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June 2025

Vol. 75 No. 895

model Boats



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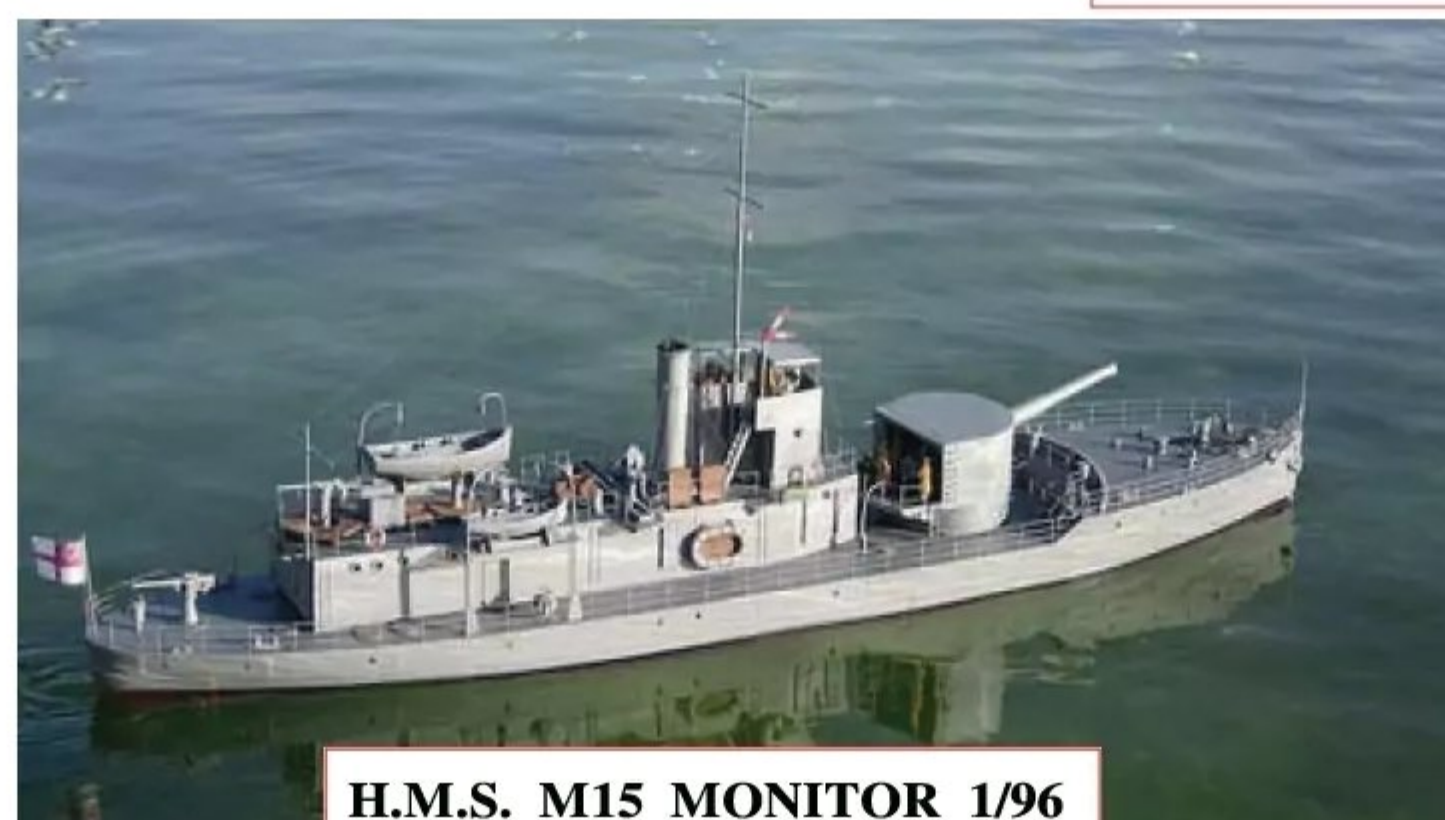
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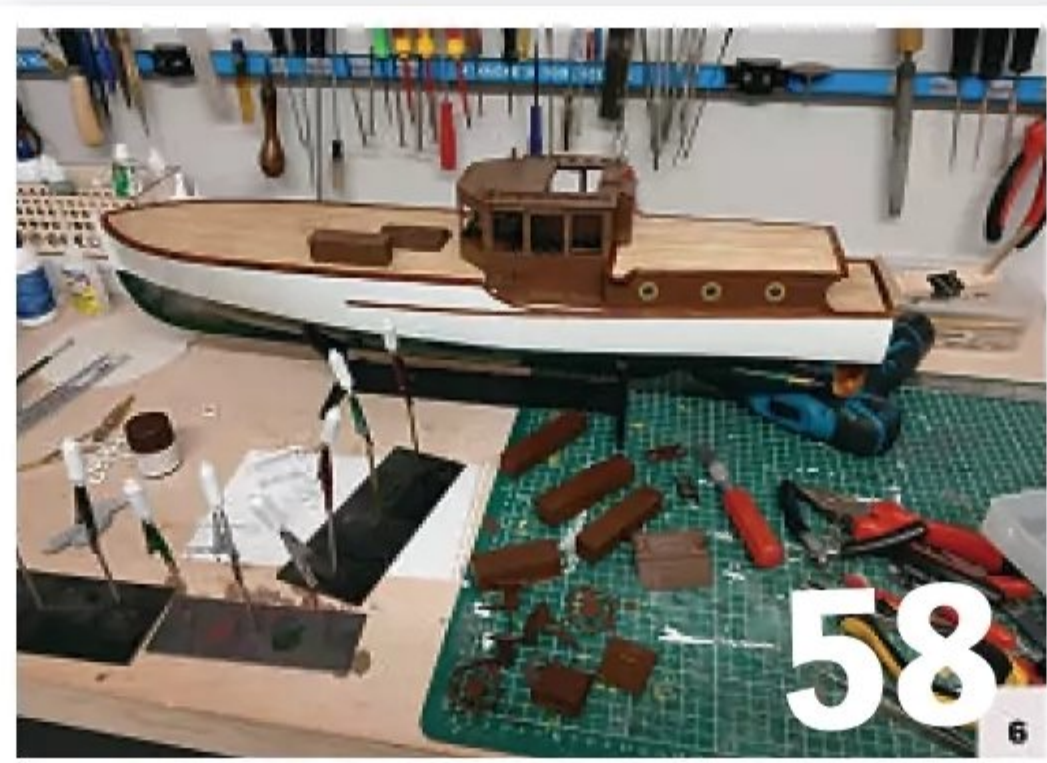
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WELCOME TO THE JUNE 2025 ISSUE OF MODEL BOATS

As regular readers will be aware, Model Boats is now under new ownership, having recently been acquired by Kelsey Media. Just to reassure you, I should point out that arrangements have been put in place to ensure that during this transition period all of the correspondence, prize draw entries, subscription renewals, etc, sent to us via our previous publisher, Mortons Media Group, are being still being received and dealt with, so it's very much business as usual.

The eagle-eyed amongst you may notice that the T&Cs (Terms & Conditions) noted for this month's prize draw (see pages 42-43) still refer you to Mortons' privacy policy. This is not an error; we are simply awaiting a directive update. You can, however, be confident in the fact that Kelsey applies the same due diligence to data protection and that all your personal information will be handled in exactly the same safe and secure way the Mortons' privacy policy outlines.

And, on the subject of this month's exclusive prize draw, courtesy of www.toolnut.co.uk, I'm delighted to reveal that there will be not just one but two lucky winners drawn, each of whom will receive a fabulous Japanese Dozuki Razor Saw. Highly regarded by craftsmen and modellers alike, the Dozuki saw is all about precision. Its thin but incredibly strong blade, rigid spine, fine teeth and draw-stroke action results in clean, exact cuts, making it an absolutely terrific tool for your model boat building workshop.

This leads me neatly on to flagging up a feature that I think will be of interest to many of you, regardless of your individual thematic persuasions, in which Nev Wade draws on his own personal experience to point out some of the workshop factors it's worth giving some headspace to (see Shedloads to consider, starting on page 30).

In fact, as well as the specific kit/scratch build and restoration articles in this month's issue, there are a number of more general 'how to' type articles packed with explanations, advice, hints and tips that I hope you will find informative, useful and enjoyable – one of which, Model Yacht Stability (starting on page 37) sees contributor John Watkinson extolling the virtues of Japanese razor saws!

As expressed many times before, being a hobby magazine we're naturally very reliant on the community we serve for variety of content. Please therefore keep your both your submissions (whether they be feature-length articles or details and photos of your magnificent work to share in the Your Models section) and notifications of forthcoming events and general interest stories for the Compass 360 news section coming!

Enjoy your read,

Lindsey

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Compass 360

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Tight space trimming plane



A fully functional 1:3 scale replica of the Veritas Tools (Canada) cabinetmaker's trimming plane has now been added to the extensive range of traditional tools, hand tools based on classic designs, and hand tools with a modern twist, available to order from www.toolnut.co.uk

Designed to perform in areas unreachable with a full-sized plane or chisel, this nifty little plane measures just $2\frac{3}{16}$ -inches long, $\frac{5}{8}$ of an inch wide, and is under 1-inch tall, facilitating precise paring cuts in confined spaces.

The 25° bevel blade combined with a 15° bed angle results



The tiny trimming plane tool designed for tight space tasks, available from www.toolnut.co.uk

in an effective cutting angle of 40°, and the fully exposed, full-width blade which enables you to work right up to adjacent surfaces can be set flush with the sole for meticulous trimming without leaving marks.

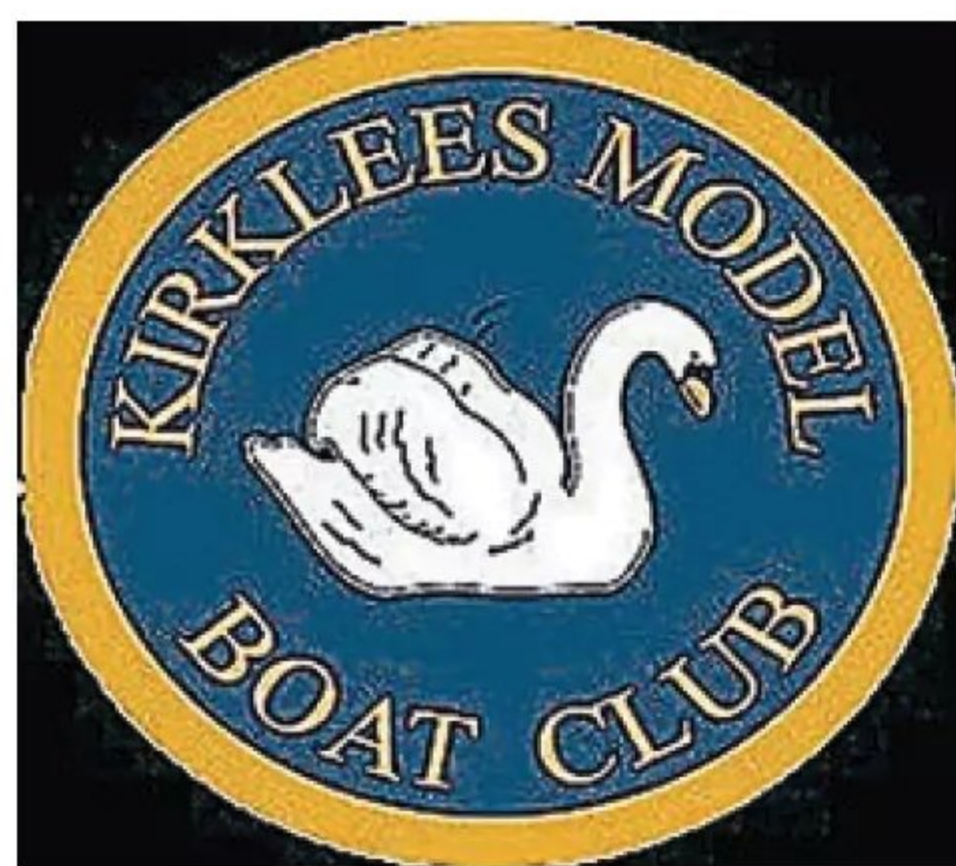
The plane is constructed from investment-cast stainless steel with machined sides and a ground sole, while

the lever cap is stainless steel and the rear tote is crafted from walnut, making it comfortable to grip and operate.

