating Lake, Cwmbran, Wales. The picturesque but practical venue boasts both a small pond (which will be busy with scale models and submarines) and a large lake (on which you'll be able to watch sailing boats, semi-scale fast and fast electric boats in action). Stands, including those manned by other local clubs, will be set up alongside of the small pond. There will also be model tanks, lorries and trucks on display.

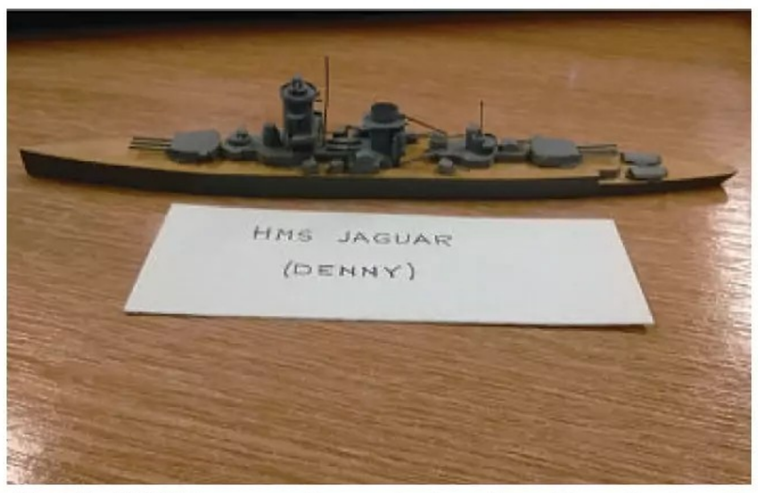
For further details, visit https://www.webster.uk.net/en/cwmbran-modelling-society.

Ships in Miniature: A Century of Denny Vessels and Their Stories

Opening on **August 23** this year at the Scottish Maritime Museum's Denny Ship Model Experiment Tank in Castle Street, Dumbarton G82 1QS will be an exhibition showcasing some of the extraordinary vessels from William Denny and Brothers Shipyard of Dumbarton (1844-1963) in handcrafted scale model form.

These highly detailed representations, so vital to the shipbuilding process (both for securing commissions and testing innovative designs before full-scale construction began), tell the story of the revolutionary engineering that transformed the industry; and while marvelling at their incredible

Black and white photograph of the Denny Shipyard thought to have been taken c.1880.



Model of HMS Jaguar, a Leopard-class Type 41 anti-aircraft frigate and the last frigate built by William Denny and Brothers for the Royal Navy. The model is from a collection of naval shipping models built by Prof. Ian Cressy Bridge.

precision and artistry you will be able to learn all about the specialised techniques and tools used to create them.

The exhibition highlights the Denny yard's global impact, featuring models of vessels that established notable records and served on famous routes worldwide, including paddle steamers for the River Clyde and commissioned vessels for the British Admiralty, over the course of its remarkable 119-year history.

The museum opens its doors between 10am and 4pm from Monday through to Saturday and day tickets are charged at £5 for adults, with concessions (for more details, visit https://www.scottishmaritimemuseum.org/dumbarton-museum/). Visitors can enjoy free onsite parking. Alternatively, the museum is a 10-minute walk from Dumbarton Central or Dumbarton East stations. Please note, the entrance to the museum is accessed by 11 concrete steps and, although there is a handrail, there are no access ramps of lifts either inside or outside the building.

Southern Model Show

The weekend of **August 30/31** will see the Southern Model Show back at the Headcorn Aerodrome at Shenley Road, Headcorn, TN27 9HX. The now well-established event will feature displays of all types of R/C model vehicles, including model boats, along with numerous trade stands to browse and family-friendly attractions to enjoy.

Both single day and weekend tickets (with the option to camp onsite) can be purchased in advance online. Visit https://headcornsouthernmodelshow.uk to view all the options.

The Brunel Museum

Located in Railway Avenue, Rotherhithe, London SE16 4LF, the Brunel Museum will this year be celebrating 200 years since construction started on the Thames Tunnel with a whole programme of events and activities.

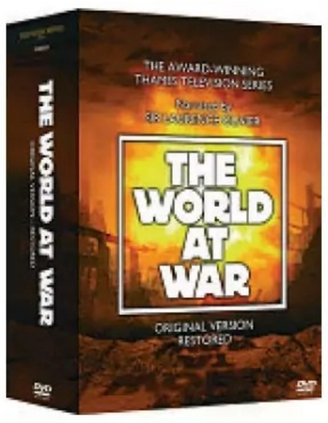
The museum is dedicated to telling the story of one of the greatest ever engineering dynasties the world has seen. As many of you will be aware, Isambard Kingdom Brunel's work included the design and build of three famous steamships, the *Great Western* (scrapped in 1856 following troopship service in the Crimean War), the *Great Britain* (now in preservation and dominating Bristol's historic waterfront) and the *Great Eastern (the launch point of which was just across the river from where the museum stands today, but this ship was also sadly broken up in 1889/1890)*, each representing major advances in naval architecture.

Open from Monday through till Friday from 10.30am to 3.30pm, admission to the museum is charged at £15 for adults, with concessions.

For more information, visit https://thebrunelmuseum.com

PRIZE DRAW ANNOUNCEMENTS

The World at War Prize Draw



We are delighted to announce the winning entry drawn in The World at War Prize Draw, which featured in our May 2025 issue courtesy of Old Gold Media and Richard Leon PR, as **Mr James Palmer of Troon, Ayrshire.**
Congratulations, James!

Japanese Razor Saw Prize Draw

In the June issue of Model Boats we were able to offer you the chance, courtesy of www.toolnut.co.uk, to win one of two superb Japanese Dozuki razor saws. It is, therefore, our pleasure to announce the two lucky entrants drawn on the June 27 closing date as:

- **Clive Farrar of Penrith, Cumbria**
- **Adrian Scrivens of Hereford**

Congratulations to you both!

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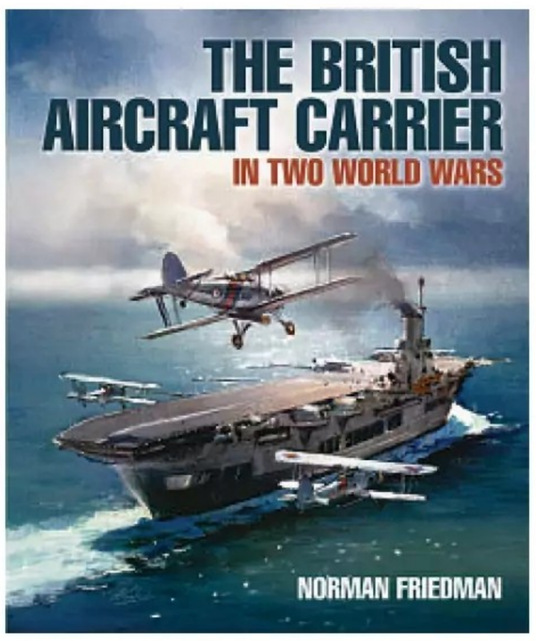
The British Aircraft Carrier in Two World Wars



In this, the first of a two-part study, naval analyst Norman Friedman focuses mainly on British dominance in the early years of carrier development (during World Wars I & II). All British-built carriers of the day, including those in Commonwealth and foreign service are covered, with historical context, both operational and technical, explained in detail. The book is heavily illustrated with period photographs, but also reproduces official plans from the National Maritime Museum, many of which have never previously been published

Carrying an RRP (Recommended Retail Price) of £50, the title can be purchased directly from www.pen-and-sword.co.uk or ordered via all good bookstores when quoting ISBN 97813 9903 3138.

Amati's Fifie

Brian Knight tackles building this 1:32 scale Scottish motor fishing vessel as a working, rather than static display, model…

Of the many materials available for model boats, nothing comes close to my favourite, wood. I can remember building yachts 'bread & butter' fashion, as I am sure many others can, and there was always something about really satisfying about this way of working, as indeed I found there to be with the plank-on-frame method I later adopted. Planking a curved and shaped hull is definitely a challenge, requiring a good eye and lots of patience, especially if double planking, but is ultimately so rewarding.

I've since built many boats with fibreglass, plastic sheet and the later technology of vacuum formed plastic hulls, of course, but I recently decided I'd like to revert to modelling with wood again. So, having in the past built the Amati Grand Banks cruiser (this kit including a fibreglass hull but the rest being all wood) and later the Amati Aquarama Italian runabout (of double plank-on-frame construction), and appreciated the detail and quality of these kits, Amati's Fifie Scottish fishing boat immediately appealed to me.

The Fifie was a traditional type of fishing boat designed on the east coast of Scotland, in use from the 1850s until well into the 20th century. These boats were mainly used to catch herring using drift nets.

What's in the box?

On receipt the well-packaged kit proved as just as expected, coming with an extensive instruction manual, seven well-drawn plans and, along with the wooden parts for the build itself, a wealth of incredible detail fittings supplied in two separate containers (see **Photo 1**). While this kit is not exactly cheap, carrying an RRP of £224 (although shop around, as there are discounts/bargains to be found), you certainly what you pay for in terms of the quality of design and the materials used.

"If the intention is to create a working model, the surfaces of all exposed MDF in the interior must be sealed against any water ingress"

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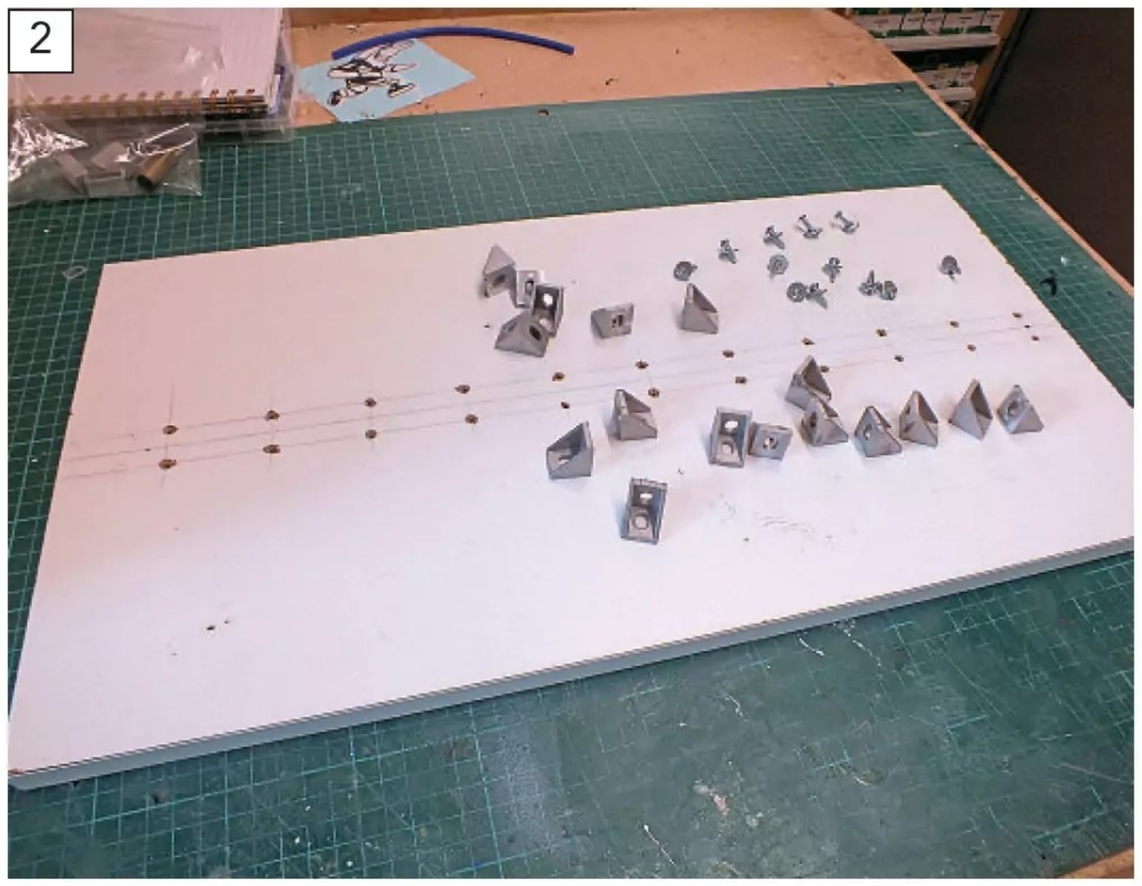

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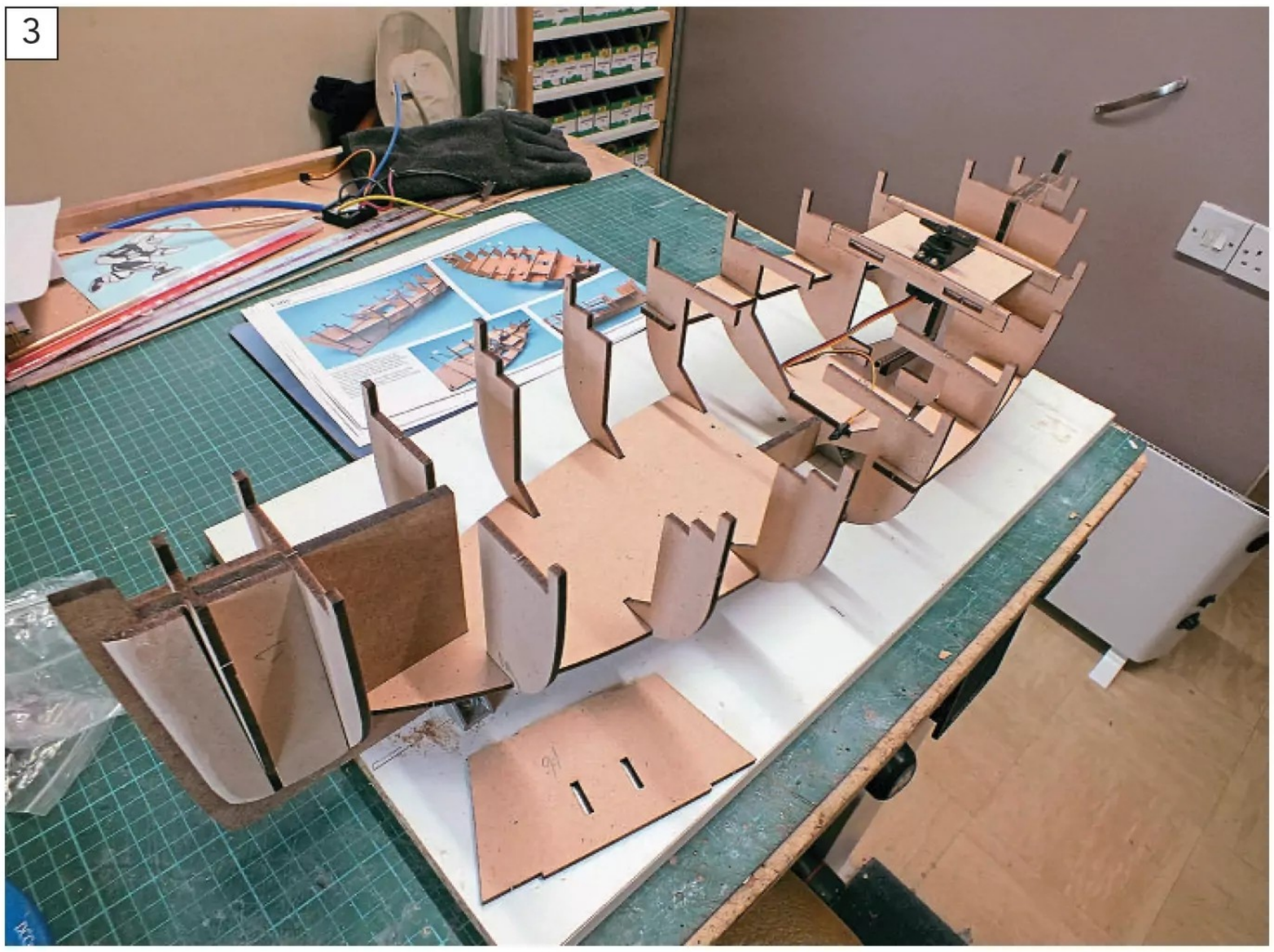

"This is a good point at which to make arrangements for an on/off switch externally, so that you can power up without having to remove the superstructure and its associated rigging"

Building for R/C operation

Ahead of embarking on the build, I suggest you first create a jig to align the frame. I put mine together simply by using some right-angle brackets made for 3D printers and a firm baseboard (see **Photo 2),** and this made things so much easier when **I s**tarted work the assembly (see **Photo 3)**.

I should also probably point out before going any further that the majority of the interior is constructed from MDF (this kit is, after all, marketed primarily for the build of a display model, hence the large amount of detail). As many of you will be aware, MDF doesn't like water and swells enormously once wet. So, if the intention is to create a working model, the surfaces of all exposed MDF in the interior must be sealed against any water ingress (which, let's face it, can happen in even the best of models). I find Rustins' Quick Dry MDF Sealer one of the best products for this purpose, but of course you may have your own tried and test preferences.

The next important step is to complete all the internal electrics and mechanical bits and pieces – basically, everything, including the shaft and coupling, that needs installing before planking begins. I also strongly advise testing all the working parts, the full operation, at this stage as, trust me, you won't have much room to attend to any modifications once you're all planked and the deck is on (see **Photo 4)**. Likewise, this is a good point at which to make arrangements for an on/

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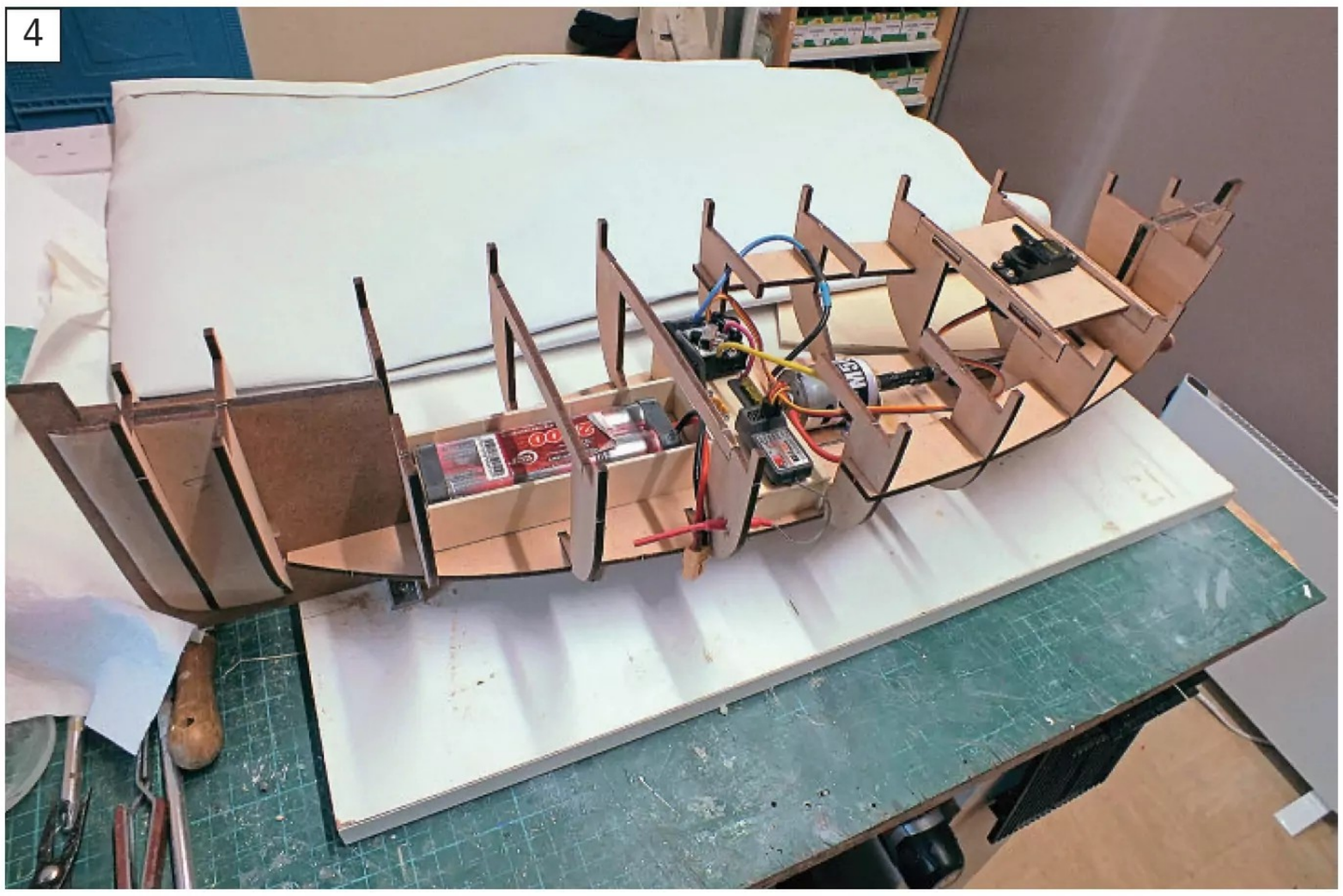
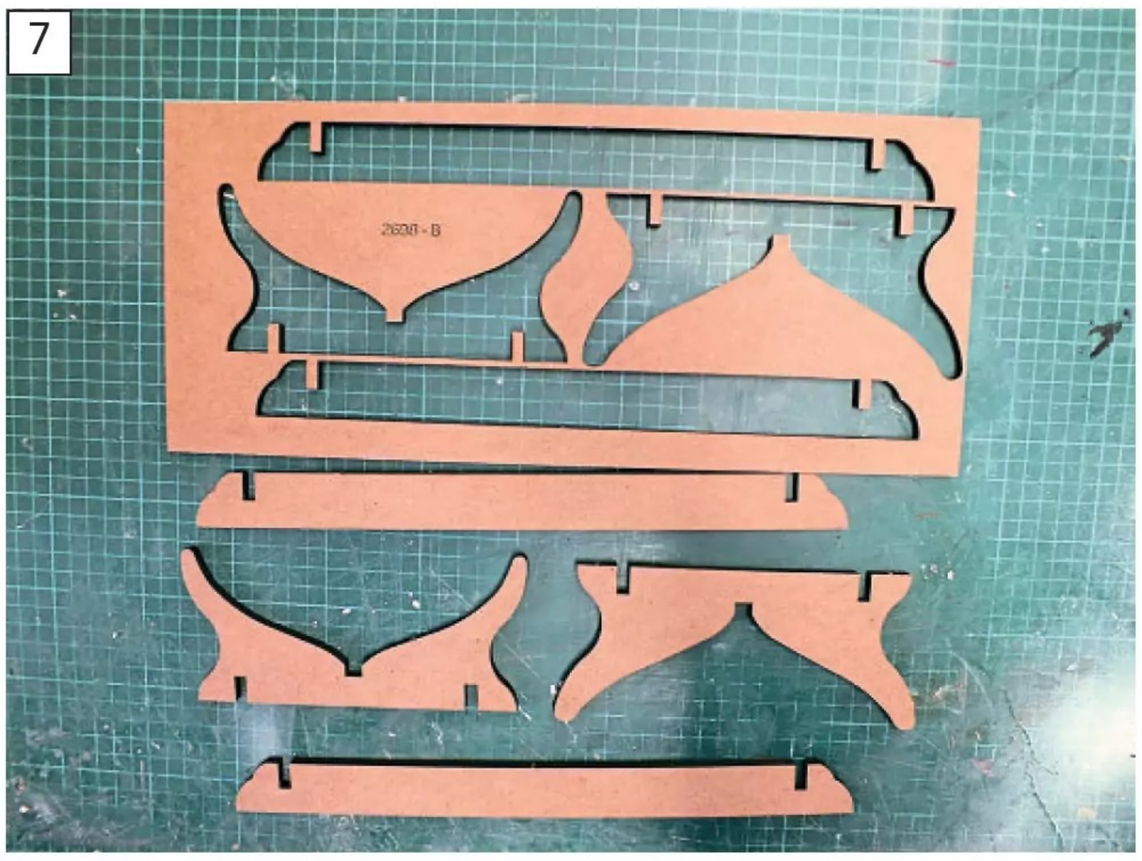
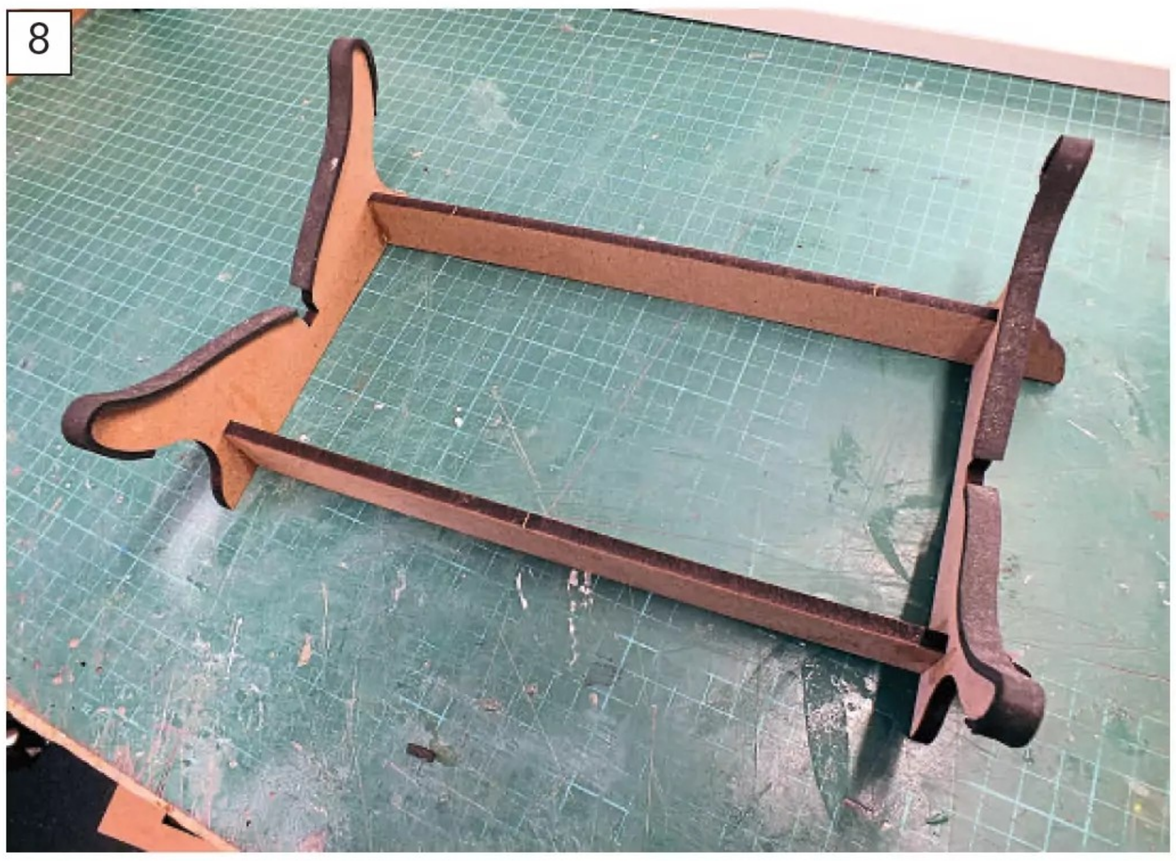
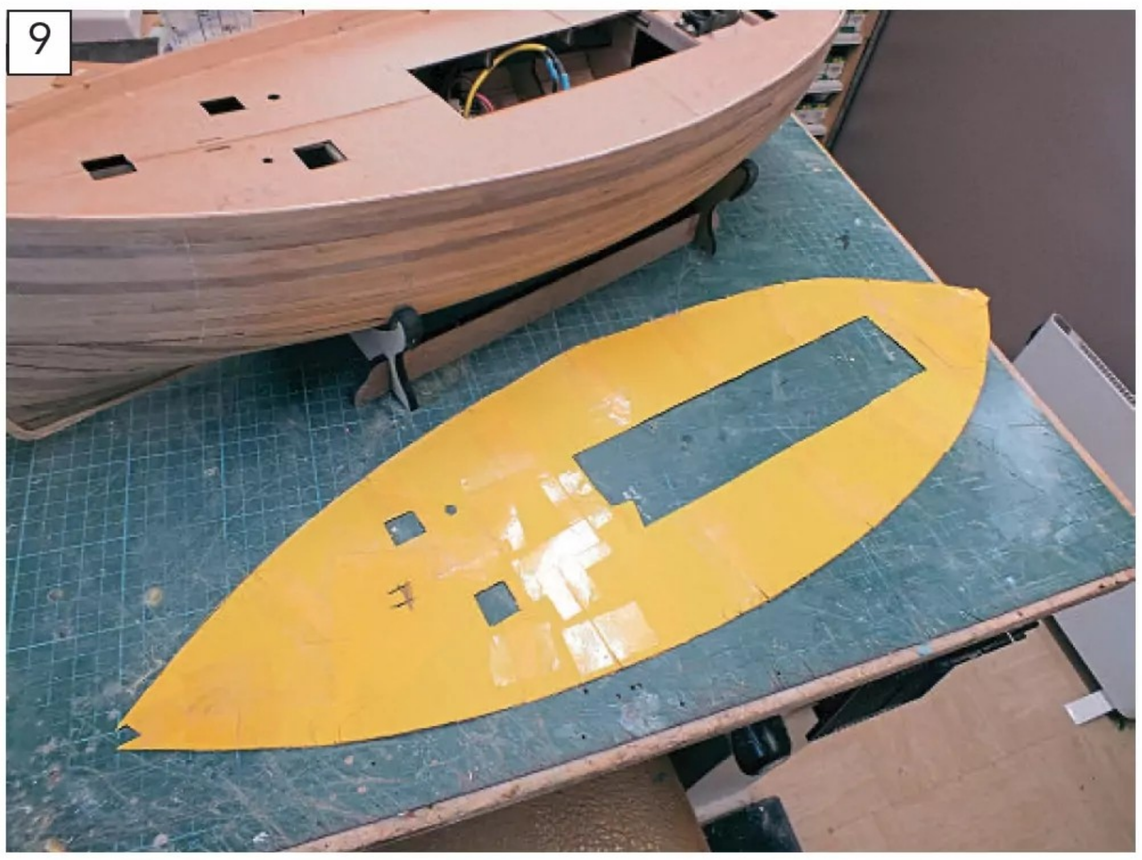
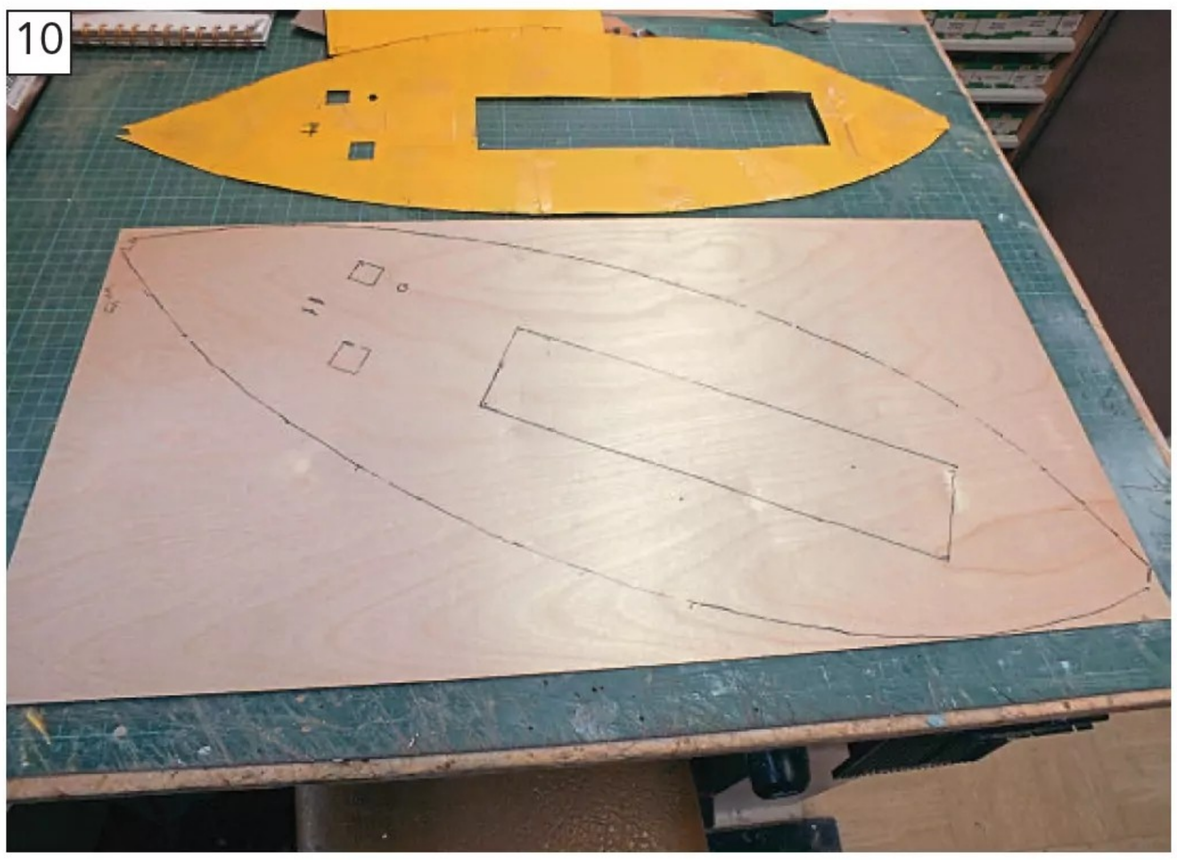








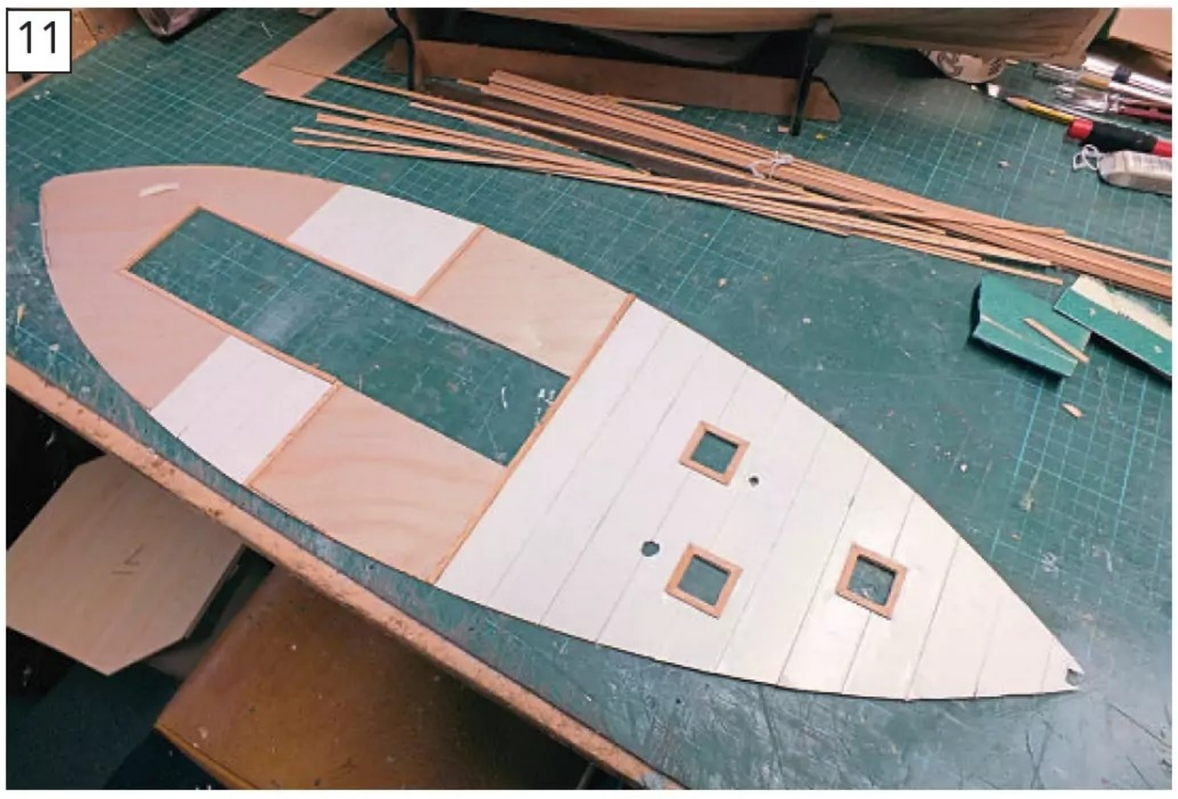


off switch externally, so that you can power up without having to remove the superstructure and its associated rigging (I ended up fitting a rocker switch below a hatch I made, positioned below the wheelhouse, at a later stage).

You can then attach the first layer of planking. I fitted the deck first to give me more support (see **Photo 5)**. My first layer was a little rough (but acceptable); the second (shown in **Photo 6,** awaiting further sanding) needed a lot more attention.

We now come to another essential assembly, the stand. The kit contains components for a very substantial one (see **Photo 7)**, which I have also photographed once assembled (see **Photo 8)** – although please note the rubber protection strips added came from my own personal stock and is not supplied with the kit.

The timber used in the kit is made up of a variety of different types of wood, in various tints and shades of colour (particularly when it comes to the strips). The base colour on the thinner laser cut sheets, however, need to be stained, either with mahogany or walnut. I preferred mahogany and found it easier to apply the stain after the individual parts had been removed from their sheets and assembled.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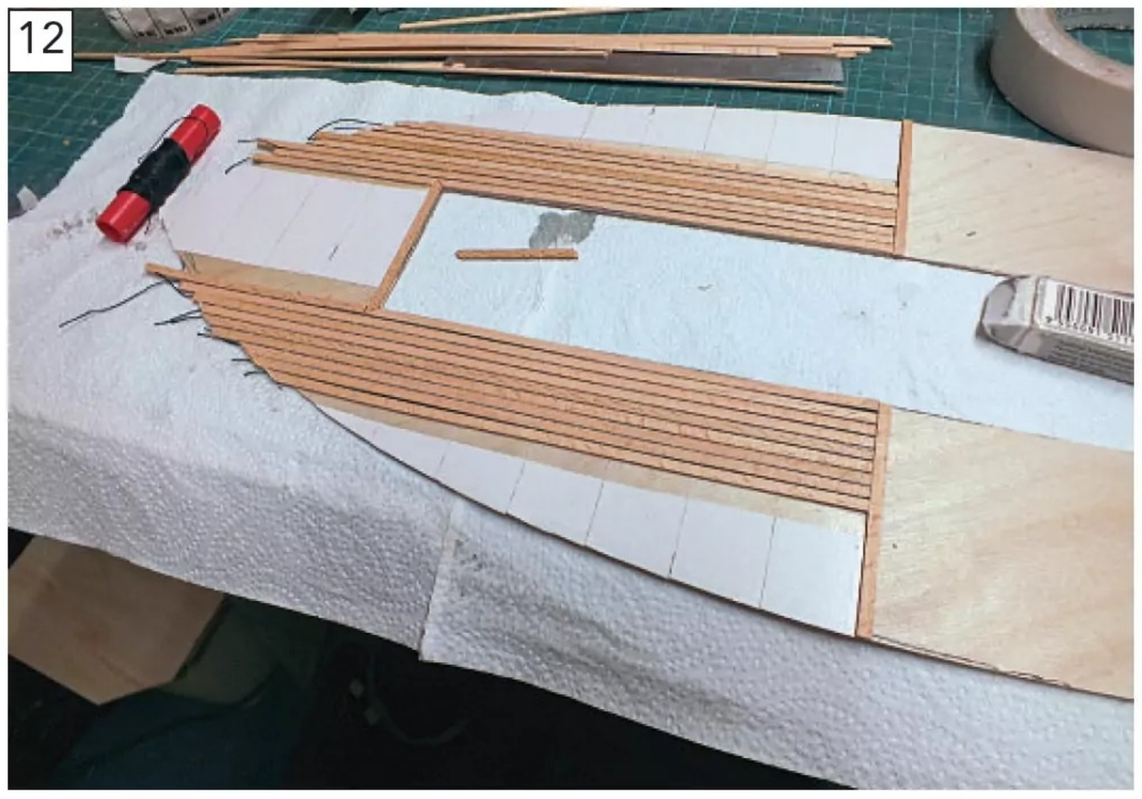
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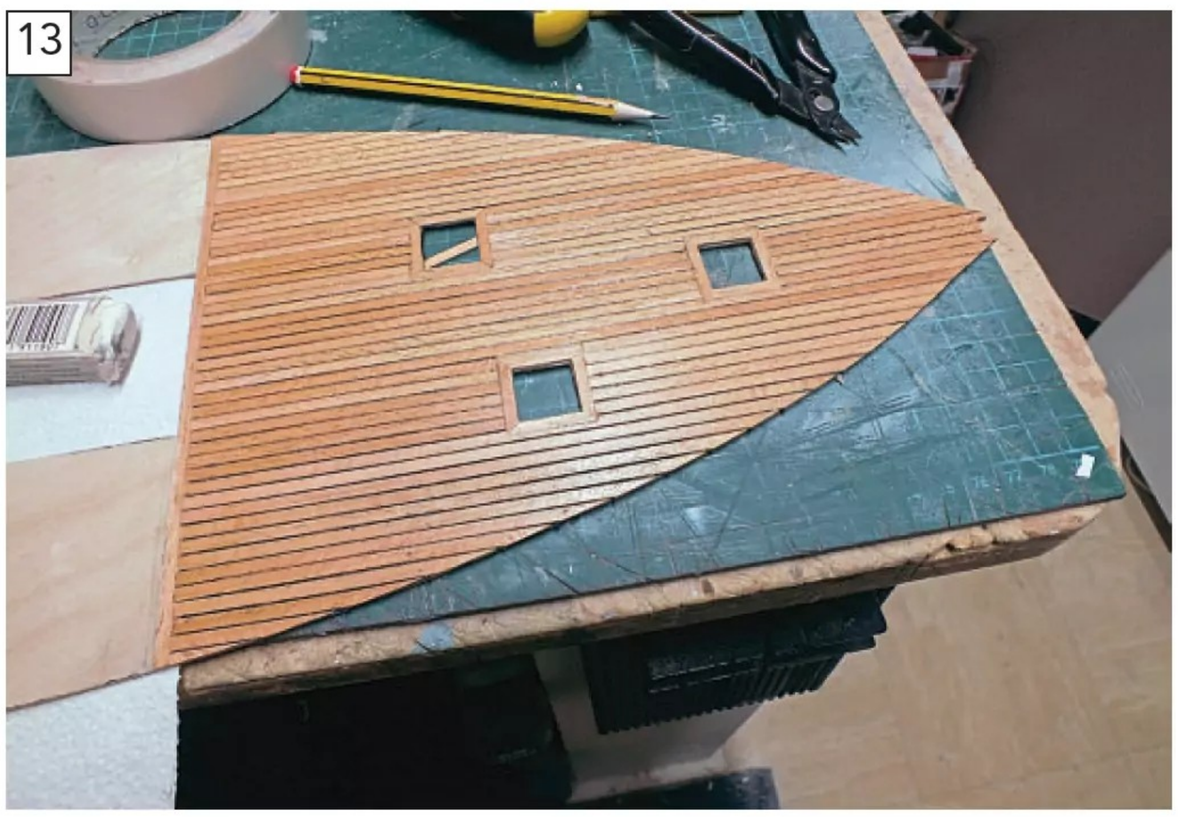
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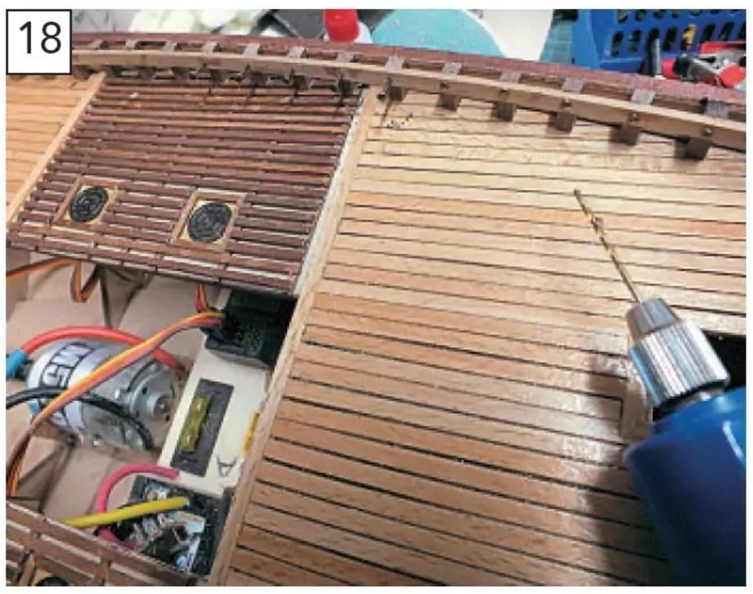
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Moving on to deck planking, here I firstly removed the bulkhead tops above the deck as per the instructions. These break off easily and then need to be sanded flat with the fixed deck. I made a template for my fitted deck using paper sheet (see **Photo 9),** which I transferred on to 1mm ply sheet (see **Photo 10)**.

As with any deck that requires planking, I prefer to use a false deck and fix the planking with black cord inserted between each plank, seated on thin double-sided tape. I've been using this method for many years and have never had a plank come loose. The method can be visually followed in **Photos 11** to **14**.

You will need to give the deck two coats of sanding sealer, followed by two coats of semi-gloss or matt varnish (depending on your own personal preference) before fitting (see **Photo 15)**.

You will find it's much easier to trim the end of the planks than try cutting them to an angle to match the shape of the bulwarks.

This done, you are ready to fit the timberheads above the deck. The instructions direct you to fit these oversize and then cut and sand flat. However, as I felt this would leave marks on my bulwarks, I elected to cut and fit each one individually (see **Photo 16)**. The results – after investing a considerable amount of time and patience, necessitating numerous cups of tea to be consumed – can be seen in **Photo 17**.

Your next task is to fit the inner rail, which is secured with black nails. Here, I pre-drilled using a drill bit slightly smaller than the diameter of the nail before pressing them (see **Photo 18)**.

I decided to fit the rudder and chains linked to my servo at this stage. This proved fairly straightforward as the hinges are perfectly formed and fit in

"I've been using this method for many years and have never had a plank come loose"

the location indicated in the instructions with no hassle (see **Photos 19 and 20)**.

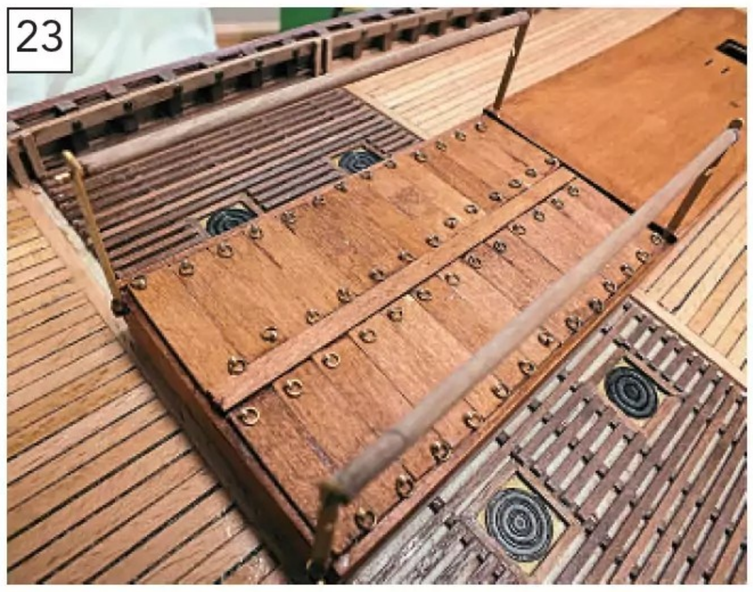
The superstructure

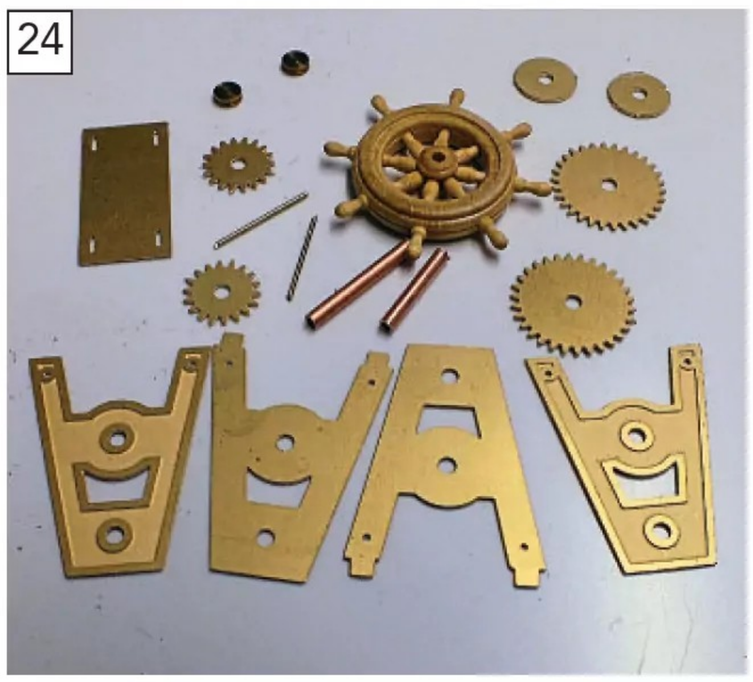
After you've varnished and painted the hull, it's time for the superstructure to take centre stage. This first needs to be stained, but as you can see in **Photo 21** there's not much of it.

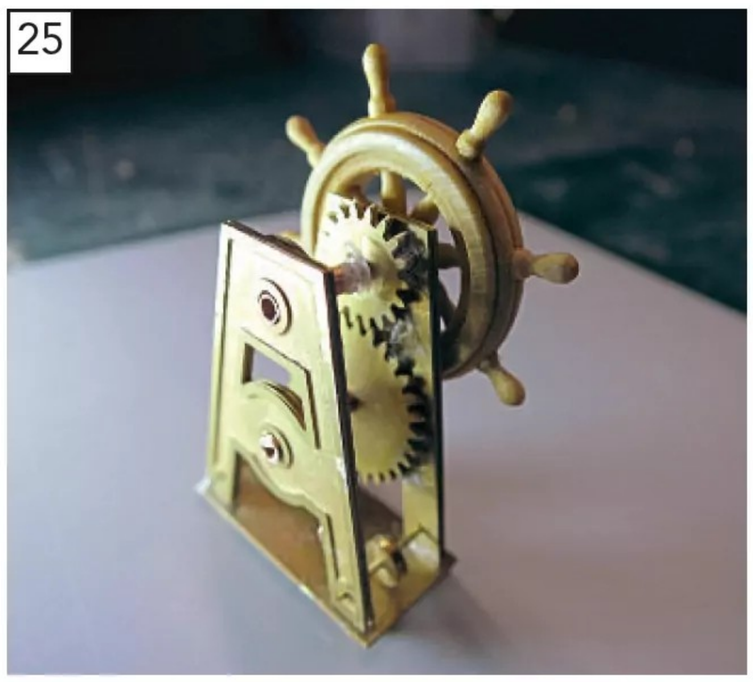
Fairly straightforward is the assembly of the wheelhouse's inner and larger outer window frames into which the glazing is fitted, but let's take a look at some of the more intricate detailing… **Photo 22** shows one of the hatch covers, with its pull ring and shaft ready to be joined and fitted, while **Photo 23** features all 26 of these carefully installed, along with the net rollers. Indeed, there's an abundance of very small and beautifully etched brass parts on the sheets included with this kit, such as the laser cut brass components that make up the wheel (see **Photo 24 and Photo 25).** This is also shown completed and installed in the partially finished wheelhouse (**Photo 26**); although not a functioning item and hidden from view once the superstructure is complete, it's good to know it's there!

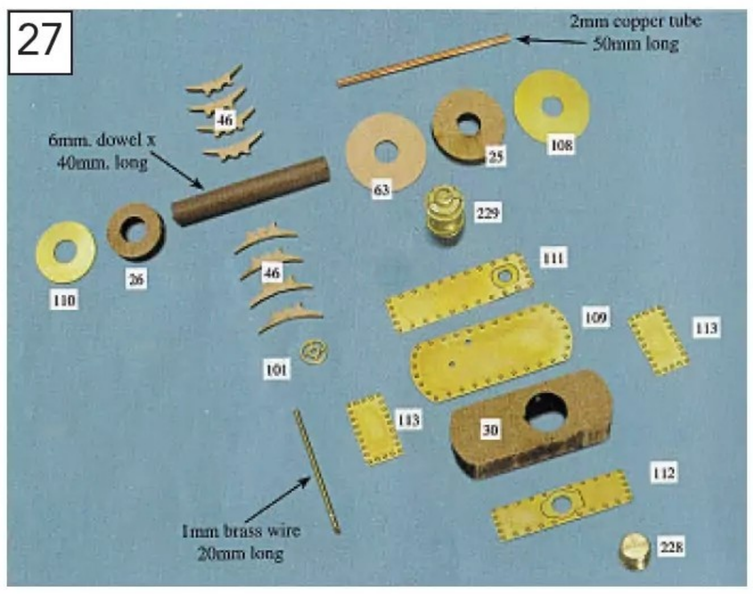
My image of the components that make up the steam winch (see **Photo 27)** was copied from the instruction manual, while **Photo 28** shows the resulting build installed on the deck. The exhaust pipe from the starboard side is lagged with 1mm cord.

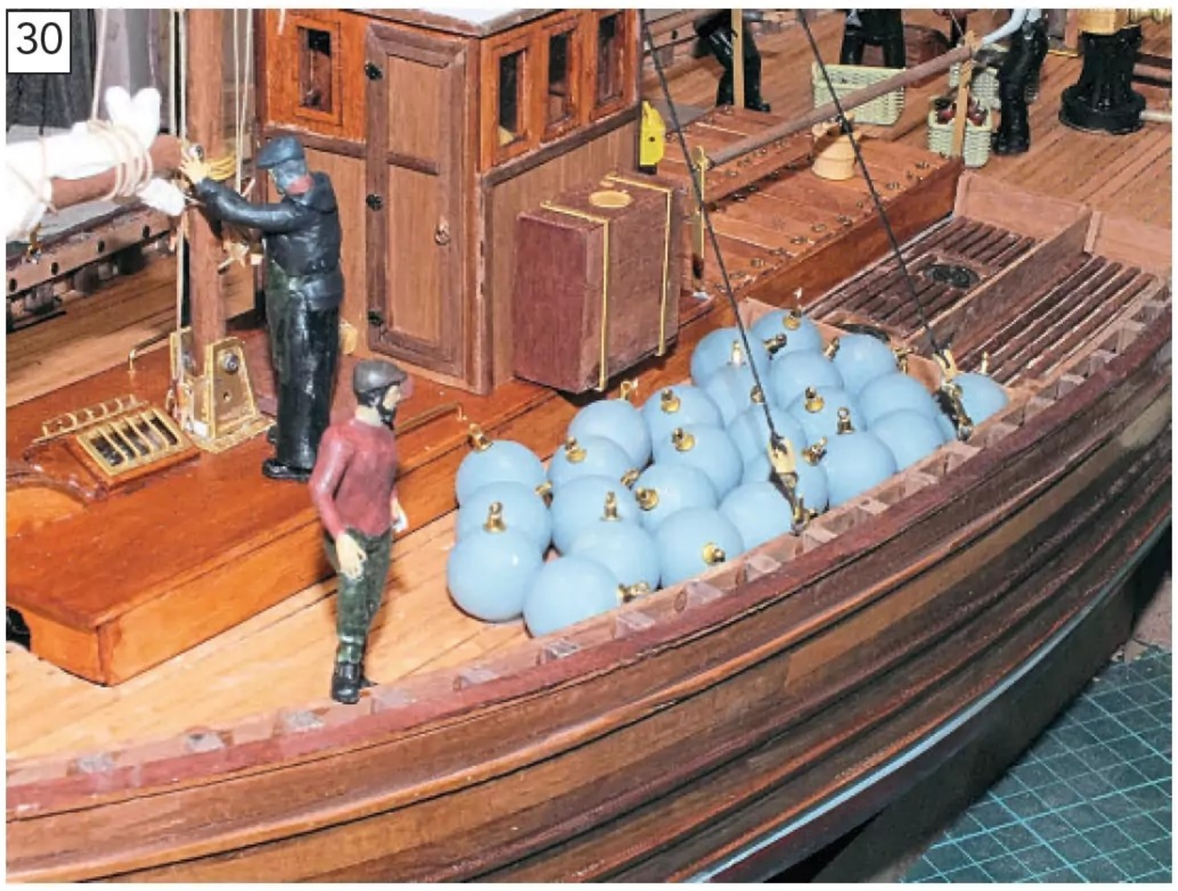
Another detail build shot shows the bilge pump ready for painting and installing (see **Photo 29)**. For this type











"As it stands, the rigging, along with the sail, is perfect for a display model, but needs some consideration if you're building a working boat"

of assembly of brass and/or wooden parts I either solder or use superglue.

Rigging

As it stands, the rigging, along with the sail, is perfect for a display model, but needs some consideration if you're building a working boat. In the latter scenario, it's most likely both masts will need to be folded for storage. I certainly don't have room on my shelves to store this model with its masts erected. So, I've found it more practical to store the sail furled on the boom. Where possible, I have fitted some of the rigging as per the full-size vessel, including the blocks. After operating on the lake, I expect to add more detailed rigging at some point in the future.

A small problem I had during the build was that there was a number of warped deck planks and the sail cloth was missing, but an email to Amati was immediately replied to by a very helpful Emilio Marletti; the result being that replacements were promptly despatched via courier.

On receipt of the sail cloth, I made up the sail (my wife kindly sewing it up around the edges for me), but as stated, I elected so show it furled to the boom along with the gaff enclosed. While the main reason was to simplify the mast lowering, this was also very important to me as our lake can get a bit windy at times, and I don't think the Fifie will make a very good yacht!

Life aboard Fifie

Some of the detail as I neared completion can be seen in **Photo 30**.

There was still, however, one issue to be addressed… My belief is that all model boats on the water should have a crew, or a helmsman at very least, so I contacted Martin at Model Dockyard for suggestions. After some investigation he advised that a vessel of this type would have a crew of eight or nine, plus a deckhand. This gave me lots of scope and allowed me to inject some humour into one particular cameo; as you will see in **Photo 31,** which depicts crew members with their catch, one of them is being clawed by a crab he's picked up, and, despite his obvious howl of pain, one of his buddies clearly finds this hilarious. The finished boat, with all the crew onboard, can be seen in **Photo 32**.

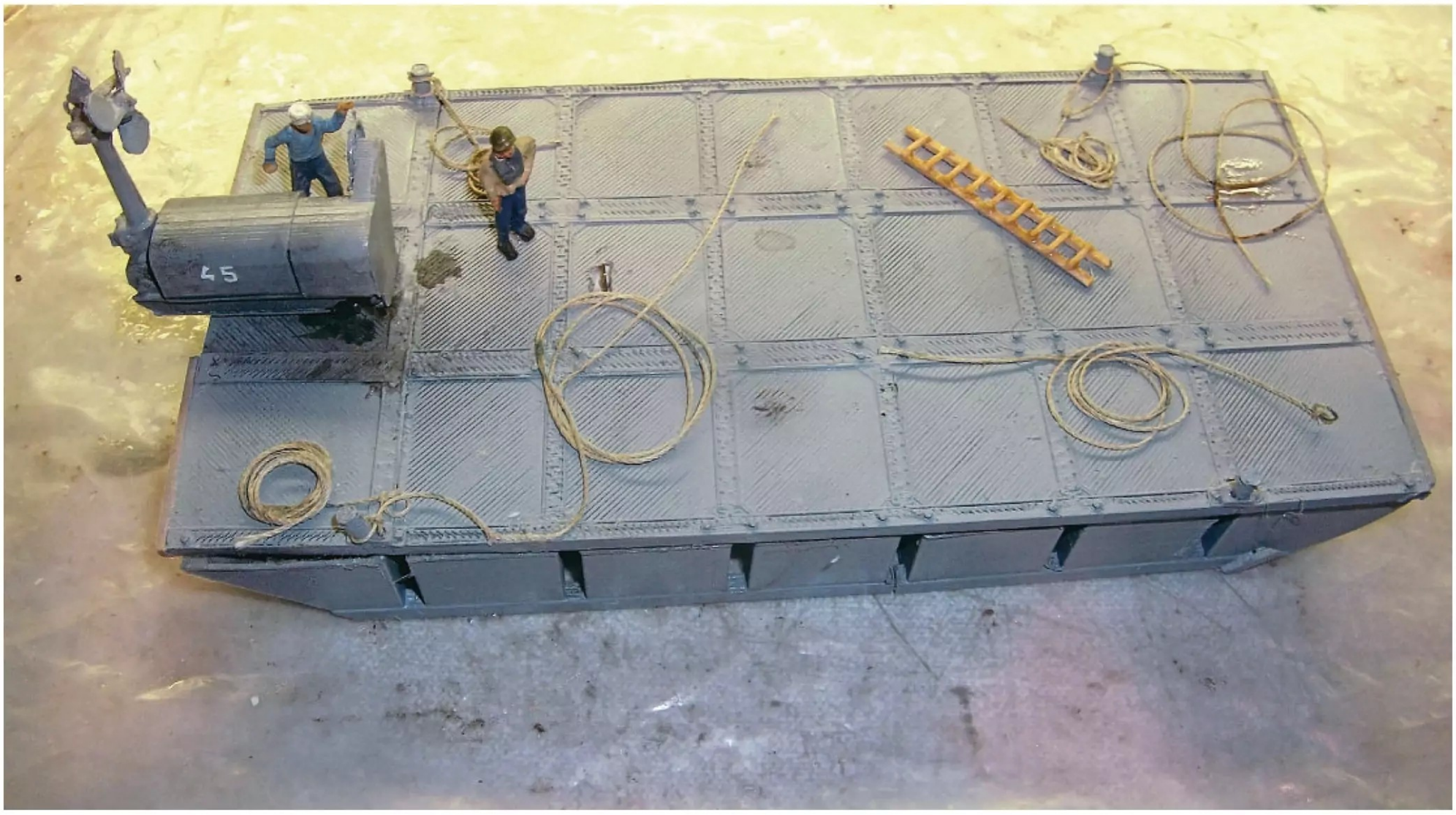
Photos 33 and, of course, the intro image, show my Fifie finally out on the water.

It's a solid endorsement from me!

This proved to be a challenging and very enjoyable project, and I found it very satisfying to be working with wood again. Indeed, I reckon any modeller with a modicum of experience (but, in fairness, also lots of patience) will equally enjoy the experience.

More about Amati…

For those unfamiliar with Amati kits, I can highly recommend them. If you'd like to find out a more about the history of the company (which was formed in 1879 in Turin) behind them and its progress to date, this YouTube video (key the following link into your browser: https://www.youtube.com/@amatimodel3031) makes for interesting viewing. ●



Mike's model pontoon lighter for landing aircraft from a ferrying aircraft carrier to a Pacific island, built to 1:72 scale, so about 7in long.

World's smallest aircraft carrier

Wannabe Seabee **Mike Purser** shares the story of an experimental and innovative little build

This is the world's smallest aircraft carrier. It's a model of a vessel with a flat top carrying an aircraft, so it's an aircraft carrier, I don't care what anyone says! The plane can land on its deck, and make a rolling take-off from it (OK, admittedly with a crane, then three planks and a tractor). When first tested on the pond, the model drove forward and backwards, left and right, on demand, so it passed its 'sea trials'; and then it immediately broke down – so, it is *exactly* like a real aircraft carrier!

This was a project that combined two experiments: the first being to see if I could cannibalize cheap toys to power my own small models with radio control, and the second to see if could recreate a historically interesting photo of a powered lighter (raft) carrying a P-51D Mustang that I'd spotted online.

Mike's initial model, with 6in gaps between pontoons, just fitted on the build plate of his 3D printer in one piece. Online he managed to find free print file downloads for many useful World War II army trucks, etc, so many, in fact, he'd need a Rhino ferry to carry them all!

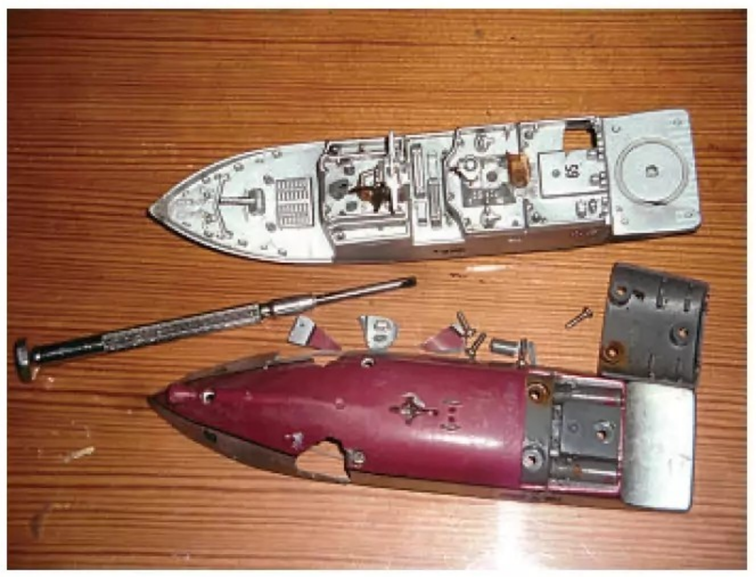
"It's a model of a vessel with a flat top carrying an aircraft, so it's an aircraft carrier, I don't care what anyone says!"

Seabees solutions

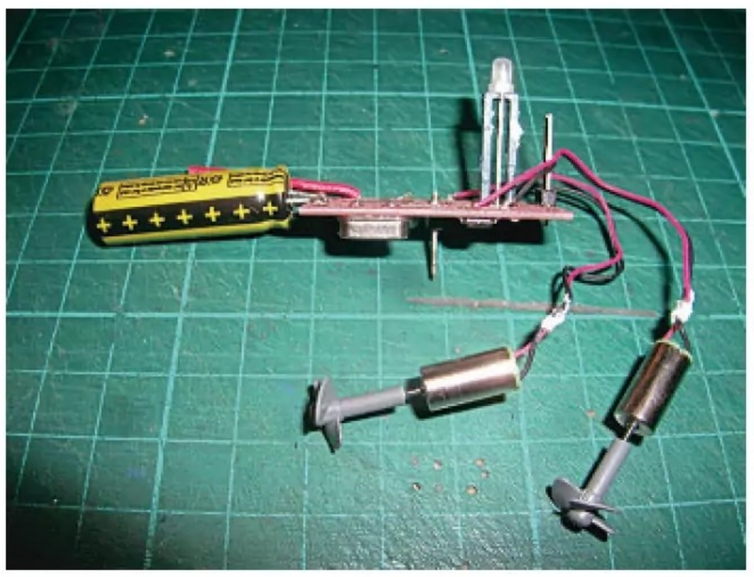
I've always been fascinated by the clever engineering solutions that emerged during World War II, particularly those that addressed the problems of amphibious warfare – the above-mentioned lighter being an excellent example.

The US Seabees (construction battalions) developed a simple and versatile system using small pontoons, each boasting about four and a half tons capacity, and a few standard accessories (*e.g.*, angle irons, fasteners, power units and special end sections) to rapidly construct rafts, causeways and all sorts of floats for a wide variety of tasks, even floating docks. They could even be filled with fuel or water, as conveniently sized tanks when, for example, being shipped abroad.

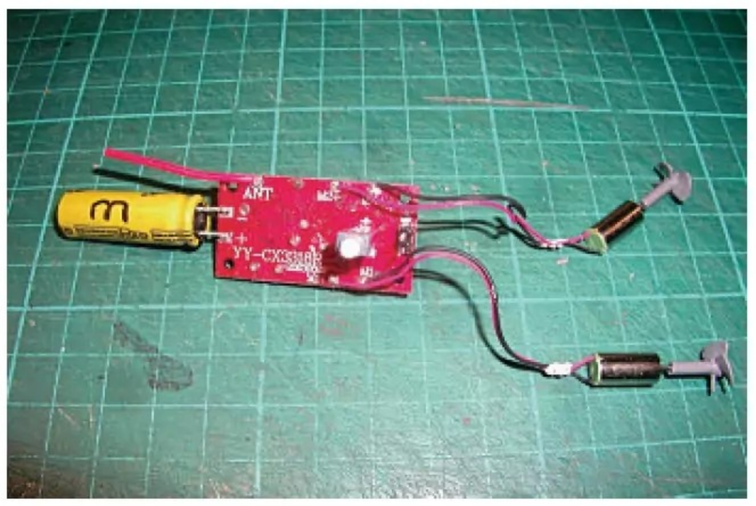
These pontoons were rectangular 5ft x 5ft x 7ft steel boxes, with 3/16in sheet sides and 3/8in sheets top and bottom, with two 7ft stiffening frames inside. The sides were impressed with stiffener grooves, and the tops sometimes featured non-slip diamond tread. Each corner was chamfered by about 9 inches, with holes drilled for special fasteners (nicknamed 'jewellery'), which allowed each corner to be connected, via a big angle iron to the next pontoon, using a large hand wheel to tighten the connections. Long lines of pontoons were built up on the wharf-side or beach, 5ft deep and 7ft wide, with 9in gaps between pontoons, all between four 46ft lengths of steel angles (extended with



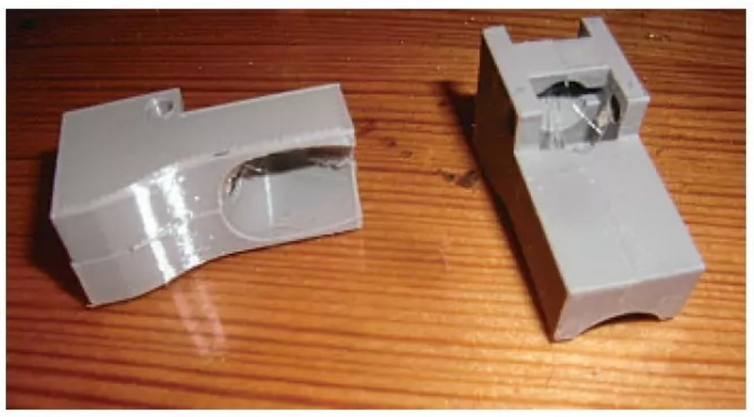
The donor frigate model, stripped of radio-control and motors, and suffering slight action damage!



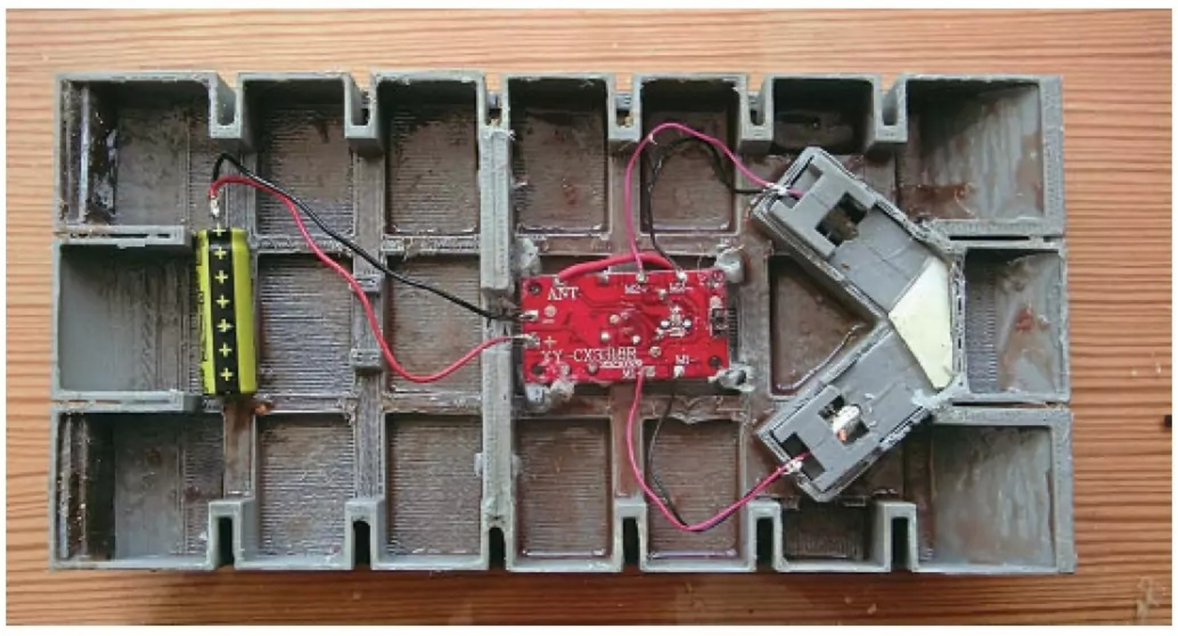
Motors with propellers, control PCB and battery, all taken from the toy frigate. If embarking in a similar project yourself, be careful when sawing the hull in half during the extraction process as the motor wires are VERY delicate!



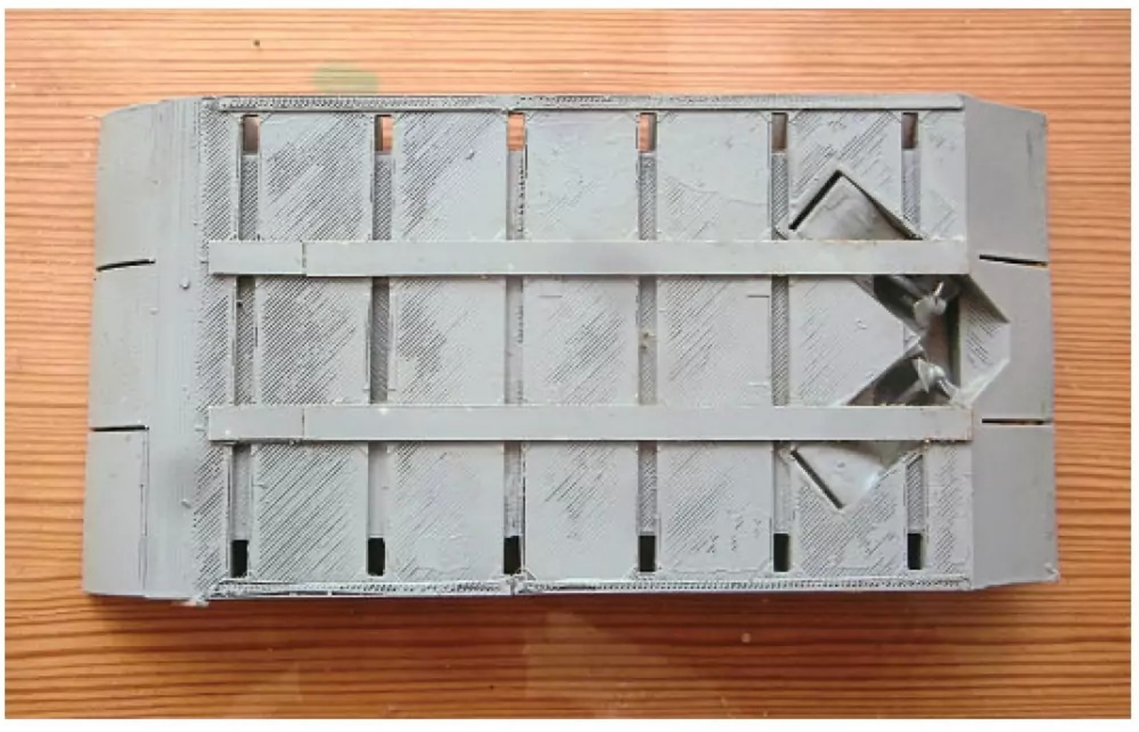
Plan view of radio-control PCB, 25mm x 40mm, with motors and battery



Two assembled pairs of motor blocks (without motor or props).

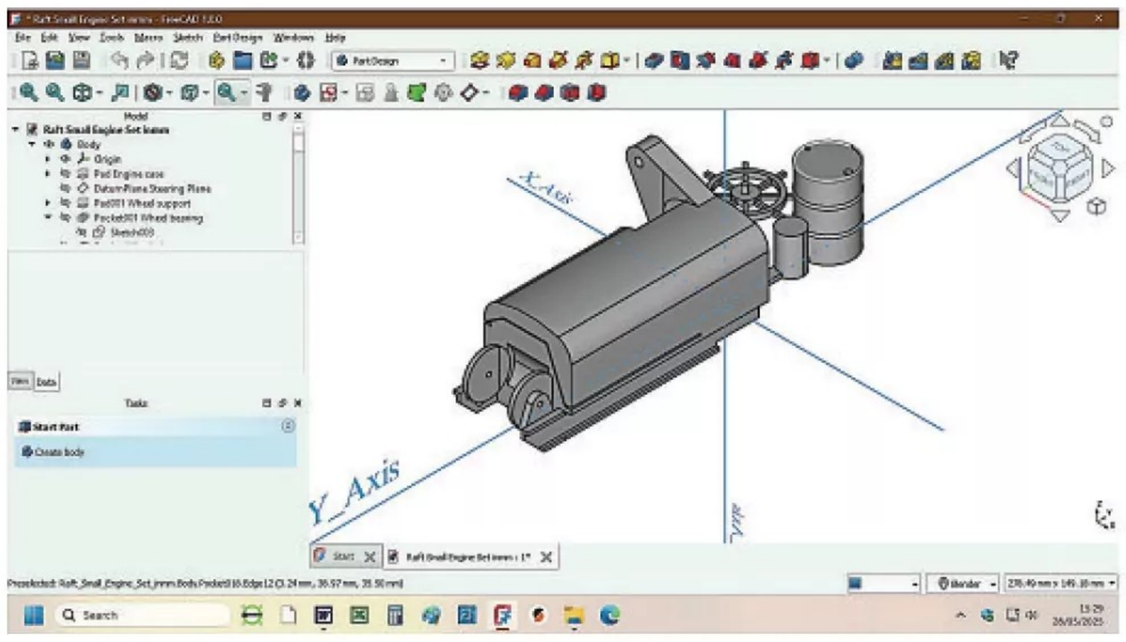


Current arrangement of the running gear. Motors are in blocks either side, while the charging pins will poke through the deck. The switch now uses the pins through the raft bottom and LED connections are snipped off. Note the lead ballast forrard to adjust trim.



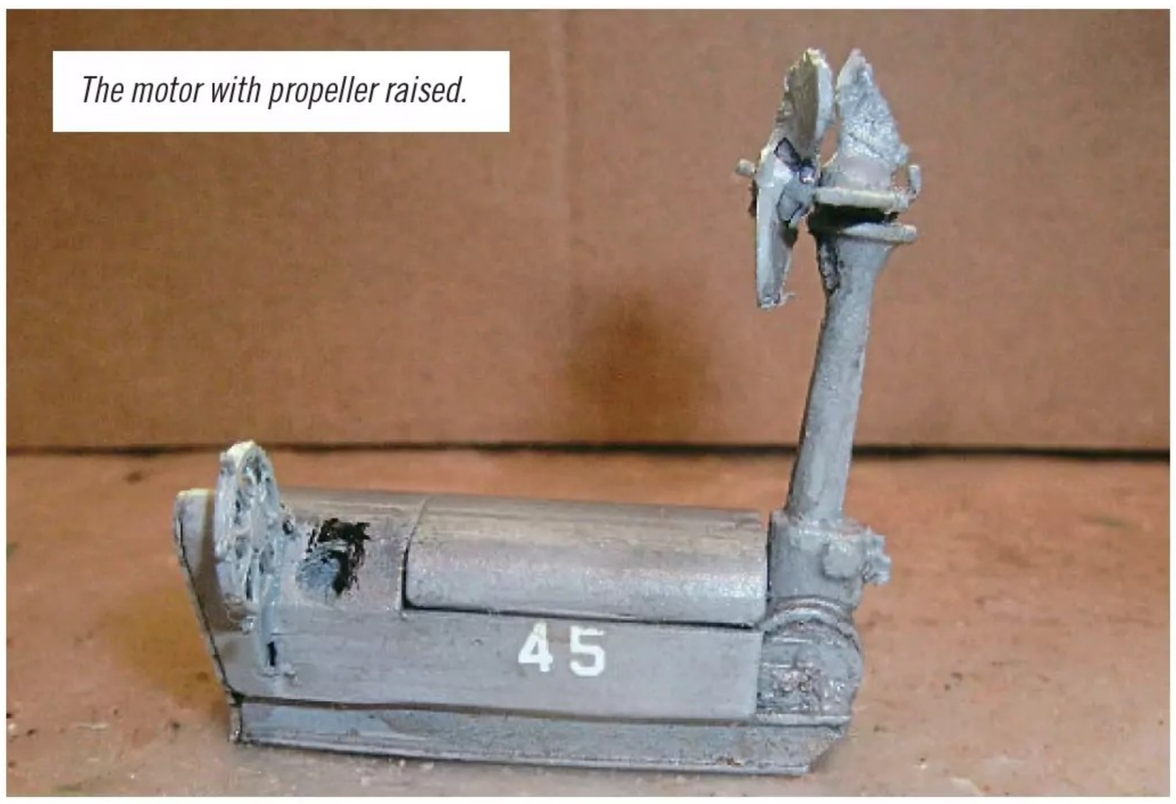
Just visible on the underside are the water-switch pins, both motor blocks in place and plastic card reinforcing strips.

An assembled view of powered pontoon raft, ready for sea trials.



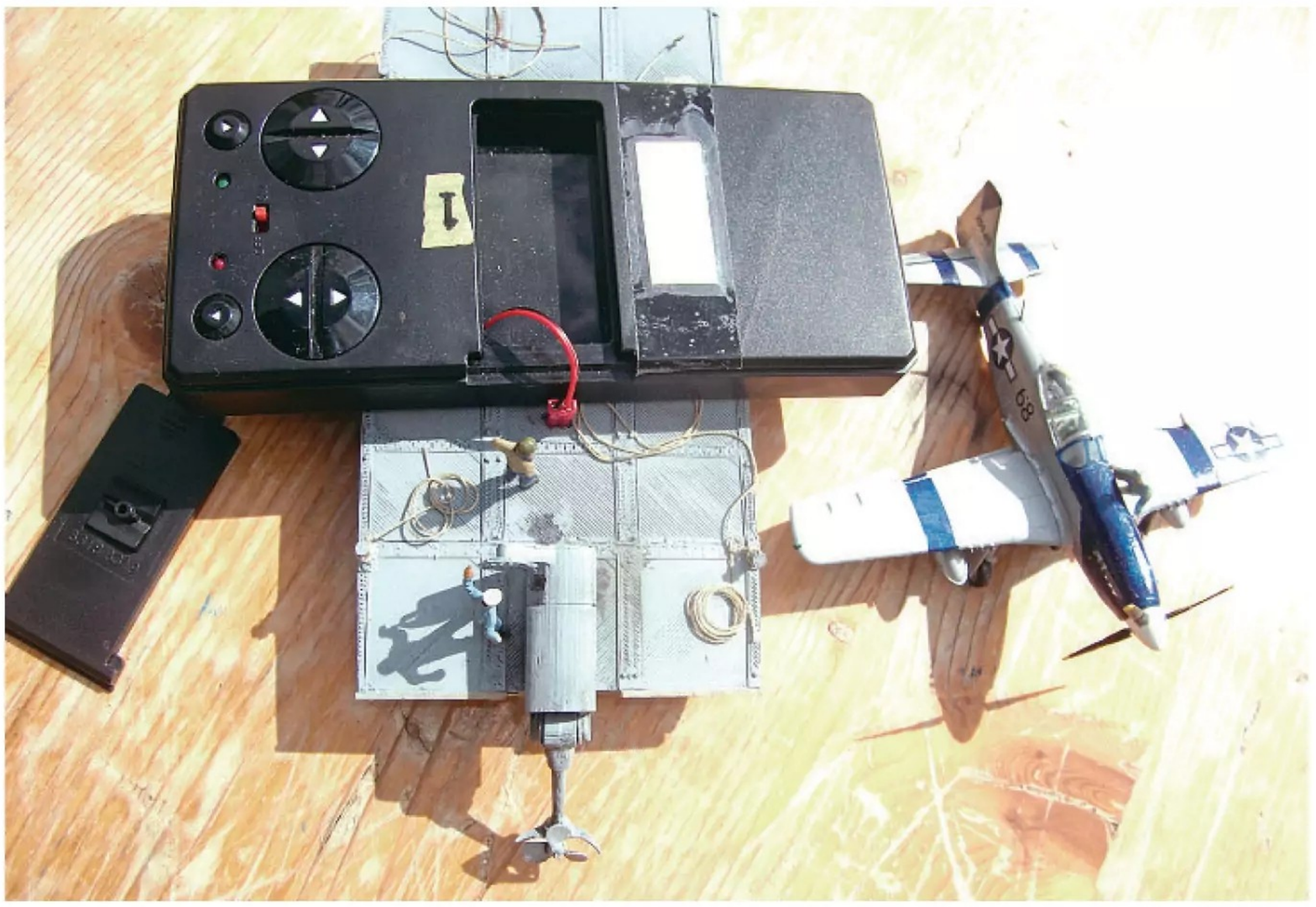
Work in progress on Mike's FreeCAD drawing for the 3D printed motor unit parts.

The freshly 3D-printed motor unit.



The motor with propeller raised.

A roasting tin 'Float Test'.



Charging from the control box, ready for 'Sea Trials'.

special in-line joints), before being tipped or bulldozed into the water. Two (or more, depending on intended purpose) long strings could then be joined side by side, *e.g.*, to make a 14ft wide causeway.

Pipe connectors on the sides of pontoons could be used to flood or blow tanks, to make floating docks or to sink causeways as jetties, or just for use as fuel or water tanks.

Several different ends were made,

"The US Seabees (construction battalions) developed a simple and versatile system using small pontoons to rapidly construct rafts, causeways and all sorts of floats for a wide variety of tasks"

mostly 7ft square: a round-down with track cleats for vehicles; two types of ramp with cleats; an angled-up bow or stern; and a similar smooth round-up (swim end), which was also used inverted as a landing surface for an LST ramp at the back of a Rhino Ferry (more on which shortly).

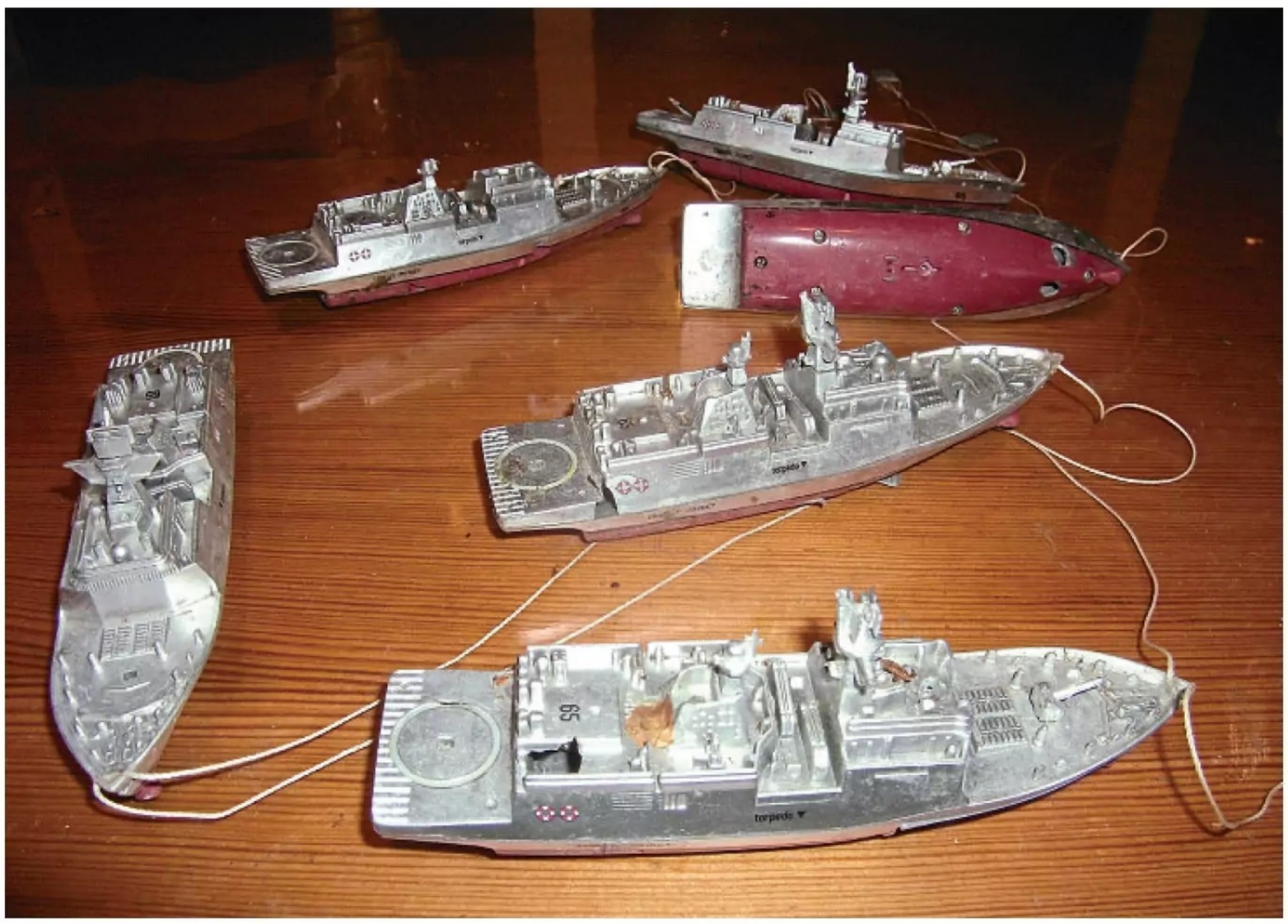
Another striking feature of these pontoons was a deck-mounted motor unit. This came complete with Z-drive to power a 3ft Ø propeller. The propeller, on the end of a long stem, was protected by three strong horns ahead of it. The propeller and its vertical stem could be steered and also hinged out of the water to store upright for beaching, *etc.* In front of the motor was a built-in fuel tank and beside it a control panel with steering wheel, the whole unit being portable and mounted on I-beam skids which bolted to the standard holes in the raft angle irons.

Other minor equipment included bollards and sometimes 9in x 5ft 8in deck plate strips to cover the gaps between pontoons (reducing the risk of leg injuries).

The aforementioned Rhino ferries were huge rafts made up of about 6 x 30 pontoons, measuring about 160ft long x 43ft beam, which could unload all the vehicles from an offshore full LST onto the beach in two trips – an invaluable asset where a beach was too flat for an LST to get close enough to the shore but the water was still too deep for vehicles to wade through. They had tripods with hand winches for hinged ramps at the bow, and a fixed

'Sea Trials' at Wardown Park, under the glare of Luton's tropical sun!

Speeding!



Empty hulks after target practice!

wooden ramp at the back to lead down from a thick LST ramp.

The Americans wore out about 30 Rhino ferries off Omaha Beach during the months after D-Day. These proved particularly useful after the 'Great Storm' wrecked their Mulberry Harbour.

For those interesting in learning more, I suggest a visit to https//www.super-.com/products/US-NAVY-Seabees-NL-Pontoon-Barge.html. Likewise, a Google images search for Seabee Pontoons will throw up lots of results.

Back to the model...

Getting back to my model, I had originally intended to work to 1:32 scale, but then I was given an old 3D printer with a 7-inch plate on which a 1:72 scale aircraft raft would just fit; this would also allow me to combine making a 3D boat/raft with tiny R/C experimentation.

Donor deal

A few years ago, R/C model warships were advertised on eBay for only £11 (£18 now) each. Intrigued, I bought one and it was exactly as described. At only 6in long, its diminutive size was perfect for the tiny, cheap, radio-control projects I had in mind, so I bought half a dozen more to cannibalize and play around with.

Their 2.4Ghz radio-control consists of a handset with four dry pen cells and a charging lead. Within the boat is a PCB (just 20mm x 38mm), a battery, and two 1/4in Ø x L 1/2in motors, with handed 10mm Ø props to propel and steer the boat, giving about 5 mins on a charge. Two pins stick out of the top to charge the battery, while two pins stick out of the bottom to switch the power on it when short-circuited by water. An LED on top shines when it's switched on. Very neat and simple, it's an excellent bit of design, and the entire battery/motor/PCB assembly weighs just 11.8g, so it requires 11.8cc of immersed hull to support it. The metric system is wonderful!

The 'works' can be removed by unscrewing the bottom from the deck and then either cutting the motor wires (not too close to the end) or the hull to extract the motors and their *very*

"Take care here..."

Tiny R/C treasure

Practising TATO (Tractor Assisted Take Off) at Whitestrand slipway.