Presented in a French fitted embossed leatherette case, the Veritas Miniature Cabinetmaker's Trimming Plane is priced at £49.98, plus p&p (www.toolnut.co.uk offers free delivery on all orders over £75).

OUT AND ABOUT

Date correction for Kirklees MBC Steam Day



Due to a *faux pas* on our part, the date provided for the Kirklees MBC Steam Day given in the May issue of Model Boats was regrettably incorrect.

PLEASE NOTE the Club will be holding its first open day of 2025 on Sunday May 25 (not May 18, as incorrectly specified in last month's mag) from 10 am to 4 pm at Wilton

Park, Bradford Road, Birstall, Batley. WF17 8JH. The theme is steam powered models and Mountfleet Models kits and builds. There will also be a display of military models.

Visitors will be very welcome take along and sail any type of model, with the exception of IC and high-performance fast electrics. Please note, however, steam models will need a valid test certificate. Club members will be happy to answer any questions.

Free car parking will be available, and visitors will be permitted to use the toilet facilities in the park's café.

For further details contact Stan Reffin on 0113 2675790 (after 6pm please).



PLEASE NOTE: the Kirklees MBC Steam Day will be taking place on Sunday, May 25 – not Sunday, May 18 as advised in last month's mag.

Pirates in the Park!



From 12 noon through to 4pm on Sunday, July 20, members of the Alvaston Pirates Model Boat Club will, once again, be supporting the 'Fun Day' at Alvaston Park, Derby DE24 8QQ, an annual family friendly event organised by the Alvaston Park Friends. Not only will the Pirates be putting on displays of their own models, both on and off the water, they will also be taking along the club's colourful and always popular fleet of 'Fun Boats' so that children can enjoy free 'have-a-go' sessions under their expert supervision.

Admission to the event itself will also be free of charge, and other attractions will include live music, charity stalls to browse, a dog show, fair rides, and lots more besides.



Sailing with Dolphins



The Dolphin Model Club, which holds its meets at Orpington Pond (just off Kent Road by the A224 Cray Avenue, Kent BR5 4AD), has announced the dates of its sailing sessions for 2025. These sessions are open not only to members but also anyone

wishing to show up and participate (NB, no IC or petrol boats can be accommodated). Non-members will be asked to pay a nominal fee of £2 per boat but can be assured of a very warm welcome.

There is off road parking on club days, but please note there are no onsite toilets or refreshments available (so you'll need to take your own provisions).

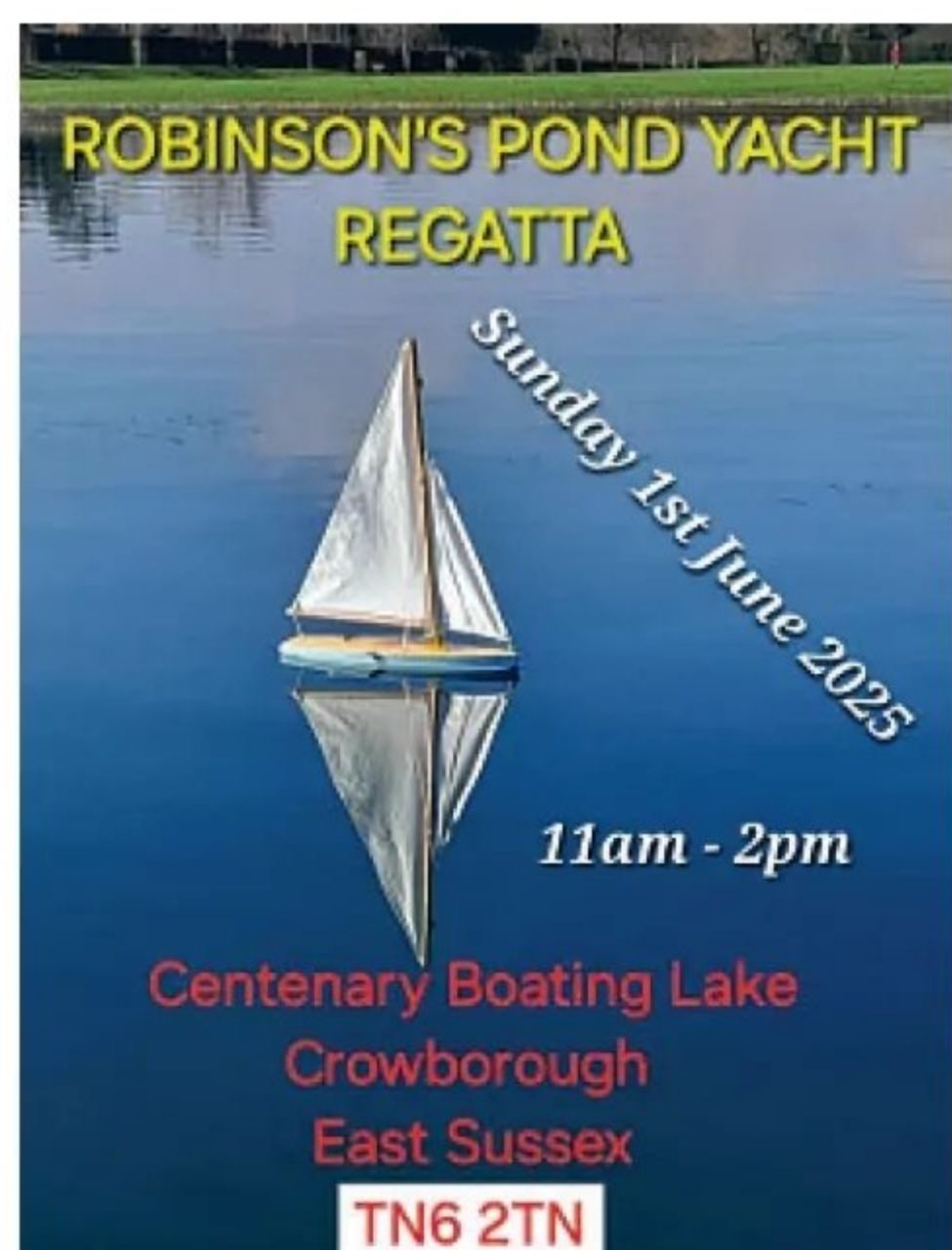
All of the following dates fall on a Sunday, with sailing commencing from 10am:

- April 6
- April 27
- May 18
- June 8
- June 29
- July 20
- August 10
- August 31
- September 21
- October 12



For further details, visit the club's website at <http://www.dolphinmodelboatclub.com/> or email dolphinmodelboatclub@live.co.uk

Robinson's Pond Regatta



Sunday, June 1, 2025 will see the second Robinson's Pond Yacht Regatta held at the Centenary Boating Lake in Crowborough, East Sussex TN6 2TN. The event will be open to all, including those of you wishing to bring along your own pond yachts and compete. For more details, visit <https://www.facebook.com/profile.php?id=61562652281812>

Exeter Heritage Harbour Festival

Sunday, June 8 will see the return of the hugely popular annual celebration of Exeter's Heritage Harbour status. Expect

steam boats, railways, traction engines and classic cars, together with musicians and other performers. This free event will take place from 11am to 4pm at the Custom House, under the Transit Shed, around the waterfront and on the Piazza.



Knightcote MBC Open Day



From 10am to 4pm on June 8, 2025, the Knightcote Model Boat Club will be holding an Open Day at New House Farm, Knightcote, Warwickshire CV47 2EQ.

The local RNLI will be in attendance with a merchandise stall. There will also be a raffle, a bring-and-buy stall and refreshments available to



purchase in the clubhouse. Visitors will be able to take advantage of free parking and use of onsite site facilities (toilets). All are welcome, including

clubs and groups. For further details, contact chrismoiruk@btinternet.com or check out the club's website at www.kmbcmmodelboatclub.com.

Evening cruise on MS Oldenburg



MS Oldenburg moored at Bideford (photo taken by Mark New on March 4, 2006), the starting point for the evening cruise on Friday, June 27, 2025, RNLI fund raising evening cruise. The RNLI's volunteer lifeboat crews and lifeguards saved 437 lives; that's more than one person rescued every single day!



Tickets (priced at £33.22 each) for a RNLI fund raising evening cruise on MS *Oldenburg* this summer can now be purchased online via <https://www.eventbrite.co.uk>.

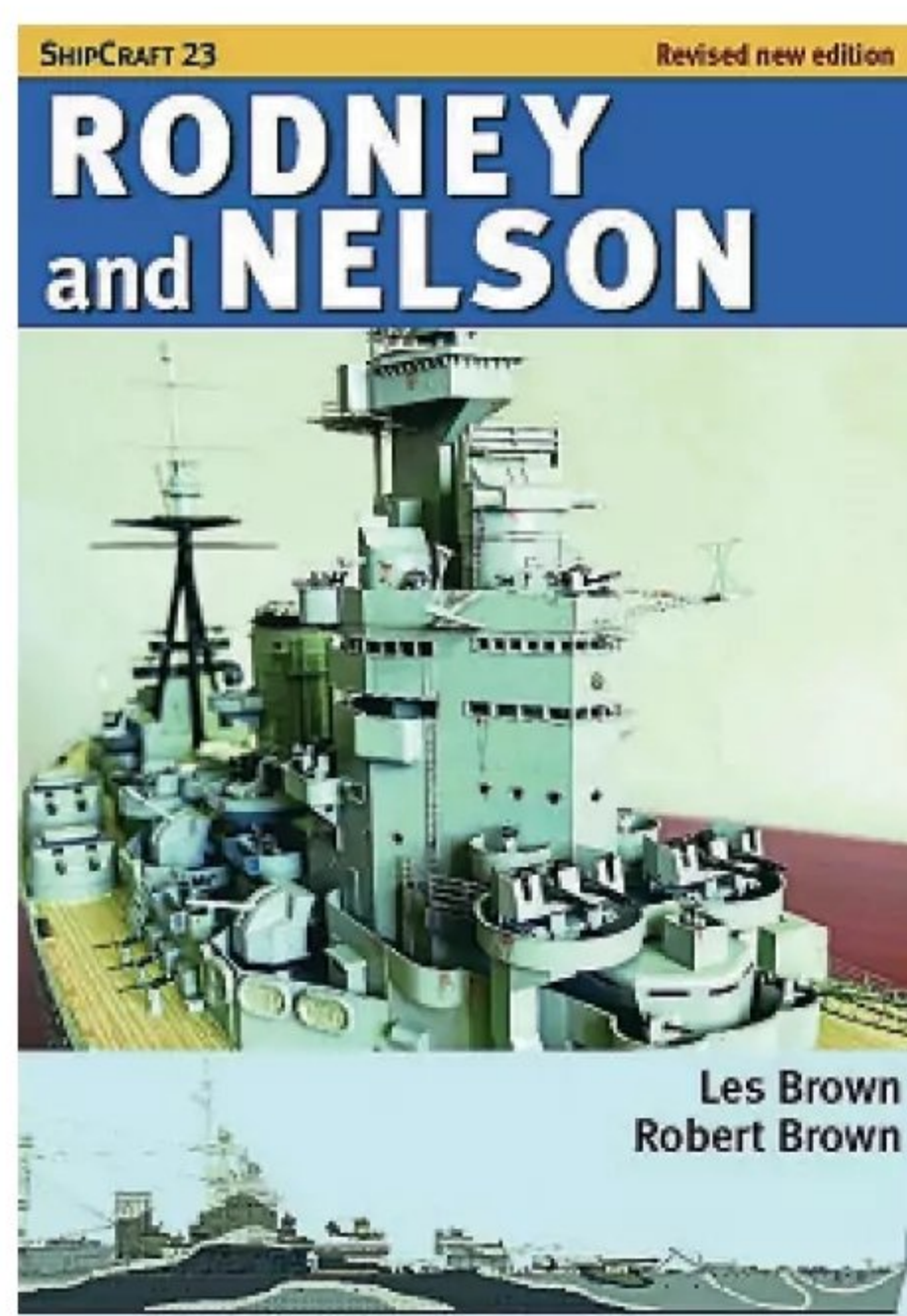
Oldenburg will depart from Bideford Quay in North Devon (EX39 2EY) at 7pm on Friday, June 27, and sail along the Taw & Torridge estuary, passing the Appledore Lifeboat Station along the way. Passengers will be able to take in the gorgeous scenery while enjoying

live music and a licensed bar before returning to the Quay two and a half hours later at 9.30pm. Please note this is an over 18s event, and passengers are advised to dress for the weather on the day but bear in mind that once the sun has set it can cool down very quickly out on the water.

You can keep up to date with all the other RNLI 200 fund raising activities at Appledore by visiting <https://www.facebook.com/AppledoreLifeboat/>.

BUY THE BOOK

ShipCraft 23: Rodney and Nelson – Revised Edition



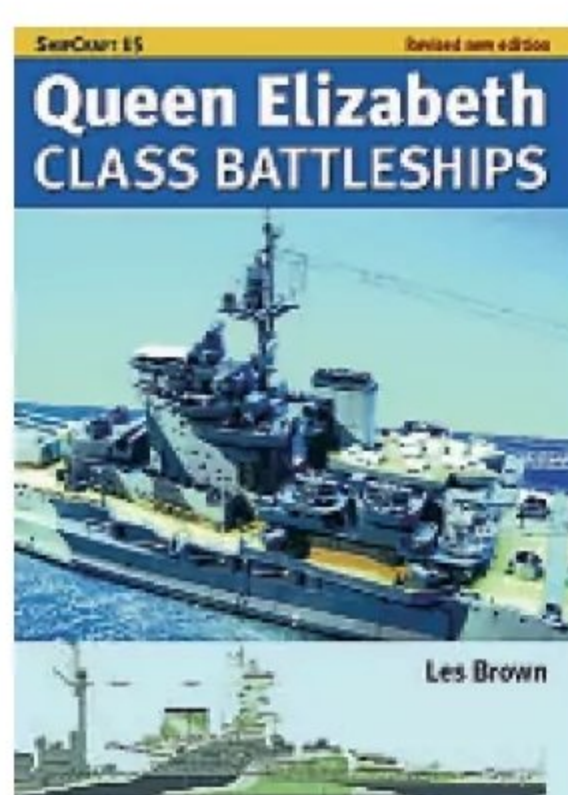
The two ships covered in this volume of the Shipcraft series (aimed specifically at modellers) were the only capital ships designed and built between the wars – a special concession of the Washington Treaty's ban on new battleships – and they were unlike anything before them, with the superstructure three-quarters aft and all main armament turrets forward of the bridge. During World War II, *Nelson* sustained mine and torpedo damage, while *Rodney* played a major part in the destruction of the *Bismarck*, both surviving, only to be broken up post-war.

Thoughtfully compiled by co-authors Les Brown (a leading light in the Small Warships

Group of the IPMS) and Robert Brown (a Canadian ship modeller, who has contributed three previous volumes to the ShipCraft series), this revised edition not only features colour profiles and highly-detailed line drawings and scale plans, along with details of the ships' paint and camouflage schemes, but newly updated Model Products and Modellers' Showcase sections.

Published in paperback format, under the ISBN 978103 6150334, the title carries an RRP (Recommended Retail Price) of £16.99, but can currently be ordered via <https://www.pen-and-sword.co.uk> at the generously discounted (20% off) price of £13.59.

Queen Elizabeth Class Battleships – Revised Edition



Just released in paperback format is author's Les Brown's revised edition of *Shipcraft 15 – Queen Elizabeth Class Battleships*.

This provides everything the ship modeller needs to know about building one of these

famous warships and includes numerous detailed plans and colour illustrations. It also features a fully updated Model Products section, along with a gallery of recently completed builds in the Modellers' Showcase section.

The title (ISBN: 9781036150303) carries an RRP (Recommended Retail Price) of £16.99 but can currently be ordered via www.pen-and-sword.co.uk at the generously discounted price of £11.89.

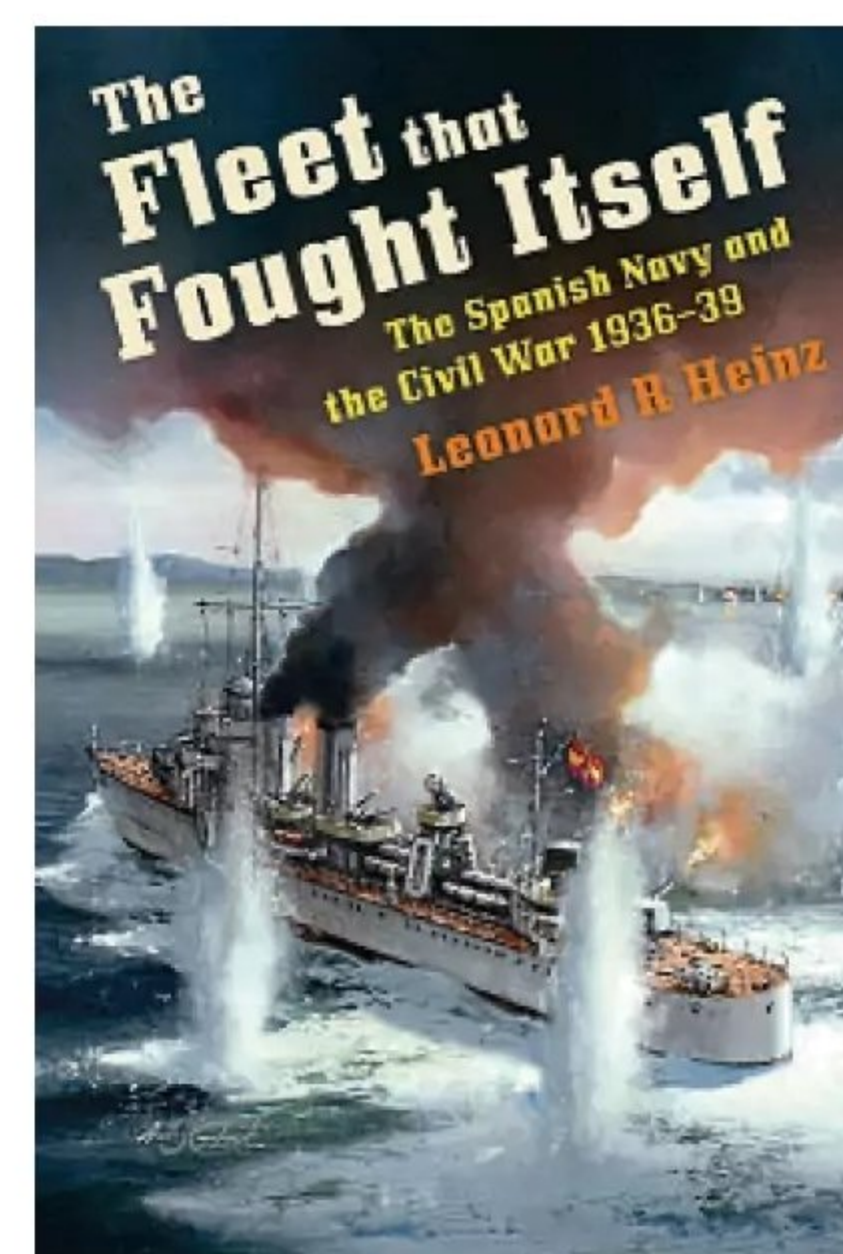
The fleet that fought itself The Spanish Navy and the Civil War, 1936-1939

Penned by naval historian Leonard R. Heinz, this new book documents the operational history of the navies of the Spanish Civil War, about which very little has hitherto been published in the English language.

The book begins by outlining the pre-1936 Spanish navy, prior to its fracture following the revolt of the generals, and then goes on to cover all the significant actions of the two opposing (Republican and Nationalist)

forces and their ships. In addition, the book describes the crucial roles played by the British, French, German, and Italian navies during the Spanish struggle.

Published in hardback format, under ISBN 978103 6113988, the title carries an RRP (Recommended Retail Price) of £25 but can currently be purchased at the discounted by 20% price of £20 when ordered directly from www.pen-and-sword.co.uk



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Fast Patrol Launch  Kit £69.95 Fittings kits from £ 4.90	Sportsman  Kit £129.95 Fittings kit £ 16.46	Pilot Boat  Kit £124.94 Fittings kit from £ 7.60	Mr Tom  Kit £46.95 Fittings kit from £ 4.90



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MOTOR TUG LOWGARTH

Scale 1:32
Length 950mm
Beam 270mm



The original vessel was built by Richards Shipbuilders at Lowestoft and launched in 1965 as a development of the Plumgarth/Avongarth class. The success of her design led to a further four ships of almost identical design.

She was powered by a 7 cylinder oil engine built by Ruston & Horsby, to a single fixed pitch propeller operating with a Kort steerable nozzle.

Following sale by Cory and a number of years moored on the River Weaver she was purchased by Rigg Shipping and converted for coastal towing.

Latterly Lowgarth was sold to Fendercare and now operates in Nigeria carrying the name Charles Plane.