At a Sevastopol Victory Day review, duct tape repairs don't seem too effective!

delicate wires from the strong rubber sealant. Take care here – I trashed one motor when the wire broke off at the motor, with no possibility of reattachment. The PCB and battery are removed by pulling the bottom switch pins from their sealant.

After taking out the motors and controls, I glued the stripped hulls back together and, being a vandal, used them as airgun targets.

Dimensions

My little 'aircraft carrier' would represent a 7 x 3 pontoon assembly with a single motor unit and four bollards. The bows would have been 7ft square rounded up, with the stern angled up, both with 18in vertical transoms, and there would have been 15 standard pontoons in the middle. So, with the angle irons being 9in x 9in x 1in, and with six 9in gaps along the length between the tanks, the total size would have been 2 x 7ft + 5 x 5ft + 6 x 9in or 43ft 6in long, by 3 x 7ft + 6 x 1in, or 21ft 6in wide.

Note, all these measurements came from analysing photos, so may not be exact! But draughtsmen will generally have used rounded-off numbers where possible, which helps estimation. Using these dimensions, and online photos, it should be reasonably easy to design accurate models of any of the pontoon assemblies that were used.

"Using these dimensions, and online photos, it should be reasonably easy to design accurate models of any of the pontoon assemblies that were used"

Tweaks along the way

As with most experimental models, I made a few changes along the way.

My first lighter (mistakenly made with only 6in gaps) was un-powered. On the working model I cut off the charging and switch pins, and LED, and I used extension wires to extend them aft, connecting a reed switch across the switch pins. That was a mistake, I think, as the electronics quickly died. I suspect this was due to the switch resistance being so much lower than the 2mm of water designed to conduct between the pins. Consequently, I rebuilt it with the two switch pins passing through the hull bottom, as on the original warship (and left off the LED). The photos show the latest version.

With the motors mounted wide apart, the raft propelled and steered well, confirming that these R/C units will be suitable for other small models I want to power.

Sadly, at 1:72 scale, to match the Academy kit-built Mustang P-51D I had, my second (of modified design) lighter turned out to be *just over* the 7in square plate size limit of my 3D printer. I therefore had to print the hull and deck out as two separate parts. The hull was basically a pair of hollow boxes glued end to end, with short indents to represent the gaps in the sides and bottom, rather than individual tanks. The back had two cut-outs underneath, into which I inserted the motors, with the propellers pointing down and inward together so that the prop-washes would combine and appear to come from the dummy Z drive. I made the motor holders so they would slot into pockets with their sides above the waterline. The motors were also tilted to be above the water, with additional protection from applied Vaseline. The 10mm diameter propellers were hidden in tunnel cut-outs in the base of the model, and tucked well under the counter, so not easily seen.

It was a mistake to make the hull 1mm thick and the motor mounts so chunky; as my lighter was a little bit overweight and trimmed down aft, although still functional. Fully loaded, the model weighs 135g, including 20g for the P-51D.

All the pieces were simple to design. I used FreeCAD to draw the pieces, then exported the .stl files to the Prusa Slicer software to get the gcode file which instructs the printer. I am still on a bit of a learning curve when it comes to the use of this software, so would make quite a few minor changes if I did it again, but that's all part of the fun of experimental model-making, isn't it!

The reed switch was originally operated by a magnet in the base of an oil drum, held on a thin hinged

Finally, delivery by TATO to a Pacific island (Japanese satellite photo).
Clearly a real desert island, as it has a gramophone and eight discs, though the resident castaway has just been washed away and drowned. The P-51D is his 'Allowable Luxury' (with radio and fuel removed). Tractor, bulldozer and boat will go with the raft.

"What could possibly go wrong?"

base disguised by a Seabee sitting on an oil can. The dummy motor fitted over the LED and charging pins, which secured it in place. The illuminated LED was originally visible through a hole in the control panel. A couple of pieces of brass wire act as hinges to tilt the motor shaft up and down, and to mount the propeller. The rest was either 3D printed, from model kits or scratch built from scraps of wood and thread. Sadly, I decided not to make the motor and Z-drive functional!

The deck section was glued in place, after the internals were fitted and tested. After all, what could possibly go wrong? It has, of course, since been removed and re-glued a few times! The four bollards were glued over the side angles above the joints (the prototype bolts used existing holes in the angles), and to match the photo a wooden ladder was laid on the deck, along with a few ropes and some crewmen.

The 'Little Friend'

Academy's P-51D was constructed as any other kit of this kind would be; except the elevators were set 15° down and the flaps at 70° droop, with the inner undercarriage doors left open – all because the hydraulics would be powered down for the long trip from California to whichever Pacific island the plane was being delivered to. The other modification was a pair of short-cropped gimp pins (Peco track nails) melted into the bottom of the tyres so they would stay put over a pair of magnets cunningly inserted under the deck!

There were so many colour schemes for American fighters, and from the black and white photo I couldn't pin this one down; possibly it was yellow and black, but I chose my own colour scheme. The lighter was probably painted 'Ocean Gray'. This was the colour of Atlantic drizzle, so used by the Seabees for their Pacific craft. Naturally they used sunny 'Pacific Blue' for the equipment used in the Atlantic theatre!

"I decided to seal my aircraft carrier in the same way I do card models… There was a bit of tricky physics to be factored in here, though"

Rubbing strake save

My 3D prints were very poor quality, to be frank because I've never figured out how to set up my second-hand printer correctly, and I realised when fitting the deck over the hull, which had been printed inverted, that It was set up to print slightly out of square. But the photos show a handy rubbing strake around the edge of the deck, so bits of thin wood strip disguised the slight mismatch.

The physics of porosity

A more significant problem was porosity. 3D prints are basically a bundle of fibres *supposedly* melted together, but almost inevitably leaky. My printing was noticeably badly fused. So, I decided to seal my aircraft carrier in the same way I do card models, by brushing on two coats of slightly thinned lay-up epoxy (I used West Systems 105 and 207 with 10% thinner).

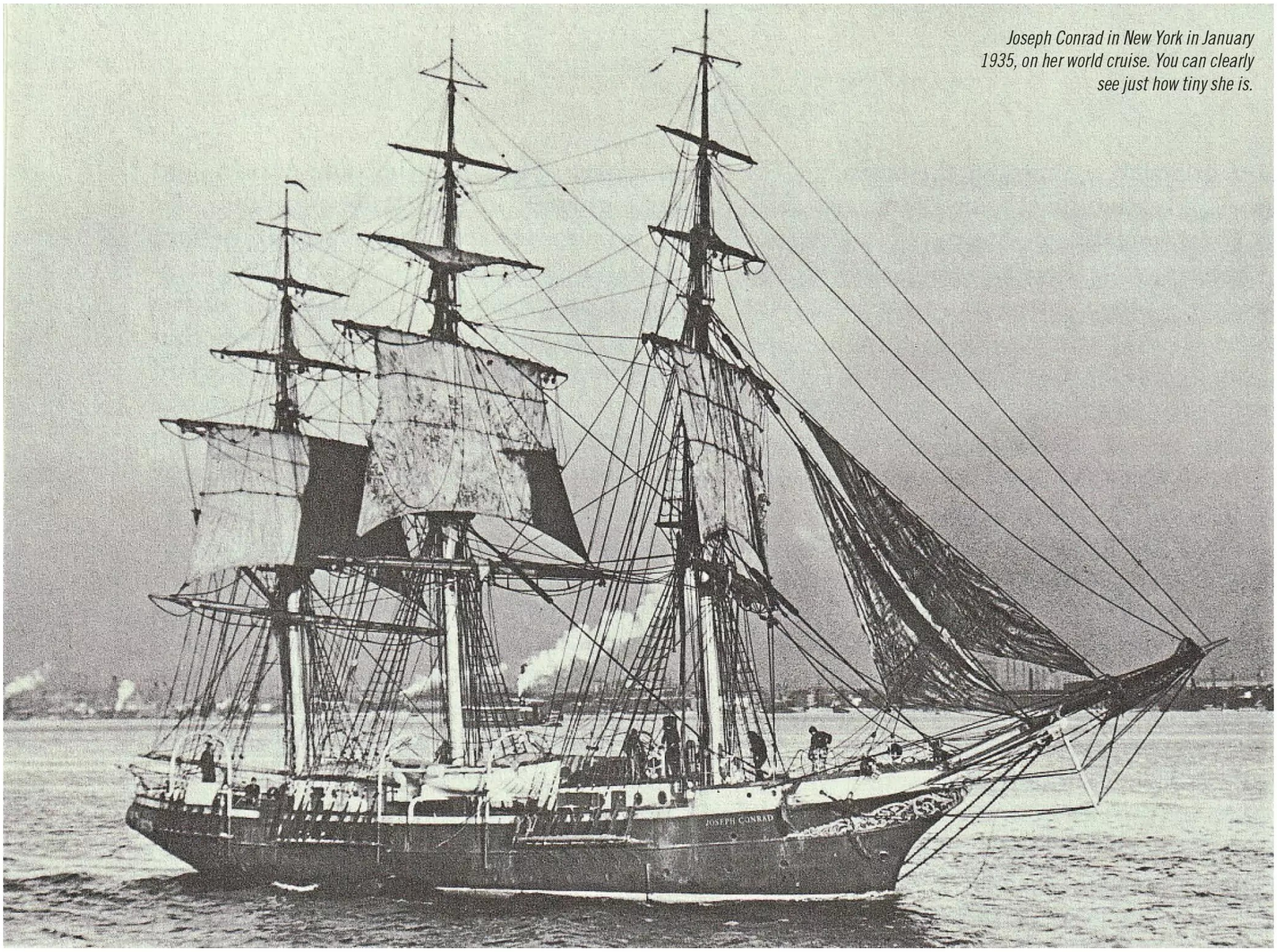
There was a bit of tricky physics to be factored in here, though. I didn't want to obscure fine surface detail with a thick coat of resin, but I did want the resin to penetrate well into any crevices or pores, hence the addition of thinners. Thinners, however, are volatile. One can remove oil stains from wood by pouring on meths, then adding a layer of talcum powder. The thin meths soaks into the wood and dissolves the oil; but then the mix preferentially soaks back into the talcum, as the gaps between grains are much smaller than wood pores and surface tension is inversely proportional to distance. And the meths then evaporates, so it transports the oil into the talcum and leaves it there, to be brushed off.

The volatile thinners mixed with the epoxy is meant to transport the resin into the 3D print or card, and not then to transport it straight back out as it evaporates from the surface! So, it's a good idea to slow evaporation, *e.g.*, by covering or bagging it with polythene, perhaps containing a solvent-soaked tissue. This should give time for the epoxy to become stiff and tacky before the solvent evaporates. Brushing the surface with thinners while the epoxy is setting will also achieve this, plus it helps prevent surface detail being smoothed over.

You'd better believe it!

This was a fun project, which not only resulted in a nice addition to my 1:72 scale World War II fleet but also proved that cheap R/C toys are a very handy source of easily convertible radio-control for very small models.

And it *IS* an aircraft carrier! ●



Joseph Conrad in New York in January 1935, on her world cruise. You can clearly see just how tiny she is.

Getting it right

Nev Wade explains the rookie mistakes made on his first ever R/C square rigger and how he's since corrected them

In 1882 the Danes built a sail training ship to prepare fledgling sailors for their later careers. She was called *Georg Stage* and did sterling service for them until 1934, when a new sailing ship was launched to do the job, keeping the original name. The old ship was about to be scrapped when Alan Villiers bought her to sail around the world as a kind of 'private' training ship. He re-named her *Joseph Conrad*, and she did her circumnavigation between 1934 and 1936. This remarkable voyage is described in Villiers' book, *The Cruise of the Conrad*. On their return, Villiers realised the money to pay off his debts by selling her to an American millionaire to use as his 'yacht'. The millionaire kept her for a few years before giving her to the American government, in 1939, as a cadet ship for the Coast Guard. After World War II, the government presented her to the Mystic Seaport Museum, where she remains to this day.

For a full-rigged ship (three masts, all square-rigged) *Joseph Conrad* is tiny, being only about 100ft long and quite beamy. When I decided to try and build my first radio-controlled sailing model of a square-rigger, I settled on her as the subject, so that I could use a scale of about 1:40 to produce a boat of about 1200mm long, which I thought would give me the best chance of producing a good sailer. I named the model *Ann Louise*, after our daughter, and she did indeed sail very well. As you do with your early models, I learned a lot and had to make construction decisions based on very little real knowledge. Inevitably, some of my choices were not the best and the burden of this piece is the later modifications, made to improve the model.

Errors

Errors are funny things; they can come from a variety of sources and affect your models in peculiar ways. In the case of *Ann Louise*, three different kinds came about. They were:

Ann Louise sailing as originally built, with stumpy bowsprit, tiny boats and full-size foresail.

- An error in a conscious decision, *i.e.*, the design of the bowsprit
  As this was my first sailing model of a square-rigger, I really didn't know how she would sail, and, therefore, how much and how often I'd be bumping into things with the bowsprit! Because of this, I chose to extend it out to almost the full length of what should have been both bowsprit and jibboom, instead of fitting a replica of the real thing, which is a much more elegant, but fragile, feature.
- *An 'experience' error, i.e., the depth of the foresail*
  When I cut out the sails, I simply worked to the plan, which has the foot of the foresail (the lowest square sail on the foremast) lower than the top of the handrails around the fo'c'sle head. On the real ship the foresail is 'loose footed'; its' controlling lines can be manoeuvred over railings, so this overlap in length is not a problem. On my model square-riggers, with wired foresail (see later), this isn't practical, and the upshot was that I couldn't fit all the handrails without the foresail hitting them during bracing.
- *A 'commercial' error, i.e., the size of the lifeboats*
  As the real vessel was tiny for a full rigged ship, she had very congested decks, so when I came to choose lifeboats, I simply picked some small ones from a local model shop, not knowing about the better, specialist shops of which I am now aware. The result was that my lifeboats were not much bigger, in scale terms, than children's paddle boats!

"Now I have the very elegant, long jib boom that graced the original vessel, instead of a thick, heavy looking one"

Over the coming years, as my knowledge grew, the above started to spoil the look of the *Ann Louise* in my eyes, so I set about putting a few things right, and the following covers a bit of detail about the process.

Bowsprit

The bowsprit was in the correct place, all that was required was to cut it off at the right distance from the top of the bows and then fit a rigged-out jib boom on top, attached by doublings, as it was on the real thing. Now I have the very elegant, long jibboom that graced the original vessel, instead of a thick, heavy looking one.

Foresail and handrails

The lowest square sails are known as 'courses', and, on my models, they have stiff wire sewn, all in one piece, into their sides and across their bottoms. This is done so that they can take the wind from in front, when necessary, without wrapping themselves around their masts. Doing this means that the sail becomes an almost solid plane of material, which needs room to swing in an arc during bracing (moving across the ship, when swung from one tack to the other). On drawings it is often the case that the bottom of a course is below the level of handrails on the ship, and, on later models, I have simply moved all the yards up their masts a little in order to ensure that

The original bowsprit, in the right place, the right length, but way too thick.

The replacement bowsprit and jibboom, just handrails and boats to do.

Real ships' boats, on skids, aboard a windjammer; this is Moshulu in 1939.

"Ann Louise was my first venture into this field, and back then I was unaware of this 'wrinkle'"

the bottoms of the sails clear any handrails that are there. *Ann Louise* was my first venture into this field, and back then I was unaware of this 'wrinkle', so I made the foresail full size and then couldn't squeeze in all the handrails on the fo'c'sle head without the wired course striking them during bracing. The solution has been to remove the foresail and shorten it by an amount sufficient to allow me to fit all the handrails before refitting it.

Lifeboats and davits

On the real ship, both the courses, the mainsail and the foresail, have to swing to positions either side of the ship that come very close to the lifeboats. As I mentioned earlier, the real sails were loose footed and could be manoeuvred around awkwardly placed items like davits, but on the

The miniscule boats and peculiar davits on Ann Louise as first built. Also, see the missing fo'c'sle handrails, where the foot of the foresail is.

As modified, the boats are much more to scale, the handrailing is complete, and there has even been room to fit two anchor davits on the fo'c'sle head.

On the port tack in the sunshine.

A tiny little ship for a full rigger!

Bowling along, a pleasure to sail.

Hopefully, in this view, you can see the lifeboats to best advantage.

Ghosting along on a quiet day, the bowsprit and jibboom look so much more authentic.

In the background, the North Sea, where the Georg Stage spent so much of her career.

"These two facts made the offending lifeboats look even more unsatisfactory, so, inevitably, a change had to be made!"

model that isn't so easy, and the task of thinking it out frightened me off a little when I first built the *Ann Louise*. Consequently, in order not to interfere with the courses during bracing, I fitted model lifeboats that were much too small, being purchased from a local model shop that tried its best with marine subjects but did not carry the range of stock that real specialists do. I fitted these tiny boats out of the way, on top of a deckhouse, using the most unlikely davits that you'll probably ever see, and left it at that.

Since then, they have rankled, and I have learned more about the ways in which to mount lifeboats, and their relationship with davits. I've also become more aware of the range of ships' boats that are commercially available. These two facts made the offending lifeboats look even more unsatisfactory, so, inevitably, a change had to be made!

I therefore bought some lifeboats and davits of the correct size and engineered some skids from bent brass wire. After removing the old boats from the top of the deckhouse, and repairing the damage thus caused, I fitted the skids, complete with the chocks in which the boats sit, through the gunwales, in such a way that they are removable by simply pulling them out. The davits are fitted into brass tubes, also fitted through the gunwales, made so that they can be swivelled. Falls are then rove on to the ends of the davits, which are then hooked on to eyes at each end of the boats.

Under this particular deckhouse is a hatch, which gives access to the servo that operates the foreyards, so the deckhouse has to be removable. To achieve this, I adopt the following procedure. The falls are unhooked from the lifeboats and the davits swung to one side, out of the way. The combined boats, chocks and skids are pulled out of the gunwales, leaving the way clear for the deckhouse to be removed, allowing access below. I have still had to make some concessions to my wired courses, in that the boats are fitted closer to the centreline of the hull than they should be, they are slightly too far forward, and the davits are too close together, but, altogether, they look far better.

In conclusion

In my experience, quite a lot of model building can be drudgery, requiring a certain amount of persistence. This improvement job, on the other hand, was one in which the tasks were all of interest, being varied and having an immediate impact on the look of the boat. As such, they were a pleasure, and I'm already thinking of other places on other boats, that could benefit from a bit of a 'makeover'. Also, that nagging feeling of not having done sufficient justice to the subject has gone away for the moment – long may it continue! ●

Sparkling sunshine.

On the port tack in a nice breeze.

Nothing nicer than sailing one of these!

"But they all look the same..."

Determined to prove his wife wrong, **John Mileson** embarks on the scratch build of one of the RNLI's more unusual historic lifeboats

The majority of the members of my local model boat club, Wicksteed Park in Northamptonshire, are, how can I put it delicately, well.... old!

We spend a considerable amount of time comparing aches and pains, diminishing returns on investments and the cost of a season ticket at the local hospital car park.

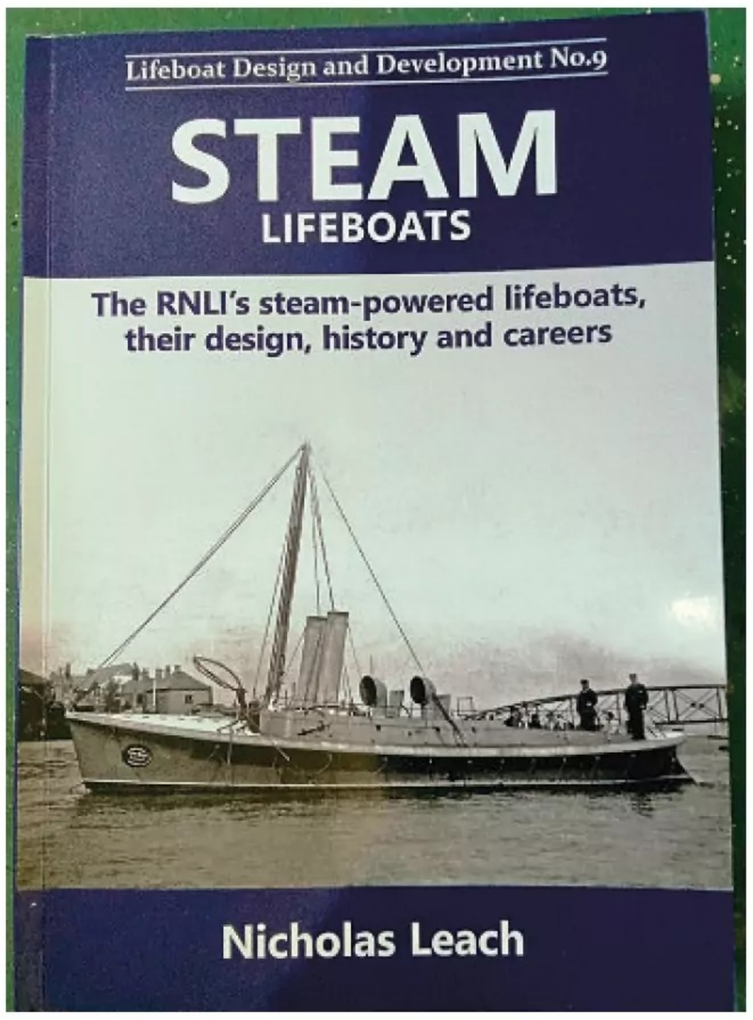
It's not all moaning though. We have discussed and scrutinised the design of zimmer frames, the merits of the folding walking stick, and updating and comparing our prescriptions.

Occasionally, we talk about model boats.

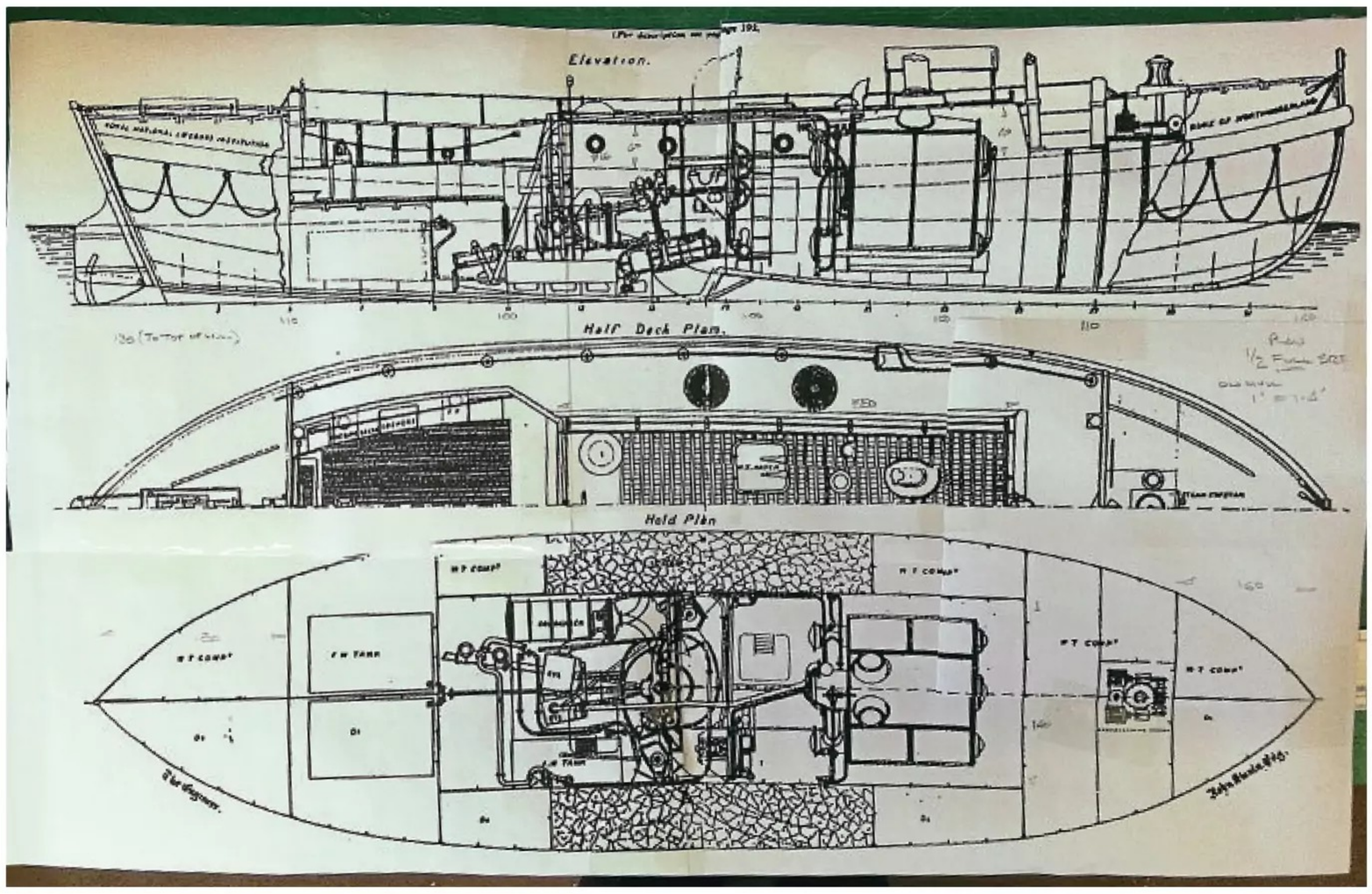
We each appear to have fairly set ideas regarding our specific interests in the hobby. Many members major on naval ships, some on merchant vessels, while the rest of us concentrate on other types of craft. Each to his own!

For reasons I have yet to discover, a couple of what appear to be normal, sane individuals home in on model submarines. To the uninitiated they all look the same. I'm referring to the submarines, and not the members. Their activities centre around much fussing and preparations prior to carefully placing the vessel on the surface of the water. If the water is clear, the submarine can be seen sinking to the bottom of the pond, where, more often than not it stays! Alternatively, the submarine races across the surface, dive and sink once again to the bottom. On go the waders! This appears to be great fun, since this ritual is repeated week after week. What concerns me is the pleasure they get from putting on the waders in an attempt to locate and recover their vessels. I have my suspicions!

However, my point is this… To my eyes, all submarines look the same, so do most of the naval ships. There



The start of the project. This book was the only source of photos and information John could readily find on steam lifeboats.



The plan photocopied from the book was barely adequate. It showed a multitude of details, but not those relevant to the construction of a model.

are, I'm reliably informed, subtle differences within the same class of ship. It could be a porthole is located in a different place, or the calibre of a gun has altered.You may think I am knocking this. I'm not. I'm pleased that enthusiasts are taking the time and trouble to research and record these changes in model form, thus creating a pool of knowledge for the future. But to me they *do* all look the same, as do all modern cars! If you're of a certain age. You may recall motor car manufacturers went to great lengths to design cars that were not just copies of their competitors' vehicles. The difference was a major selling point. As youngsters we could spot the difference between a Vauxhall Wyvern, a Hillman Minx and an Austin Cambridge at 200 yards. Variety created interest for us.

I digress, though, so let's get back to model boats… I have trodden a similar path to that of my chums. I have purchased or built a whole variety of boats, in the end favouring one aspect of the hobby, steam-powered craft. But there are only so many kits or prototype designs suitable for steam propulsion. This centres around the power output of the majority of steam plants – built mainly for smaller craft, such as lake steamers, river boats and tugs.

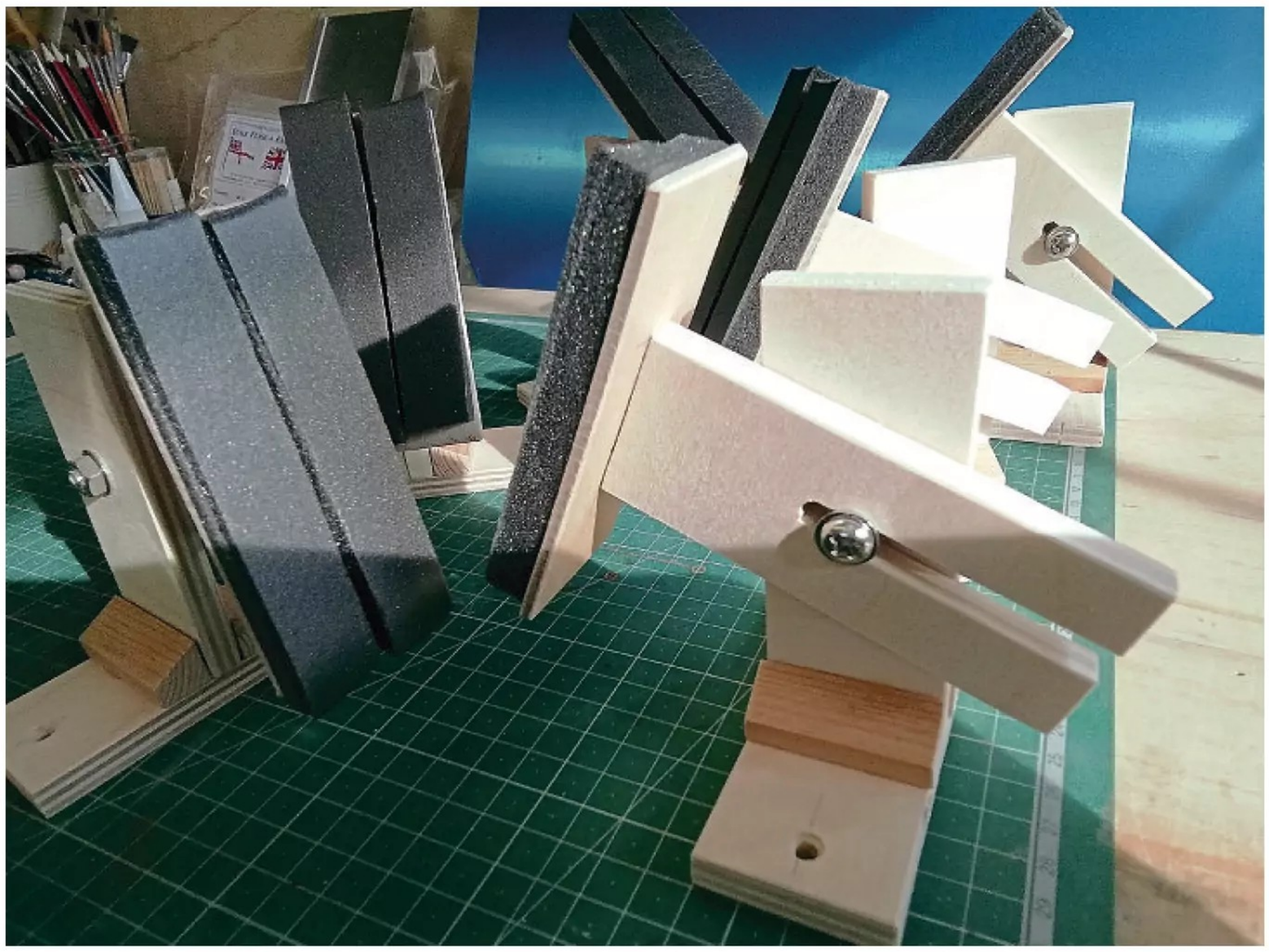
Brief encounter (with boats instead of trains, and far less romantic!)

Recently, I was ensconced in my shed pottering around when suddenly I was surprised, nay, shocked, to see my wife appear at the shed door. Usually, my sixth sense warns me of her approach to this hallowed ground! In this instance my radar had failed, giving me little or no time to concoct excuses or reflect on my domestic failings.

Feeling the blood draining from my face, I casually ventured to ascertain the purpose of the visit.

"*I've just come over to see what you are up to*", she explained. We chatted amiably for a few minutes, and then came the 'body blow', "*Where are all your other boats?*". No amount of fancy footwork could get me out of this predicament. Hoping no further inspection would take place, I casually remarked "*They're all stored in the other shed*". But, of course, she wanted to see, leaving me feeling like a naughty boy whose stash of sweets and comics (or similar!) has been discovered. After a cursory glance at the racks of boats, all the while ignoring my attempts to stress the investment for the future angle, I was somewhat nonplussed when she declared: "*Well, they all look the same to me, so why keep building more and more of them*?"

Caught on the backfoot, I lamely said "*Yes, they would do to the untrained eye, but I've carried out hours of intellectual research to ensure they are all different*". My sarcasm and

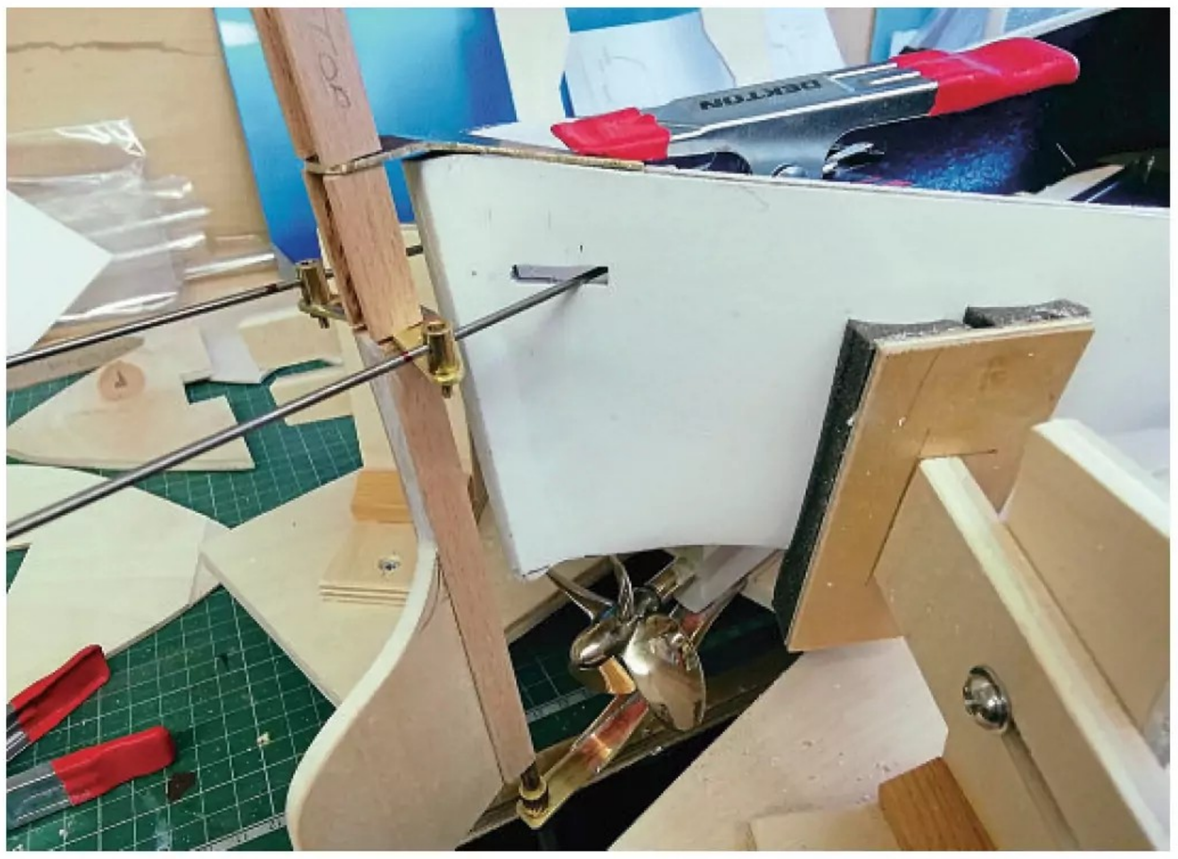


The baseboard, made from a sheet of 9mm plywood, was fitted with a series of homemade adjustable supports, ideal both while building the boat and subsequently as a carrier in the back of the car.

The supports in use. These are screwed to the baseboard and can be easily moved if necessary.

Drastic measures were taken to alter what was a perfectly good hull to allow a single propellor to be used.

The gaping hole was filled with P38 filler and the propellor shaft bonded in. John approached this latter task with some trepidation, as he knew that if positioned at the wrong angle or slightly off-centre line he would be in big trouble!



With the propellor in place, the rudder was fitted along with the servo mechanism.

possibly the word 'intellectual' did not go down well, but, hey, why stop when you're on a roll? Time for me to exert my authority. "*Well, what about your patchwork quilts, the rugs you make and the socks you knit for soldiers... They all look the same to me!*". I had run out of further examples but thought I had won a decisive victory.

"Don't be ridiculous! P*erhaps you should try your hand at one of my crafts. You may just make something useful, and would be far less expensive, too*". With this parting shot she was gone, leaving me mentally and physically drained.

But maybe she had a point. Why do we keep churning out more and more of the same, or at least very similar, boats?

Our meeting in the shed had also raised another, possibly controversial, question. My wife had spotted two boats I'd 'weathered' – rather badly, I'll admit. Why, she asked, had I spoilt these two boats?

It's one of those perennial questions, often discussed pondside. To weather, or not to weather? The

"It's one of those perennial questions, often discussed pondside…"

majority of members tend to agree with my wife. Others support the concept of realism and will argue that skilful weather totally elevates a model's credibility. As my former school masters used to say, discuss!

Weathering also, of course, makes it possible to immediately differentiate between two models that have been based on specific vessels or vessels of the same class.

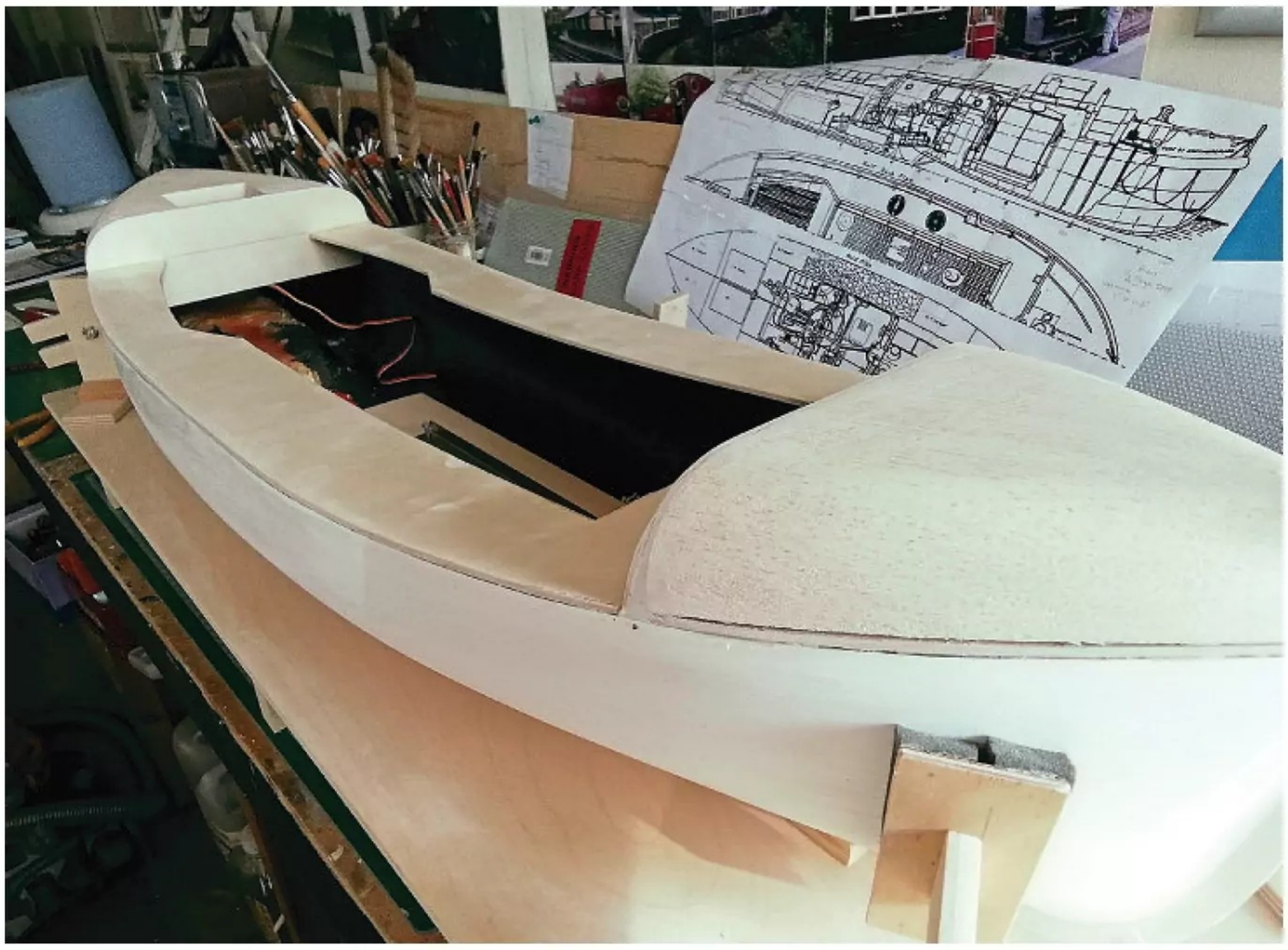
Which brings me back to my original theme: *'But they all look the same!'*. There is, of course, a simple answer here: beauty is in the eye of the beholder, and it's the subtle differences that makes ours such an interesting hobby!

A steam-powered lifeboat?

With this in mind, it was time to decide what to build next. I remembered that during one of my chats with Jerry at Clevedon Steam our conversation had, for some obscure reason, turned to lifeboats, and he'd mentioned that in the late 1890s there were even some steam powered lifeboats. Interesting…

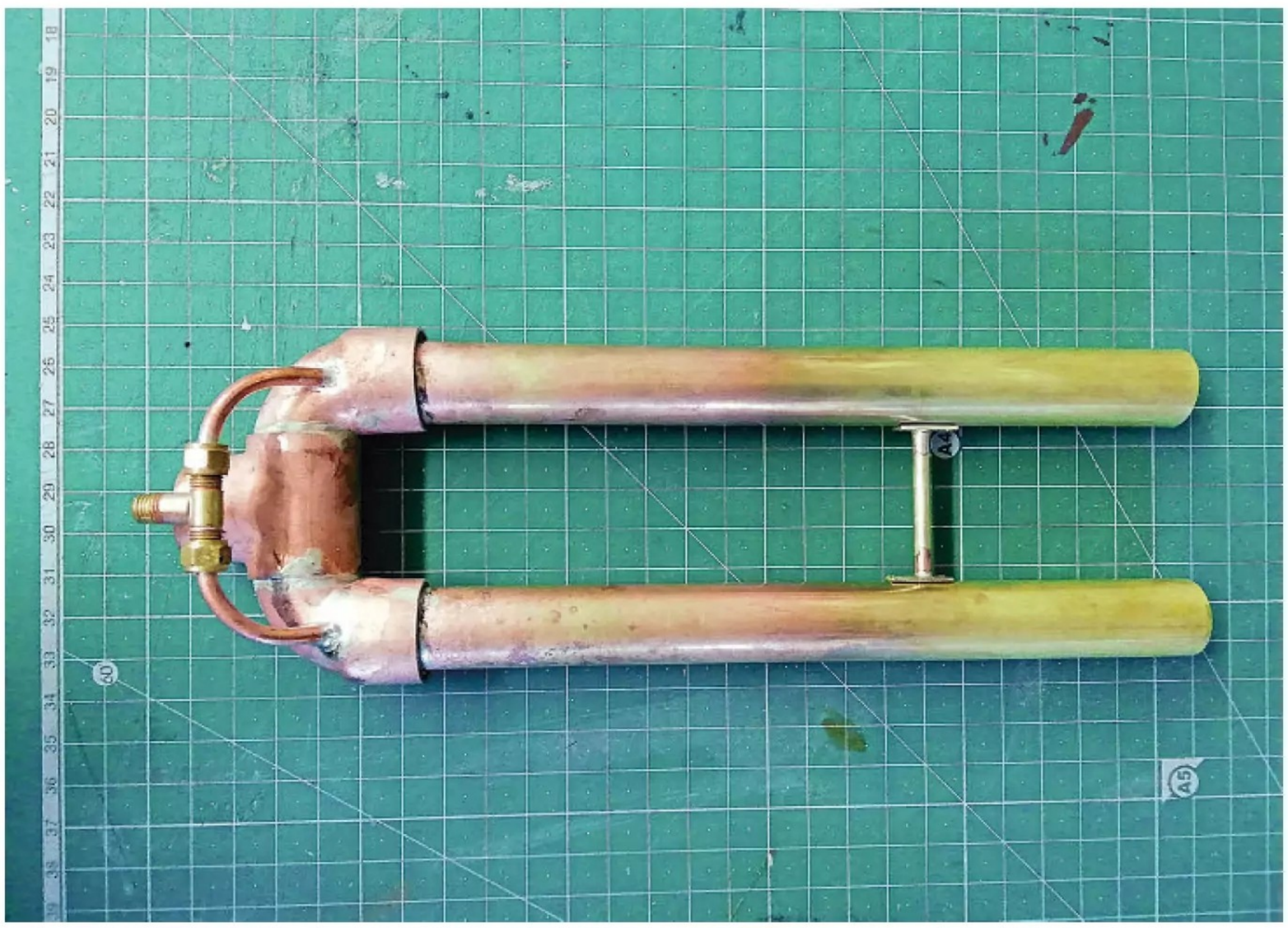
A bit of further online investigation revealed there had indeed been six examples, all of which were built towards the end of the 19th century. The first was the *Duke of Northumberland*, built in 1889 by R&H Green at Blackwall in London.

While I could find a few grainy photos on these steam lifeboats online, there was nothing in the way of plans or any real details of the construction. I did, however, spot a small book, written by Nicholas Leach, entitled *Steam Lifeboats*, which covered their design, history and careers. A copy was in my grubby hands the following day. It's a superbly written book, with plenty of good, albeit small, photographs. Unfortunately, with these being, on average, 100 mm x 70 mm, it's impossible to discern much in the way of detail, and likewise, no plans of any reproducible size are included.



The balsa wood fore and aft 'decks' were fitted at the same time as the main deck, which was made from 3mm plywood.

Within the hull, the base for the steam plant, made from 9 mm ply, was bonded in on a bed of P 38. Onto this, was screwed the stainless-steel base.



At this stage, following lengthy telephone calls to Jerry Watson, the twin funnels were made by him. Built from copper and brass pipes, the design incorporates the feed from the engine, with the funnels being raked back by 5 degrees adding to the challenge.

The dummy steering gear in place on the rear deck, with work on the superstructure of the engine/boiler room in progress evident in the background.

Determined not to be defeated, I decided it was time to get to grips with this research lark. The RNLI site referred me to Adrian Clutterbuck, the man responsible for all aspects of lifeboat modelling on behalf of the Institution. Following an email to him, a couple of days later I received a long letter by way of reply. I had struck gold!

What I still didn't have, however, was a decent size plan. So, with no other options, I had to resort to enlarging the tiny plan in the book (which was just 120 mm x 80 mm and had originally been drawn up for *The Engineer* journal, probably around the same time as the *Duke of Northumberland* was being constructed) to a larger 450 mm x 300 mm.

"During one of my chats with Jerry at Clevedon Steam our conversation had, for some obscure reason, turned to lifeboats, and he'd mentioned that in the late 1890s there were even some steam powered lifeboats. Interesting…"

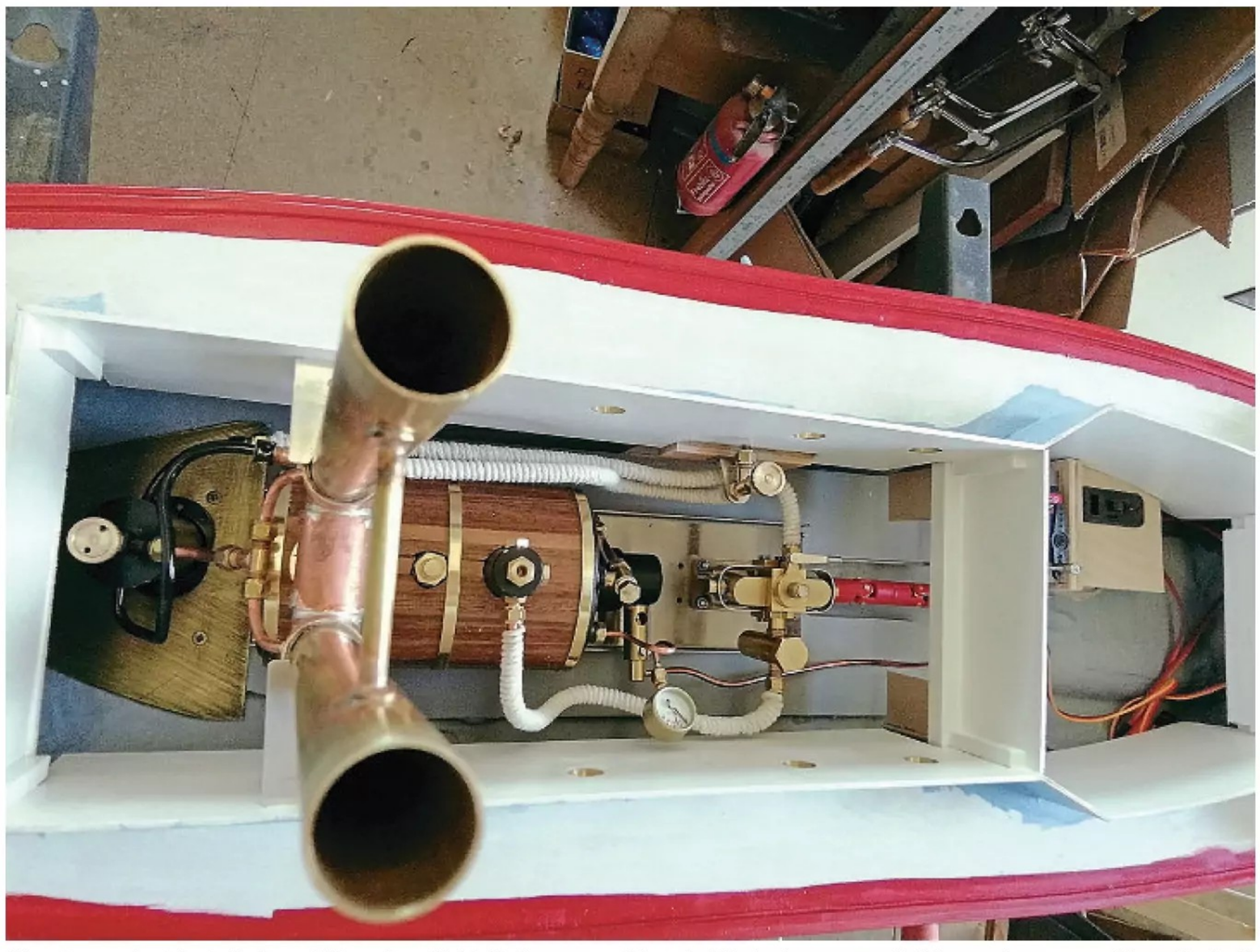
While naturally this enlarged plan was very grainy, I was now on a bit of a roll, so set about ordering plywood and balsa from SLEC, various components from Cornwall Model boats, the steam plant from Clevedon Steam, and, most importantly, a hull from Orion.

As it was intended for a twin-screw lifeboat, the fibreglass hull wasn't an obvious match for the prototype, but Anthony, from Orion, assured me that with a bit of 'mackling' here and there, it would pass muster.

With Jerry not having blown himself up, it was now John's turn to test run the steam plant. Apart from a minor 'pop' as the gas lit, everything went well.

The pale blue achieved by mixing blue and white enamel paint applied. The colour is an approximation of that carried by the prototype. Disaster was lurking round the corner, though!

After the application of spray lacquer, John's paintwork began blistering and flaking off!



The steam plant installed, and it's quite a tight fit. However, although it looks 'permanent', this can be removed from the hull in about five minutes should this be necessary.

Duke of Northumberland

While waiting for the delivery of these parts, I continued to read up on the *Duke of Northumberland*, so let me tell you a bit more about this vessel…

She was 50ft long, had a beam of 14 ft 3ins and depth of 5ft 9 ins. Not having a screw propellor, she was powered by a Thornycroft coal-fired steam engine, which in turn drove a water pump, thus propelling the boat along with a water jet. Quite revolutionary! This was considered an ideal method of propulsion, since much of a lifeboat's work back then was in shallow water, amongst debris from stricken vessels.

When fully loaded with crew, 30 passengers, plus the fuel, *etc*, the riveted mild steel boat had a displacement of 23 tons.

She was based during her 34 years with the RNLI at Harwich, Holyhead and New Brighton, and saved a total of 304 lives.

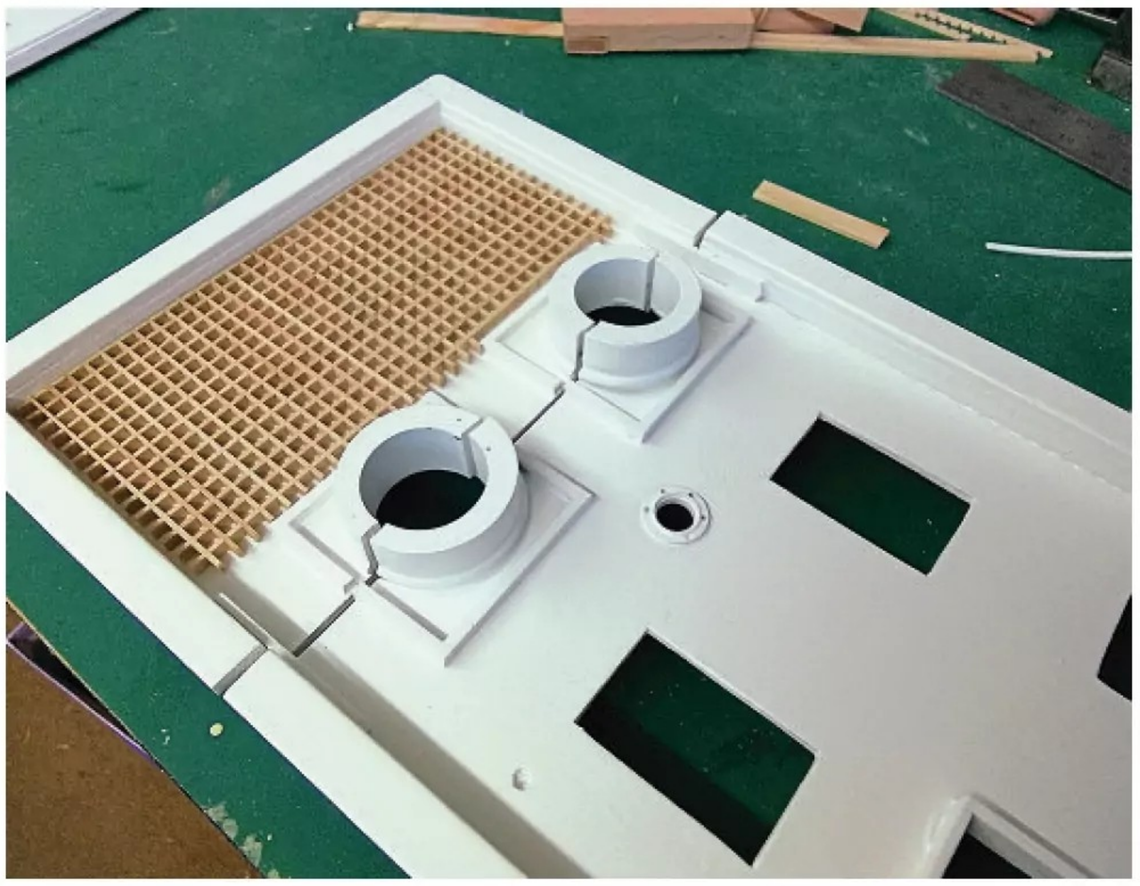
Sadly, after being used as a workboat on the Mersey she ended up in Widnes on a riverbank, covered in waste concrete!

The build

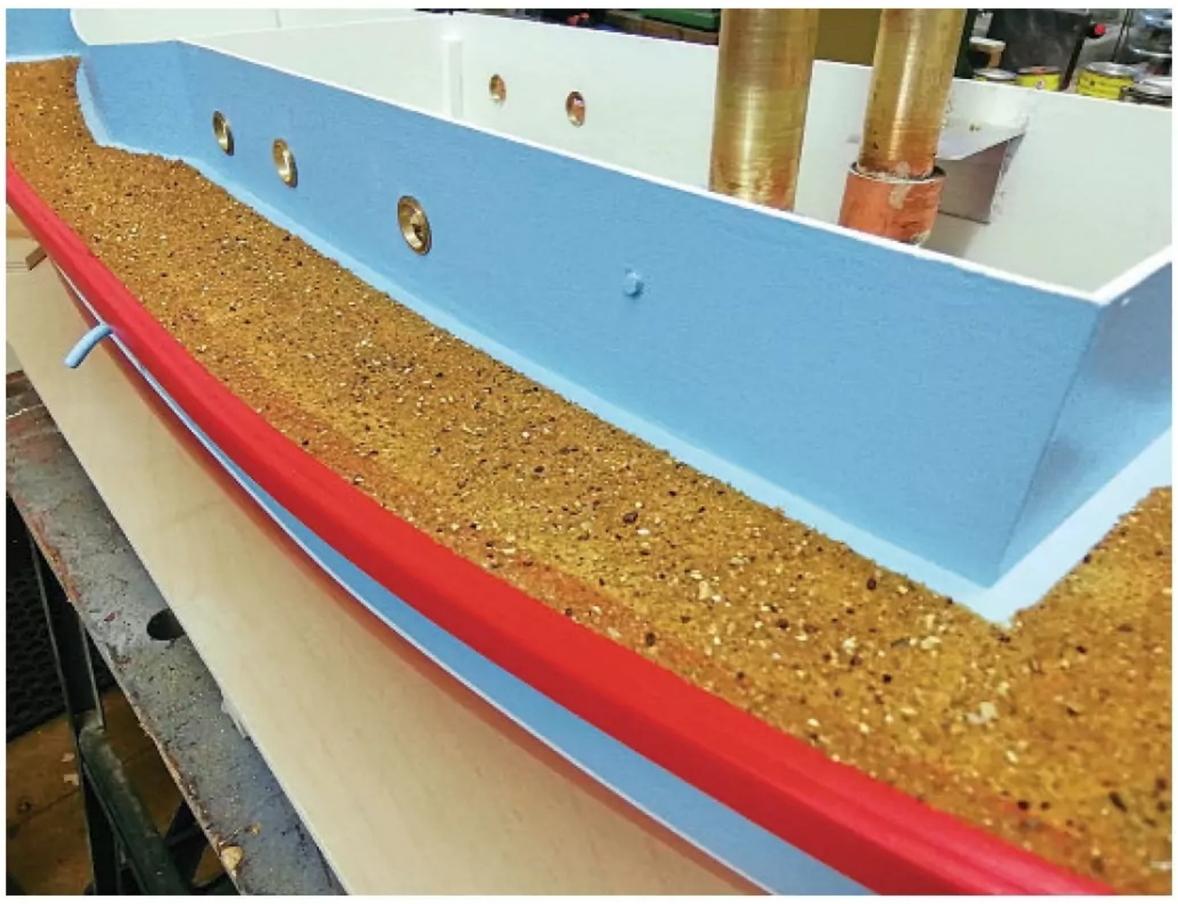
Having taken delivery of the Orion fibreglass hull, work started immediately on modifications to the stern to accommodate the propellor and shaft. This entailed fairly drastic changes to the underside area and the cutting of a slot for the propellor shaft. The gaping hole was filled in with a bucket load of Isopon P 38, which was then sanded down to

"Not only does this make a hull stronger and more durable but, after lightly sanding, results in a very smooth surface finish"

With the steam plant installed, detailing of the superstructure could begin.



To represent the non-slip side decks, which were originally a mixture of ground cork and India rubber (corticine), sifted sand was used.



The engine/boiler room deck needed to be removable for access and was therefore split. It couldn't be installed as one piece due to the funnel tie bar. The rectangular holes you can see are for ventilation to the boiler.

The deck was covered in wooden grating. John found this to be a most tedious task. Not only did his grating keep falling apart but it had to be cut to fit around various obstacles.

create a reasonable representation of the *Duke of Northumberland's* stern.

Having obtained a large block of balsa wood from SLEC, the next, and somewhat daunting, task was to cut two pieces from this for deck at the bow and stern. These pieces then required carving and sanding to shape. While a little more difficult to carve, working with a medium density balsa allows a reasonable finish to be obtained. Even so, I felt the location of these components, which were likely to be dented in use, merited using Deluxe Materials lightweight laminating fabric and Eze-Kote resin. Not only does this make a hull stronger and more durable but, after lightly sanding, results in a very smooth surface finish.

Much of the construction from that point followed the traditional, well-worn procedures for model boat building.

The original lifeboat had twin funnels running across the axis of the hull. After protracted telephone calls to Jerry Watson at Clevedon Steam, the construction of these was thrashed out using central heating copper pipe and fittings. Although we agreed on the design, I asked Jerry to make up the funnel unit and, more importantly, test it out in his workshop prior to sending it on to me. My concern was based on my own personal safety. I wasn't sure if when lighting the boiler there may be a build-up of gas in the adjacent funnel to that where the flame was being applied. The subsequent explosion could remove my eyebrows and what little hair I have left! While he admitted he had not previously come across a design like this proposal, he felt there wouldn't be a problem. I did notice, however, there did seem to be some hesitancy and quivering in his voice as he agreed to test it prior to despatch!

There was one other problem to overcome, namely, the rubbing strakes.

"The 'deck' over the boiler/ engine room did cause me some sleepless nights"

It would appear from the photos the strakes were half round in section. I experimented with various strips of wood to mimic the original, but the wood either split or was impossible to deform to shape. In the end, I resorted to a method I have adopted previously and used plastic micro trunking from Wickes. The version I use has self-adhesive tape for attaching to the hull; I do, however, back this up with self-tapping screws to ensure a lasting job. Once the trunking capping had been clipped on, it was then simply a matter of painting it red, using Phoenix Precision enamel paint.

The 'deck' over the boiler/engine room did cause me some sleepless nights. The original vessel had grating

The mast fitted, with a crumpled-up bit of old cloth representing the foresail. Note also the guard rails along the side decks, these having been made from stainless steel rod, notched and thread twisted around each stanchion.

over the majority of the deck. I assumed this to be constructed from wood, so, after some investigation, ordered 10 packs of wooden grating from Cornwall Model Boats. Assembly of these kits is a 'right old fiddle'. Each small length of grating has to be interlocked with those at right angles to it. As I'd get one piece assembled, half a dozen others would fall off! I didn't want to apply any adhesive at this stage, since the ten panels when eventually made up would need to be cut and fitted around access the hatches, ventilators, *etc.*

Once cut, the gratings were lightly glued to the pre-painted base plywood deck. Into this deck a number of rectangular holes had been cut to ensure adequate ventilation for the boiler burners. These holes are evident when viewed from above the grating.

The side decks running adjacent to the boiler/engine room were, on the original, coated in a non-slip mix of ground cork and India rubber. This was called 'corticine'. Now, I'd not heard of this before, so had little idea of what colour it would have been. In the end, I opted to use coarse sand to represent the corticine. The area to be treated was masked off with tape, then brushed over with neat PVA and the sand liberally sprinkled on. This was tamped down to ensure adhesion. The tape was removed immediately to avoid this becoming so firmly stuck down stripping it off result in damage. Once dry, the area was vacuumed to remove any excess sand and coated with satin varnish. I could, had I known, painted it an appropriate colour. However, I think it looks reasonable.

The view from the bow. The boom attached to the side of the engine room has the mainsail wrapped around it. It would appear the additional sails were rarely used.

A view from above showing the finished lifeboat.

"The following morning I headed to the shed, fully expecting to be congratulating myself on a perfect finish…"

An unexpected reaction

The rest of the build was going smoothly. Note, I say 'was'….

While there seems to be little evidence of the true colour of the original boats, it would appear to have been pale blue, so I'd mixed paint from a tin of white and a tin of blue Phoenix enamel to create a paler shade of blue. This went on well, as did the red oxide paint below the waterline. I was 'right chuffed' with the overall appearance. But, having left the paint to dry for several days, I then chose to spray the whole hull with Halford's matt lacquer. Why I chose to do this I don't know. After all, the hull was painted in enamel, requiring no further protection. Anyway, the following morning I headed to the shed, fully expecting to be congratulating myself on a perfect finish, only to find a hull covered in 'blisters'. The lacquer appeared not to be compatible with the enamel. I could have wept.

Time to consult with my erstwhile chum Les. He suggested letting it dry thoroughly over a period of days, and, with a bit of luck, the lacquer and enamel may dry back onto the fibreglass hull. Gradually, this did happen, leaving only about 10% requiring repainting. Whew!

Drama over, it was then just a question of making and fitting various components, including a small jib and mainsail. These were not found to be very successful on the prototype – a bit obvious really, being that they were adjacent to the two funnels!

Men in black crack!

At last, the project was finished, and the result was a vessel distinctly different to all my other boats. So, confident of receiving accolades from my wife, I invited her over to the shed.

"Now tell me this isn't different from the other boats".

"Oh yes, I agree this is different. It's the only one where the two little men have black coats on."

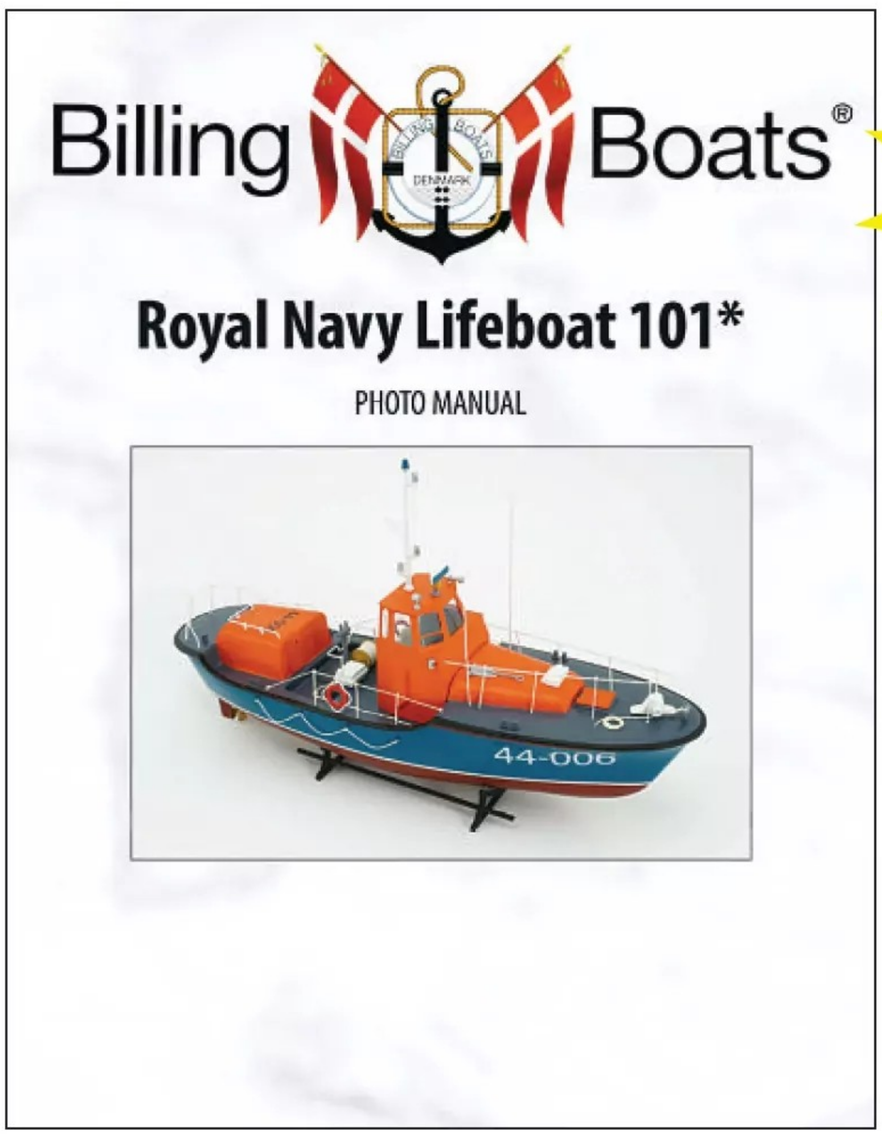
Maybe it is time for me to start knitting socks for soldiers! ●

WIN! BILLING BOATS' WAVENY CLASS LIFEBOAT KIT!

This month, thanks to the ongoing generosity of the fantastic crew at Billing Boats, we're able to offer you the chance to win this splendid 1:40 scale kit for the Royal Navy Waveny Class Lifeboat.

Marketed as a static kit and suitable for the novice modeller in terms of the skills required to assemble it (please note, the kit does not come with paints and glue), there is also, if you have the know-how, the potential to equip *your* build for radio-control.

The kit captures a vessel built at the Coast Guard shipyard in Curtis Bay, Maryland, USA, but which, after some minor adjustments, is now doing duty in British coastal waters.



Check it out!

You can gain digital access to the Photo Manual instructions for this kit by simply scanning the QR code below.

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 accepted from those of you not wishing to deface your magazine) and mail it back to us at:

BB Waveny Kit Prize Draw,
Model Boats
Kelsey Media, Media Centre, Morton Way,
Horncastle, Lincs LN9 6JR

Please note, the **closing date for entry submissions** will be **Friday, September 26, 2025.**

Good luck, everyone!

TERMS & CONDITIONS

N.B. For this particular prize draw we can only accept entries from those residing in mainland UK, the European Union and North America. The competition closes on September 26, 2025. 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 WAVENY KIT PRIZE DRAW

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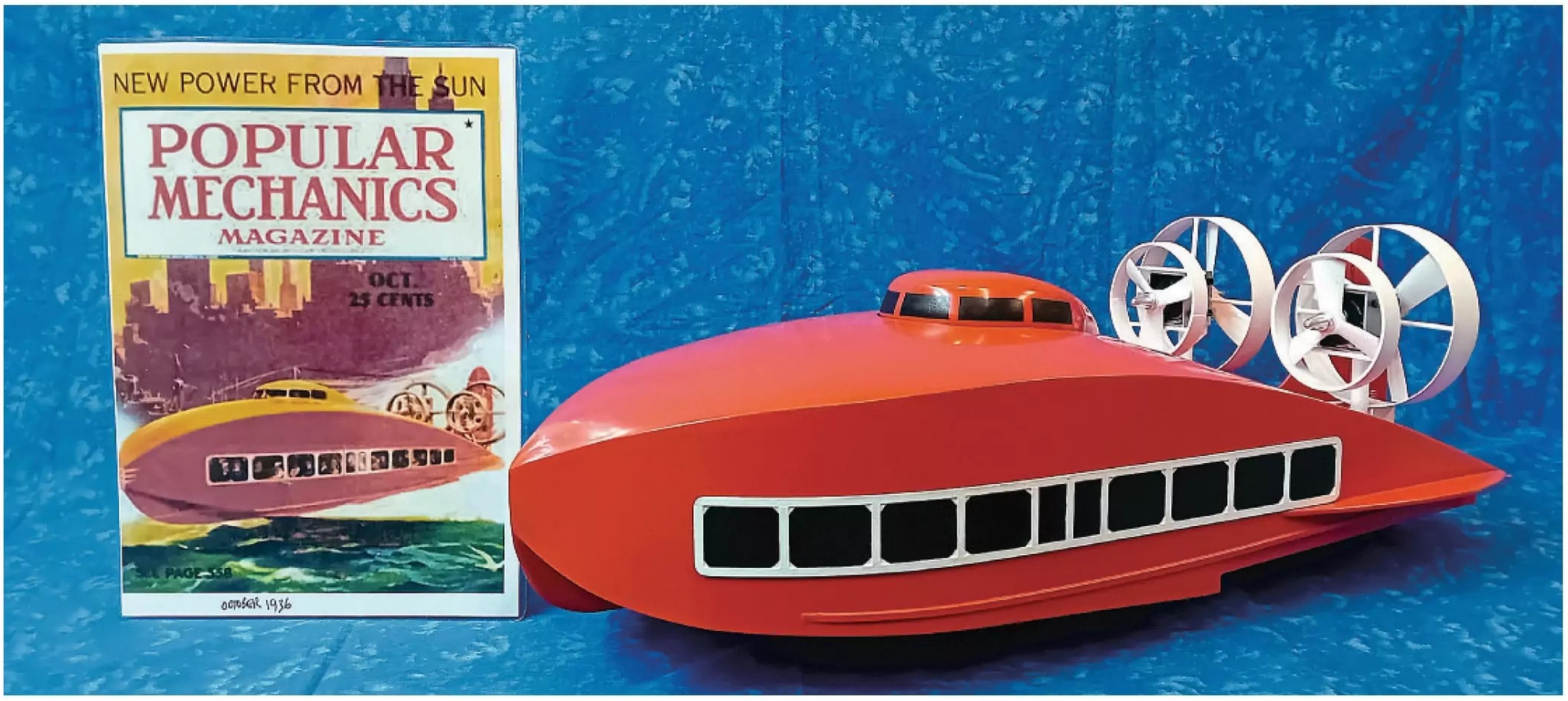

"Whale shaped boat driven by an airscrew"

Ashley Needham creates a working version of a 1930s' magazine cover star…

It's no secret that I lean towards the obscure and the quirky. Indeed, my model boating buddies at Bushy Park Pond and I have collective experience in the construction and operation of 'odd' things. So much so that, in comparison to some of my previous projects, this one – inspired by the cover picture of the July 1936 edition of *Popular Mechanics* magazine – is almost sensible! To some it may appear to be simply an overgrown Tupolev A3 (referred to as a 'Tup'), but despite the similarities (perhaps not surprising, seeing as it's also a surface-skimming passenger craft powered by an aero engine and propellor) this design pre-dates the Tups by around15 years or so.

I should perhaps start with the simple fact that the cover star I based this model on was, in reality, never actually built. Sensationalist magazine cover images like this were once commonplace, which is something to bear in mind when scouting for modelling ideas. True, smaller craft *had* been built, but the story flagged up on the cover, featured on page 558(!) and consisting of only ¾ of a page of editorial, alludes to 'studies of a transatlantic craft', accompanied by a picture of two smaller, almost Tup-like, boats, and a model of the proposed craft. One of the boats was actually built, and there's a picture is of it zooming along, but this was only a test example and nowhere near the transatlantic size being touted. The title of the write-up in *Popular Mechanics* was entitled "*Whale shaped boat driven by an airscrew*", hence the title of *this* article.

Canny designs

So, what do we know about the craft? Honestly, very little. The image shown on the front cover is nothing more than an artistic interpretation. Had the model shown in the article itself been built before the illustration had been drawn up, or vice versa? This uncertainty was, in fact, helpful, as I could base my version either on the front cover artwork or the photo of the (non-working) model that appeared in the article, and, after giving the matter some though, I decided to combine the two!

Obviously, there were two engines on the thing, and the blurb noted the craft was wide for stability reasons. My Tups have a 2:1 length/beam ratio, which has proven a winning combination for stability, so a similar ratio was the goal for this design. The burning question was, should there be two vertical fins? Neither the illustration nor the model show two, but I couldn't help but think, two props/two fins – surely that's what they would have used?

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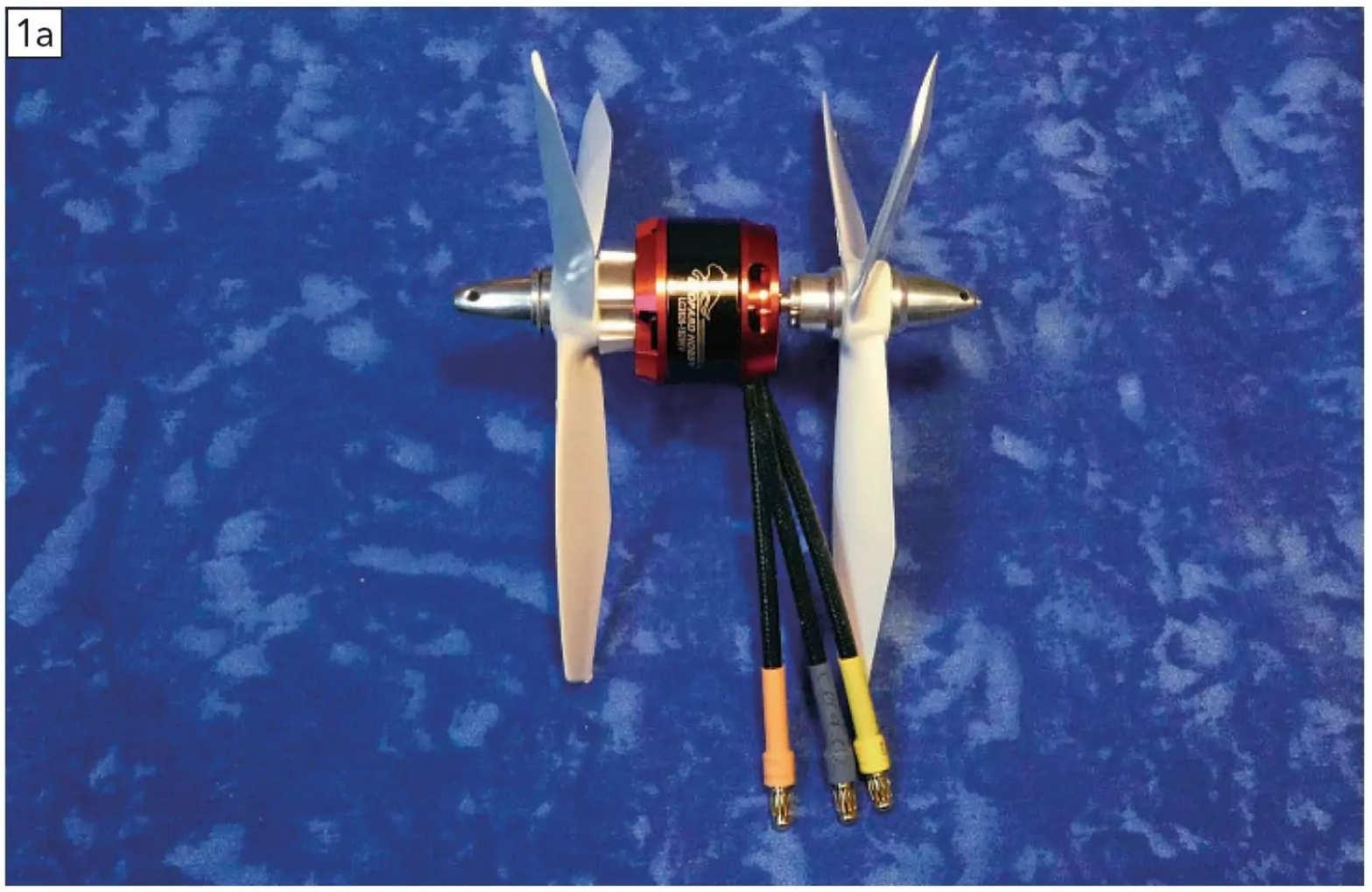

"I should perhaps start with the simple fact that the cover star I based this model on was, in reality, never actually built"

Another intriguing aspect was the fact the engine pods appeared to have a fan forward and a propeller aft; most unusual, but a feature I wanted to include.

Full speed ahead, Mr Sulu!

I needed to sort out the propulsion first, as this, to an extent, would dictate the size of the boat. It was obvious from both the illustration and, in particular, the model, that the props were not that big, but, as there were two of them, this would determine how wide my 'bus' should be. To keep things sensible, I was looking at a maximum prop diameter of 5-inches (125mm), giving a bus width of 10-inches, notwithstanding the gap between props. Examination of the model, however, showed some sort of curved shelf sticking out of the sides at the rear, likely a prop guard (keeping the side of the hull away from the edge), and I could use this to 'hide' a bit of prop overhang. I settled on a hull 9-inches wide and 22 inches long, with side extension shelves of likely 25mm or so. This did result in a bigger prop than shown on the model/illustration, but small props don't deliver much in the way of oomph, and I didn't want to be underpowered!

To replicate the odd fan/prop combination, I purchased two 1820Kv 28mm out-runner motors. These have a motor shaft one end and a screw on prop adaptor on the other, giving, in effect, a double ended power unit (see **Photo 1a**). I had thought to use a ducted fan blade at the front and a prop at the back but realised this may cause thrust imbalance issues, either starving the rear prop of air or bunching it up, so I ordered four 3-bladed props, with clockwise and anticlockwise rotations.

It wasn't clear whether the motor sat in a tube and thus made the unit a sort of ducted fan with a second rear impeller, or if the housing was square, with the fan and prop sitting inside ring ducts. Given the early year of the original, it seemed likely the motor was in a box; think the front of a WW1 fighter – a DH4 is a good example – with a boxy fuselage and radiators either side of the engine. It's a bit tenuous but I fancied the black lines on the model motor housing could be exhaust outlets (think Spitfire). This was pure conjecture, as the write-up was sparse, with virtual no details, and while a model had clearly been made, I doubt there had been anything in the way of serious development behind it. So, in essence, I was the one who would be doing the development, albeit a bit late!

My motor mounts were fabricated from brass sheet and tube and were of the same design as the bumper boat mounts, although in this case they don't turn, and they are the other way up! I ran the model before the cowling rings that would eventually be fitted to test the propulsion and then make cowling rings from a double wrap on 0.8mm ply around two wood formers, made on my woodwork lathe.

The mount tubes would provide the means by which the extended motor wires entered the hull, and with the motors being brushless two ESCs were used, with a 'Y' lead.

Coach building

Lightness was key here. The sides were built with 0.8mm ply, all bulkheads with 10mm Styrofoam, and the top and bottom skins with 0.8mm ply. Firstly, the main bottom piece was cut out. This was made up from two pieces of ply – the front bit with the outer grain running side to side so it would curve upwards easily, and the rear half grain running lengthways – after which the 'step' rear section was trimmed off and separated. Bulkheads in 10mm Styrofoam were added midsection and braced as I saw fit (I build in an organic manner). Some strips were added to the rear section, and then the sides were glued to the main box. I had extrapolated the side pieces as they needed to be longer than the drawing to curve round the bow (see **Photo 1**).

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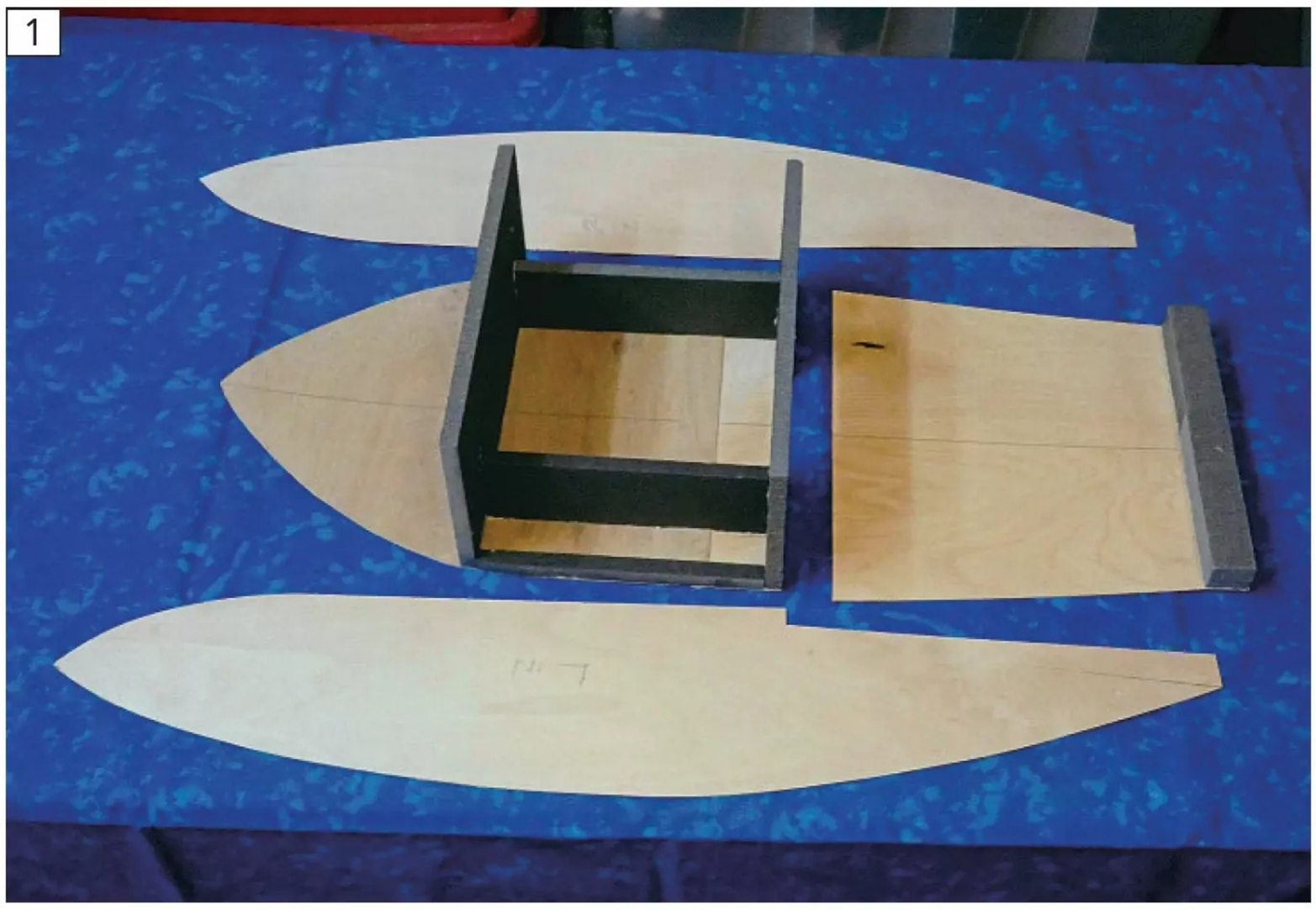
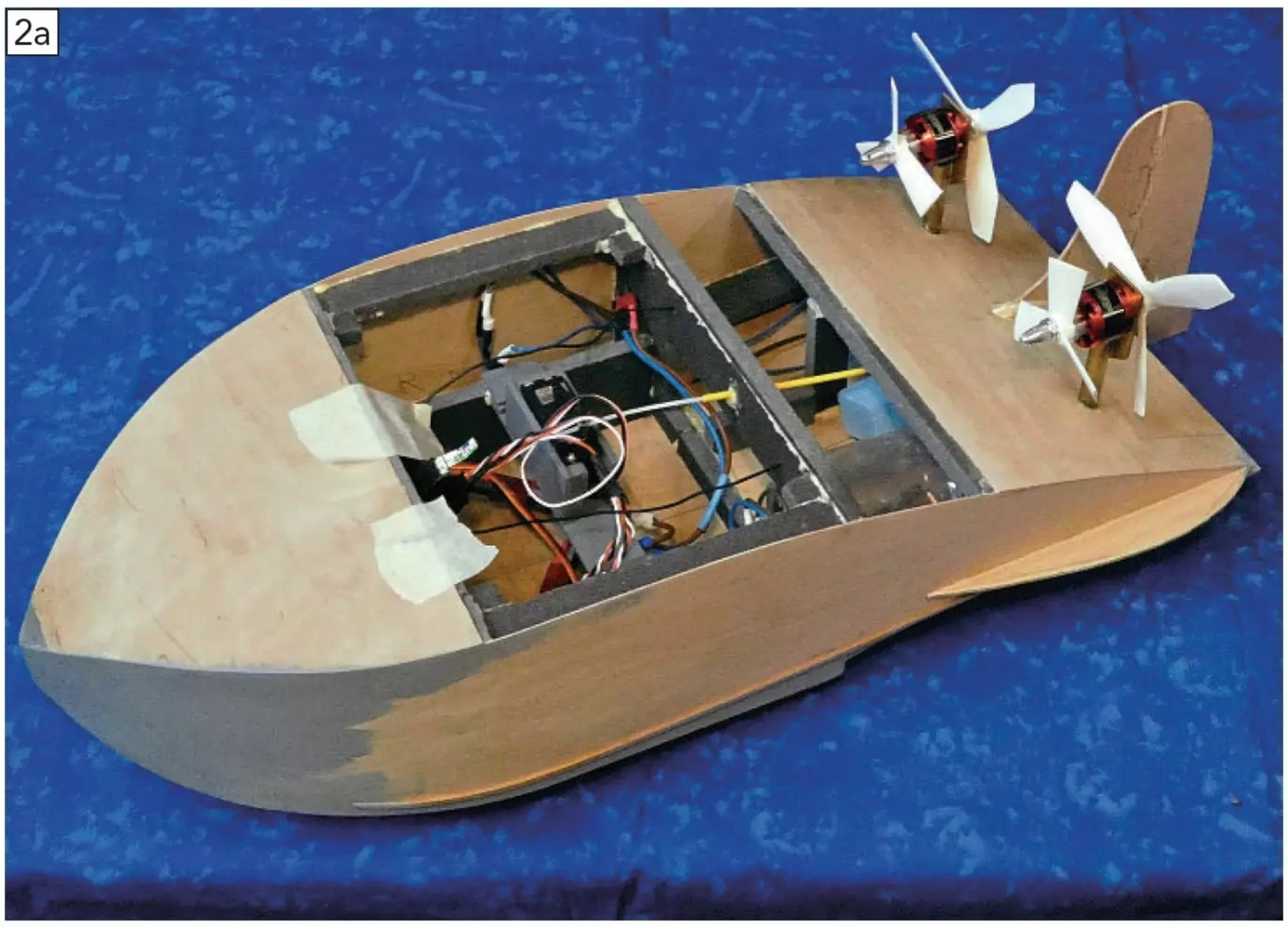




"Although a model had clearly been made, I doubt there had been anything in the way of serious development behind it. So, in essence, I was the one who would be doing the development, albeit a bit late!"

It *would* make sense if the bus were proportioned as a bus and wasn't so fat. I could see the cut-in being pinched into a point and the rudder being at the apex, but it's not.

Whatever you think of the width of mine, the blurb says it's wide for stability and there are two props, giving it a certain width. From experience, the stern on something like this needs to be wide(ish) and square in order to get up on the plane, so that's what I made! When it came to it, however, there was no way to get a rod from the rudders either side past the arc of the props without using extra linkages or some-such, so I did indeed use a single rudder so that the servo rod sat nicely between the prop cowls. Although the full propulsive juices will not be flowing over the rudder, some will, so to boot I extended the rudder to just dip in the water (like the Tup's air fins) as this I felt would be more than enough to provide steerage.

Rudder construction involved two layers of 0.8mm ply to sandwich the nylon tab hinges the moveable flap pivots on. Gorilla glue was used to fill in the gaps around, and little holes in, the hinges for better adhesion (see **Photo 3**). I used thin brass wire for the hinges, having taken out the steel pins that they originally came with. As the rudder was just that, and not the 'ice skates' that the Tupolev ones were, I used laminated ply for this, while a flat brass servo arm was let in via a saw cut and epoxy glue. During assembly, the 1mm brass wire that the hinges pivot on were inserted into the tabs to ensure they were nicely lined up.

Next, the rear section was tackled. Here I had to allow for the fact that the rear floor is higher than the main floor, as it sits behind a step. Stiffeners were glued to the rear side projections before the after floor was glued in place, being careful to chock everything and use heavy weights to eliminate the dreaded twist that can occur when making long box shapes (see **Photo 2**).

The bows were heat bent to lessen the force needed to pull them round the bow, and then using weights and a bit of grunt, along with a set square to try and keep the sides vertical, the sides were tacked on to the base with superglue. *Ad hoc* bracing was then applied, using balsa this time.

The motor units were sat on ½-inch thin-wall brass tube let into the rear fuselage, and, in order not to be victim of rampant vibration, internal bracing using Styrofoam was provided. I used a pillar drill to drill two neat holes through the ply skin and foam support and the motor mount tubes were slid into place. Unless you're very lucky, Styrofoam tears while drilling. Fortunately, that wasn't something that was going to be an issue here, as it wouldn't be visible, and I'd be using foaming glue.