Kit comes complete with brass propeller and shaft

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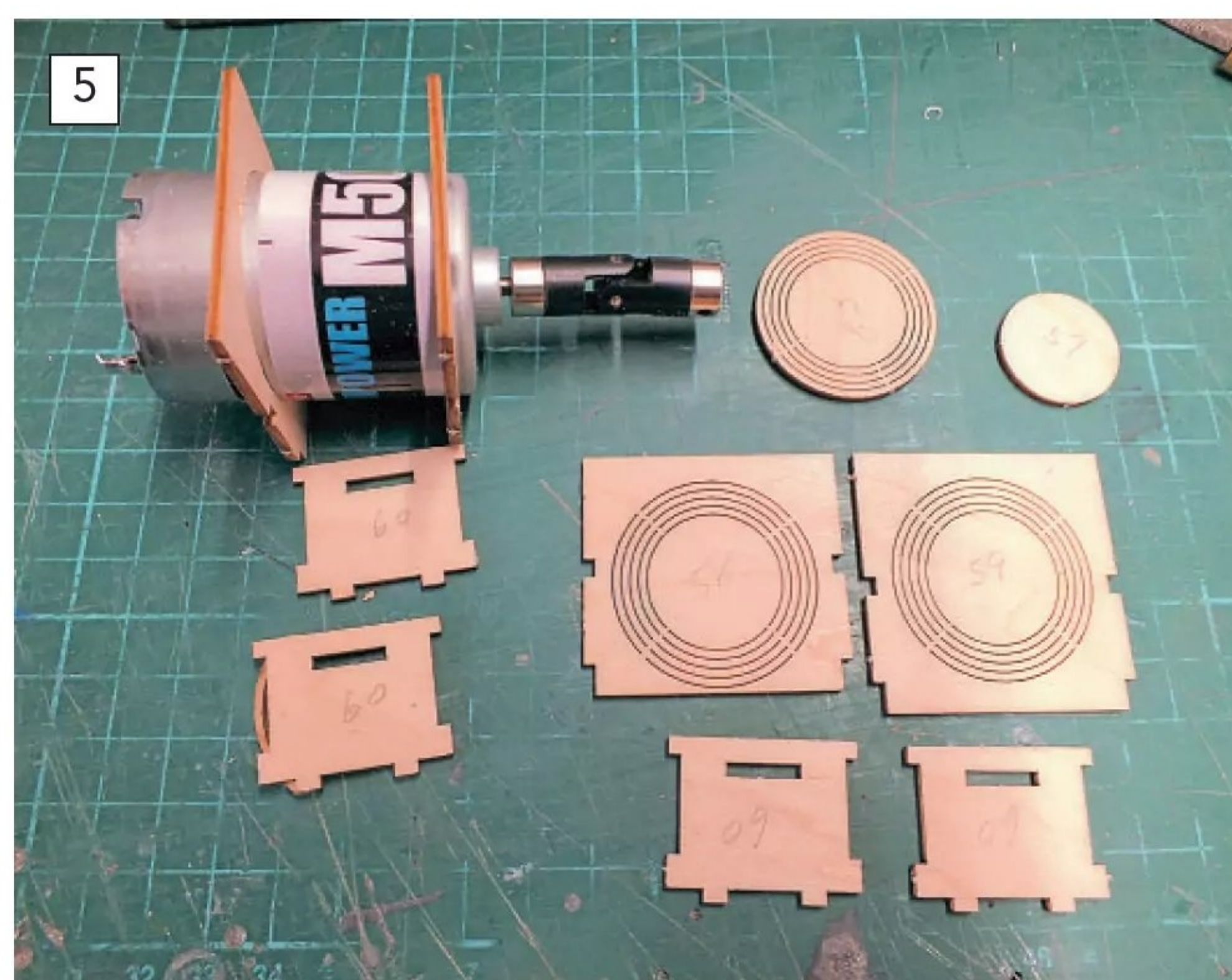
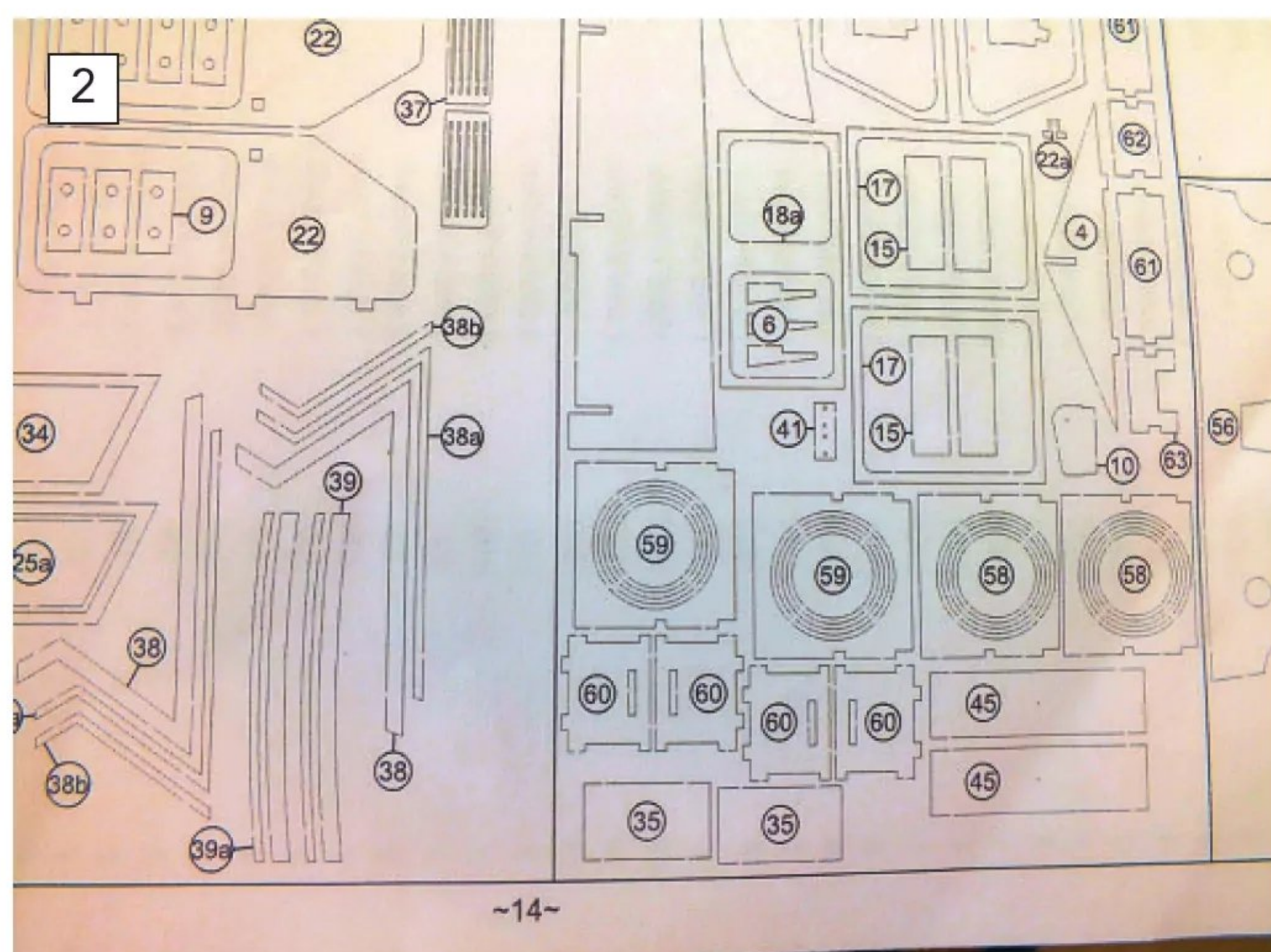
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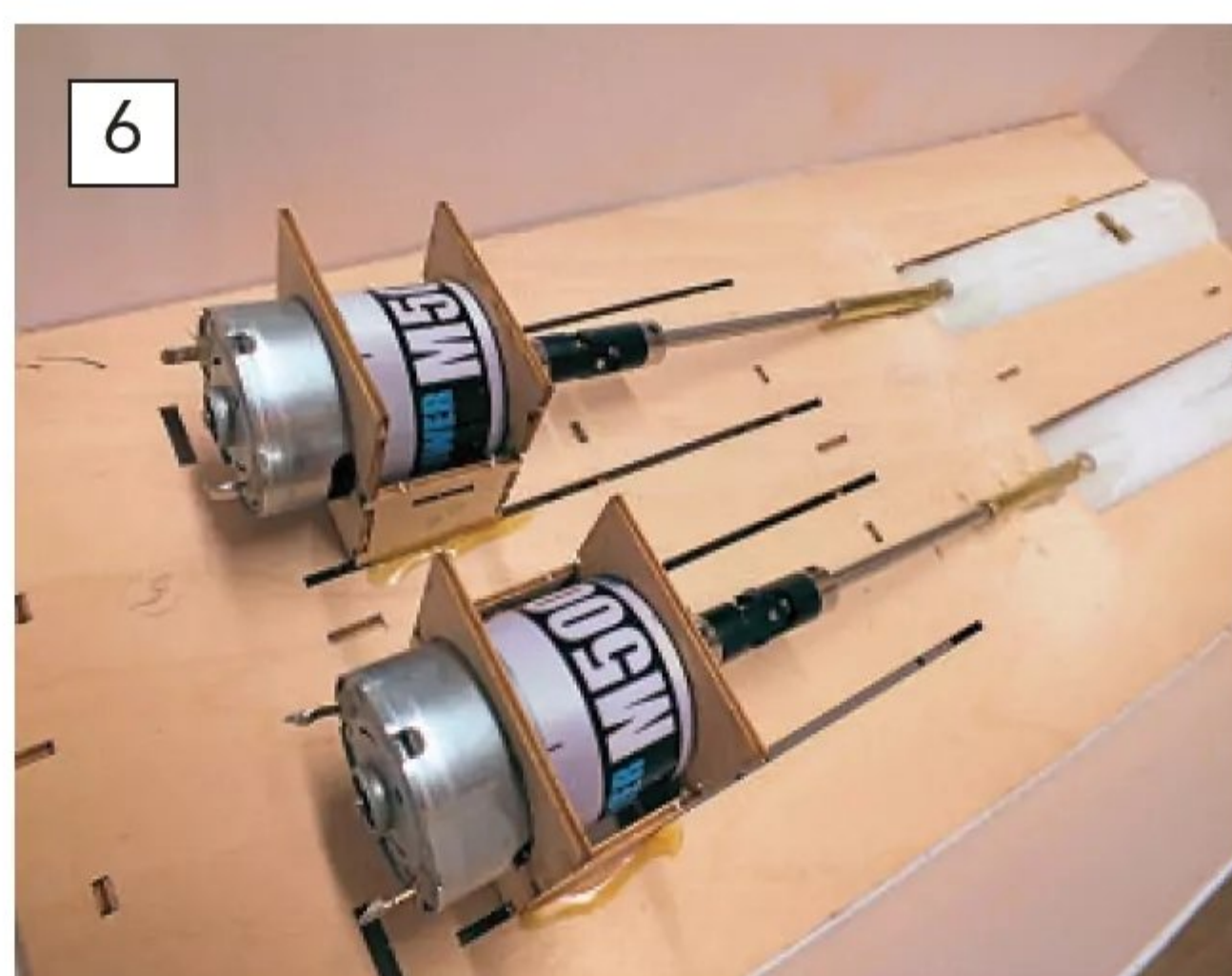
www.modelboats.co.uk June 2025 • Model Boats



“In some instances, you may find the cutting marks on the vacuum formed parts cast from the original moulds are no longer as clear as they could be, so here’s is a little tip...”

and the fact that the majority of the fittings are either brass or plastic (I haven’t found a single white metal part). In some instances, however, you may find the cutting marks on the vacuum formed parts cast from the original moulds are no longer as clear as they could be, so here’s is a little tip... For better definition, just lightly run a pencil over them, as shown in **(Photo 3)**.

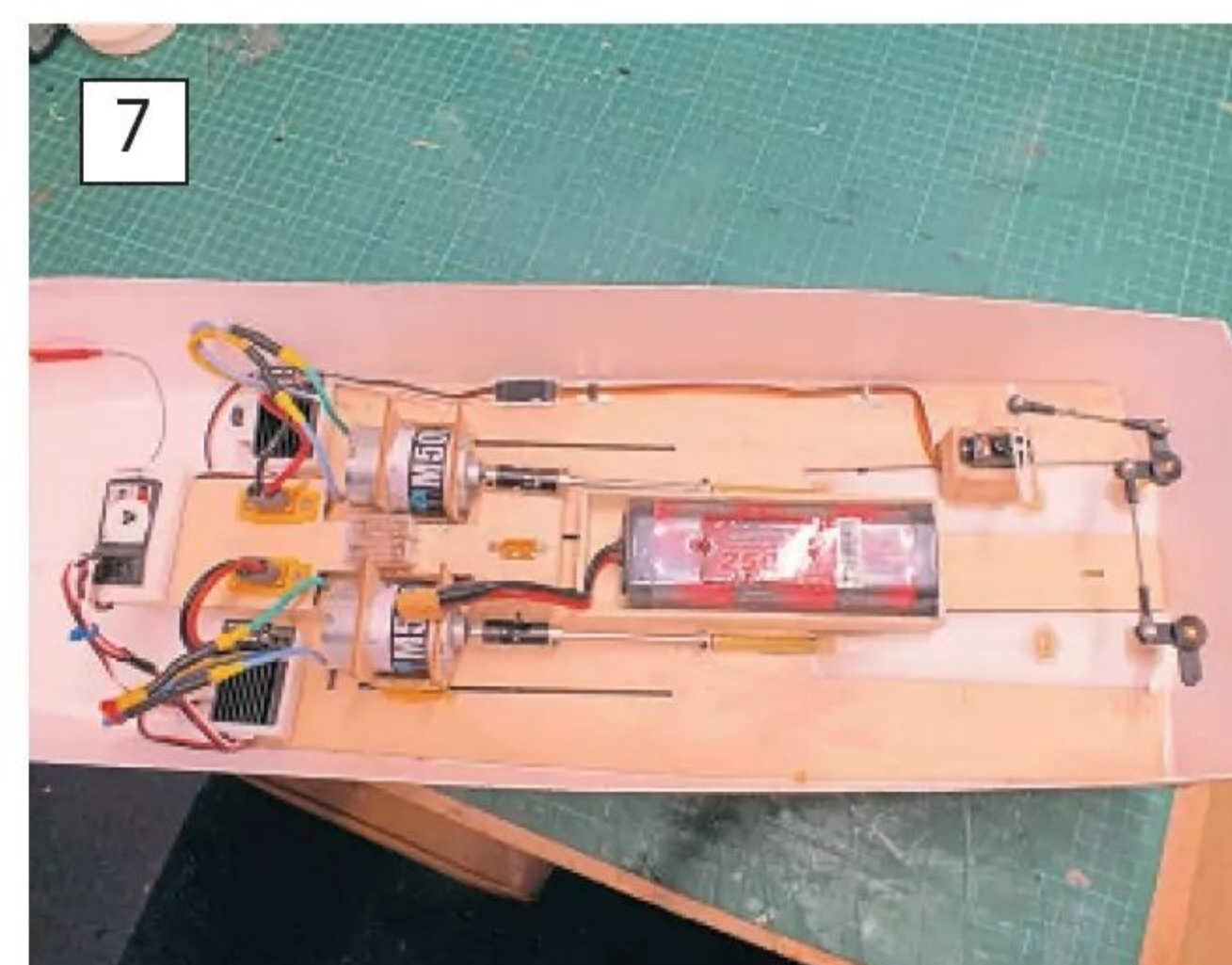
Also, while the photo instruction manual Billing Boats provides with this kit is very helpful, some images are a little faint. If you visit the Billing Boats’ website, however, you will find digital manuals for all the kits in range, including the WSP 10, and the high-



res images all look much clearer and sharper when viewed on screen as opposed to in print.

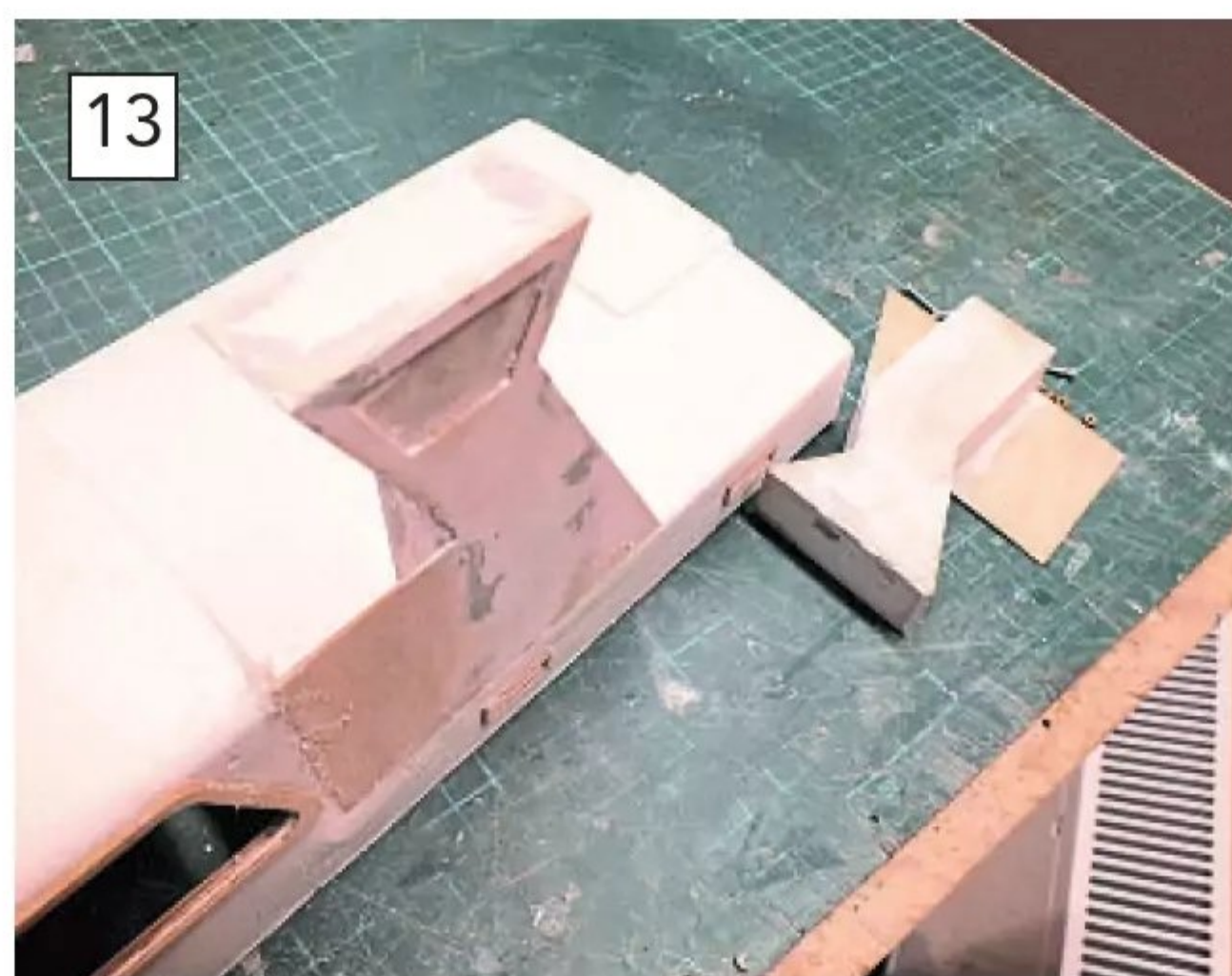
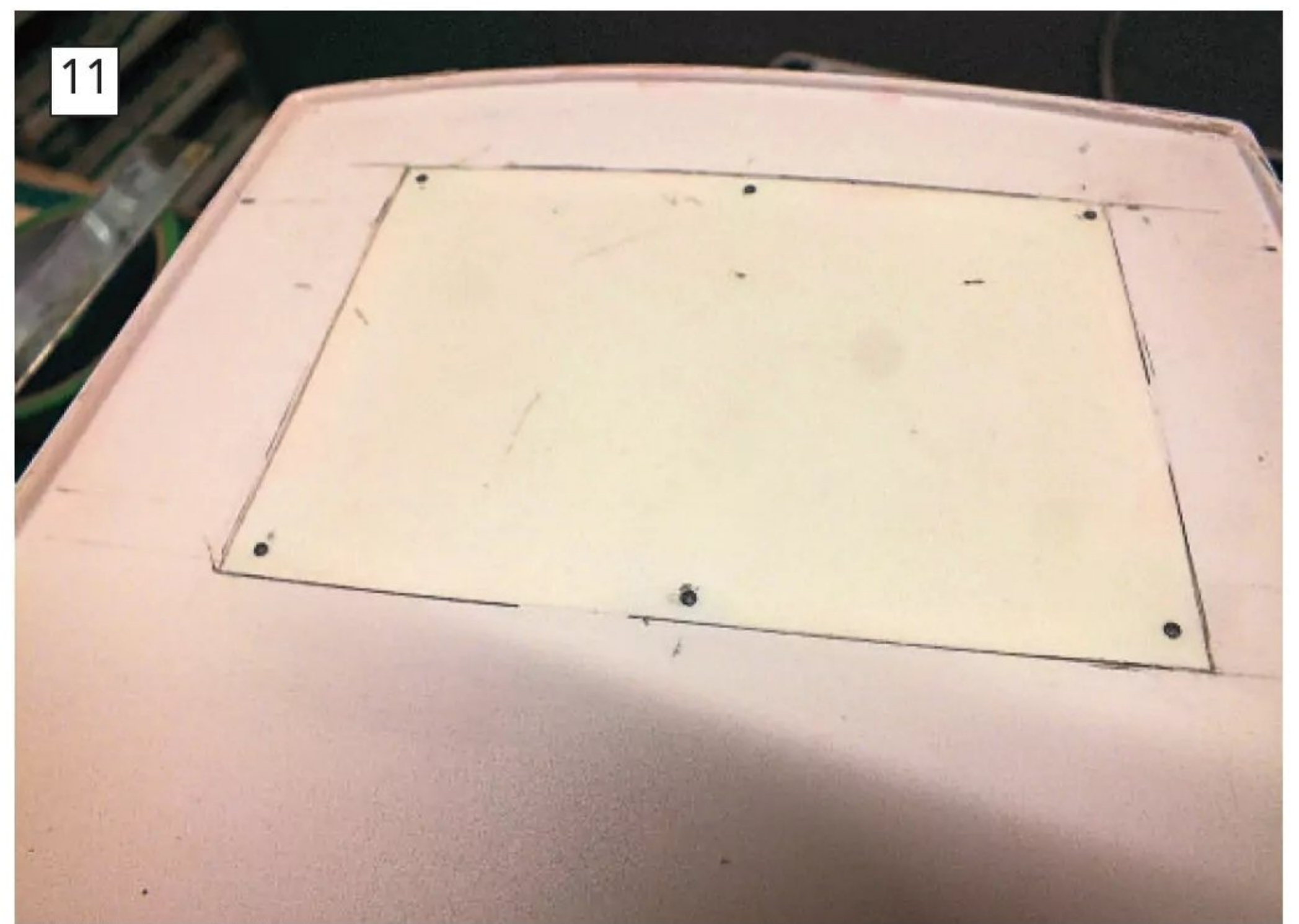
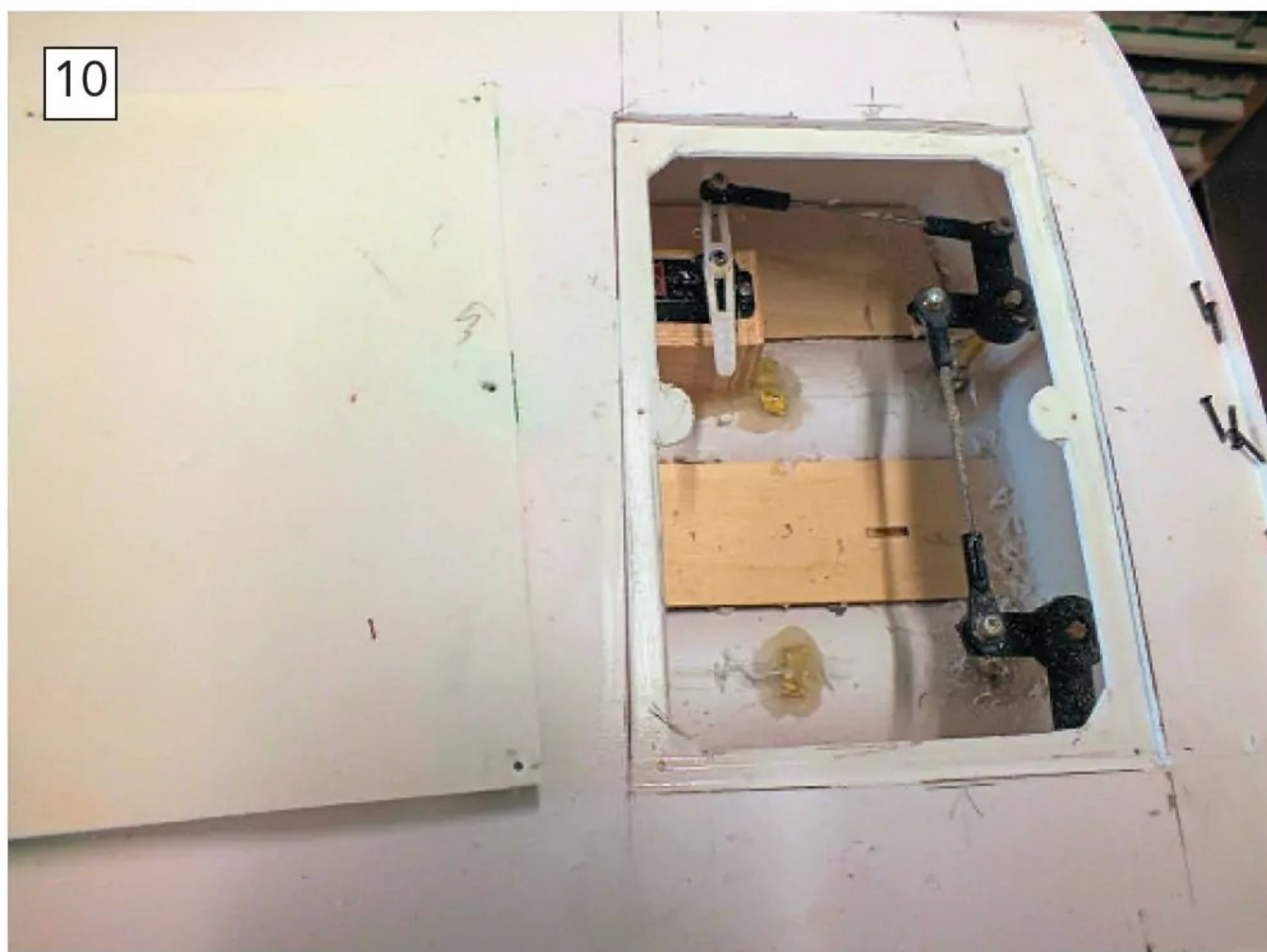
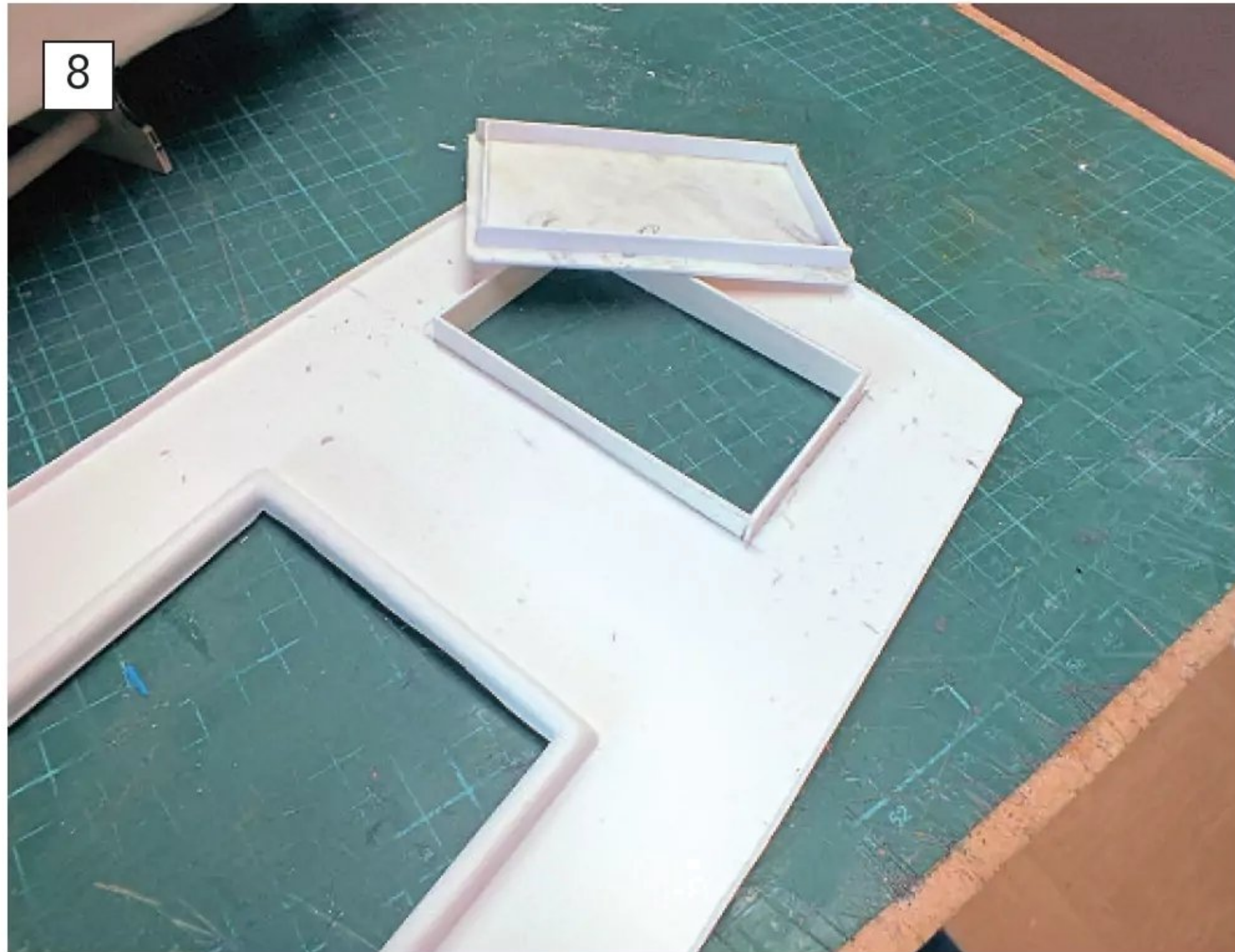
Constructing and equipping the model