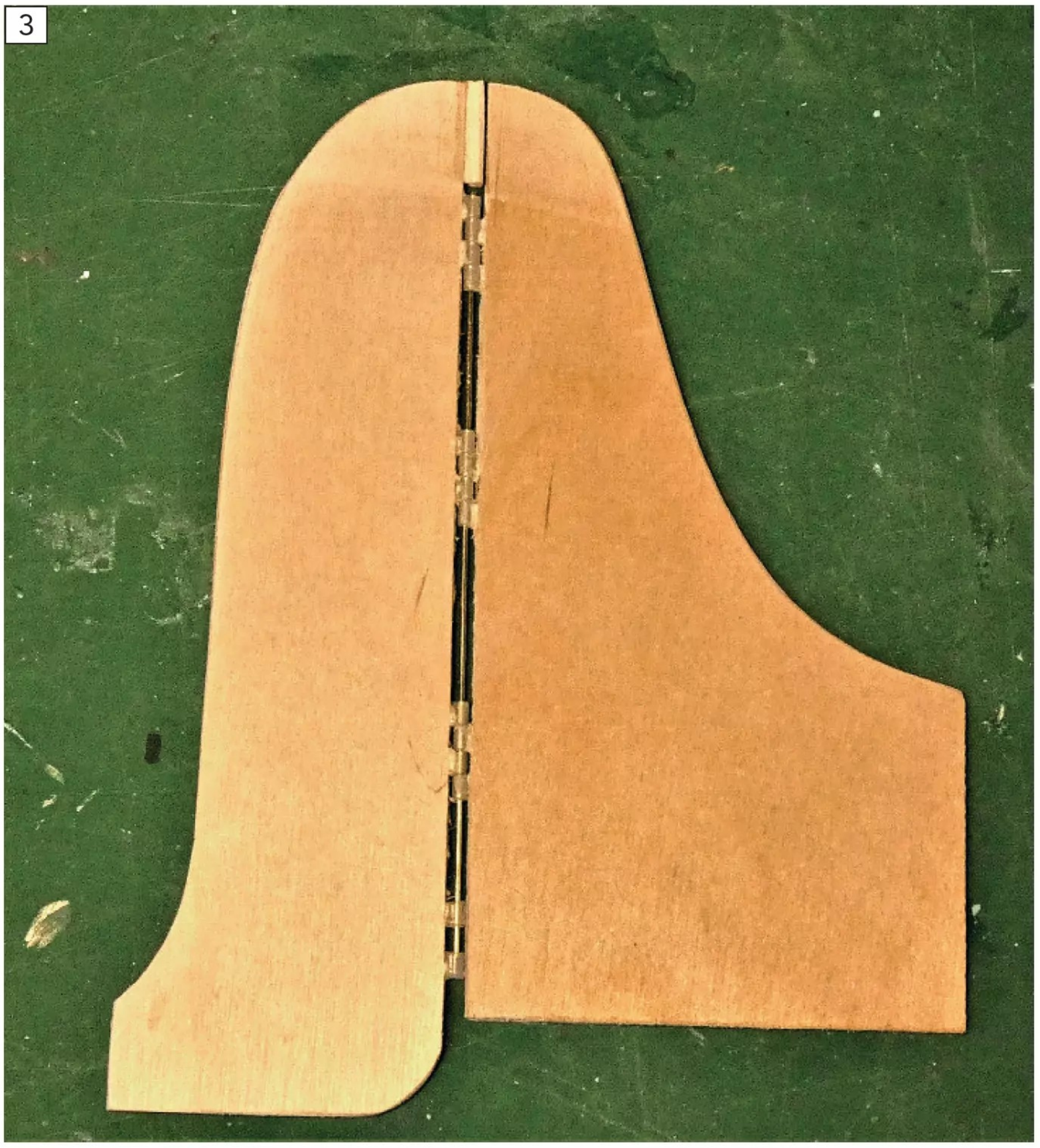
Direction indicators

Neither the illustration nor the model inside the magazine show two air rudders but, in both cases, this may be due to the viewpoint angle. Moreover, although the side of the bus appears to be slab sided, there is clearly a cut-in extending from about midway and going under the stern. Further, the model appears to show the rudder on the same line as this cut-in, and thus the rudder is inboard of the prop arc, but not by an awful lot. That simply doesn't make sense.

Power units

The mount was easily constructed using the same method as I'd for my Bumper Boat and Terror Fish builds: a bit of 1.6mm brass strip drilled and soldered to a section of ½-inch tube. I trimmed the tube to an appropriate length so that once seated in the body the rear prop had about 5mm clearance of the top skin. I then marked the bottom of the tubes to the height of the bottom foam support (20mm) so I could file oval holes in the tubes. Wood dowel, cut at an angle, was inserted into the bottom to reach

3



4

these holes, the purpose of which was to allow the three motor wires to be inserted from the top, the slope of the dowel assisting the wires to exit the hole (see **Photo 4**). Having glued the rear section top skin in place, two hole positions were marked and drilled (these being better than expected!) and the tubes stuck in place, using some flat strips clamped to the mounts to ensure they lined up properly. Once dry, the motors were test fitted, and the wires proved a doddle to pass down and out through the tubes. Whew!

The top skin had to be fitted in several sections, comprising rear (already fitted), front and centre, all of 0.8mm ply and cut with the outer grain side-side to assist with curving it around the top. A generous amount of Gorilla glue was applied to the inside of the top edge so that it would foam up and provide adequate support, and then the front was fitted. Once dry, the deliberately oversize top piece was trimmed with a craft knife and sanded, giving a nice clean fit. Next, I got a bit radical! I realised I was never going to be able to achieve the rounded nose of the original by bending bits of flat ply, so I cut it off and glued a block of Styrofoam in its place. This was sanded and shaped to blend in once all the skins were in place (see **Photo 2a**), leaving the centre top skin until after a quick pond test.

Left hand down a bit

Rudder next, and having made both parts as simple rectangles, the fin was offered up to the hull side, marked and cut to fit the curvature. A nice artistic rudder shape was then drawn on and cut out (again, see **Photo 3**). Glue was smeared into a small slot cut in the rear end, this being for the very bottom tab hinge to seat into. To assemble, the wire pivot was run through the three tabs on the fin and the last bottom fourth tab, and the whole lot was offered up to the boat. A square wood block was used to keep the fin vertical (in relation to the skin) and assist in lining the fin up with the slot underneath, into which the last tab was inserted. Finally, when it all looked good, the fin was tacked in place with superglue and reinforced when dry with some thin triangular wood strips. Having glued the fin on, and fitted the moving section in place, I could then mark the slot position for the brass servo arm and a position on the hull to file through to set the slinky in place, this being roughly level with the servo arm inside.

I made a mount for the rudder servo, which I sat centrally in the body. In this position it could operate the rudder yet still allow room to insert a battery, either forward or rearwards. Aircraft style plastic snake servo rod/outer tube was used here, as it bends nicely and the run needs minimal support. Once this was in place and the whole boat had been sanded, I gave it a splosh of EzeKote resin and took it to the park for a quick test.

Testing times?

The initial test was carried out with the 5-inch rear props and the cut down 3-inch fronts, but no shrouds, and a large open hole at the top! Although mostly finished, I suspected there would be some thrust decrease when the motors were boxed in and there was slightly more weight on top.

All the running gear was tested on the bench prior to the off, during which I noticed that one prop was starting quite a bit before the other when moving the throttle. This imbalance probably wouldn't be an issue at ¾ or more throttle, but you'd be able to feel difference in thrust at ¼, and this would make the steering tricky. So, firstly I swapped the various leads about, to no avail, before finally replacing the 'fast' ESC with another.

Following this, the motors pretty much started at the same time. There was no adjustment to be had on the ESC, so this would be something to look out for in future if two ESCs were to be used on a Y-lead.

Fuelled with a 2800Mahr 3s LiPo battery, the bus was placed in the slightly breezy pond and the very shallow draught of about 15mm was noted. I motored around a bit to test the manoeuvrability, which was fairly good, although some power had to be applied to get a tight turn. I also had to motor back into the jetty to move the battery to the rear, as the nose was showing a tenancy to dig in. Pointing the beast into the blue unknown again, as it headed into the centre of the pond it was obvious it was devastatingly fast, even at small throttle openings, so there was another return to the jetty to fit a 2s pack. Despite the lower voltage, the bus careered out into the pond at almost light speed on half throttle! It then promptly flipped over when put into a really shallow turn. Oops! It was obvious that having built the boat as light as possible, I was going to have to *add* weight to keep it upright! Also, having worried over the possible lack of power, it transpired that the bus was massively overpowered, and although the Tups have slightly larger props, they all run on 1300Kv motors. I reckoned that one bus motor was producing as much, if not *more*, thrust than the Tup setup, for a craft which weighs less – and there's two of them!

A central rib had been applied just before the test under the front section to give the impression of chine, and it may have been that the continuation of the rib contributed to the flip by digging in, although in all probability the wind simply blew it over as it was turning slightly. Oddly enough, after having been towed in by a landing craft, the interior and all the electrics were bone dry, as the bus had floated as well upside down as it had the right way up, in an inch of water (handily). I sanded the centre rib down a bit (by half, actually) once home, just in case.

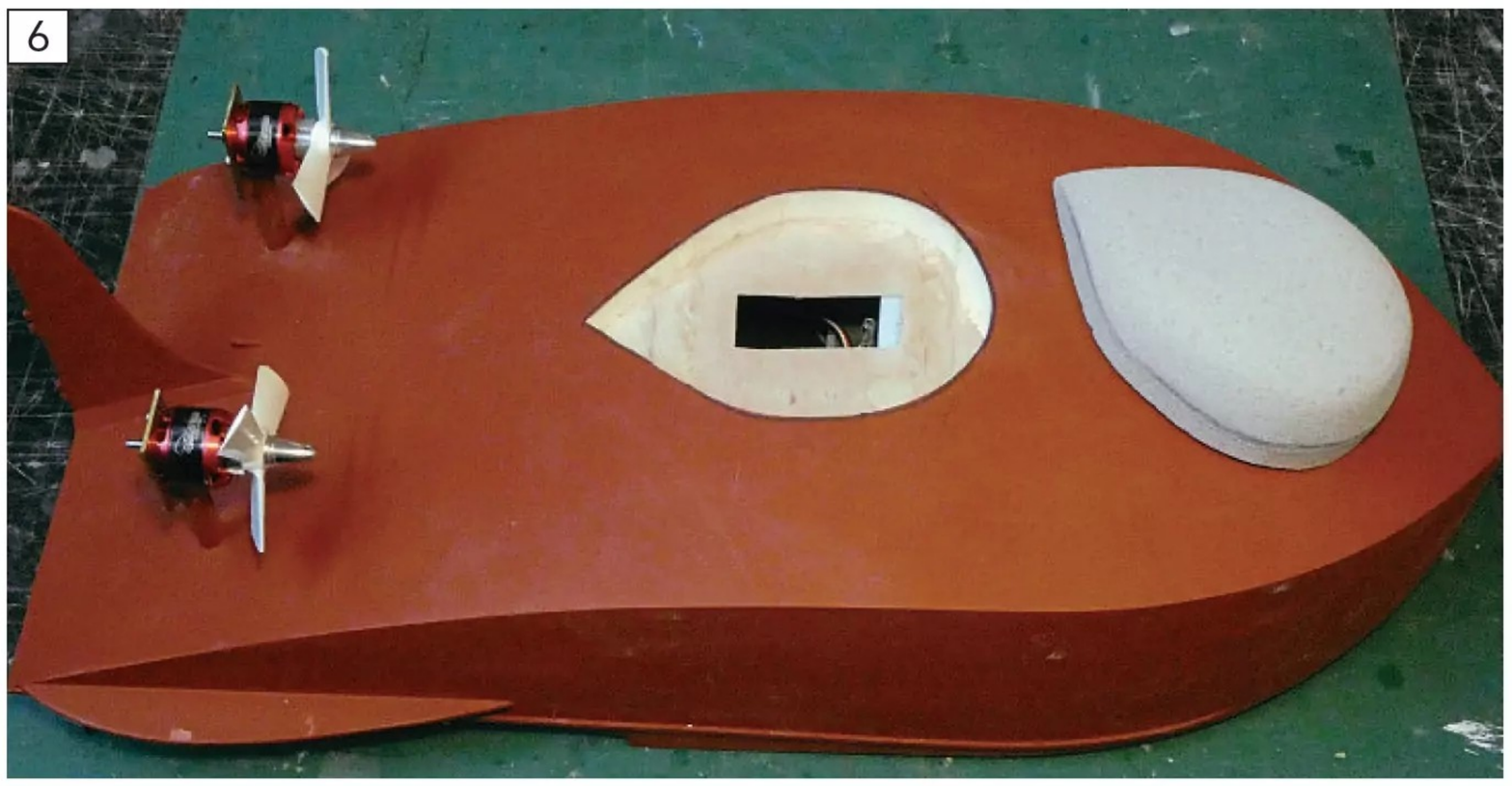
Finishing touches

Barring the revelation that I needed to add weight and be careful with the throttle, the test had gone well, so I set about finishing off the build, planing down the front central rib and attending to the rest of it.

Although the sides are flat, the illustration shows a shallow curve to the top surfaces, so some builders foam insulation was appropriated from a skip, cut into 20mm slices and glued on the top. Once dry, some artistic sanding then took place (see **Photo 5**). Once I was satisfied with the shape achieved, the foam (which is very soft) was painted with epoxy resin, sanded with wet'n'dry paper (once the epoxy had cured) and given a few coats of primer, sanding in between each to even out the shape and fill any pin holes. The area at the rear of the foam gave me a lot of trouble when trying to blend in the foam/resin with the ply. The ply couldn't take much sanding, being very thin and less than stiff, so, as a last resort, I scraped P38 filler across the 'join' with a wide scraper, and this worked OK after some *more* wet'n'dry work! When the surface was sprayed with red primer, however, a few hairline cracks appeared! Naturally, I was a bit cheesed off but ploughed ahead and covered the top with glass tissue and EzeKote acrylic resin. Finally, after two applications of grey brush-on undercoat and a subsequent topcoat of red primer, everything was acceptably smooth, with no cracks (see **Photo 6**).

Access to the inside was facilitated by having the central control cabin as a removable unit, and this was made from solid foam, artfully sanded, painted with epoxy resin, scraped all over with p38 filler and sanded smooth. When finished I placed the cabin was on the top, drew round it with a felt tip pen, and cut through the top foam just down to the ply, so that the cabin would sit on the ply but be held in place by, essentially, a bulwark of foam (again, see **Photo 6**).

Oddly enough, I'd glued a lump of foam underneath the cabin, so I had something to hold on to while spraying. I had cut this down a bit so the cabin would sit in place with it underneath, so having tested the bus and seen that some ballast was required, I epoxied some lead weight onto this protrusion. This now keeps the cabin in place. An issue with magnets is they must be strong (or the cabin flies off!), so you need to get a



good grip on the top (or whatever), inevitably leading to damage or the magnet being pulled off. A hole just smaller than the cabin shape was cut through the ply top to provide access.

Having made some propeller shrouds, it became obvious that the rear 5-inch ones were disproportionally large, and so the props were cut down to 4-inches (100mm), and new shrouds made (see **Photo 7**). This looked so much better and as a bonus decreased the embarrassing thrust issue.

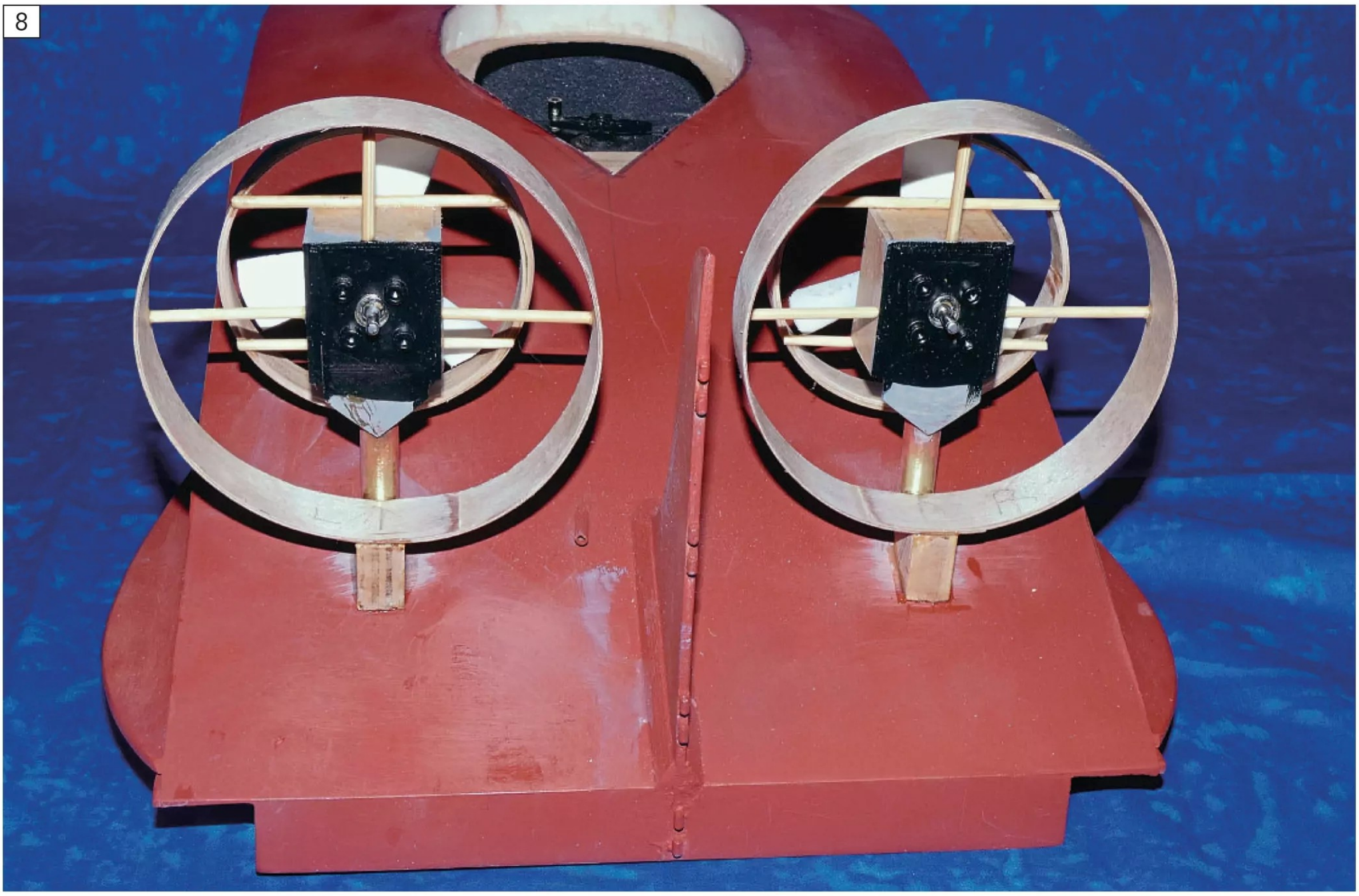
Choices, choices..

Final flourishes included the side 'propeller guards'. These were made from 4mm ply and glued into place using blocks to hold them in position and level on both sides while the glue dried, with a thin 2mm rib running just above the cut in. I cheated a bit on the motor boxes, these being just sides and a top epoxied on to the brass mount and tube; you can't see the bottom, so a tiny strip placed underneath at the front suffices to give the impression of a full box shape. Bamboo BBQ exhaust pipes were then added to the sides.

The all-important prop shrouds were made from strips of 0.8mm ply wrapped around a former (20mm MDF turned on my wood lathe) after having been smothered with PVA glue, and they've kept their shape well. Fitting them, however, took ages and involved the use of BBQ bamboo skewers (an old favourite), superglue and a colourful smattering of Anglo-Saxon expletives (see **Photo 8**).

Thankfully, minimal work was needed to obtain the final finish as most of the prep had already been done. I lie; the closer I got to spraying, the more I noticed tiny bits that needed filling and sanding, and I realised another coat of spray red primer would have to be applied. I then spent an eternity in Halford's studying all the various shades of red for the final topcoat.

Spraying involved first masking up the prop shroud assemblies with aluminium foil and blanking off the access hole with a shaped cardboard blank. Then, on a warm day, the bus was placed on box atop my workmate and sprayed with the Ford Carnival red I'd chosen (see **Photo 9**). A bit disappointingly, this wasn't as anywhere near as lustrous



as the same brand black paint I'd used on the Larsen Aqua car, which dried to a fabulous liquid gloss. I was, however, loathe to start using a rubbing compound to attempt more of a shine, as not only would it be tricky to get into all the nooks and crannies but there's always the danger of rubbing right through on the corners.

After allowing a few days for the paint to harden, the masking was removed, the shrouds painted white, and the motor boxes painted silver. Finally, the 'exhaust pipes' were pre-painted and glued in place.

All aboard! The passengers

Passengers need windows to look out of, and handily on this craft there's a strip of such items either side to watch the world go by at 50 mph from! After talking to fellow modellers, it seemed the way forward was to cut a strip of 0.8mm ply and stick the frames (simple 3mm strips of more 0.8mm ply) onto this, then cheat by adding small white infill corners in paint to emulate the originals. I cut several strips of card before arriving at the proportions I thought were best. A point to consider is that the image I was working from is an artist's impression, in which the windows taper (for perspective) a bit more than I think they should. In fact, I'd go as far as to say the whole boat tapers too much, but the design illustrated was all I had to go on. With such a small craft, there is no perspective narrowing, so the windows appear to be a bit taller than necessary.

As you can see, I masked off an area underneath the window strip so that I didn't cover it in gloss red, and the plan was to then stick the strip in place. Acrylic paint is fairly agnostic to most glues, but not it seems to the red oxide car spray paint I'd used! Several glues were tested, and they *all* reacted badly with the paint. What to do? A suggestion on the MB forum was to use double-sided tape, so I purchased some clear double-sided Gorilla mounting tape and with this found the windows attached very easily. It's a method not without risk, though, as the tape sticks as instantly as impact adhesive. Consequently, trimming this around the window strip with a scalpel so that it cleared the edges (before sticking my strip on) proved a challenge. Yes, I should have glued the windows on first, painted them, masked them up and then sprayed the red on... Next time!

Debut

On debut day the bus was loaded with a Nimh 6 cell battery for weight and a 2s Lipo for go. Gently, I let the motor out on a flat calm pond and then 'let her rip'. Well, not exactly, as the cut down props, shrouds and motor boxes had indeed cut down the available thrust, to the point where the performance was pedestrian, to say the least. So, I removed the Nimh pack and performance was then good – not rip-snorting, but good.

A 3s had to be tried, and with this the performance was fantastic. Not as ridiculously fast as before, but more than fast enough. While I didn't attempt any high-speed turns, just straight(ish) line dashes, she didn't disappoint. Cutting the centre rib down seemed to have been a good idea, and wide, fast(ish) turns were OK. Shaking the battery towards the stern lifted the nose a bit, and at half throttle the bus was sitting on the water just as portrayed by the *Popular Mechanics* artwork.

Back at base I swapped the radio set from the old Planet T6 to the newer Planet set, as the two main channels have a switch that cuts down the throttle range (or rudder range on the right stick). This was handy, as when fitted with a 3s battery and the switches operated, performance was still good, without having to worry too much about turning at high speed. When un-switched, however, passes fast enough to shake the passengers to bits could be performed!

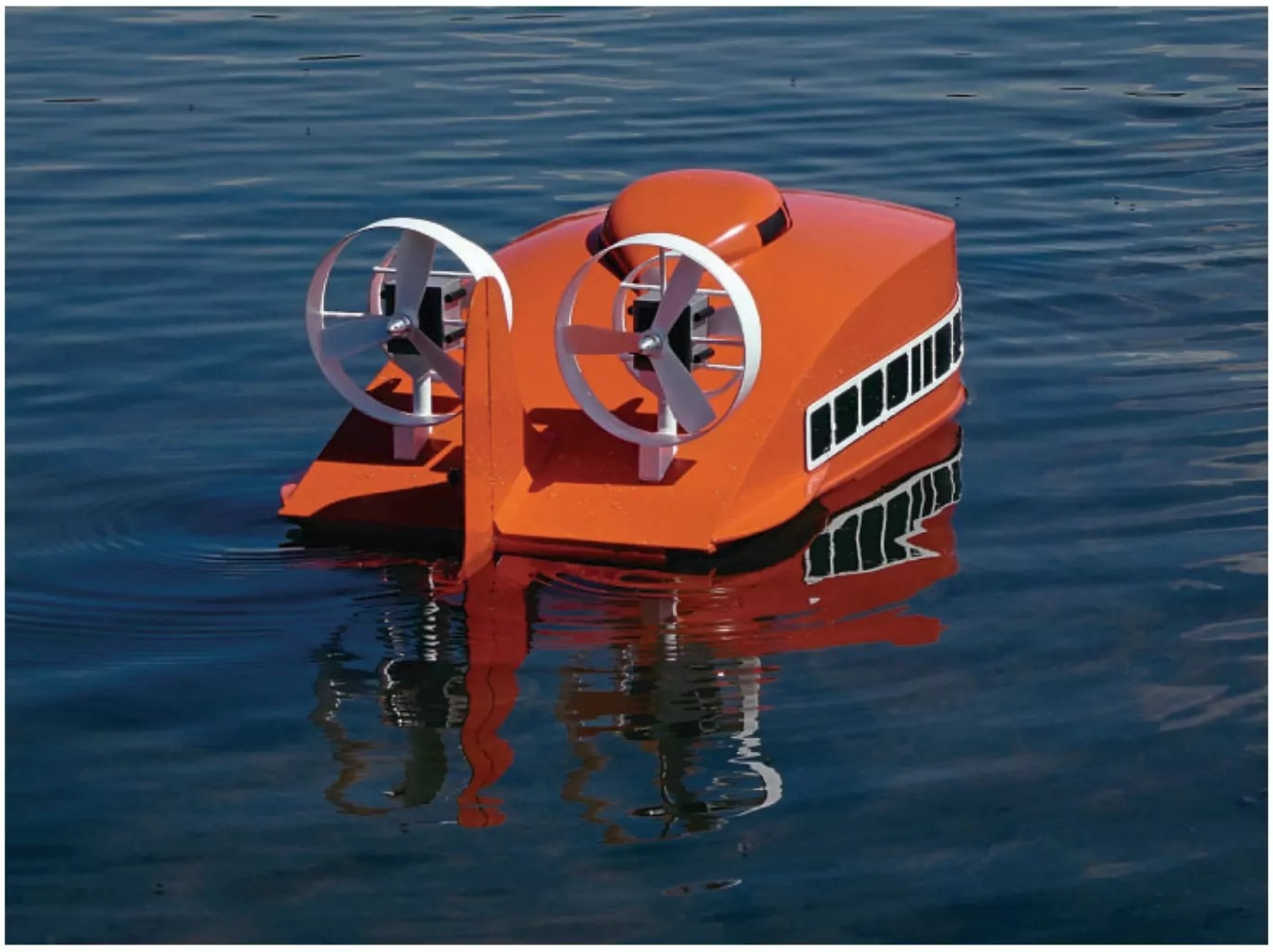
Going forward (these things take time, not to mention good weather conditions) further tests saw turning performance remain good, but low speed turns needed quite a bit of power as the motors didn't start at the same time, despite previous ESC swapping.

To fix this issue, I purchased a 'W' tail mixer. This is a device to mix two motors and rudders together, giving you a differential prop *and* rudder control. This has had a fabulous effect, making the bus very manoeuvrable, even at low speeds. It also has, as I discovered when I actually read the instructions(!), a feature to balance up the starting of the motors by adjusting the rudder trim. which is a bonus. A lot of better modern 2.4G radio sets boast a built-in mixing function, so this feature could have been had without a separate purchase; however, I'm on the simple side when it comes to radios!

Whereas the Tups take to rough weather with ease, the bus is far too high and light, and is horribly affected by wind, especially when sitting in 1mm of water at speed, so it's a calm day only craft unfortunately.

Well, well...

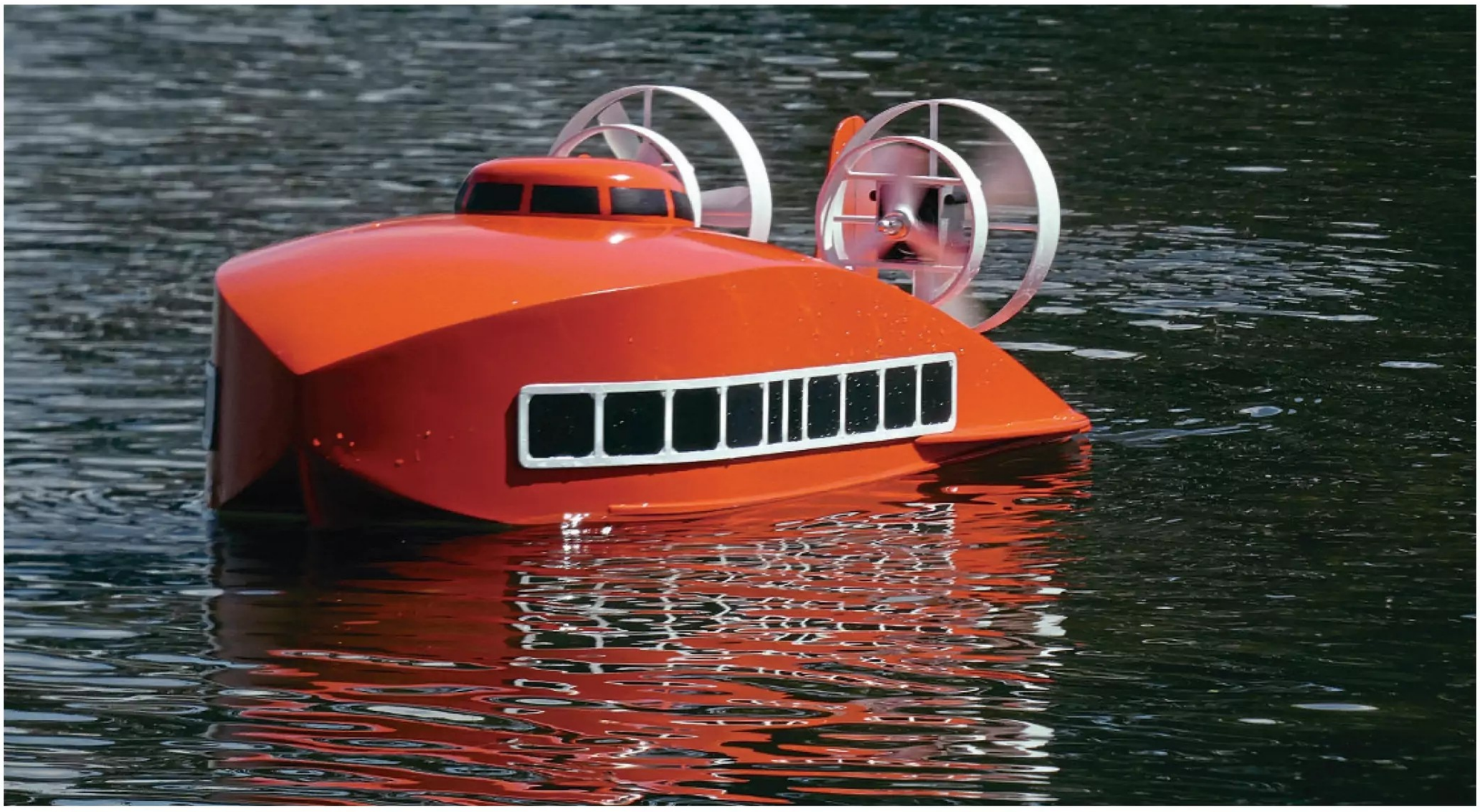
If viewed from the same angle as illustrated on the magazine's front cover, my model is a good match, which was, after all, the object of the build, but from there on it all goes to pot! While the bus surprises people with its



width, calling it a ‘bus’ has been the wrong thing to do as the expectation is then that the proportions are bus like, whereas the prototype must simply have been *fairly* wide (if built) to accommodate twin props and provide stability when planing.

You will have noticed that there are no passengers peering out the windows. I tried various schemes, but at the end of the day the faces which I collected from several sources (and I even tried painting some) stood out from the black like they had been simply stuck on, which, of course, they would in fact have been. So, as I was unable to reproduce the indistinct passenger look as depicted in the artwork, I’ve left the windows blank.

Concerning the actual build and authenticity of it, no-one can contradict my choices as there is no more information to be had, so I must have got it right! Job done – another implausible magazine cover craft realised, and what a performer!



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Digitally designed dinghy

Robert Bulbrook puts his newly acquired tech skills to good use

Following the completion of my last project (The *Bluebird of Chelsea*, featured in the June issue of Model Boats), I was keen to apply my newfound 3D-printing skills to something completely different, and after trawling the 'net (no pun intended) for a while (about 30 mins) I came across some files for a little 3D-outboard motor that looked rather interesting. These files were, therefore, promptly downloaded.

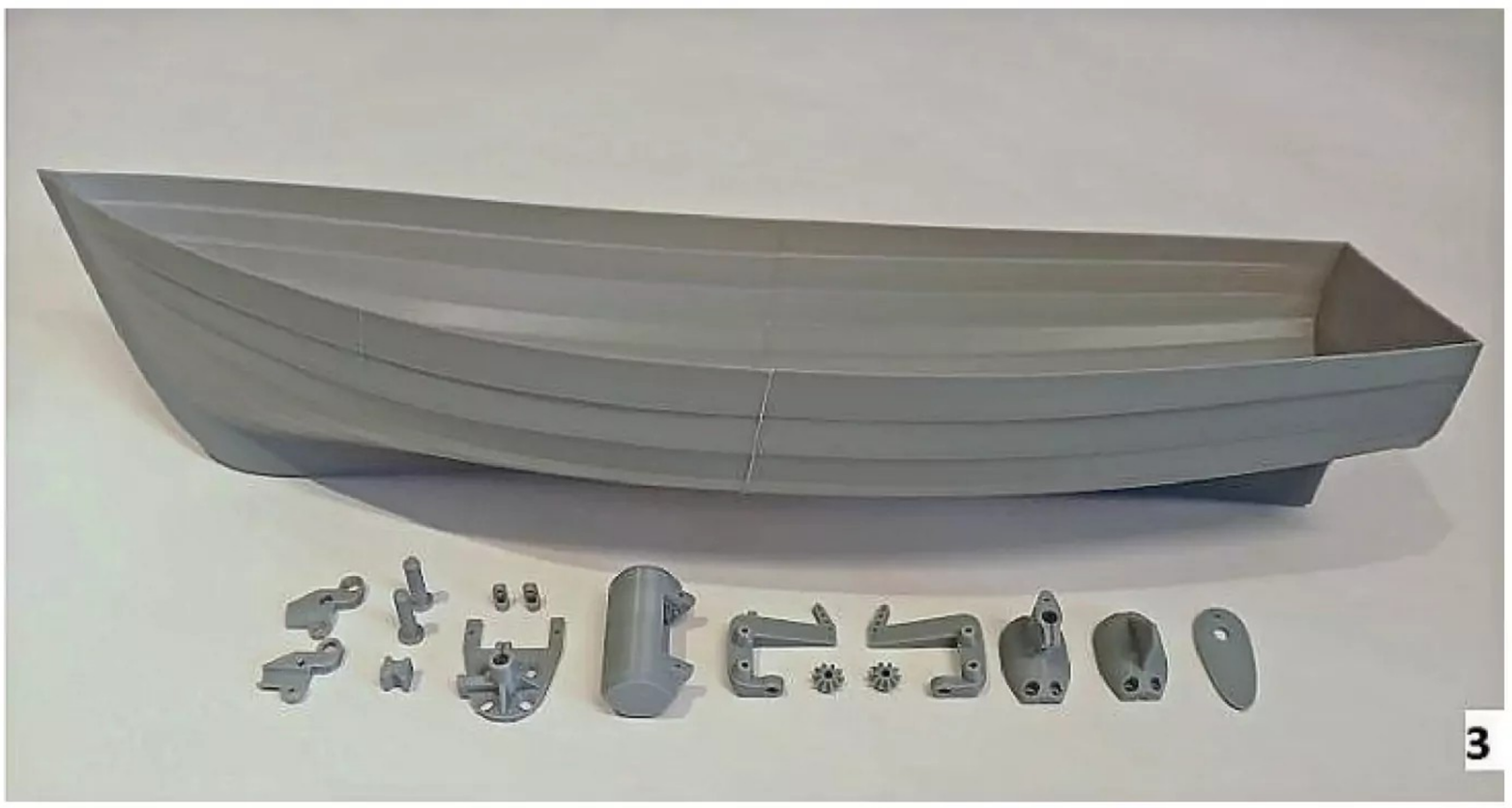
However, while designed to be printed out at 1:6 scale, I decided to rescale the

files so I could create an outboard motor for a somewhat smaller model.

I managed to find hull files for a life size dinghy that I could scale down to 1:10, a close enough match for the Action Man (1:12 scale) captain I intended to add at the helm. Resizing can be done digitally, and a number of useful 'how to' tutorials can be found on YouTube and other social media platforms.

The hull

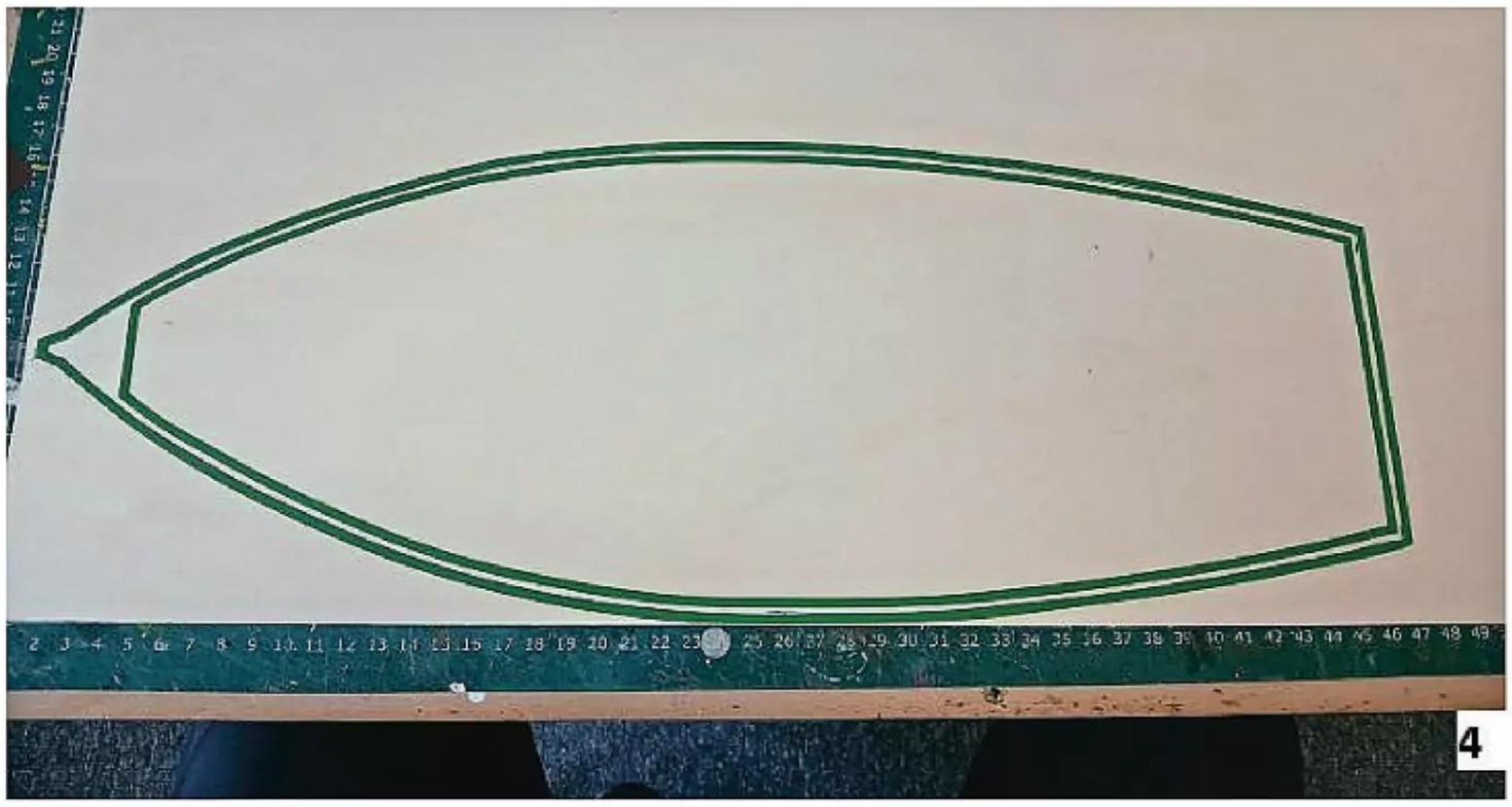
On, then, to the printing and building itself… After making sure my print bed

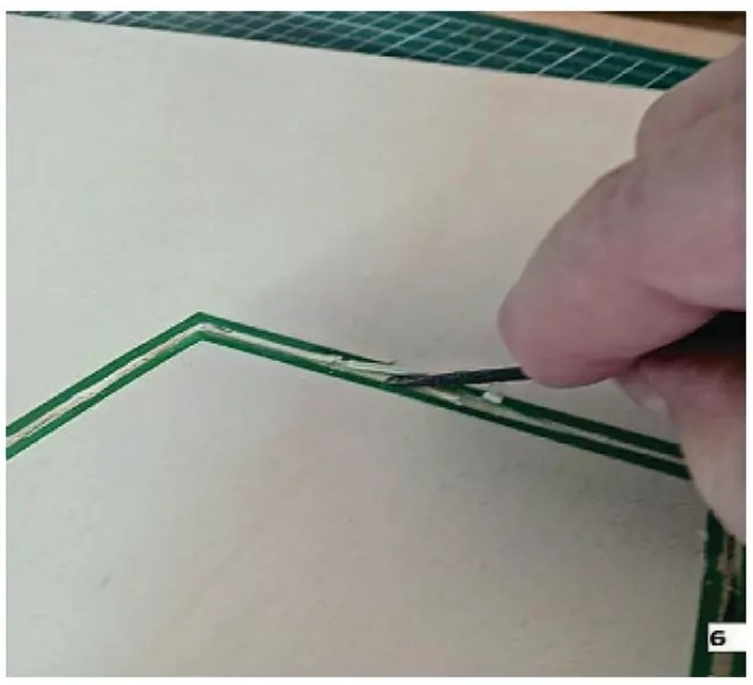


was level, I started with the smaller items so that I could adjust the printer to get as fine a finish as possible. I then moved on to the larger items (see **Photo 1**). Here you will find that altering print speeds, cooling, *etc*, will enhance the finish (or ruin it!). This is very much a case of trial and error but gets easier as you gain experience. The good thing is that if things do go wrong mistakes cost pence rather than pounds, and after a few attempts you will find the process starts to come naturally, like a lot of other things in life.

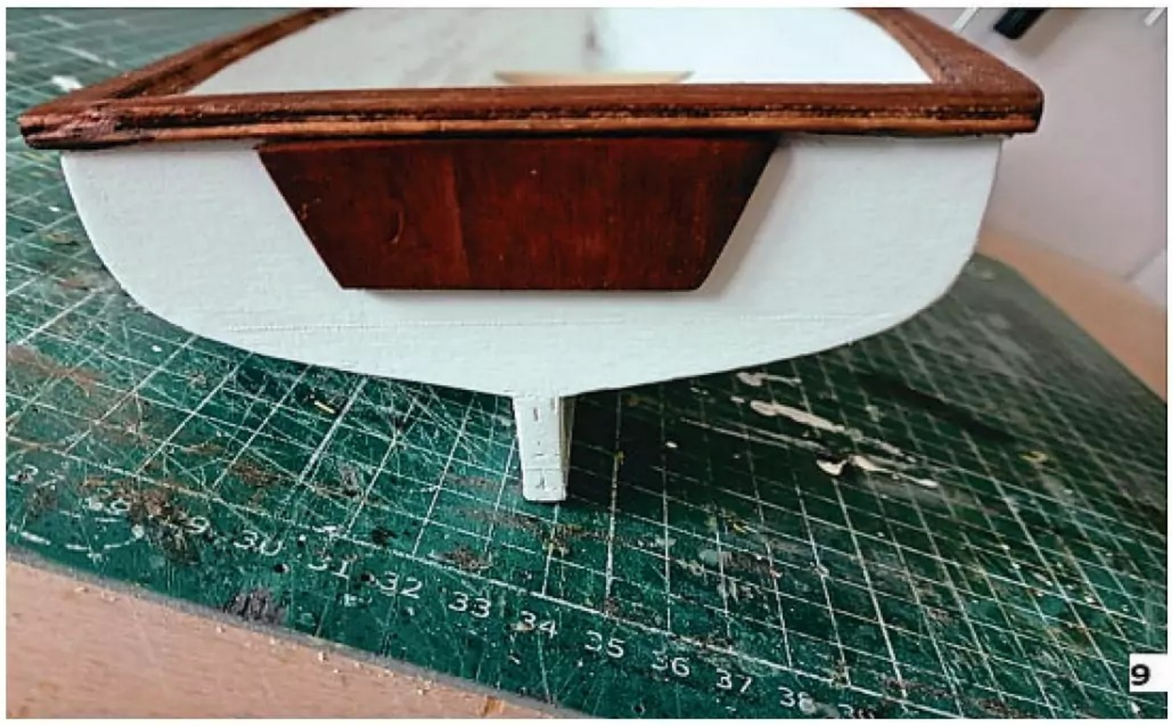
The print file for the hull is broken down into three parts (see **Photo 2**), each of which prints out at just 0.8 mm thick. The resulting parts proved lovely and clean, with very little or no sanding required. Using Plasweld, I then glued my three hull parts together and, with a little care and patience, managed pleasingly tidy butt joints. At this point I didn't reinforce these joints as they were fine, although this was something I returned to at a later stage due to the type of hull and radio control being used (read on!). As well as the hull, in **Photo 3** you will see some of the smaller motor parts printed off, which, as previously mentioned, I tackled first.

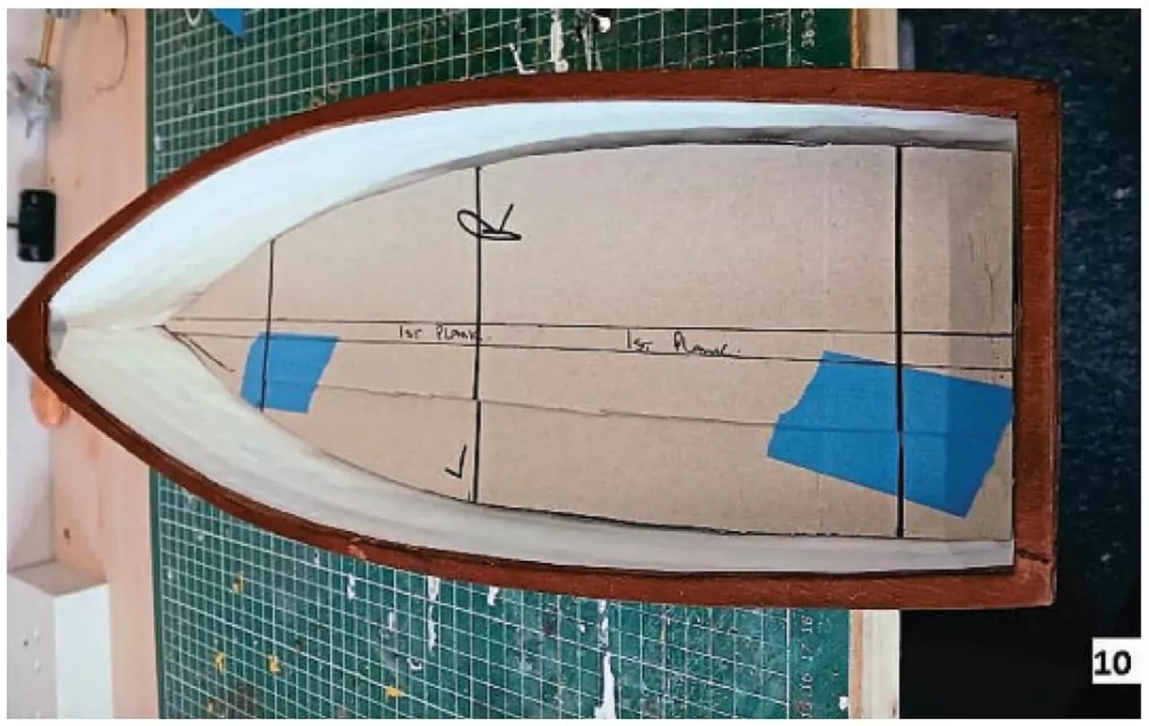
Once the parts for the hull had been glued together, a rigid gunnel was needed, and this was made from a 3mm ply sheet. With the hull turned upside down, a line was drawn around it to mark out its shape, and 1.5 mm either side of this line masking tape was attached (see **Photo 4**), followed by another piece of 3 mm ply bonded to double up to 6 mm (see **Photo 5)**. Once dry, with

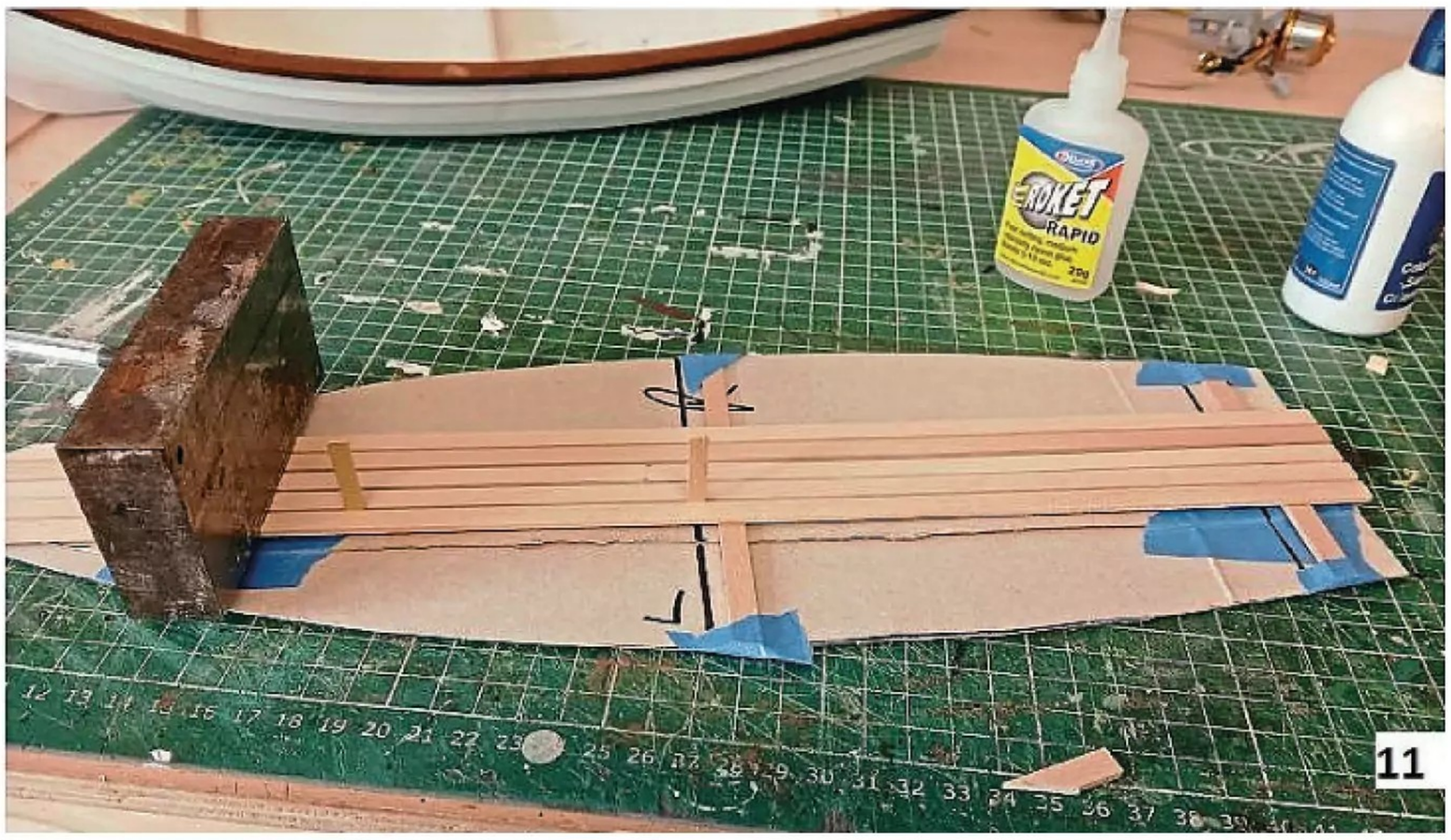




a sharp knife, cuts of about 2 mm depth following the lines between the two strips of masking tape were made. Then, with a small chisel, I routed out the middle, leaving a recess for the hull to sit neatly in (see **Photo 6**). I filled this recess with 15-minute epoxy resin and, due to the camber of the hull, taped the hull and bent the ply to said camber. This proved easier than anticipated, and with the extra tape holding the ply gunnel in position created the result seen in **Photo 7.**







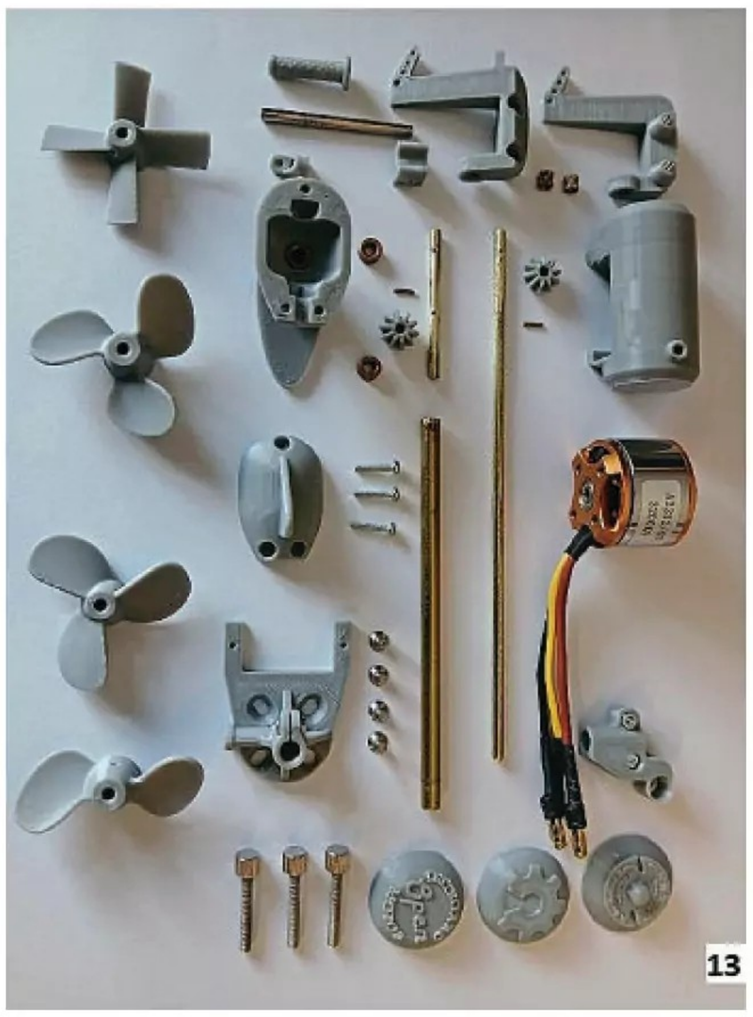
It was now time to turn my attention back to making the hull stronger for radio control use, and here I decided to use fibreglass wing mounting material and its accompanying epoxy. This, however, did not go too well, as the material, once dried, still had some flexibility, with no extra strength or rigidity really achieved. Clearly this needed some further thought. I could either print another hull, as the cost would be minimal, or I could mix a different fiberglass resin batch and paint that over the top. In the end, the latter solution was chosen. Fortunately, this worked well enough. A point to note here is that when using resins and plastic you need to be very wary of the heat produced during the curing process. Plastic is fine when cold, but when warm it can turn ugly! After this, I applied a coat of white primer followed by paint to seal any mistakes.

"When warm, it can turn ugly!"

I used a Sapeli Wood dye for the staining of the gunwales and transom plate for the engine mounting, as shown in **Photos 7, 8 and 9.** These shots also show the ribs epoxied in place to take the deck and the fibreglass internal finish.

Decking

Decking came next. A cardboard template was made (see **Photo 10**), with the width of the centre plank marked to start the process. This would make the decking look square and true to the hull. As I had some stock 7x2 mm Lime wood going spare, this was utilised. I started with three ribs laid flat on the template and the planks glued in place (see **Photo 11**). A 1.5 mm gap between each plank resulted in the finished article (see **Photo 12**), and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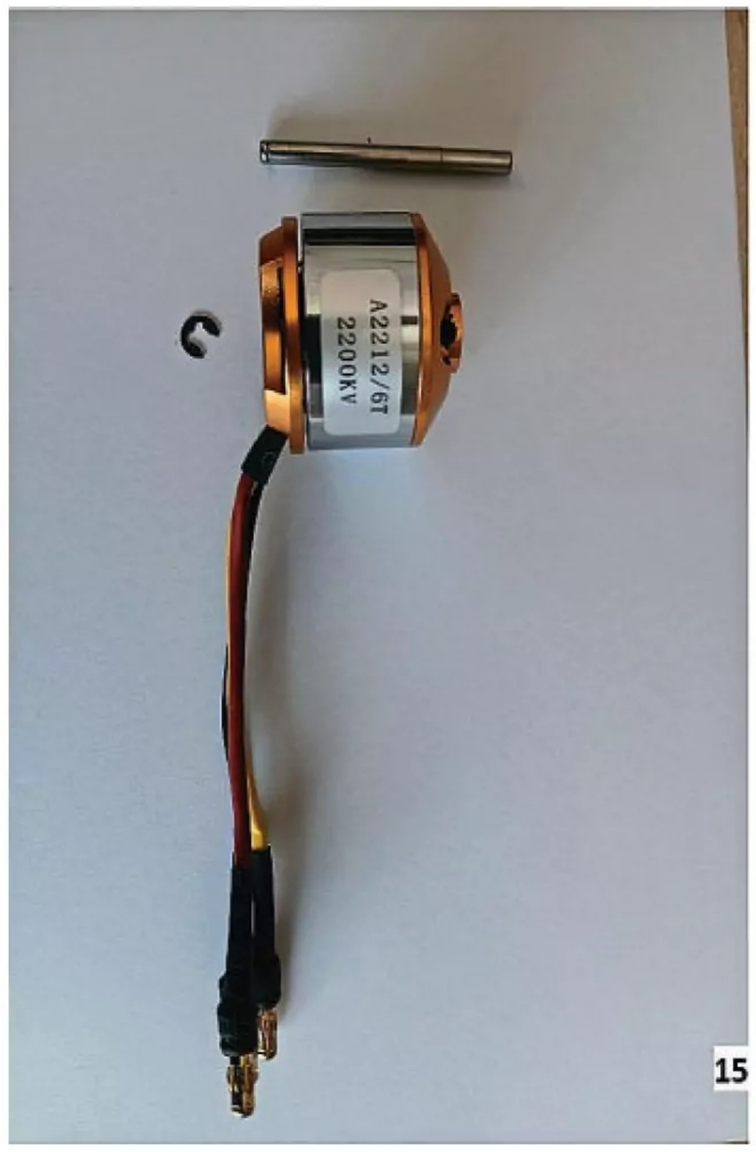

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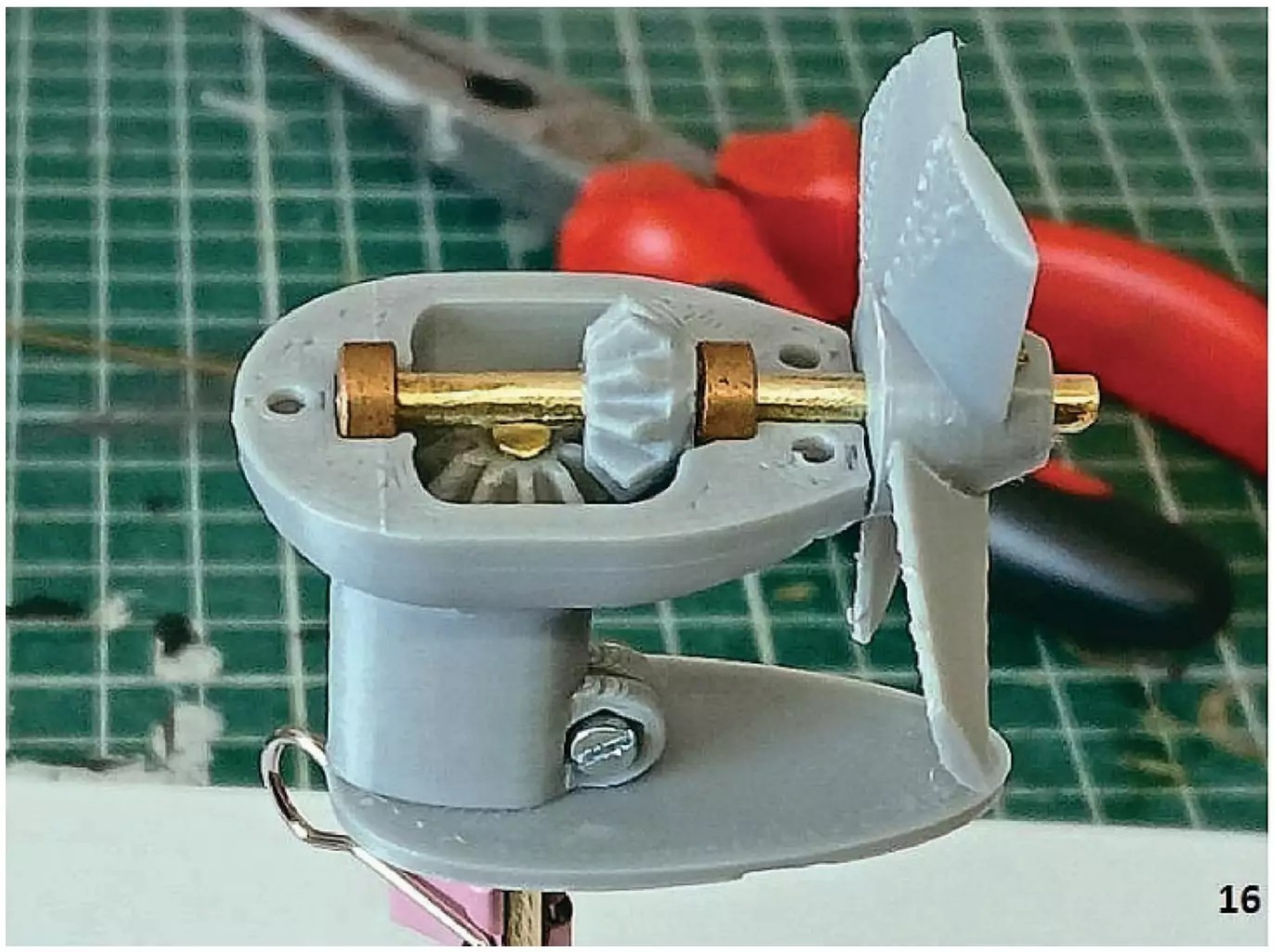
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with that, what I call all the 'dirty work' was done.

The outboard motor

I had finally reached the stage the whole project had been inspired by, the nice little outboard based on a Seagull outboard motor (see **Photo 13**). These files are available on various 3D printing sites that offer files at little or no cost. Just as you would do with a fancy Tamiya plastic kit, or any other build for that matter, the printed-out engine parts needed to be laid out for a precision assembly of this unit. At this point you do have to source brass rod for drive shafts, screws, bronze bushes, etc. The included instructions that come with the purchased print files do have assembly pictures, which make it all clear. You can either print the little gears in plastic or search and source from the internet from various sites. However, I decided to print mine in plastic, as a lot cheaper and reprinting meant spares are free, as the gear files were included. All the plastic motor parts printed right the first time, it was easy. The little motor needed adapting to run upside down, and also to take a longer drive shaft. Removal of the end circlip and also a little grub screw (just visible in the right side of the casing and indicated by the right arrow in **Photo 14**) holding the shaft in place allowed for the shaft to be removed (see **Photo 15).**

Photo 16 shows the lower drive casing and the associated parts to assemble. The little drive gears and brass shaft are held in place with some small bronze bearings; these were bought for pence on the internet, somewhere like eBay.

With the files you get a choice of propellers, but here I made a modification. I knew that with the motor I was using the prop would go like a speed boat, so I simply trimmed a couple of millimetres off the ends of the blades – a word of caution here, though, this needs to be done accurately, or you will get vibration up the shafts or cause air cavitation in the water).The propeller and lower housing runs in the water with no seals and lubrication supplied by H2o only,


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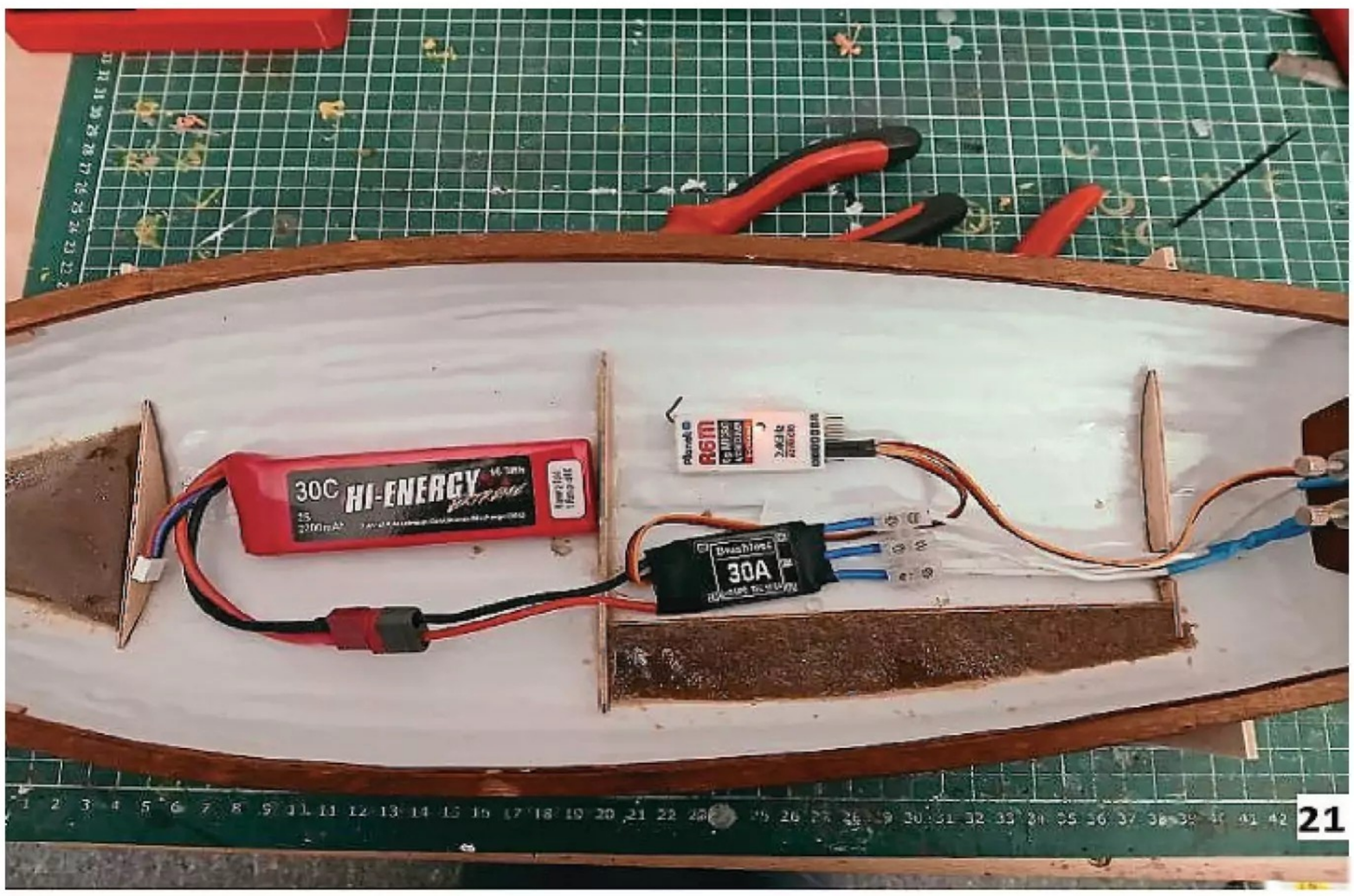

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no grease, *etc*, needed, which is good for the environment. If the gears do wear, I've already 3D- printed some spares, at a cost of about 1p each as previously mentioned.

Once the parts are assembled here and the case put together, it is simply a matter of attaching all the other parts (see **Photo 17**). After this, the motor is slid onto the brass shaft, made with other brass parts earlier, and the original grub screw retightened onto said shaft (see **Photo 18**).

Photo 19 shows the motor finished, and the plastic printed fuel tank printed and affixed, obscuring the steering servo from sight. To keep things neat, the cables were tucked down the inside of the transom and under the deck boards.

The servo in the little engine would move the motor for steering, but I wanted more. If I could get the motor to move the arm of the old Action Man, who would serving as my caption, this would, I felt, look more realistic. The motor shaft I'd removed earlier was utilised as the tiller, with a printed grip glued on the end, but I knew this wouldn't be strong enough to move Action Man' rigid arm, and any attempt to do this might burn out my servo. Consequently, poor old Action Man had to undergo a bit of surgery to insert a spring that would allow good arm movement (see **Photo 20**).

Ballast

With my captain finally sitting to one side on the boat, ballast was required on the opposite side to counteract his weight. This was done with children's play sand and the last few mils of what was left in the bottle of the wing mounting epoxy mentioned earlier, as this was more fluid than normal epoxy and soaked in well. Plywood was used to keep the ballast to one side and at the front of the bow. I had to guess the amount necessary, but I had a plan for adding further ballast if required.

R/C gear and access

At this point the receiver, speed control, and the battery were fitted, bearing in mind the weight had to be kept low down in the hull. An afterthought was cutting a hatch in the deck to allow the battery to be removed for charging. This was done by gluing some supports to the underside of the planks and cutting across said planks, allowing an access hatch to be easily made (see **Photo 21**).

Captain cover up

It was now time to fit everything together. Well, almost – my captain

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was still half naked! So, I persuaded my good lady Karen to get her knitting needles out, and in less than an hour Action Man was sporting a nice, new fisherman's jumper, and as a bonus she also made him a cosy matching hat.

Having been suitably attired, he was then sat on one of the two plywood seats, with his right hand clipped on the side of hull and his left hand clamped to the grip of the tiller.

Cool accessories

The final items I 3D printed were a fishing rod reel, a bottle of Coca-Cola, and a cool box for beers.

The rod I made using a plastic reel and some brass tube offcuts (going from about 4mm down to 1 mm), with the eyelets were made from 0.25mm wire. This I gave a wrapped string handle and a thread fishing line, to which I added a little weight that allows it to dangle in the water.

The Coca-Cola bottle was printed to scale and then painted in burgundy. As on the print the Coca-Cola script was recessed, I applied a thin coat of red and simply wiped the excess away, leaving just the famous brand name picked out in red – *"It's the real thing!"*.

The 3D-printed cool box was not just decorative but served to further balance the boat, being loaded with five old rechargeable batteries as additional ballast and glued to the top of the hatch to hold it in place (see **Photo 22**).

Cheap frills and new skills

From start to finish, this further foray into incorporating 3D-printing into modelling projects took about three weeks (working evenings only) to finish and cost very little to produce (approx. £30, excluding the electronics and motor).

I am trying to learn CAD (Computer Aided Design) myself, but I do this as and when time allows, so until then I am grateful for the good selection of 3D designs available as STL files online.

Dinghy debut

I tested my little dinghy on the Spalding Model Boat Club water (my local club) to ensure all was well and was delighted by how well she performed – after just a few adjustments to the jumper and cables (see **Photos 23**). What's more, when the motor turned, it actually looked as if the captain was turning the tiller. ●

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Self-centred?

Glynn Guest provides some helpful guidance on a frequently discussed pondside topic…

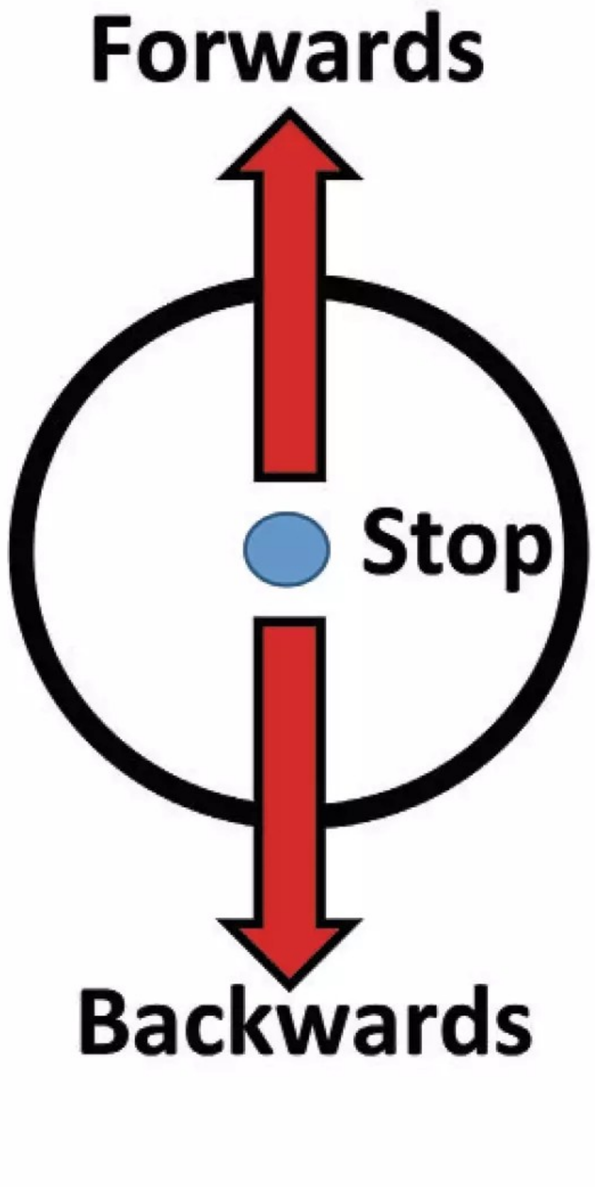

Figure 1 The usual Throttle Stick operation

Usual throttle stick operation.

A subject that sometimes comes up in discussions is the radio-controlled model boat's throttle stick. Should it be on a ratchet, where it ought to stay as placed until deliberately moved, or on a spring-loaded stick where it must be moved and held away from a central position to keep the model in motion?

With scale type models, both methods usually have the central position of the stick corresponding to the motor(s) being off. Moving the stick upwards or away from your body, depending on how you hold the transmitter, causes the model to move ahead, while advancing the stick further increases the power of the motor and hence the model's speed. Pulling the stick downwards gives you the same effect but with the model moving astern (see **Figure 1**).

With racing models, which may have no reverse motor function, you could arrange a ratchet stick to have the full downwards position to stop the motor. This would allow all the upwards stick movement to be used to give you fine progressive speed control. That's something that isn't possible with a spring-loaded stick, where you usually have only half the total movement from the centre. I have, however, had transmitters where the throttle stick could be adjusted to give something

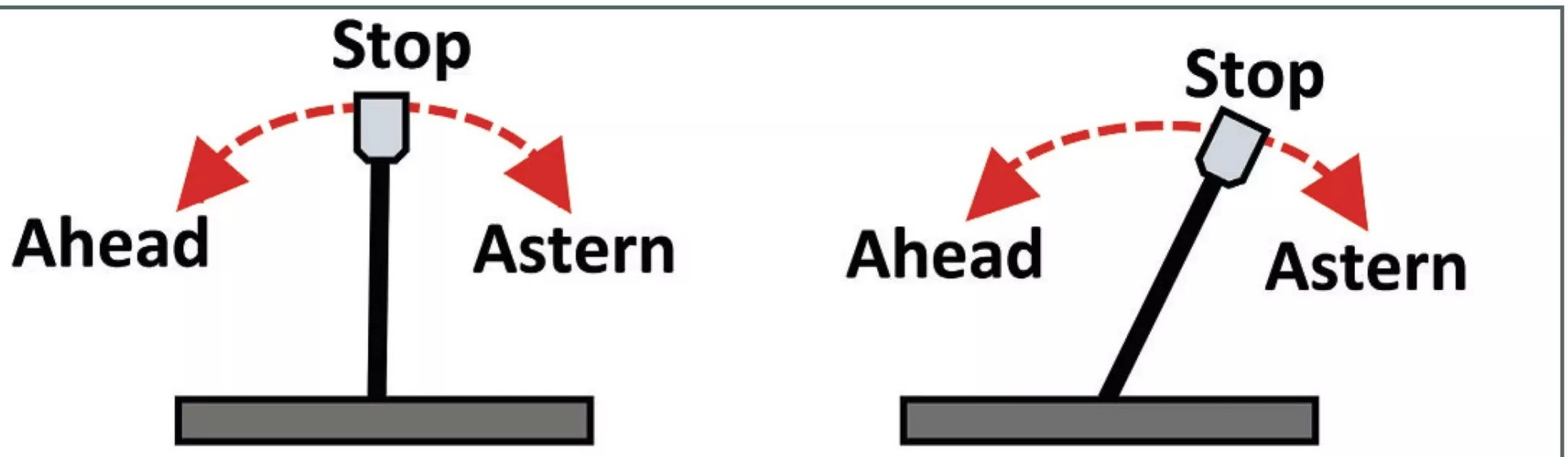

Figure 2

Even and offset throttle stick operation.

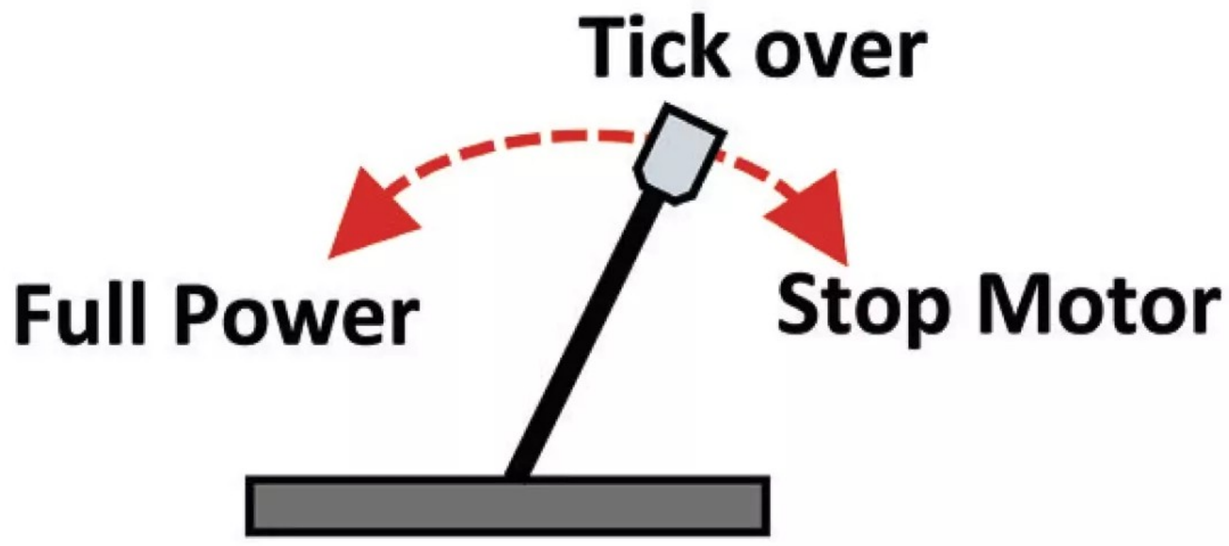

Figure 3

Possible stick setup for models with no reverse.

like 2/3 up from the sprung centre and 1/3 down. This was handy when full power astern was neither required nor desirable (see **Figure 2**).

A more suitable alternative was taken during my limited foray into IC powerboat models, when a self-centred throttle stick was used. The throttle linkage was adjusted so the central (or thumb off) position gave a safe 'tick-over' motor speed; pushing the stick forward increased the motor speed while pulling it back cut the motor. The option of having a reliable slow model speed, where I could just release the stick, along with the ability to stop the motor on demand, made me feel much safer (see **Figure 3**).

Like many things in life, there is no one right way to use a transmitter's throttle stick, although some might try to argue otherwise. It all depends on what you feel comfortable with. I will confess that my preference is for controlling a model's motor with a spring-centred stick; there's some 'feedback' from the pressure the stick exerts on my throttle thumb which must, probably at a subconscious level, tell me what I'm expecting the motor to be doing. In fact, this effect is encouraged by my preference for strong springs on the transmitter sticks, and I adjust them to maximum tension whenever possible. It is also reassuring, especially when faced with an unexpected and potentially dangerous situation, to know that the throttle stick will return to the centre 'OFF' position with no effort on my part as soon as I remove pressure on it. This can also be handy should you accidentally drop the transmitter or knock the throttle stick. I once witnessed a modeller park his creation on the lake amidst many other models, then turn around to chat to fellow modellers. The yelling of people as his model ploughed at full speed through the other boats rudely interrupted his social intercourse. Yes, he was using a ratchet throttle stick and had, without realising it, moved it to full speed!

On the other hand, however, when sailing a model with sedate performance, then a ratchet stick throttle can be quite practical. It does free one hand up to hold a suitable refreshing beverage on a pleasant summer's evening, or, for the hardy folk who sail in winter, a mug of something hot! ●

PART 2

SS Vagabundo

Glynn Guest completes his guide to building a small coastal trader suitable for steam plant installation from last month's free plan

Having covered the construction of the hull in Part 1, we now move on to building the superstructure, finishing the model off, and what you can expect in terms of handling and performance out on the water.

Superstructure freedom

Apart from making this part a good fit over the deck coaming, ensuring adequate internal ventilation and a funnel position matching the boiler's exhaust, you can do very much your own thing here. Well, apart from obvious 'no-no's, like making the funnel too heavy. You may think this is not worth commenting on, but I've actually seen models where it looked almost as if scaffolding pole had been used to create a tall funnel, and, surprise, surprise, witnessed their owners expressing frustration with the instability of their creations!

For ease of operation and to minimise damage, the superstructure of this model was designed to lift off in one piece. I built my frame from the same material I used for the fixed deck coaming.

The obvious way to ensure a good fit is to build your superstructure around this coaming, taking care to

"It is not a bad idea to mark your frame, so you know which way this will be"

avoid it becoming glued to the deck or coaming during the construction process (see **Photo 1**). To prevent this, you could use some thin plastic sheet as a barrier or just work very carefully.

Only when the glue has fully set can this frame be removed. There are four possible ways you could refit the frame over the deck coaming. Unless you've worked perfectly and precisely while

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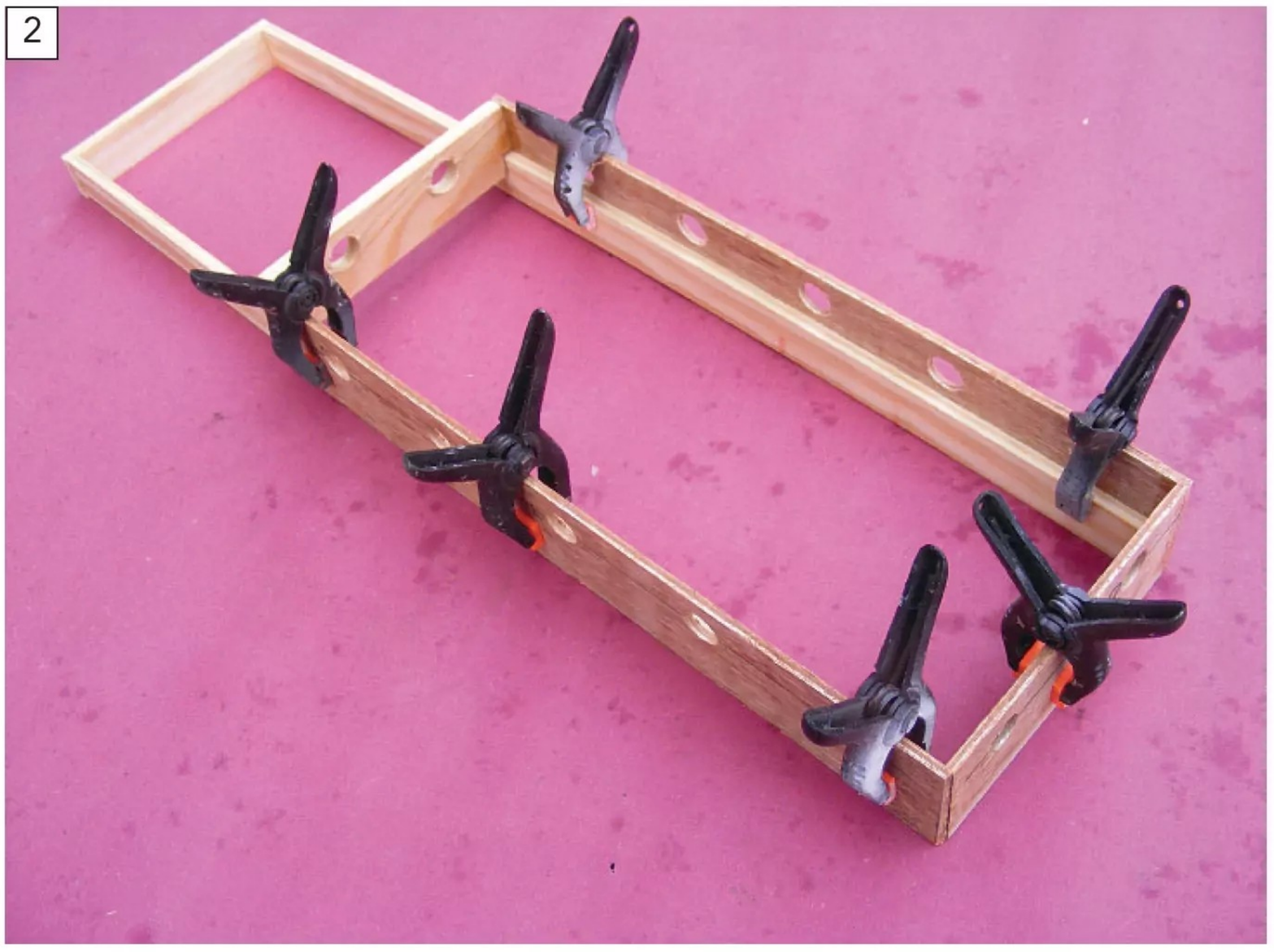

marking, cutting and gluing, the frame will likely only fit one way in a snug but unstressed fashion. It is not a bad idea to mark your frame, so you know which way this will be.

My superstructure was built using mainly 3 mm (1/8-inch) plywood out of my scrap box. Before gluing anything, it seemed like a good idea to drill the portholes. With this design, most of the portholes were to be discreetly sited and I opted for making them oversize, about 15 mm in diameter, to encourage adequate airflow into the hull (see **Photo 2**). Some brass eyelets were found to fit perfectly into these holes to finish them off.

The superstructure's deck was made to extend out to the hull sides (see **Photo 3**). The position of the funnel was checked and double-checked to ensure it still matched the boilers exhaust before cutting anything. I used a circle cutter in my electric drill; this, however, was slightly undersize, so the hole had to be opened up to match the funnel using sandpaper wrapped around a suitable dowel. My funnel was fashioned from a thin-walled metal tube, possibly from an old vacuum cleaner, but other suitable sources exist. It was given a small rearwards rake, as is often seen in vessels.

As my steam engine was of the oscillator type, which can leak a little steam when operating, I also added an open grating above its position. I used a piece of perforated board bought from a DIY store for this, but you could make your grating from wood strips.

The superstructure was then finished off with the bridge and a small deckhouse, again made mainly from plywood (see **Photo 4**).

The opening ahead of the bridge was to be covered with a hatch and became something of an experiment. Just in case the portholes failed, I ensured adequate ventilation into the hull so it would be possible to start sailing trials

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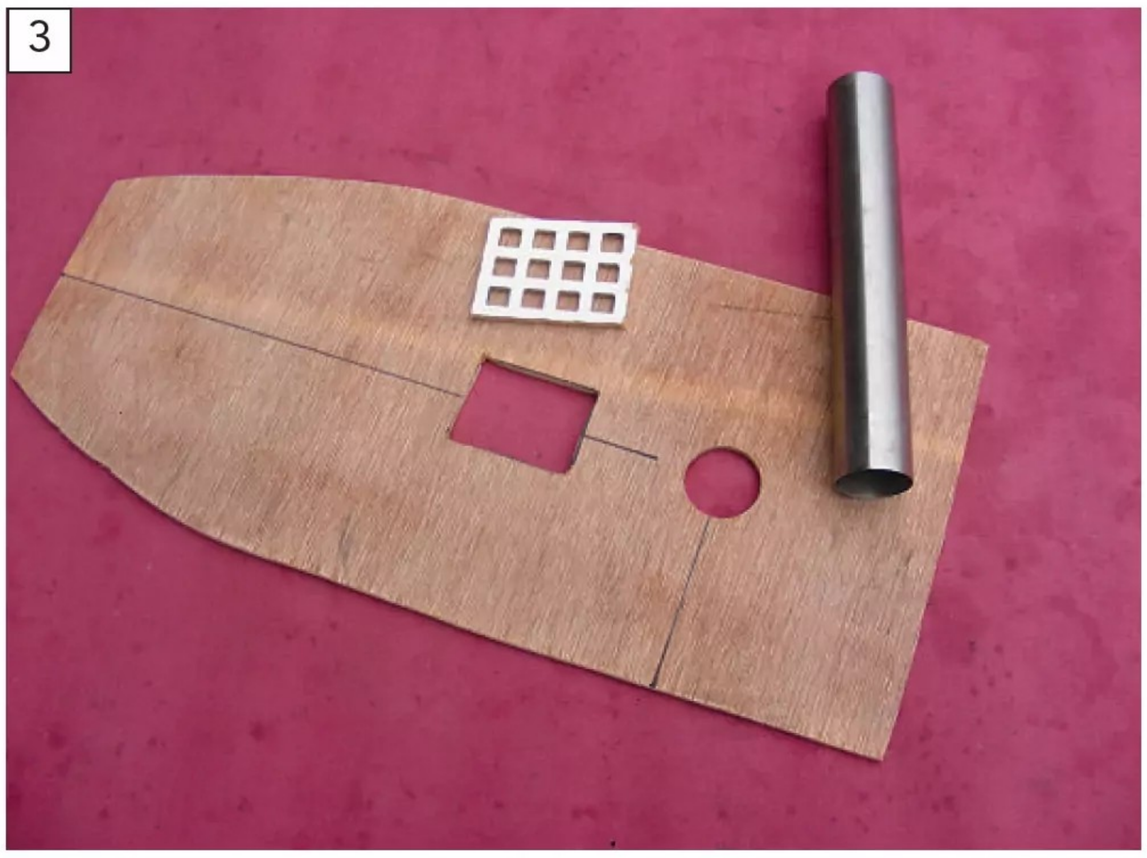

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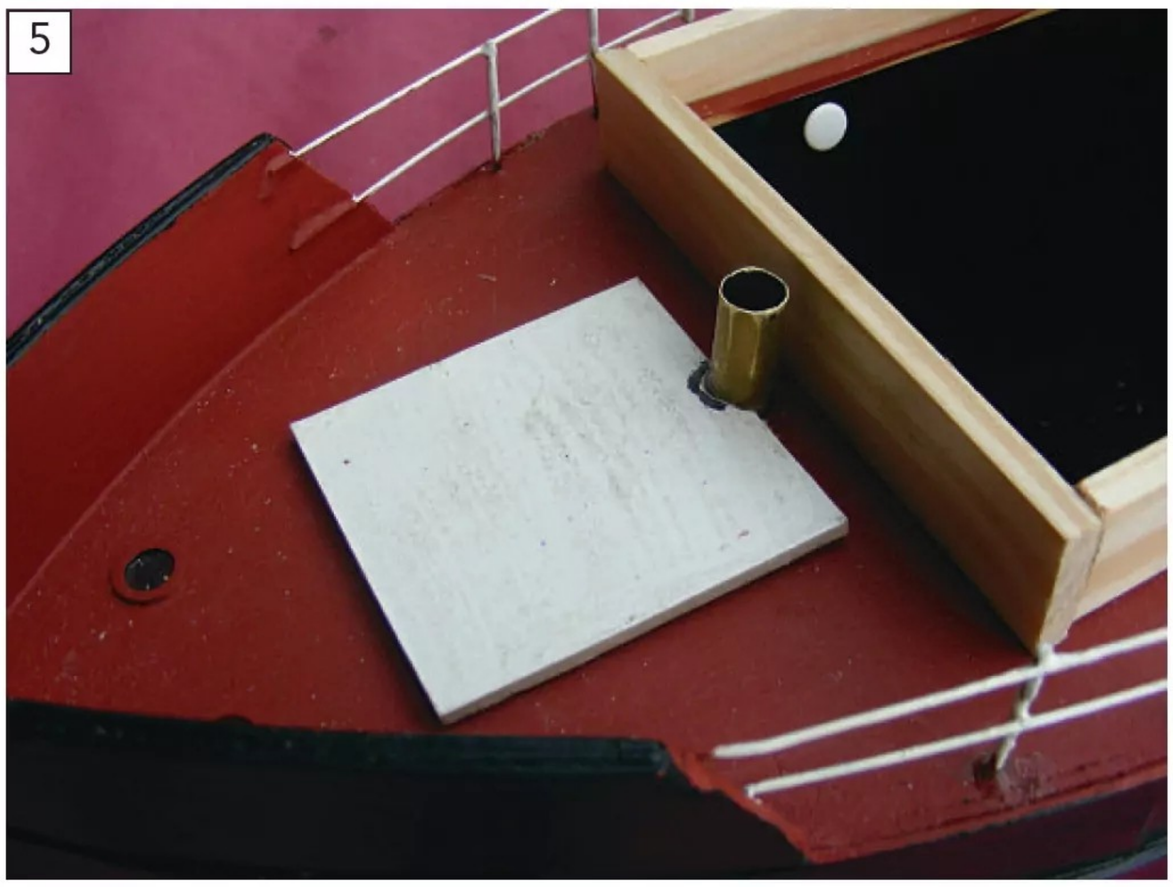
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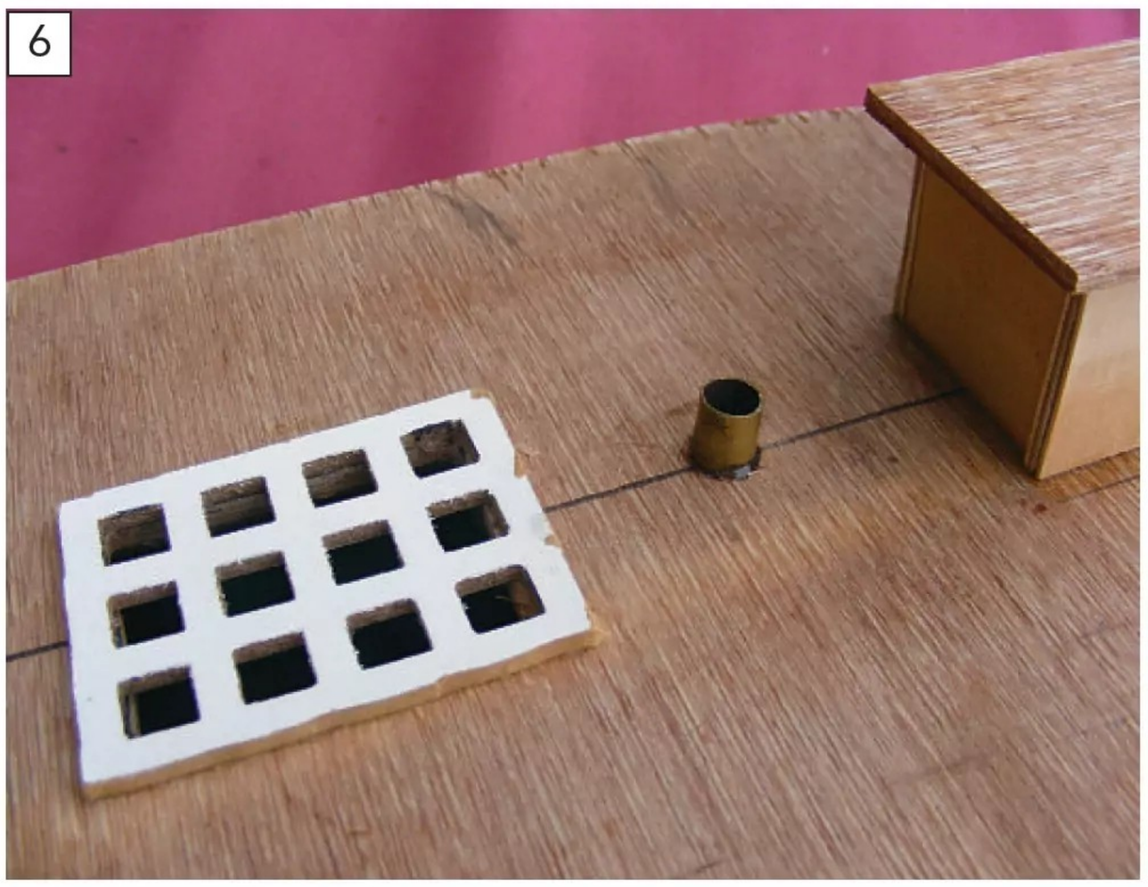
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without the hatch cover in place. The hatch could then be refitted to see if the model still performed correctly. This hatch was just a piece of thin sheet, with a wooden frame on its underside that would plug into opening.