Before assembling the hull itself (an easy-to-follow process using the instructions provided), you will need to build your stand, for which all the basic parts are supplied (**see Photo 4**). Please note, the foam rubber shown, which I added for cushioning, is from my own personal stock and not included in the kit).



Although this kit does not come complete with the equipment required for R/C operation, it has been designed with this option very much in mind. **Photo 5** shows the unusual way suggested for mounting your motors. This involves cutting out the rings according to their diameters from the parts supplied for your motor mountings, and it actually works very well (**see Photo 6**). **Photo 7** illustrates how all your gear can be neatly installed within the interior.

For those who opt to take this route, the deck also needs some



consideration. I was worried that once fitted it would be impossible to carry out any maintenance or repairs to the rudder assemblies (tiller arms have a habit of coming loose), etc, so I elected to cut an extra hatch. There are many ways to tackle this, but the following three methods are the most common... The first, shown in **Photo 8**, is standard practice, but an option I quickly discounted as, a) my hatch will only need to be removed should there be an emergency, and b), I felt it would look ugly and out of place. The second is as shown in **Photo 9**, i.e., secured with small track screws, but, again, I

didn't feel this would complement the outline of the model and nor would it have been used on the full-size boat – a trip hazard for sure. So, I plumped for the third option: a platform directly under the deck to which my additional hatch could be flushly mounted (**Photos 10 & 11**) and secured with small track screws. The joints, I felt confident, would be almost invisible once the deck was painted.

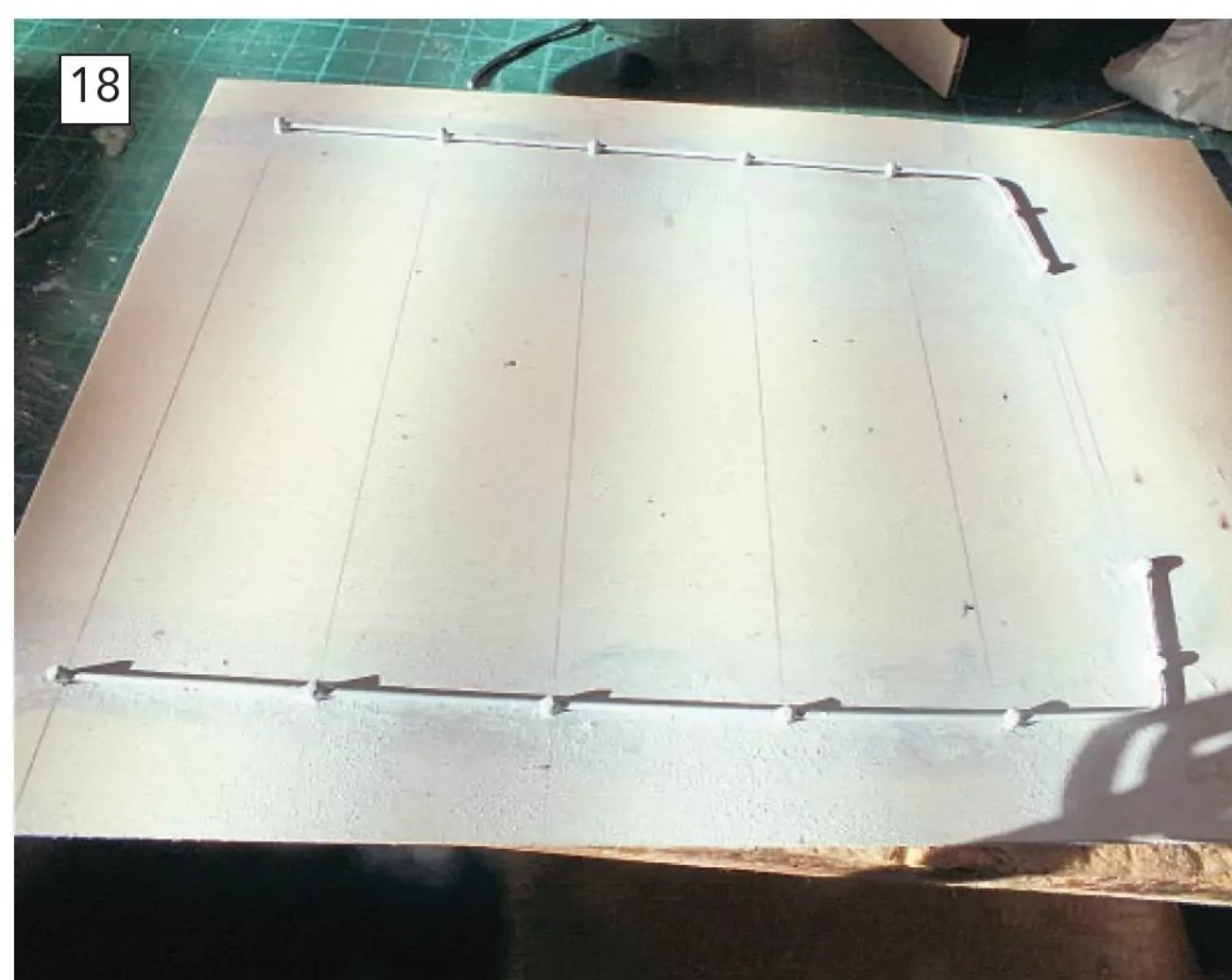
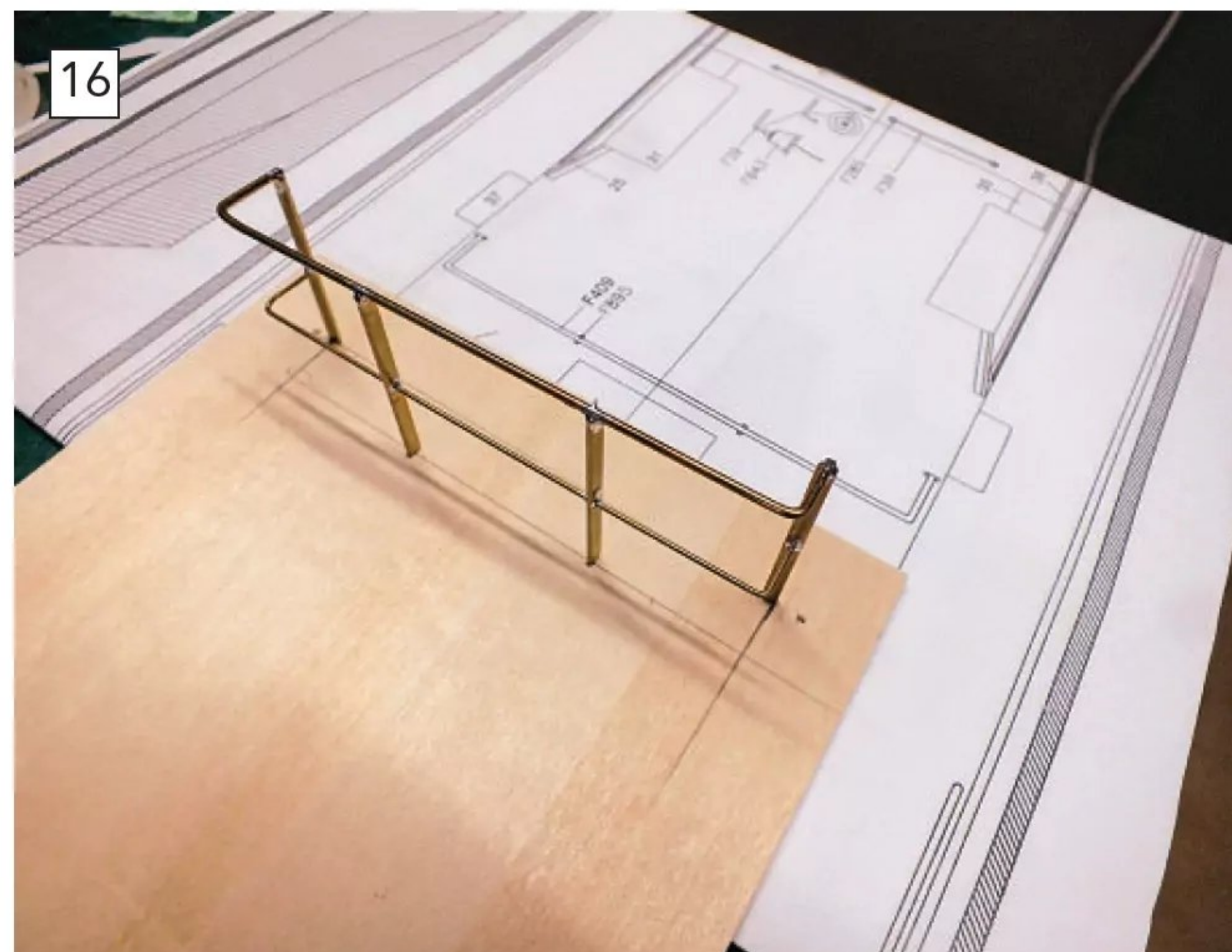
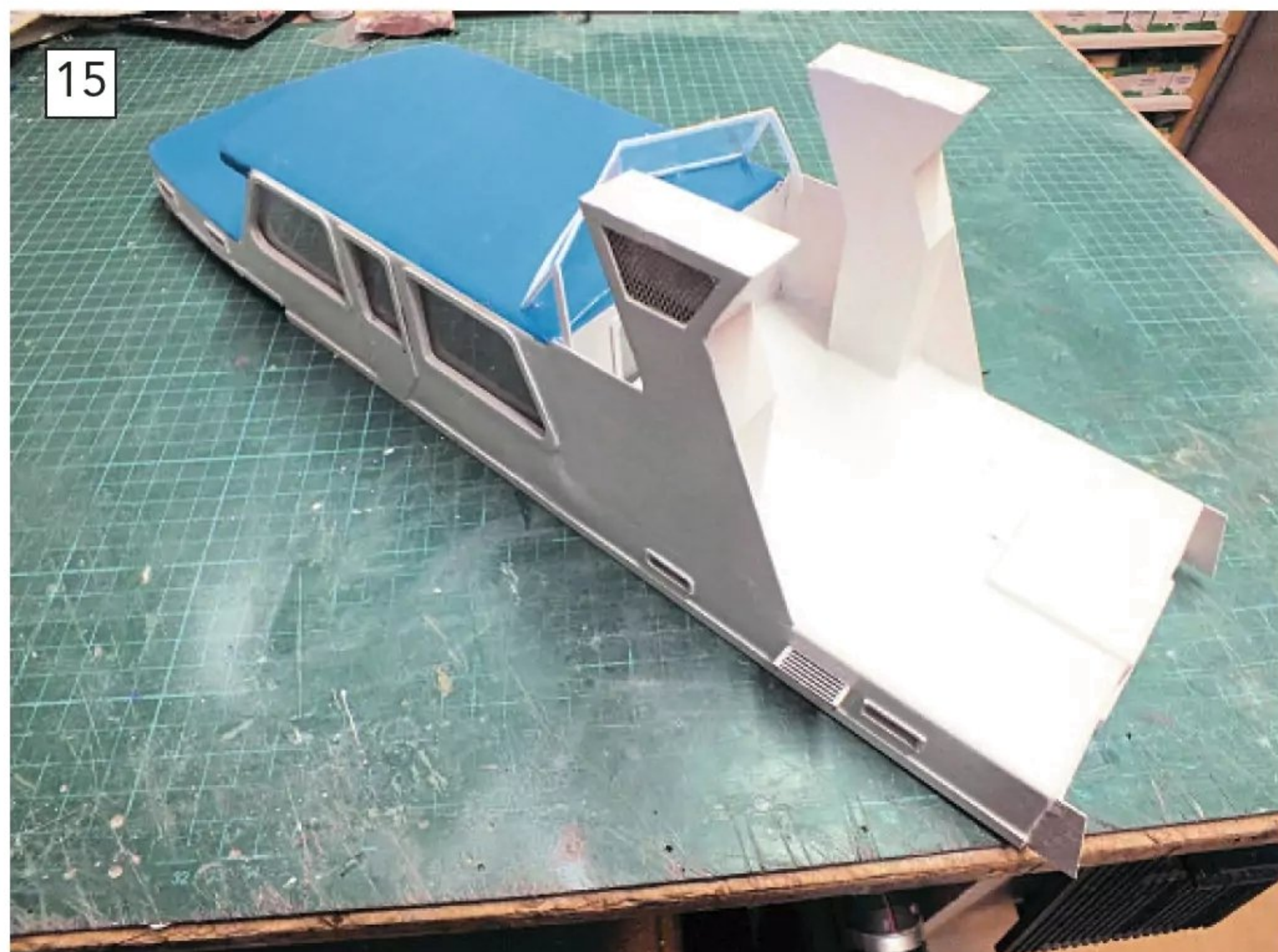
Before painting, however, I felt it prudent to dry fit the cabin and fixture weights to the hull and then run a flotation test to establish a waterline that allowed for all the little