Two masts and booms were made from dowel; in fact, the top pieces were old paintbrushes, which had nice tapering sections, and scrap wood. Masts on a model boat can be very vulnerable items and are best built to be removable while work is in progress. Two short lengths of metal tube, into which the bases of these masts would slide, were epoxied into the hull (see **Photo 5**) and superstructure (see **Photo 6**). The tubes were angled to produce a rake that matched the funnel. The stempiece sealed the bottom of the forward tube, but the rear tube needed a piece of plywood gluing in place otherwise the bottom of the mast would have dropped inside the hull.

Finishing off

I wanted to give the internal surfaces of the superstructure block some resistance to the inevitable moist atmosphere the steam engine would create within the interior. As good ventilation was aimed for, this was limited to a couple of light coats of sealant. The external surfaces needed more coats to create a good surface for the final layers of paint.

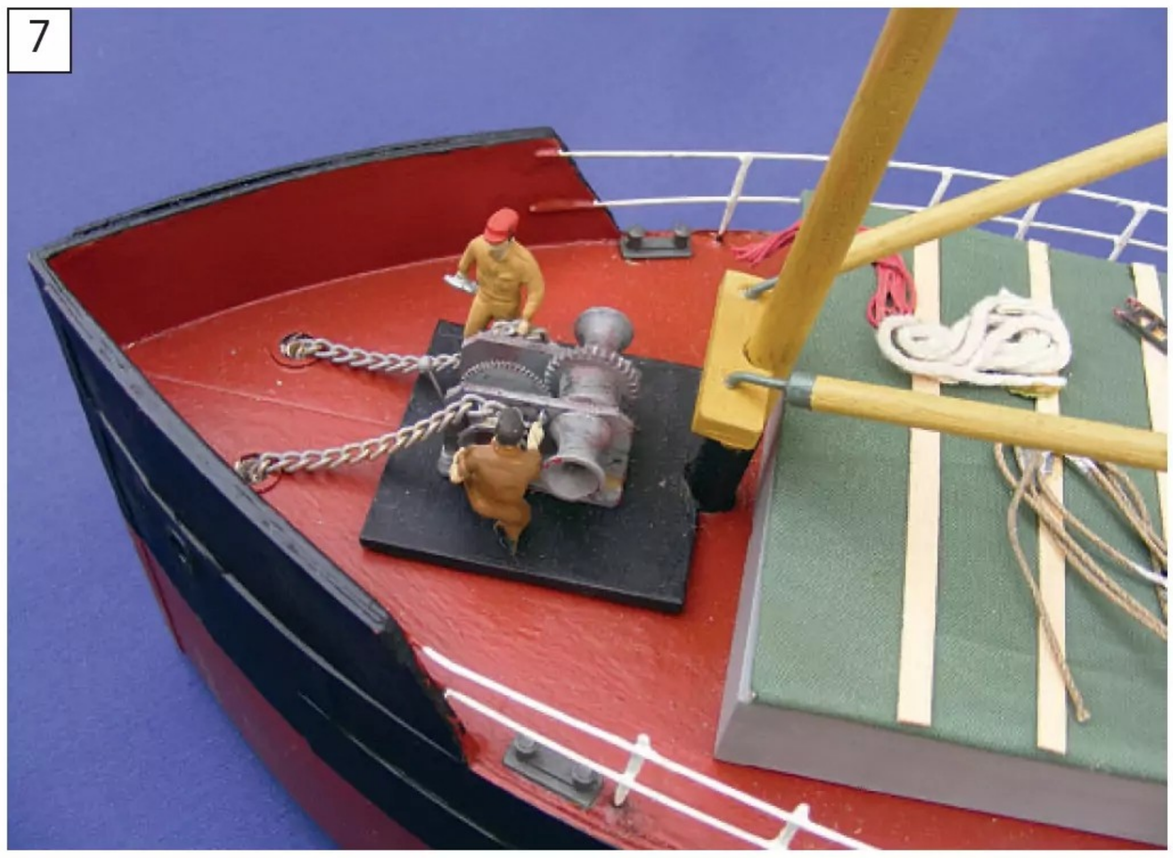
"This has become one of those models where I keep finding small items that immediately make me think, "There's a place for that on my steamboat!"

I stuck with the drab image of these vessels and used grey primer for most of the superstructure. A little colour was however added by painting the deckhouses, bridge, masts and grating a brown/yellow shade. The funnel was finished in what often seemed to be the default colours for such vessels, *i.e.*, with a red body and black top.

As mentioned earlier, a winch was to be fitted at the position of the access hole cut into the deck (see **Photo 7**). Referencing photos of typical steam winches, I made mine from plastic sheet, gear wheels and even golf tees (which serve as quite respectable capstans and warping drums). To create a little visual interest, two crew members were positioned as if working on this winch.

I'd seen some photos where the bulwarks around the bridge and front of the superstructure appeared to be made from vertical planks of wood. By chance, I had some sheets of wood, probably left over from an old kit, with suitable scoring. The final effect does seem to add a little extra to the model (see **Photo 8**). The captain, who'd been a Railway Stationmaster in a previous life, was secured in a waving pose.

Raiding my boxes of spare stuff soon had the model covered with the sort of clutter one might expect to see as one of these vessels sailed between two small ports (see **Photo 9**). A figure and a couple of oil drums managed to hide the exposed rudder tiller at the stern (see **Photo 10**). To be honest, though, there are a few items still to add, such as railings and more deck clutter. This has become one of those models where I keep finding small items that immediately make me think, "*There's a place for that on my steamboat!*".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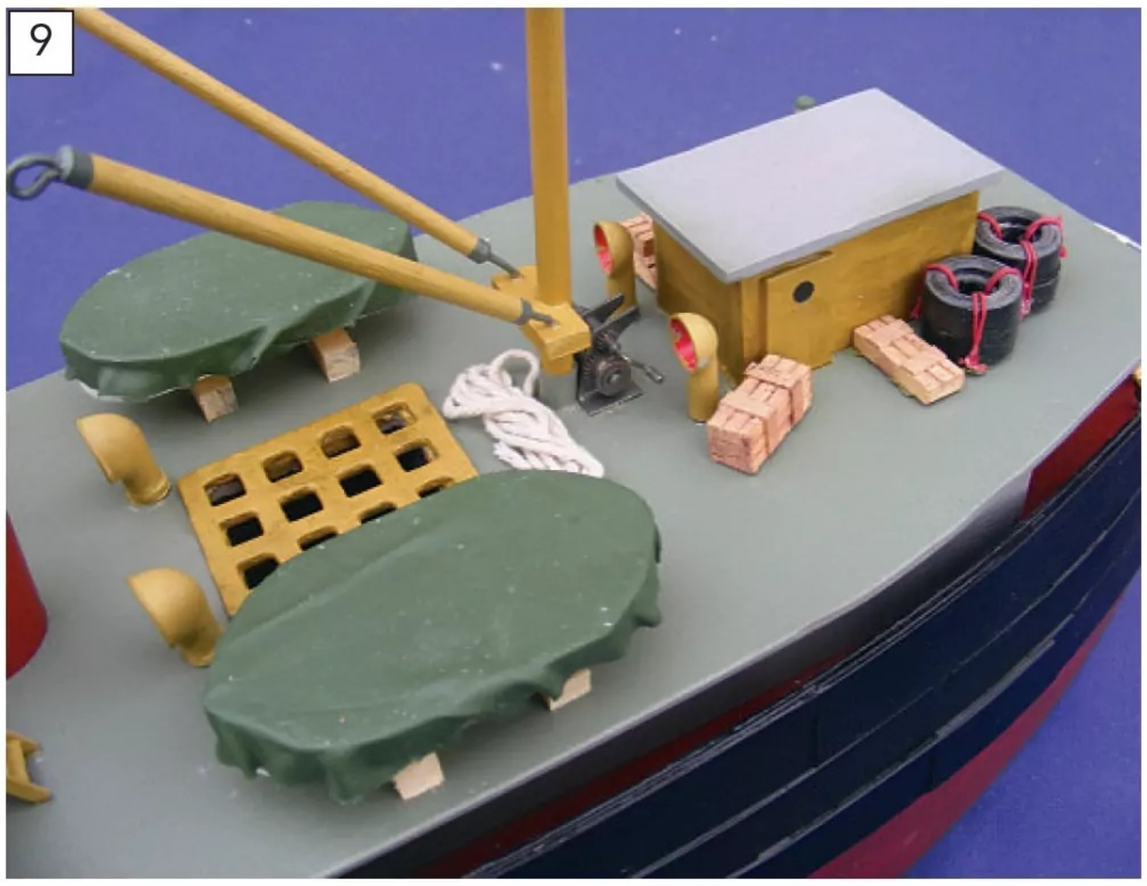

To grubby or not to grubby

Originally, my intention had been to finish the model off with lots of damage, visible repairs and rust, *i.e.*, typical of a vessel eking out its final days. But I then had a change of heart, as it seemed to me that this would be the sort of boat which, although old, would have been regarded with pride by its owner and crew. As such, I felt it ought to look well cared for and not yet ready for the final trip to the scrapyard. This allowed me to keep a reasonably clean appearance, with just a few streaks of staining where water had run off the decks and down the hull sides.

The final job was to give the whole model's exterior a light dusting with some clear satin varnish. Considering I'd used both matt and gloss paints on the model, this avoided an unrealistic appearance and also offered a little protection against oily fingerprints!

"This avoids an unrealistic appearance and also offers a little protection against oily fingerprints!"

The build complete – well, sort of… This, Glynn points out, is one of those

The home stretch

models where the deck can constantly be updated with accessories in order to add even more realism.

Before sailing

When planning the model, an operating weight of some 12-13 pounds (5.5 -6 kg) had been estimated, and the initial float on the pond confirmed this value.

With the build complete and the steam plant installed, the model was retested on the pond, at which point it sat bow high, needing some ballast added to the bow compartment. As an alternative to the traditional use of lead for a model's ballast, tyre weights were employed. On my last trip to buy a couple of new car tyres I'd spotted the old balance weights being removed and discarded into a bucket. Making a polite enquiry and offering to add the price of a pint of beer to the bill enabled me to leave with two new tyres and enough ballast weights for several models.

These balance weights were dropped through the deck hole, with equal numbers inserted either side of the stempiece until the correct sailing trim was achieved. While these weights did seem to wedge themselves into place quite firmly, I also poured some glue on top of them to prevent any possible movement.

I could no longer resist firing up the engine, and with a boiler pressure of 2 Bar, soon got the model moving on the pond. The R/C throttle control worked flawlessly, boasting smooth operation and instant response. Steering, with 45 degrees of rudder movement either way, looked to be good, even astern. So, no reason not to go and start the shakedown trials on my local water. By this point, however, winter had come, bringing with it a big freeze!

"The model's behaviour can best be described as steady, with a modest and slow roll – a perfect match for the character of these vessels"

Sailing at last

After a few frustrating days, a thaw arrived, so, despite it still being cold and dull outside, proper sailing trials could be carried out. Arriving at pondside, having quickly raised steam and checked the R/C functions, the model was lowered into the chilly water using two rope slings. These slings were essential due to the model's mass and the need to keep it level, so as to prevent it tipping and risking water rather than steam being driven into the engine!

Following my usual procedure with a new model, *i.e.*, slowly increasing the speed in modest increments while

SS Vagabundo on the water.

checking out the rudder response and handling, revealed no problems. The top speed was around 2 feet/sec (0.6 m/s), which matches a dynamic scale speed of some 10 knots. The pond tests had suggested good rudder control and this was confirmed. Compared with other types of model boat, I could detect a slight, barely perceptible, delay before the model responded to rudder commands, but this certainly wasn't problematic in any way. When moving astern, the rudder had positive control, which is a handy feature in any model. The turning circle at full power and rudder was around 9ft (2.8m) in diameter, but tighter turns could be made at lower speeds.

Due to the hull shape, this model needs small regular rudder adjustments to maintain a straight course. But I think you'll find this will quickly become an easy automatic action.

The model's behaviour can best be described as steady, with a modest and slow roll – a perfect match for the character of these vessels.

Despite the day of this trial slowly turning colder, it did at least enable the exhaust steam being vented up the funnel to make an attractive 'smoke' effect.

"While, of course, you could choose to fit an electric motor to this model, I hope that this article has managed to convey that you don't need to spend a small fortune on equipment and materials to build a working steam powered model. And don't be put off if anyone suggests that steam power is difficult, it's not"

The first trials were run with the hatch open, and no problems were encountered. A little internal condensation occurred around the engine's position, but this was minor. Clearly, the internal ventilation was adequate.

Subsequent trials saw the model sailed with the hatch in place, following which perhaps a little more internal condensation could be seen, yet not to a degree that would cause any concern. I must admit that I do now tend to sail with the hatch removed, but simply so that I can check the boiler's pressure gauge as the model sails past me.

Steam for you?

There can be no denying that building and operating a steam powered model boat can be more demanding than an electrically powered one. More preparation beforehand and maintenance work after sailing is required to avoid problems. However, for some people, this extra involvement can make such models more appealing.

While, of course, you could choose to fit an electric motor to this model, I hope that this article has managed to convey that you don't need to spend a small fortune on equipment and materials to build a working steam powered model. And don't be put off if anyone suggests that steam power is difficult, it's not. In fact, the basic ideas involved could easily have been understood by the likes of the ancient Greeks. Given a suitable industrial base, maybe steam engines could have appeared a few thousand years earlier? ●

BOILER ROOM

Richard Simpson tells a cautionary tale…

In this series, I have, over the years, covered many of the procedures and ever-changing rules involved in the testing of our boilers. At the model boat club that I'm a member of, every year we hold a Steam Gala Day at which I perform annual steam tests on as many plant as I'm presented with, usually around 12 or 13. I also frequently carry out pressure tests on uncertificated boilers at my own home workshop. I suppose it would be easy to assume that everything comes in, gets tested and is returned to its respective owner without too many problems. That, however, is not always the case. I've been asked to test some quite unusual home-built items, such as the interesting design seen in **Photo 1,** which haven't always been able to pass a pressure test (see **Photo 2**), but this story is about the problems encountered with a boiler produced by a very well-known and highly respected manufacturer. Hopefully, it will serve as a reminder that things don't always go quite as we expect them to…

The boiler

The story starts with a discussion I had with a fellow club member about the testing of his Cheddar five-inch horizontal boiler. When manufactured, these boilers were frequently paired

"I've been asked to test some quite unusual home-built items, which haven't always been able to pass a pressure test, but this story is about the problems encountered with a boiler produced by a very well-known and highly respected manufacturer. Hopefully, it will serve as a reminder that things don't always go quite as we expect them to…"

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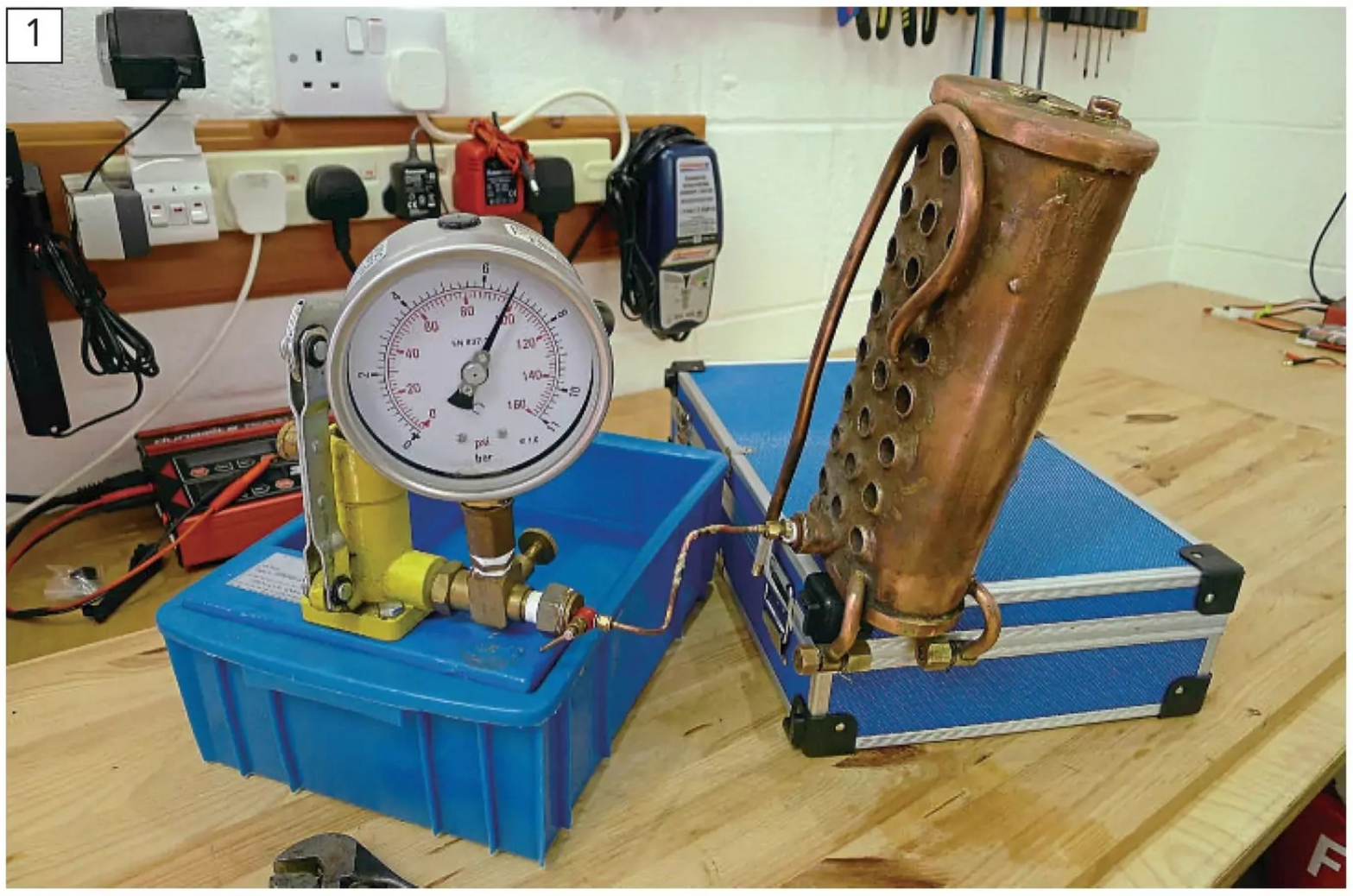

A very old handmade boiler of unusual design, with no paperwork and no drawing, doesn't come along very often but, when it does, can still be tested.

2

It wasn't a great surprise when a number of leaks revealed themselves at the joints between the shell and the tube ends. This is just one of them.

Most of us are well aware of the quality of a Cheddar boiler and, even without paperwork, it's fairly straightforward to identify one and determine its working pressure, and hence hydraulic test pressure.

The boiler was presented with plugs in all the bosses, an isolating valve for testing if I chose to use it, plus an adaptor had been made and fitted to the safety valve fitting to make life even easier. Richard had already decided that this shouldn't take too long!

After fitting a pressure gauge, Richard quickly took it up to pressure to test the rig and if necessary, rectify any leaking fittings or plugs.

Unfortunately, a leak revealed itself after just a couple of minutes. Initially hoping he was simply looking at a little splash of water, Richard wiped this away and cleaned the paint off the area, but, sure enough, more leakage was evidenced.

with either the Proteus engine to make the Proteus plant or two Puffin engines for twin shaft set ups. His example had long since lost its original paperwork but had been subsequently pressure tested by an engineering club (see **Photo 3**). On studying the certification issued following that test, I noted a couple of anomalies. More concerningly, however, I noted that the initial pressure test had not been conducted at twice working pressure (for some reason, having only been conducted at a less telling one and a half times working pressure). Fortunately, as this was a popular and well-known boiler, I had the specifications for it, so I suggested the best way forward would be to conduct another initial pressure test and supply new and correct certification, to which its owner readily agreed.

The boiler was then removed from the plant, fittings dismounted, and plugs fitted into all the bosses before it was handed over to me at a club event in December 2024 (see **Photo 4**). To save him a bit of messing around, I had explained that the cladding could remain in place initially (as all the soldered joints were still visible with this in place) to save him a bit of messing around; the idea being that if the boiler passed the test and held pressure successfully then there really wouldn't be any need to remove it.

The first test

When doing a pressure test, I invariably perform a quick initial assessment just to check that everything fits together and seals, and that I have everything to hand I need to perform the proper test. This can be the point at which I identify a leaking plug or fitting somewhere, which naturally needs rectifying before the actual test is conducted.

In this case, I fitted an additional pressure gauge to the boiler and took it up to twice working pressure before isolating it from the pump (see **Photo 5)**. Fully expecting everything to be perfectly sealed, for the next few minutes I watched the pressure gauge and closely studied the joints with a bright torch. Surprised to see a drop of water appear on a joint between the end of the fire box and the back plate, I first assumed this to be a splash, so simply wiped it away and continued to observe. When another appeared (see **Photo 6**), my heart sank. More red flags were to come. I usually empty the contents of the boiler into a measuring jug to check the stated internal capacity is correct and verify the bar-litre number, but when I did this here my concerns grew: the water was very noticeably green in colour (see **Photo 7**).

Further concerns were raised when the water was drained out, as this had a very distinctive green colour. This is Verdi Gris, or copper oxide – the result of copper corrosion. You can see the same colour whenever copper is used as a building material and is left to weather.

8

Dry Acid Salts Crystals was something Richard have not tried before, but he was assured it would do the job. Being corrosive, this is something that must be handled carefully, so Richard donned a leather apron, goggles and rubber gloves and everything was kept in a contained area with a water supply.

9

The pickling rig was all set up on the draining area of a stainless-steel sink, with the pump suction jug sat within the sink below the tap. Richard highly recommends tackling such a process in a sink, which provides both the water supply and drainage required.

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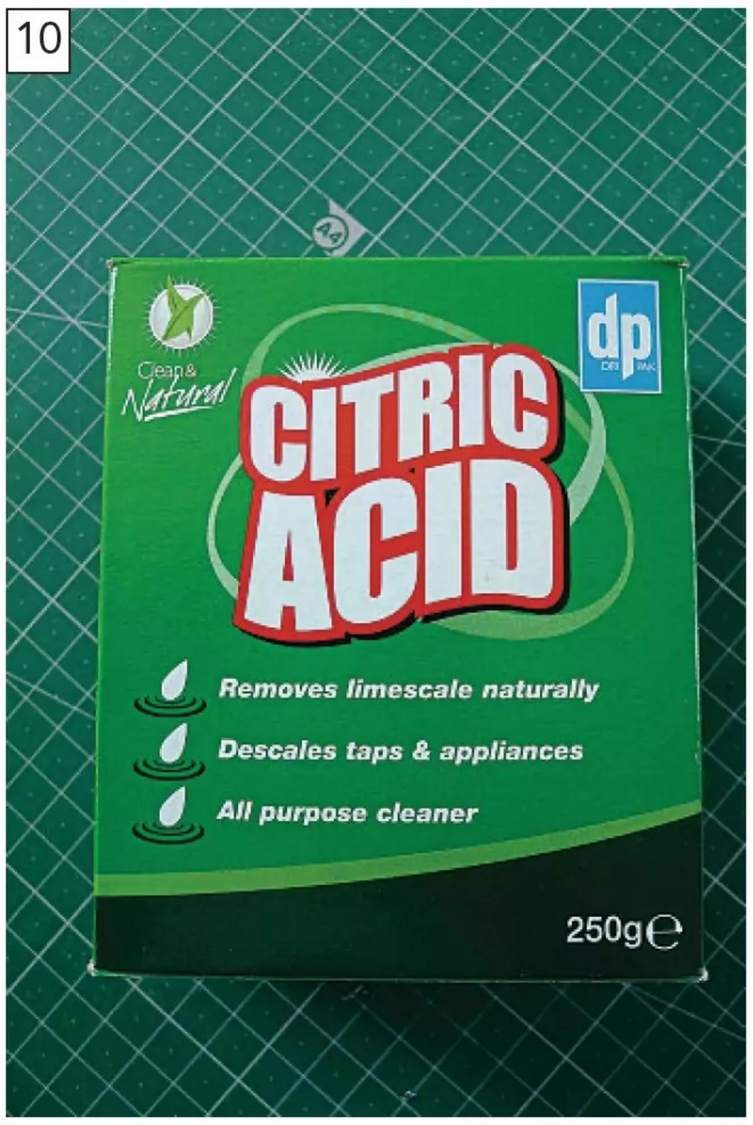
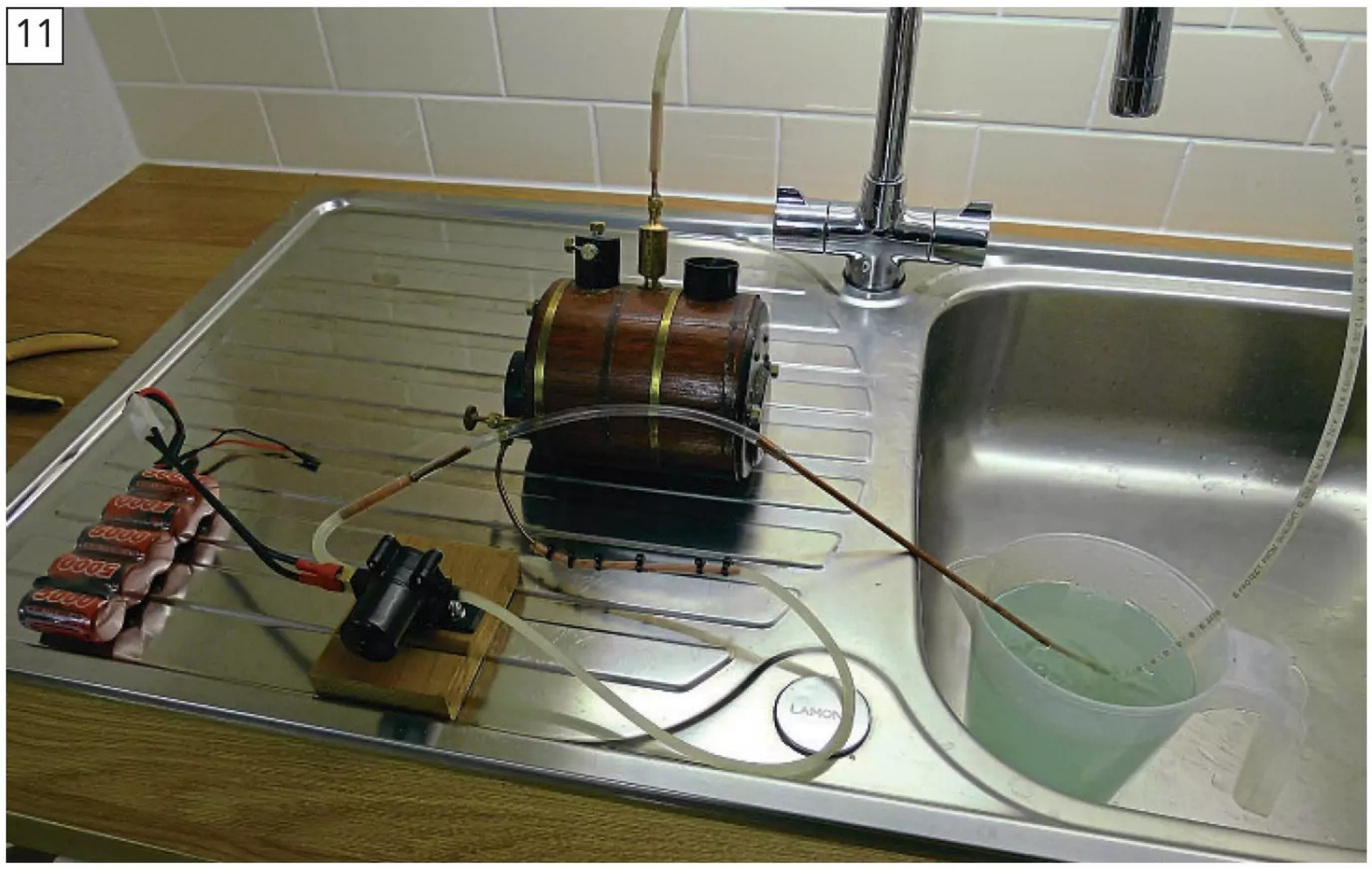


A liberated packet of citric acid. Although sold commercially in reduced strength as a bathroom and kitchen cleaning agent, care should still be taken not to splash things, including yourself.

11



After around 15 minutes of circulating, the water was noted as a green colour again, which, Richard hoped, meant the pickling solution was doing its job. It was then left circulating for around half an hour before the solution was drained and replaced with fresh water.

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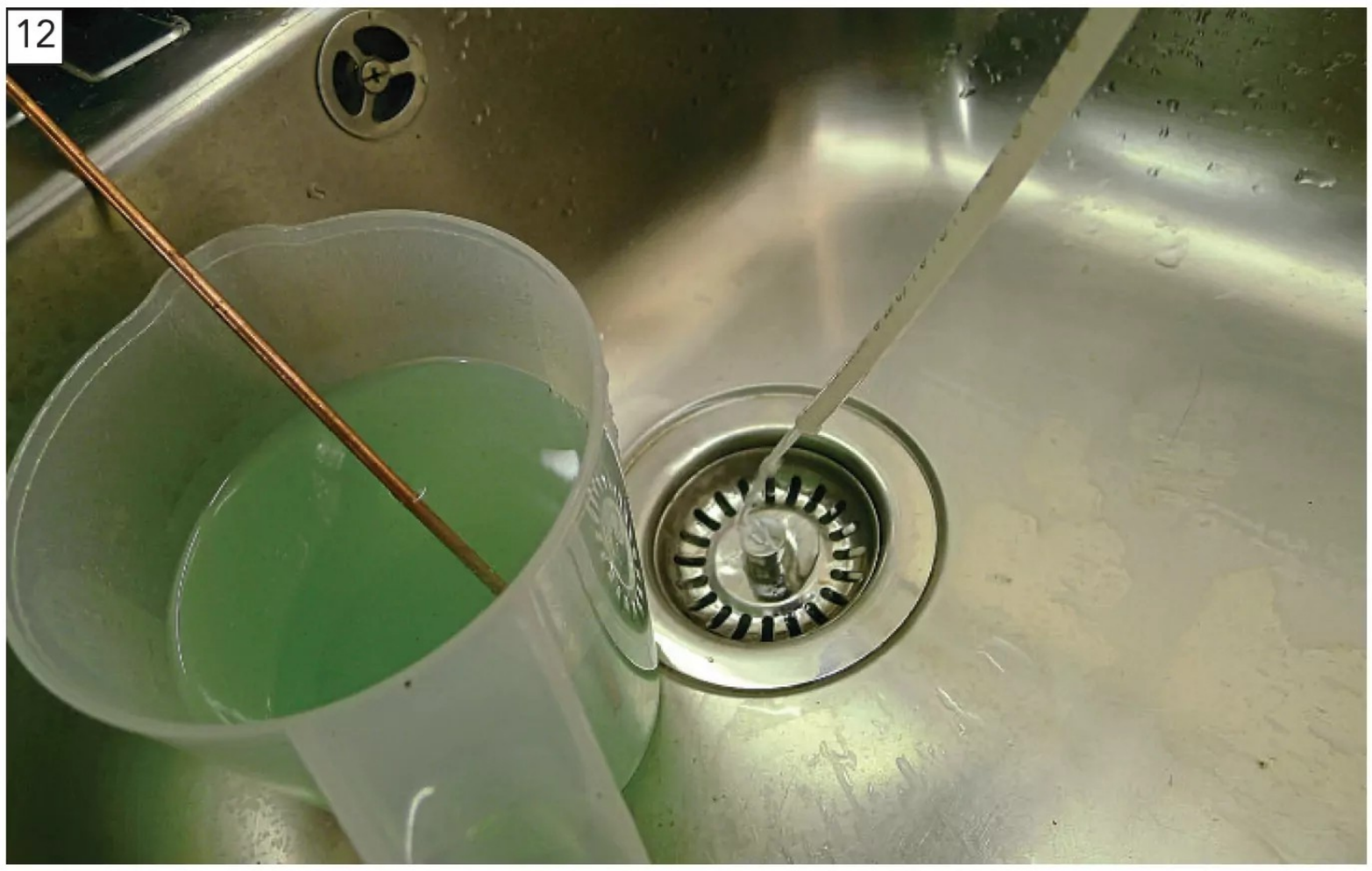

With the pump suction jug sat in the sink, it is easy to simply remove the return pipe and place it in the drain until the contents of the jug have lowered. This can then be topped up with fresh water and repeated numerous times.

"When the insides of a boiler show a green colour, we're talking about what's commonly known as 'Verdi Gris', i.e., oxidised copper"

Usually, internal problems arise from sludge or scale build up having settled on the internal surfaces or in the bottom of a boiler. This is nearly always the result of using poor quality/unfiltered/undistilled water and is simply a build-up of precisely the same limescale you may see on bathroom taps or the insides of a domestic kettle. Exactly the same process occurs in our boilers if we use tap water from an area of the country where the

The water eventually runs nice and clean. Once this happens, you can leave it for a further half an hour to ensure the boiler is thoroughly flushed through. Some might like to use a piece of Litmus paper to test for acidity, but Richard sees clean fresh water as good enough confirmation.

water is considered 'hard', *i.e.*, having a high concentration of calcium and magnesium carbonates.

This, however, was a bit different. When the insides of a boiler show a green colour, we're talking about what's commonly known as '*Verdi Gris*', *i.e.*, oxidised copper. Oxidised copper is what you end up with when the copper corrodes, for whatever reason, so a green scale forms on the surface of the metal.

I phoned the owner to inform him that his boiler had a leak and was showing evidence of internal corrosion, so we needed to discuss ways forward. Firstly, it was essential all that all internal scale be removed. This descaling was likely to break down any build up sealing damage yet unknown to me and possibly result in further leaks, but I needed to know exactly what I was dealing with before deciding what the next steps would be, and certainly before I committed to another pressure test.

As getting the boiler back to the owner (who lived some distance from me) and him then returning it to me for another test would be a bit of a pain, I agreed to do the pickling and retest at my workshop.

The pickling process

As previously mentioned, in a model boiler challenges internally are almost always the result of limescale build up, so the pickling process is performed to remove this. I have, in the past, simply used coffee machine descaling tablets to clean boilers. Most coffee machine manufacturers supply their own, but they can also be purchased from hardware stores or online.

"Don't make the mistake of putting these crystals directly into the pump suction measuring jug as they will be sucked straight into the pump. This will cause it to seize and will strip the pump gears, requiring the purchase of another pump"

The process here was a bit different though, as I also had to remove the copper oxide, which I wasn't sure would respond to such a treatment. Luckily, not too far from where I am is a small business that produces and sells metal electro-plating kits for hobby use, so I made a quick call to them to discuss the removal of copper oxide. Apparently, this was an issue they regularly encountered, the solution to which, they told me, simply involved the circulation of 'Dry Acid Salts', described as "*A carefully formulated blend of mineral acid salts that, when mixed with distilled water, produce a balanced acidic solution with applications in a wide variety of metal finishing operations.*" This is primarily used as an acid cleaner and activator prior to electro-plating, as well as for stripping chrome and rust. I was assured that it removed copper oxide, so I drove over and picked up a bag (see **Photo 8).**

The pickling set up was basically the same as I have always used, with a small 12V battery powered pump, actually a car windscreen washer pump, circulating from a measuring jug, through the boiler, which then returns to the open jug. This way I can start the circulation, add chemicals to the measuring jug, dump the spent chemicals down the drain and flush with fresh water, all in one smooth operation (see **Photo 9**). With everything in the right place to clean up afterwards, the mess is contained, plus the chemicals can be neutralised by dilution, making the process both easy and safe. To test out the pump, pipework, procedures, *etc*, I first did a clean with citric acid to remove any limescale that may have been in the boiler. Citric acid is sold as a cleaning agent for bathrooms and kitchens, and, as luck would have it, my wife had just purchased a packet of it to clean the shower, so it was promptly liberated from the cupboard underneath the kitchen sink (see **Photo 10**). Circulating with the citric acid worked well, so everything was then thoroughly flushed through with clean water and the process repeated with the Dry Acid Salt Crystals. The crystals were dissolved in the appropriate strength in another measuring jug, before then being introduced slowly into the boiler via the pump suction jug. Don't make the mistake of putting these crystals directly into the pump suction measuring jug as they will be sucked straight into the pump. This will cause it to seize and will strip the pump gears, requiring the purchase of another pump. Likewise, another word of caution: always use suitable safety gear when handling such corrosive chemicals, and make sure you work in an area where you have a supply of fresh water and a drain. Think the process through carefully before handling, and never be tempted to further tweak something, even if it's a momentary task, once you've removed your goggles.

Again, the water showed a slight green colour as the acid descaled the internals of the boiler (see **Photo 11**), but eventually, after a thorough flushing through, the water remained clean. Everything was thoroughly cleaned and the boiler rigged up for another hydraulic pressure test. The acid was drained away (see **Photo 12)** and the boiler flushed through with clean fresh water for a further 20 minutes (see **Photo 13**) before leaving the boiler full and reconnecting it to the pressure test rig for another hydraulic pressure test.

The second test

The pressure gauge was refitted and the boiler connected to the test rig

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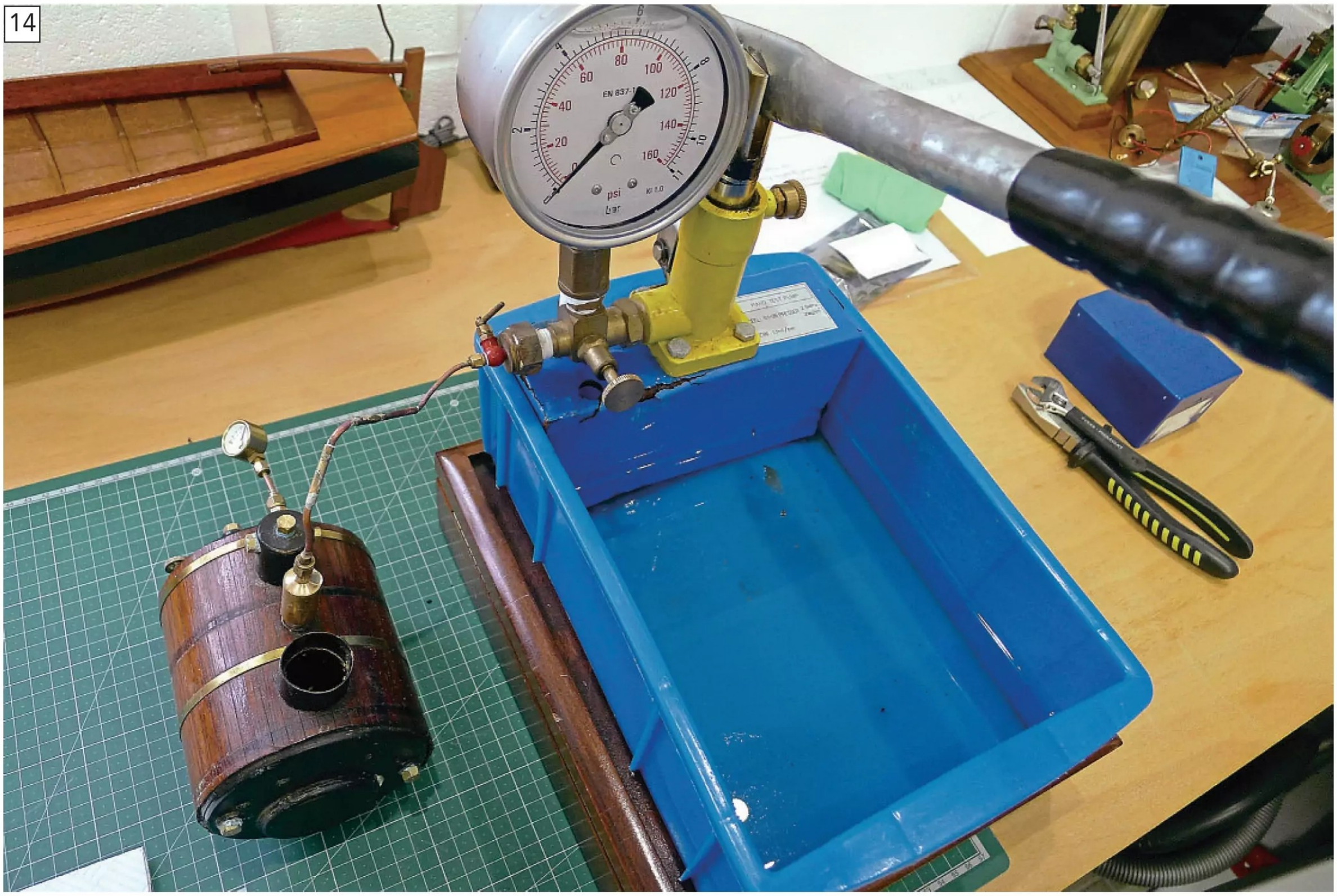

The second hydraulic pressure test was again taken up to twice working pressure and given a few minutes with the boiler isolated from the pump.

15

Sadly, with the internal scale out of the way, a couple of areas where leaks were coming through the same joint became evident.

for another pressure test (see **Photo 14**). As I suspected might happen, but what had to be proven, was the fact that, disappointingly, there were now two even more noticeable leaks at the same joint between the end of the firebox and the boiler end plate (see **Photo 15**). More importantly, however, the discovery that the joint was possibly in a worse condition than it had originally appeared to be meant the pickling process had done its job. Consequently, the boiler could not be certificated for use.

The owner will now have to decide whether repairs, if indeed even possible, would be an economically viable proposition. Repairing silver soldered joints in a built boiler is a notoriously tricky process as there's a very real danger of the heat required to resolder a joint also opening up other joints.

Conclusions

It's actually difficult to draw conclusions from this story as there are, of course, still many unknowns. How and why internal corrosion occurred in the first place is open to discussion, but quality of feed water may well have played a part in it. Leaving water in boilers for great lengths of time can also lead to corrosion, so there's always been a strong argument for drying them out before simply sitting them on a shelf for a few years.

Basically, what this story underlines is that boilers can deteriorate over time. Interestingly, in this instance, had the original boiler hydraulic pressure test certificate not been lost, resulting in my retesting it, this deterioration may have remained, potentially dangerously, undetected, as leaks were not yet manifesting at working pressure. ●

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Smoking pot

John Parker shares his method for 'rolling your own'…

The prototype smoker on test fitted to John's tug, Wattle.

Smoking may be bad for your health, but it can do wonders for the realism of a model steamboat. The guide that follows perhaps requires a certain amount of technical knowledge to source the necessary parts, but construction is straightforward and not critical, enabling the smoker to be readily tailored to a particular model.

"Construction is straightforward and not critical, enabling the smoker to be readily tailored to a particular model"

Principal of operation

The smoker I am about to describe is of the nebuliser type. It utilises a piezo-electric transducer to 'excite' molecules of water so much that they are only too happy to escape up a funnel and billow out in a cool cloud under the gentle persuasion of a small fan. This is one of its advantages over a heated oil type of smoker: it uses only water, and its current consumption is rather less. On the other hand, it does require 24 volts to operate (more on this later) and gives its best results in cooler and/or damp conditions. I understand this is seldom a problem in the UK climate! Here in Australia, the hot dry days of summer can cause the 'steam' to dissipate too quickly. There is absolutely no heat or fire danger to your model and the unit is quite inexpensive to make.

Construction

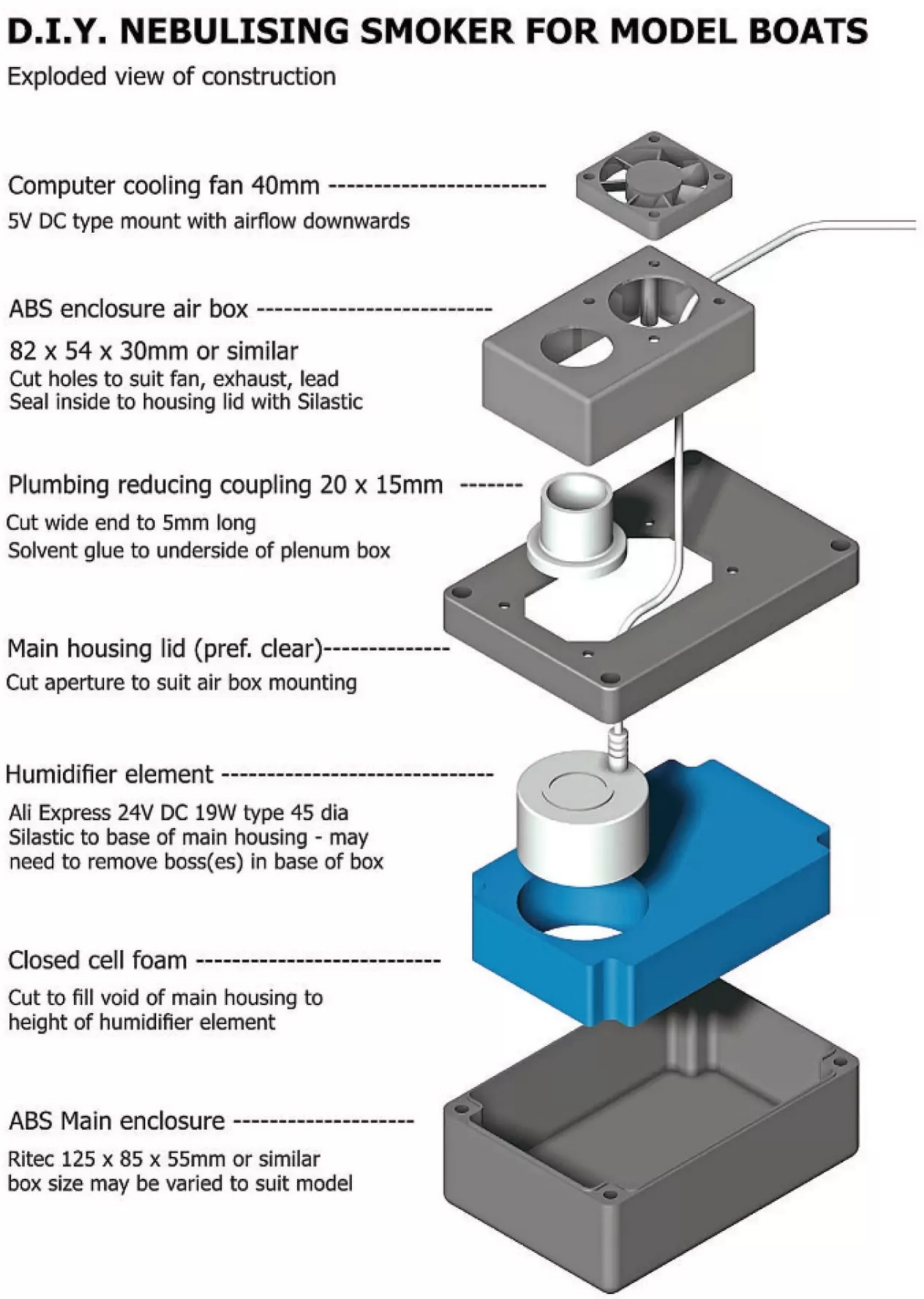
The accompanying exploded view should contain all the information needed to construct the smoker, but I've included some further notes on sourcing the parts and so on. I made my prototype for the equivalent of about £32, but this can be bettered if you are resourceful.

The nebuliser (also called a mister or humidifier element) is of the type intended to sit in a water-filled bowl and produce a mist over the surface of the water ('smoking pot' thus takes on a new meaning!). It is quite heavy, as it needs to sink and measures around 45mm diameter by 40mm high. Target price is under £4 plus postage from Ali Express (www.aliexpress.com). The black fitting on the top is the water level sensor, which switches the nebulizer off when the water level drops too far. You don't need the lights or power supply options.

I used an ABS utility box from a local electronics store for the main housing or tank because it came with a clear lid and recessed waterproofing gasket for its IP65 waterproof rating. This was a

Nebuliser/humidifier element from the Ali Express website.

more expensive option though, and any suitably sized rigid plastic box with a good fitting flat lid should suit. The lid is only needed to be removed for occasional servicing and can be sealed with Silastic if there is no gasket. Its height needs to be about 55mm to suit the nebuliser operation, but the other dimensions can be varied to suit the model. If a deeper box is used, then the water level needs to be limited to 15-20mm from the top of the nebuliser. A smaller black 'jiffy' box, large enough to mount the fan and exhaust stub, is needed for the air box sitting on top, mounted inverted and without its lid. On my example, I had to use a piece of thin plastic sheet cut to provide an even mounting for the air box, as the lid of the main housing had a raised rim.



An exploded view of construction.

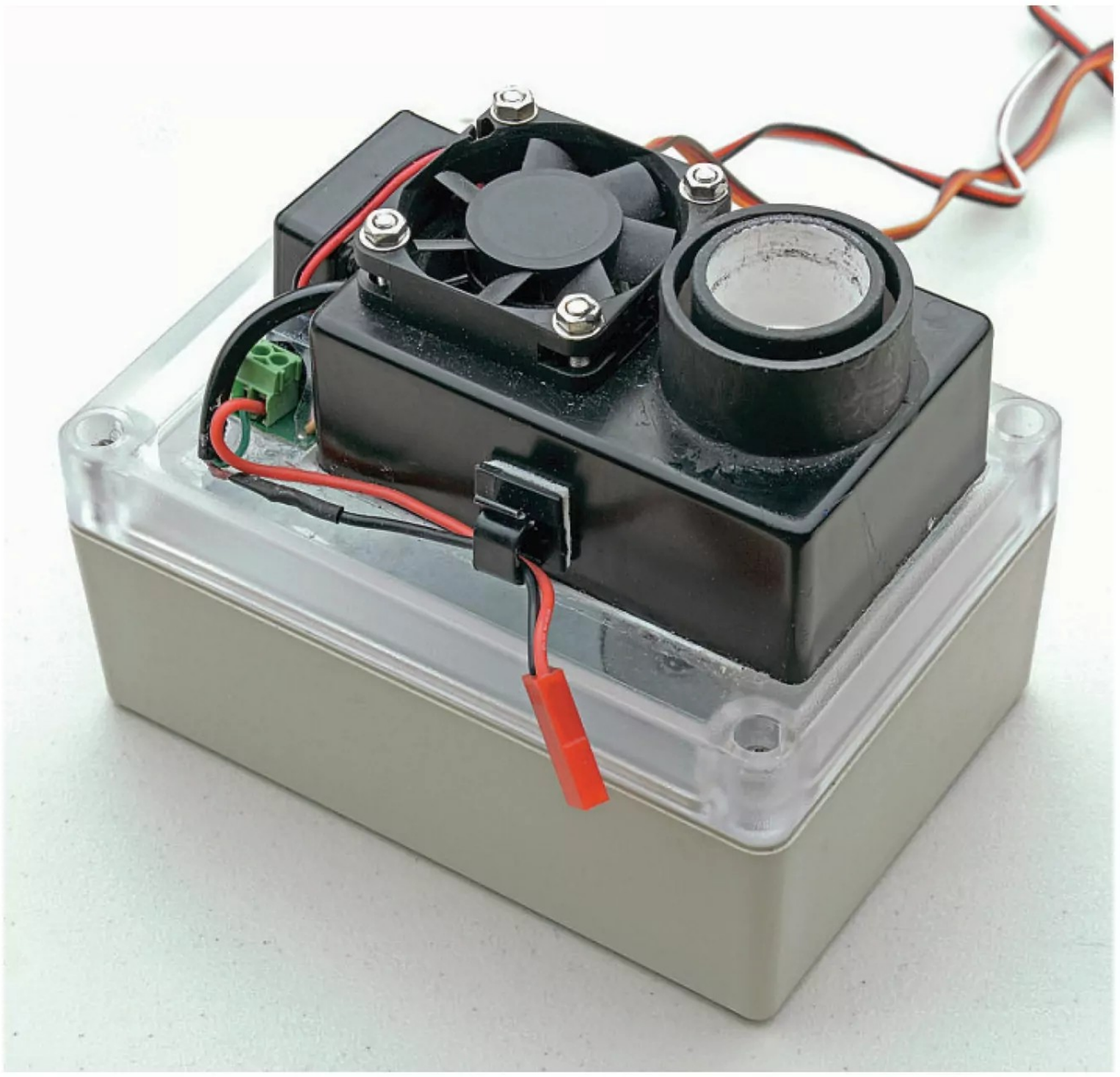
Foam (I used blue insulation foam) needs to be cut to fill the tank level with the top of the nebulizer. Since the nebulizer turns off when the water level drops level with its top surface, any water below this would only add extra weight and lead to corrosion between sailing sessions. Glue the nebuliser element to the floor of the box with Silastic and likewise seal any small gaps with Silastic. I recommend the use of stainless-steel fasteners to further prevent corrosion. The fan is a standard computer type 40mm diameter by 10m high but make sure it is a two-wire 5-volt type.

Variable smoke

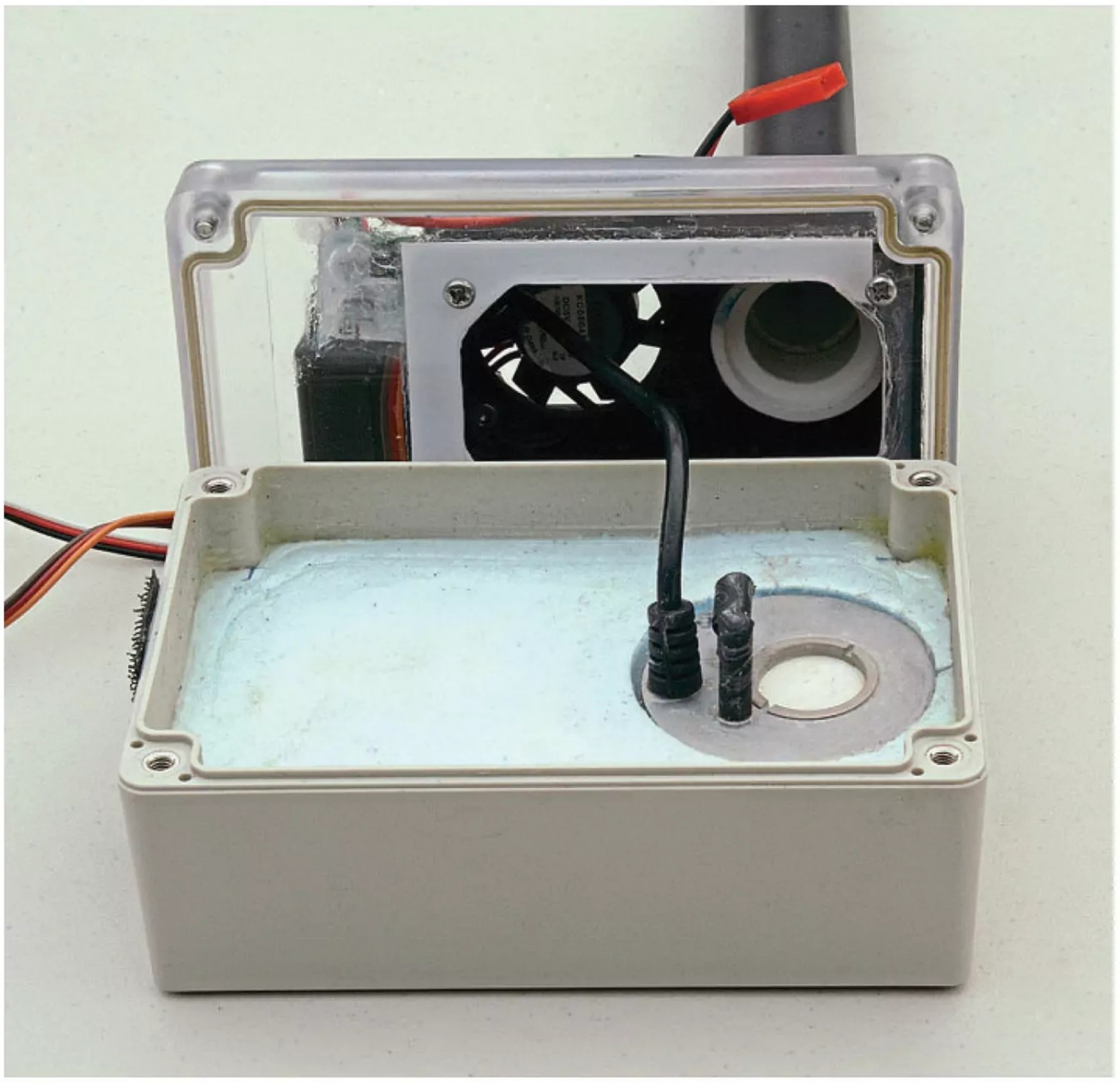
The fan is run off the receiver 4.8-volt supply. When the nebulizer is connected to 24 volts (observe correct polarity) and the tank filled, smoke will start to be generated and blown up the exhaust. This represents the simplest configuration of the smoker, producing a constant stream at all times. If desired, the output can be made to respond to the throttle setting. This is done by varying the speed of the fan, since the output of the nebuliser can't readily be varied. I find that when fitted with a variable speed fan, if the funnel is reasonably large it fills with smoke when the engine is stopped or idling, with only a wisp appearing at its opening, then when the throttle is opened the smoke accumulated in the funnel is blown out in a realistic plume.

To achieve this, just run the fan from a low-power electronic speed controller (ESC) connected to the main throttle channel via a Y-connector. There is one problem here: if the fan ESC provides reverse, then on going astern the smoke will be sucked back into the funnel and blown out into the superstructure! This can be corrected by connecting the fan to the ESC via four diodes, as shown in the diagram, which will ensure the fan only runs one way regardless of the throttle setting. I have not tried running the fan in parallel with the drive motor so that no separate ESC is required, but if you do try this, a higher voltage (12v) fan might be required to suit the model's main battery.

There is just a chance that if the model is stationary for a long time and the fan is not running, condensation may build up in the funnel. This shouldn't cause any problems, but if it concerns you, just fit an RC switch to cut the power to the nebuliser. This is a good thing to have in any case, as it means you can



The completed unit – this one has an ESC fitted for variable fan speed and an RC on/off switch.



The unit opened up.

"The exhaust flue may be divided if required to feed two funnels using suitable 15mm diameter plumbing fittings, or two nebulisers fitted to the same water tank for multiple funnels"

switch the smoker off and save power and water when no-one is watching. The prototype unit depicted in the photos has variable smoke and an RC on/off switch to the top.

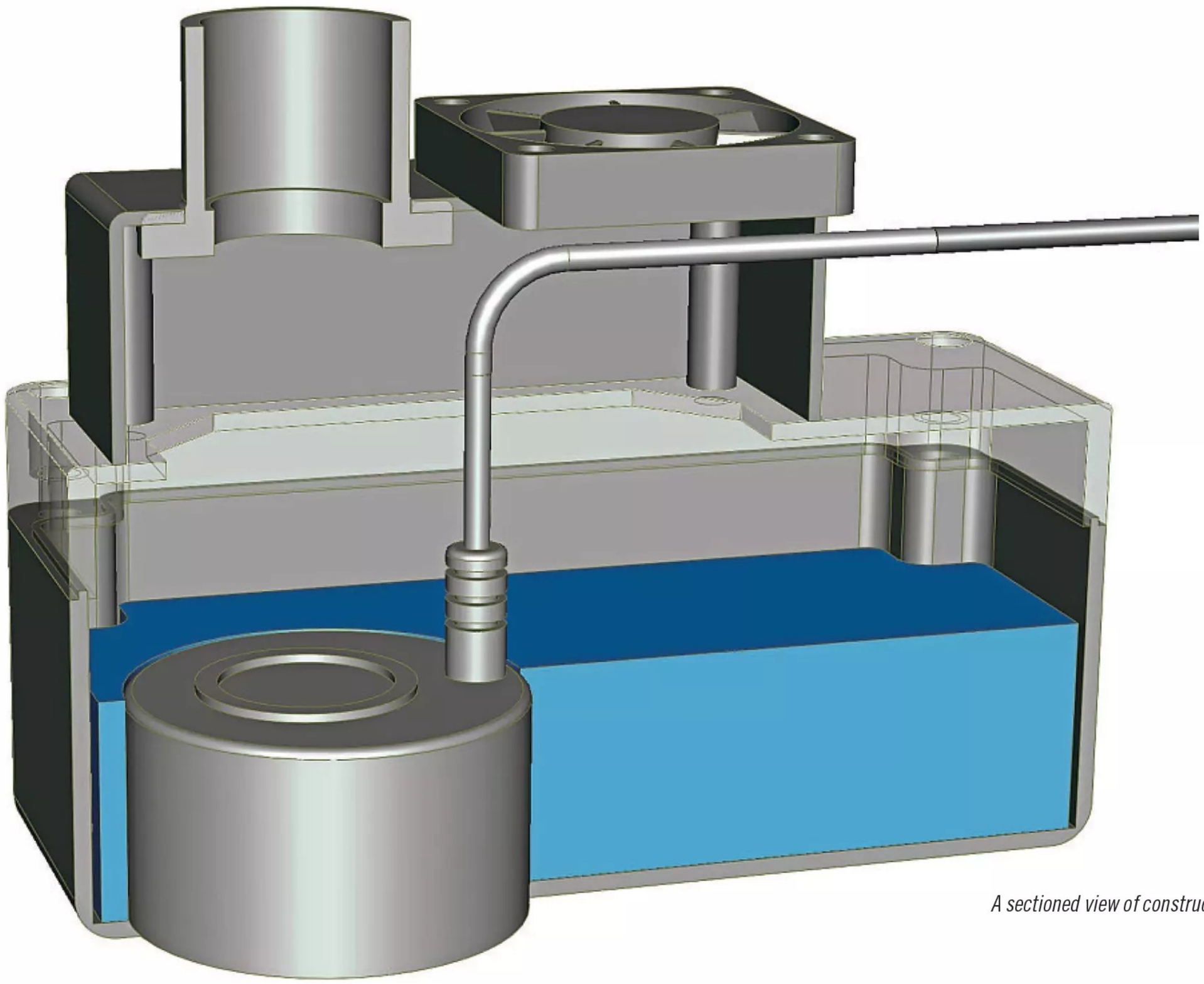
Mounting in the model

The smoker should be mounted as low as possible, for stability reasons, in the boiler room region immediately below the funnel uptake. The exhaust flue may be divided if required to feed two funnels using suitable 15mm diameter plumbing fittings, or two nebulisers fitted to the same water tank for multiple funnels. On my tug, the funnel has a blanking plate fitted inside about 40mm from the top, with a hole for the smoker exhaust tube, so the superstructure (with the funnel) can be lifted off easily. A suitable 'O' ring slipped over the smoker exhaust at the correct height will guard against any condensed 'smoke' from dripping down into the model.

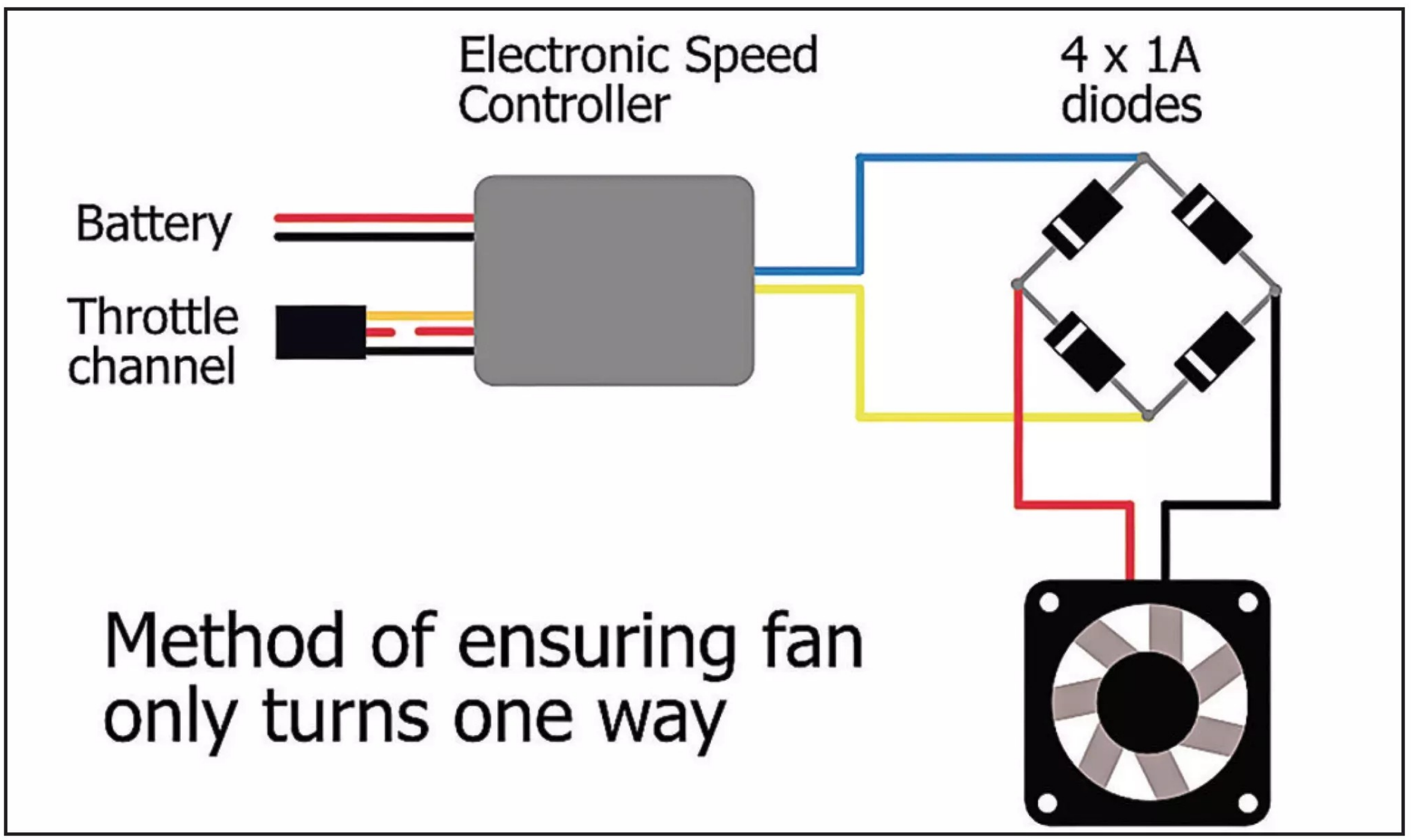
Fill the unit with pure water (no additives) up to the underside of the main housing lid, take a note of this volume of water and mark a clear plastic squeeze bottle accordingly. This can then be used to replenish an empty tank at lakeside through the funnel, without having to remove any superstructure to check the level. The model's displacement will fall as the water is consumed, but only by 200g or so, depending on the size of your tank.

Powering the smoker

As stated earlier, the smoker requires a 24v supply. If you are at the model planning stage, consider making the model's electrical system 24v throughout, or incorporating a second 12v battery in series with the motor 12v battery to provide 24 volts just for the smoker. If you're not keen on doing either of these, or if your model is simply too small, you can use a voltage step-up module to run the smoker from a lower voltage; these are available quite cheaply from Ali Express. The module I tried was the XL6019 adjustable booster module, 5A rated, and it cost the equivalent of a couple of pounds. Adjusted to provide 24 volts from a 12-volt input, it ran the smoker fine at a current consumption of 1.6 amps. Naturally this is slightly more



A sectioned view of construction.



The prototype installation on the Wattle.

power (19 Watts) compared to running the smoker directly off 24 volts (16 Watts) due to losses in the step-up module. The prototype drew 650mA on 24 volts and provided smoke for approximately one hour on 200ml of water.

Smoke on the water

One sailing day, my smoker-equipped tug was travelling in company with a friend's large live steam tug. Observing the smoke billowing from my tug (it was a cold day), an onlooker was prompted to nod towards it and make the comment "*Obviously steam powered*". "*Nope… electric*", I told him, and, pointing to my friend's tug, from the funnel of which a thin wisp of steam could just barely be made out, added "*… that one is steam powered*". He was seen to give a very puzzled look and went away scratching his head! ●

John's replenishment bottle (which holds two refills).

Smoke on the water!

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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**

Martha May

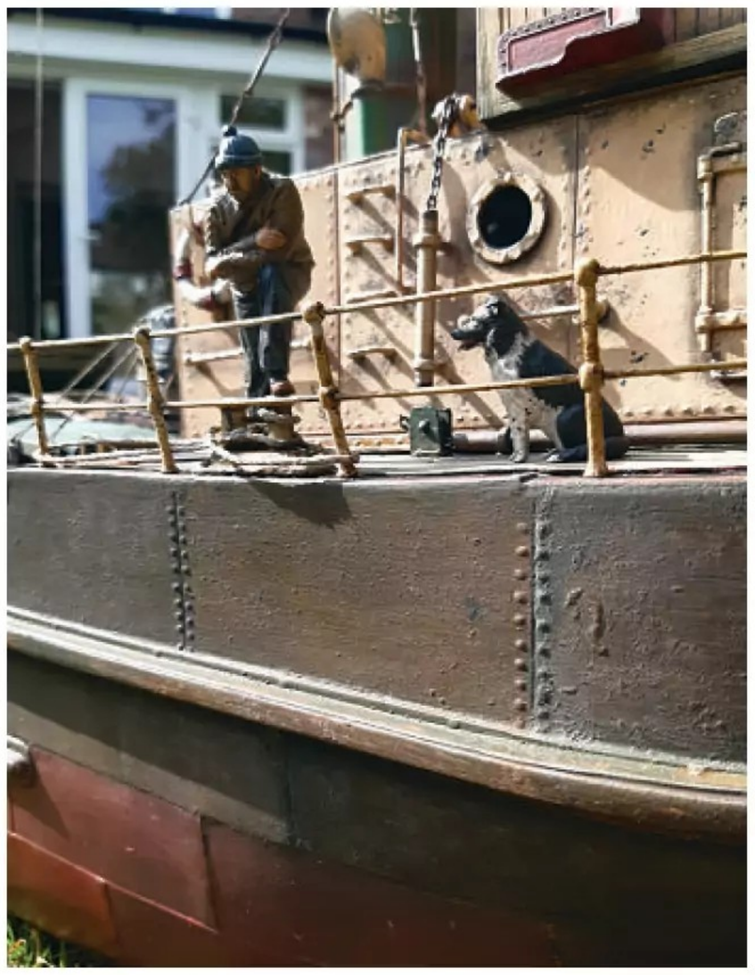
This is my second Clyde Puffer build, the *Martha May*. It is based on the Mountfleet Models 1:24 *Highlander* kit, which came into my possession as a part-built Facebook find. As I had to rebuild the engine room housing and the bridge from scratch due to poor workmanship by the previous builder, I took this opportunity to redesign the bridge and build a less industrial looking one (in my opinion). I also decided to finish boat to look like it was only a couple more trips from the breaker's yard, using enamel and acrylic paints. The figures were sourced from a company called Modelu.

It only has basic R/C functions, but I am tempted to fit a smoke generator at a later date.

Overall, the project took around two years to complete and proved really enjoyable, so I won't guarantee it will be my last puffer!

ALAN DAVIES
EMAIL

She looks absolutely phenomenal, Alan! I spent ages zooming in on the digital images reproduced here in order to appreciate all the extra detail you've packed into both the finish and accessorising of what already looks to be an excellent kit – so many thoughtful 'going the extra



Alan Davies' marvellous Martha May, based on a Mountfleet Models' kit but with a self-modified bridge, lots of thoughtful extra detailing and a really convincing 'only a couple more trips from the breaker's yard' finish.

mile' little touches, such as the maps, newspaper, cup of tea and copy of Moby Dick (LOL!) within the cabin's interior. Plus, those marvellously clad and posed Modelu crew figures (loving the dog, too!) really add to the sense of realism.

If you're thinking about installing a smoke generator at some point in the future, this month's instalment of John Parker's excellent Flotsam & Jetsam series may well be of interest.

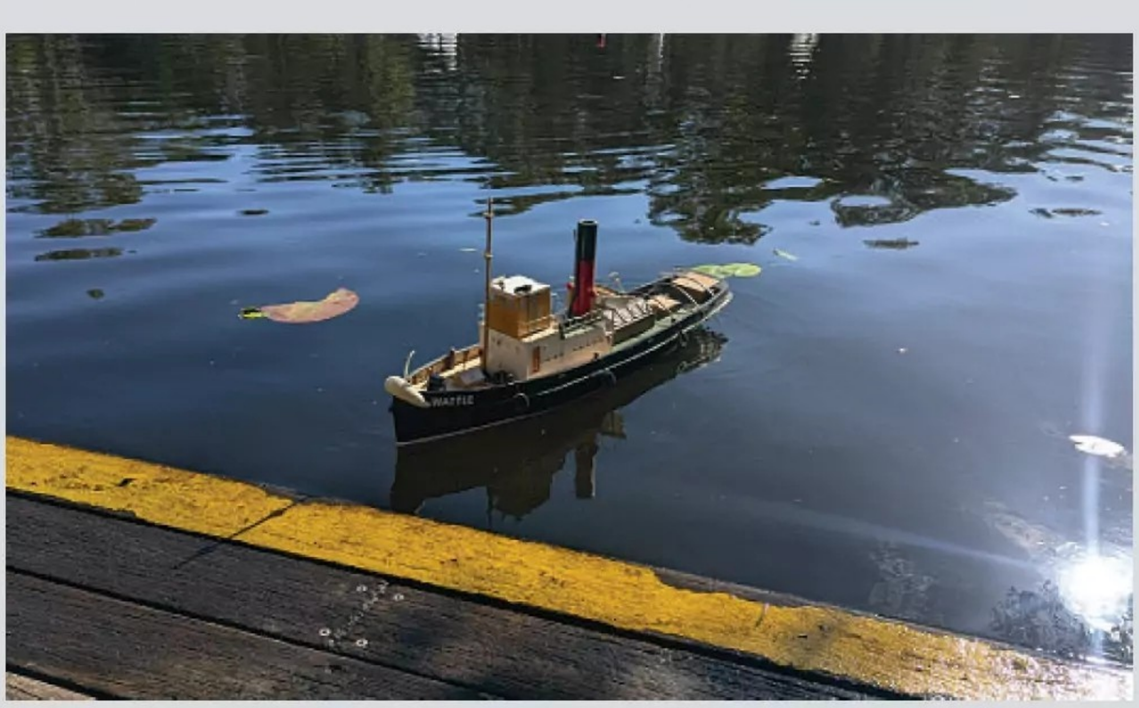
Thank you so much for sharing the outstanding results you've achieved here. Ed.

Wattle

I'm sending you a couple of photos of my model of the tug *Wattle* on the Triple SSS Model Boat Club lake here in Brisbane. The original full-size boat was one of the last ships built in the Cockatoo Island shipyard before it was closed by the Australian Navy, and, if my memory serves me right, its construction served as a way of keeping the apprentices working until their apprenticeships were finished. *Wattle* is still around today and resides in Melbourne as a historic preservation ship.

MICK EAST
BRISBANE, AUSTRALIA

Brilliantly modelled, Mick. Thanks so much for sharing these pics. Ed.



Mick's superb build of the tug Wattle.

Nordkap

I have now finished the North Sea fishing trawler *Nordkap*, Ref. 476, from BIlling Boats.

It's designed with R/C operation in mind, but I have built mine as a static display model.

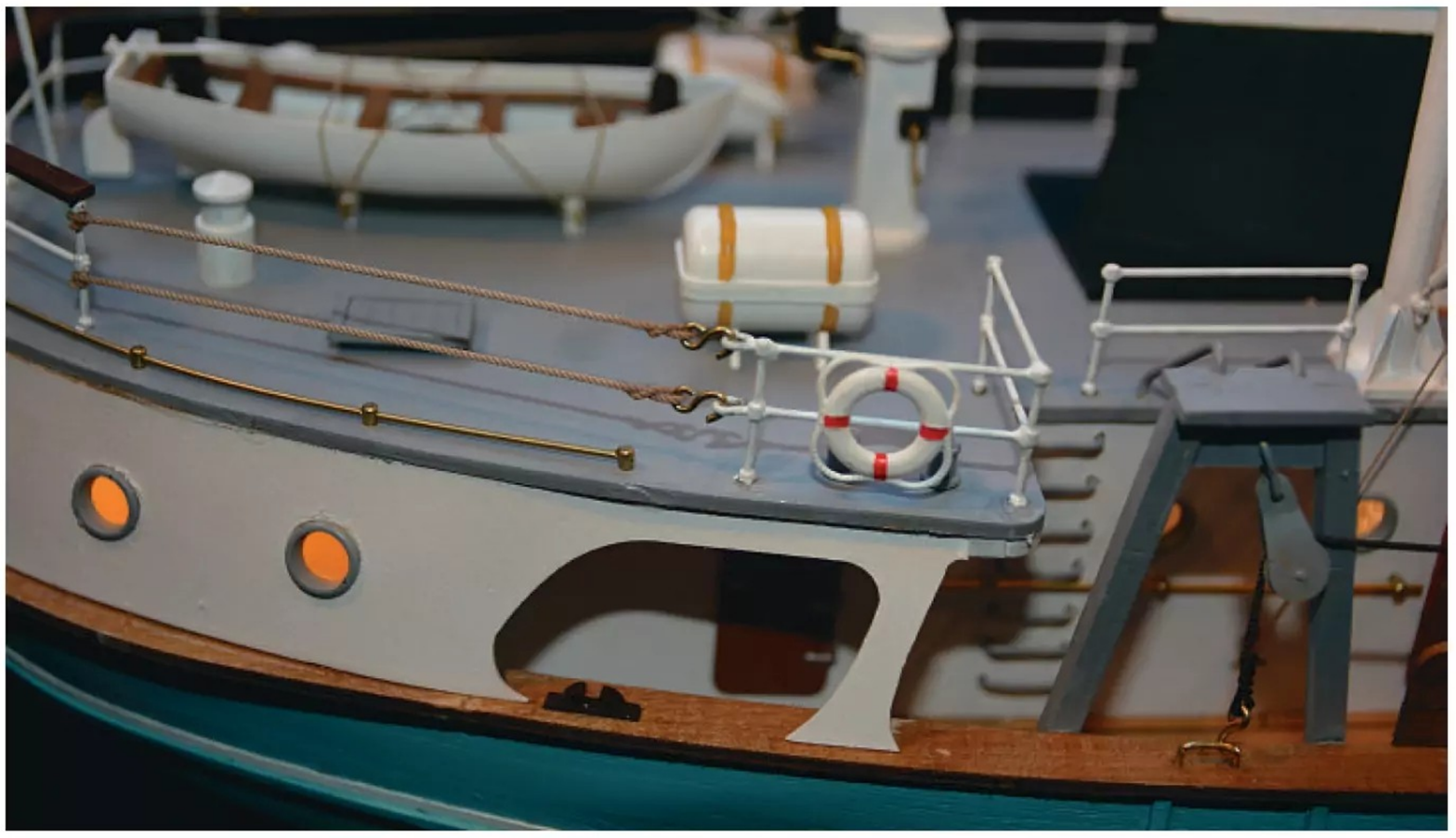
I have, however, installed a motor to turn the propeller, just for effect.

I've also added a few little touches of mine own, such as LED lights, the big square net, the small net on the bow and the small round fishing net that I've placed next to the hook. That said, Billing Boats has gone above and beyond with the number of items with which to authentically detail the model, even providing a couple of plastic pieces shaped like a load of fishes with which to represent the catch in fish boxes on the deck.

It's a great kit and a project I've really enjoyed.

JOHN ALIPRANTIS
EMAIL

Another sensational build, John. Especially love the very atmospheric 'night' shot of her all lit up. Fabulous! Ed



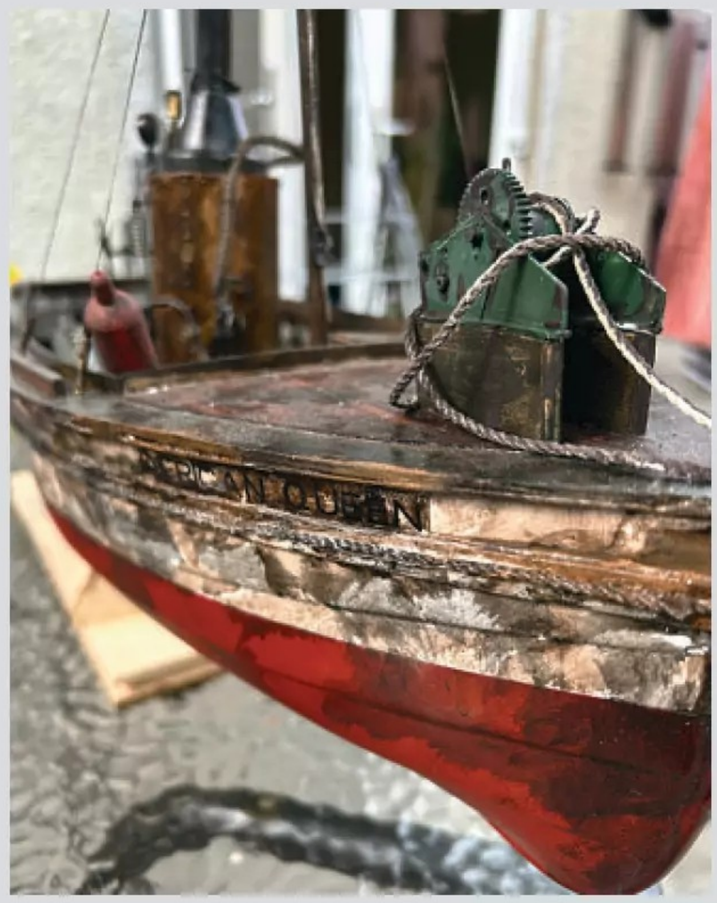
John's build of Billing Boats' 1:24 scale North Sea fishing trawler Nordkap, with a few of his own little finishing touches added.

African Queen

This is my, converted for R/C operation, build of Billing Boats' kit for the *African Queen*, with smoke! The *African Queen* was seen throughout most of the film without a canopy, so that's how I've modelled her. Also, the kit came without a front winch, so I built one myself. The servo for the rudder I installed in the back, along with a smally battery. I also spent a considerable amount of time weathering her to achieve 'the look'.

DON MCLEOD
GLASGOW RICHMOND MBC MEMBER

Love how you've weathered down this model, Don. I remember reading somewhere that in the movie the African Queen's steam engine was just a prop, and in fact a diesel engine was hidden under cargo and stacked gin crates – so, another aspect you've nailed. She's absolutely fantastic! Ed.



Don McLeod's build of the Billing Boats' kit for the African Queen, with added front winch and true to film look finish.

Coastal battleship

I am currently in the process of building a fictious model coastal battleship to a scale of 1:48, employing design features of late 1800 to early 1900 battleships. As can be seen, there is still a long way to go before completion.

The project started with the need to replace my 1:6 scale tank models and associated moulds and castings of their various components with a display that does not weigh 200 pounds or so that I take to the various rallies. These I attend with the small general modelling club that I am a member of. Here in West Wales model boat clubs don't really exist, as while we of course have local ponds they tend to be monopolized by fishing clubs. However, I have long had an interest in model boats, subscribe to this magazine and particularly enjoy articles and plans from Glynn Guest, as he reduces the elements of design and construction to produce models of simple but effective appearance and performance. Thus, a model boat was decided upon. This would be mainly a display model but a working model if required. The overriding requirements were a model would fit into the boot of my car and occupy the length of two six feet display tables at events.

A model 8 feet 4 inches in length and 20 inches beam was found to fit if made in two halves. As I find battleship design fascinating and have a selection of useful reference books, a truncated Dreadnought form was selected . To reduce ballast weight, the hull is a raft, with the hull bottom level with the waterline and the sides extending 2 inches below the waterline. A lower hull 6 inches wide and deep is fitted to the main hull bottom to give correct buoyancy, with a total displacement of 2 x 35 pounds.

All materials are obtained from a local builders merchant, mainly 3mm and 8mm plywood. It is much easier and quicker for me to source locally than from the internet.

The model was conceived as a ‹Pond Model', where detail is lost at any distance to the observer bankside, thus only major features are being fitted. This design aspect will be an important discussion point with interested visitors. I have also created a narrative explaining the rational for the 'full size vessel' which will feature as a brief note with the display. It should be noted that the rallies and other events we attend are not model boat orientated, and always lack 'rivet counters', just interested and friendly Welsh folk.

TREV FORD
EMAIL

Shaping up very nicely, Trev! Can't wait to see some more pics of the model on completion. Ed

Work in progress on Trev Ford's coastal battleship, a build design of two halves, so that it can easily fit in the boot of his car.

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**

Oban Lady

I have a large model ship named *Oban Lady*. Although the vessel looks like something that would operate in the Islands transporting supplies people and mail, I've been told by Scottish Ship Management that the model doesn't represent an actual ship, so it's hard to work out what kind of scale she's been built to (she measures 34in in length – so perhaps someone can advise?). I suspect she may have been a display piece in travel agent's window at some point – but it would be fantastic to hear from anyone who recognises her and can tell me more.

TONY COWLING
EMAIL

Lovely model, Tony. I can totally see how she'd make a wonderful window display model (in the same way some travel agents used models of airliners back in the day). Over to you, chaps! Ed.

Tony Cowling would be very interested to learn more about the backstory of this model before she came into his possession. Anyone recognise her?

3-D printing

I was interested in your articles about 3-D printing for model boats.

I have been doing 3-D printing for myself and friends for model boats and railways. As your article suggests, there are many excellent resources on the internet, both paid for and free. Sadly, there are some that are less good.

My interest has now moved to designing my own parts and hulls. There is a wide range of software available, each with their own advantages and drawbacks. The software I use is FreeCad, which as the name suggests is free to download.

The learning curve is steep, but some reasonable results are possible.

This opens up a whole new area of possibilities. Extra parts that are not otherwise available.

Boats that are not in production. Customisation of kits. With time, and a lot of prototypes, a.k.a. failures, I have produced guns, winches, superstructure, and whole boats. Most of the examples attached are printed with a filament printer but others are resin printed, which gives fine detail.

The LCM in the picture is all 3-D printed from my own design. The tank is from Thingiverse, a site full of free prints!

The torpedo boat is the 1876 HMS *Lightning*, again 3-D printed and designed on FreeCad, but an early version.

I have learnt so much more since then. The Lewis guns were made for a friend who added the metalwork.

I do not pretend that my prints are special or particularly good, and some of these models have been added to by friends, but delving into the world of CAD opens many possibilities for the modeller, and not a few frustrations.

STEVEN CHAMBERS
EMAIL

Great to see how you creative you are managing to get, Steven. Thanks so much for both sharing and inspiring! Ed.

The Lewis guns (and tub) 3-D designed by Steven, with the metalwork added by a fellow modeller.

Steven's 1876 torpedo boat HMS Lightning, again built from 3-D printed parts on an early version of FreeCad.

Steven's 3-D designed and printed vents.

Steven's LCM, created entirely from 3-D printed of his own design.

Work in progress on a 3-D designed and printed Thames Lighter.

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▲ A FREE PLAN & BUILD GUIDE

for the lovely *Lysander*!

▲ *Navatek*

A military paddle boat modelling project based on an intriguing experimental half-scale UHAC (Ultra Heavy-Lift Amphibious Connector)

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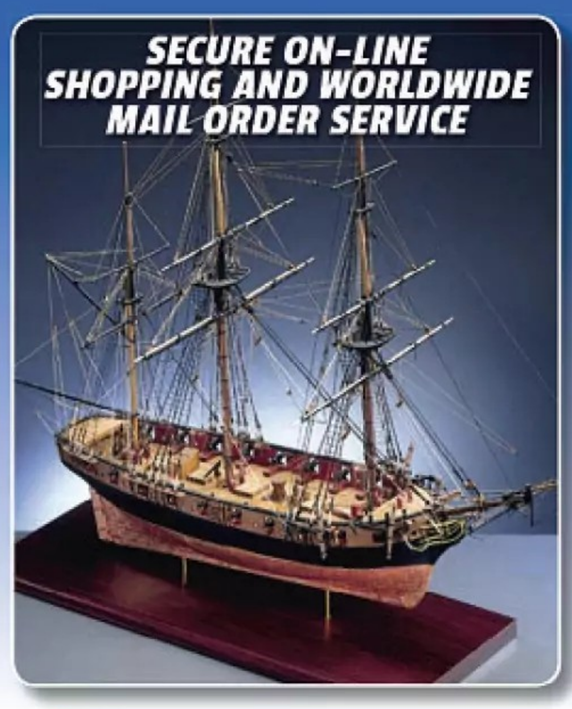

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