“There are many ways to tackle this, but the following three methods are the most common...”

modifications/bits and bobs I would be adding to further enhance the model.

This done, after the exhaust vents and cabin trim had been filled and blended (see **Photos 12 and 13**) I painted both the hull and the deck (see **Photo 14**).

I was then ready to start adding detail, including the railings. The



“I feel I must apologise to Billings for one major change made to my model”

perhaps, this task is better suited to a younger builder with sharper eyesight than mine! Consequently, I ended up designing and scratch building my own version (see **Photo 15**).

After filling any small gaps, I then set about painting the cabin. A trusty old faithful, in the form of a Halfords' rattle can, was used to spray on the main white of the WSP 10's scheme, with the blue and grey elements provided by three brush painted coats of Tamiya acrylic.

Before fitting any glazing to the windows, I first sanded the insides of my glazing sheets so that the essentially empty space within the cockpit wouldn't be evident.

The railings on this model need to be very carefully located, mainly because both the bow and the stern row sit at an angle. So, to make this

a little easier, here I suggest you do as I did. Copy the locations of the rails from the plan onto a piece of 3-ply/liteply, mount the rails onto this, and then solder or glue them together before fitting them onto the model. The completed structure, having followed this process, for some of mine can be seen in **Photo 16**. Likewise, the layout of the hand roof rails on a board can be seen in **Photo 17**. Once painted (see **Photo 18**) these are then ready to fit later. **Photo 19** shows them in situ (**Photo 19**). Note also from this photo that the added rear hatch, to provide access only if strictly necessary (e.g., if there were to be any problems with the rudder assembly), is not intrusive, and that the rubber fender strip has also been fitted.

We now come to my favourite part of any build, all the finishing touches. The detailed parts included in this kit itself are quite extensive, and the smaller ones in particular demand a considerable amount of time and patience be spent on them. For simplicity's sake, therefore, I

two protrusions you see in front of the rear hatch are bolts that match magnets to hold down the rear of the superstructure. The front is held by a rod to match the front hole, just visible to the fore of the raised section on the deck.

I feel I must apologise to Billings for one major change made to my model. Simply due to my own ineptitude, I was unsuccessful in constructing the cockpit windscreen as per the instructions. The laser cut out was very fine and I somehow managed to break more than one piece of it. I think,



“The railings on this model need to be very carefully located, mainly because both the bow and the stern row sit at an angle. So, to make this a little easier, here I suggest you do as I did”

intentionally didn't go the extra mile by fitting my own working lights and radar to this model. Being a great fan of 3D-printed parts however, I will always, where I can, replace some of the standard parts supplied in kits with the more precise ones this new tech affords. Here I swapped out the radar, engine controls and bollards for 3D items ordered from Martin at Dockyard Models. The real cherry on the top, though, came courtesy of the figures designed especially for this model that he printed out and very skilfully hand painted for me (see **Photos 20, 21 and 22 and 23**). I particularly like the dog, which can be seen on the finished model in **Photo 24**).

25



26



On patrol

With the club's boating lake currently undergoing an extensive refurb, simply getting the WSP 10 down to the water's edge for her maiden voyage proved a muddy affair. However, as you will see in **Photos 25 and 26**, as she looked and performed fantastically out on patrol.

Vital feedback

In conclusion, I can certainly testify to the fact that this WSP 10 kit has been produced to the exacting standards we've come to expect from Billing Boats. That said, the expectation that any kit will be perfect, or that manufacturers are infallible, is a little unrealistic. If, therefore, you find any parts in a new kit to be missing, or indeed any kind of discrepancy when it comes to how everything fits together, it's very important you contact the manufacturer direct; your feedback can only help them in future production, and I know they appreciate all constructive criticism. My observations when it came to the rear hatch and the faded cutting marks on the WSP 10 kit produced an immediate thank you and assurances that these matters will be looked into. Bravo, Billing Boats!

1



The **ULTIMATE** GP hull top

Ashley Needham introduces a Universal crowd-pleaser

The model boats we sail at Bushy Park have attracted a large public following. Not all those who gather at pondside are modellers and, as I mentioned in the previous Fireboat article, what they really enjoy is noise, speed, character figures, innovation, water squirters, and so on. Several of the conversations we've had as a group, therefore, have been about designing 'The Ultimate Bushy Park boat', something that would incorporate all these features, and more, and eclipse anything else on the water when it sets sail.

Inspiration for the **Ultimate boat**

Hitherto, I didn't have a structured design in my head for such a vessel. I knew just plonking, for instance,

character figures, cute animals, or the very-popular-at-Bushy Park minions (from the *Despicable me* and minion Disney animated films) on a boat wasn't going to cut it. While browsing stands at a local car boot sale, however, I spotted a large tub of about 30 minions, each of them roughly 50mm tall (see **Photo 1**). The vendor only wanted at £1 for the whole tub; how could I resist?

One figure in particular stirred the old brain cells: a singing minion, with a full head of blonde hair, holding a microphone. All of a sudden, I found myself envisaging a stage, with a singer (who I am calling Minion Monroe!) and a backing group of minions performing in front of an audience (also minions). Emptying out the tub revealed a veritable treasure trove of different

figures. Uses for them quickly sprang to mind as I sorted them into groups, which we will come to shortly.

All this excitement coincided with the ongoing build of the *Sandie Shaw* fireboat on my General-Purpose hull No. 2 (see the April 2025 issue of *Model Boats*), which, I started to realise, I could make an Ultimate Boat top for as my next project.

Features to be incorporated

I have mentioned a couple of the features that are popular in the preamble, and having spread the minions out and examined them, a workable plan gradually formed. This involved the figures being positioned either in groups or singly, depending on their characteristics. To accommodate them, my Ultimate Boat



"I would be building to a scale of approx 1: minion"

top would need (in no particular order):

- A stage for the singer and backing group (there were four builder's hatted Minions in the tub with great voices!)
- Space for the audience
- A wheelhouse for the captain
- Deck space at the bow for a water squirter, directed by a firefighting-hatted minion

While, at the stern, provision had to be made for:

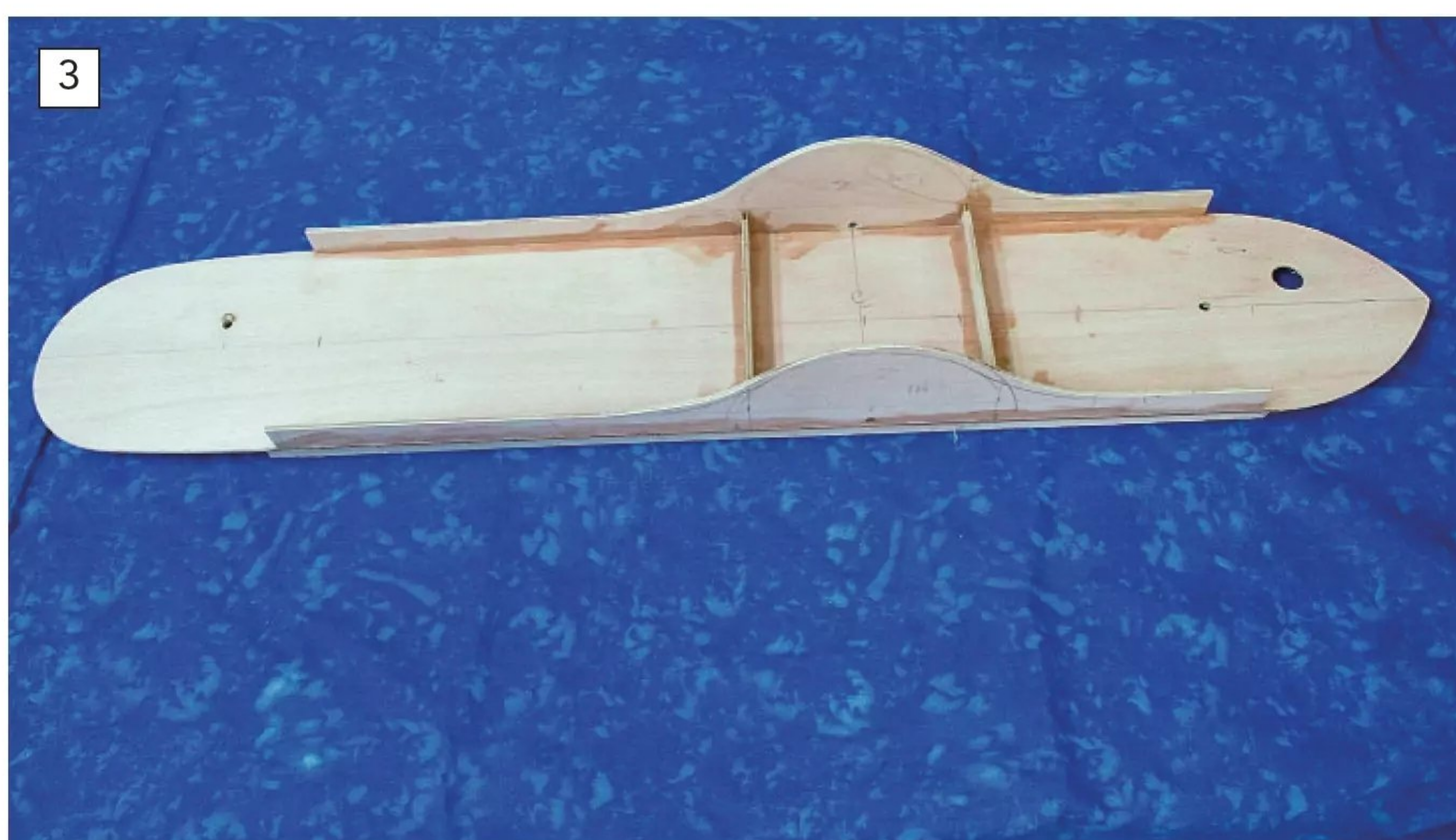
- * A minion with a large fish
- * A minion in a lifebelt being made to walk the plank by a pirate
- * A male minion, whose purpose would become clear when the front water squirter was powered up!

This list was important, because the superstructure would be designed with these 'scenes' in mind. In addition, I wanted to fit side paddle wheels, as I had a couple of basic ones left over from trials of the disco boat paddler (see the July 2024 issue of Model Boats).

Finally, some sounds were going to be required; recordings of Marilyn Monroe, if possible, but any female singers would do. Fortunately, there was already space in the GP hull for an 'Anker Sound core mini', a noisy self-contained sound speaker (the size of a small can of beans).

Designing the *Ultimate Boat*

It's no coincidence that I mentioned the disco boat top, as this (with its paddles, fore deck, cabin for the



captain, seating/audience space and a small space aft) would be the template for the minion ship.

As I would be building to a scale of approx 1: minion, minions were placed on a deck and moved around until I was satisfied with the overall layout (see **Photo 2**). Having made the appropriate pencil location markings on the deck, I then removed the minions and set to work with the SPAR design package – bearing in mind everything was subject to change, as I would be making most of it up as I went along, and as different ideas occurred to me.

Stage one: the upperworks

The first stage of making any top for the GP hulls is the deck, so my hull was placed over a sheet of 4mm ply, drawn around with a pencil, and the deck

outline cut out, sanded a bit, and then marked out with the various items that would populate the deck.

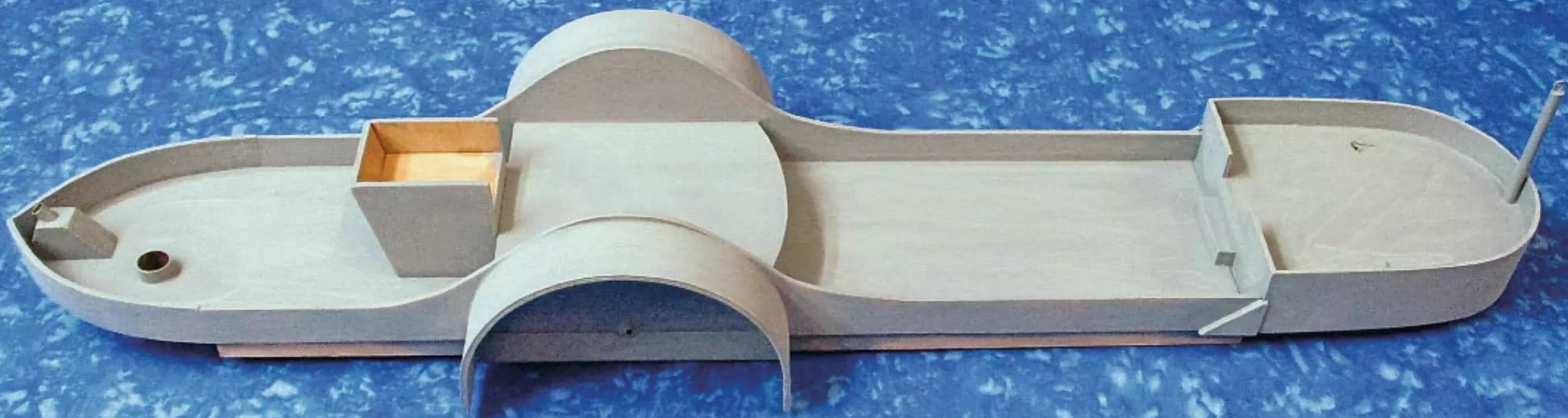
This deck sits on top of the hull sides, and not inside the bulwarks. There are, however, bulwarks on the sides of the deck; 20mm high and stuck on the outer edge.

A raised centre section provides the elevated stage for Marilyn Minion Monroe, flanked by the semi-circular paddle box inners.

The long centre bulwark run was added as one piece of 4mm ply incorporating the paddle box rears, with separate bow pieces cut across the outer plywood grain so they bent (with a bit of gentle persuasion from a hot air gun) at the bow (see **Photo 3**).

At the stern, a raised 'stern castle' gives a bit of shape to the boat and broke up the flatness of the deck.

4



20mm squares of ply were glued around the edge, a deck section was made by drawing around the original deck as a template on a bit of 4mm ply before cutting out, with this finally skinned in 1.5mm ply due to the tight radius. Holes were drilled as a pivot for the Pirate Plank and the 'special minion', as his 5mm brake pipe feed needed connection to a tube underneath, for which a clearance hole had to be drilled into the shelf supporting the stern planking.

In the middle, Minion Monroe stands with her two backing singers (I couldn't squeeze four in as originally planned) on a raised stage – 20mm high cross-deck risers and a top of 4mm ply. This raised area serves two purposes; firstly, it elevates the singer a bit, and, secondly, it provides room for the paddle cross-shaft and its 40mm gear wheel. There is no covered 'disco area' on the minion boat as you need to see all the minions on deck. Conceivably, a lift-off top could be made incorporating the same sound-to-light disco bulb for use when it's a bit gloomy.

“Being uncovered, the paddles create ‘an amount’ of free water at the sides, thereby adding to the spectacle”

Forward of this, a simple wheelhouse with a sloping front was made for the captain, while at the bow a block of wood, drilled and sleeved with thin wall brass tubing, provided the seating for the bowsprit (see **Photo 4**).

Paddle bits

I had two paddles, my prototypes for the disco boat, going spare and it seemed rude not to use them. The drive train here would be as per the other boats, created from an MFA small 30:1 6v motor/gear unit left over from the disco boat (if you remember, I re-gearred this after testing) and two red plastic gears – these having brass centres with securing grub-screws, giving a 2:1 reduction ratio, driving a brass shaft, running in thin-wall brass

tubing and acting as bearings.

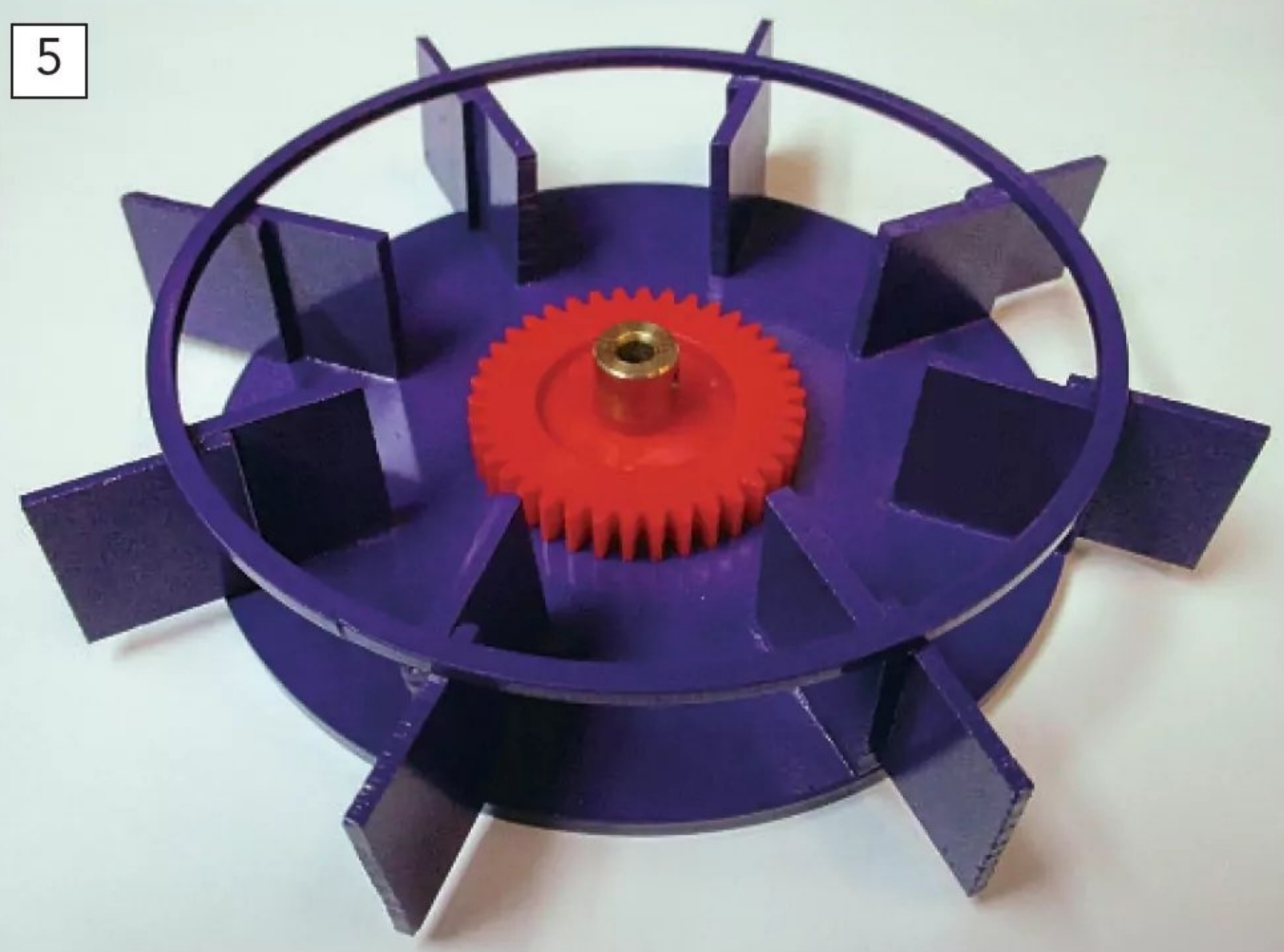
As per the paddle shaft on the GP1 hull disco top, the paddle shaft support is integral with the removable top, so stays permanently attached, making it easy to swap the tops over. All I need to do is connect the appropriate power wires for the geared motor leads via the plugs.

Red plastic gears were bolted to the paddle wheel inner disc to provide the drive. Small extensions to the paddle tips were added and the actual wheels sprayed purple (see **Photo 5**). However, as I would be leaving the paddles on display and not fitting covers as a feature, the gears and nuts and bolts were left unpainted. Being uncovered, the paddles create ‘an amount’ of free water at the sides, thereby adding to the spectacle.

The hull

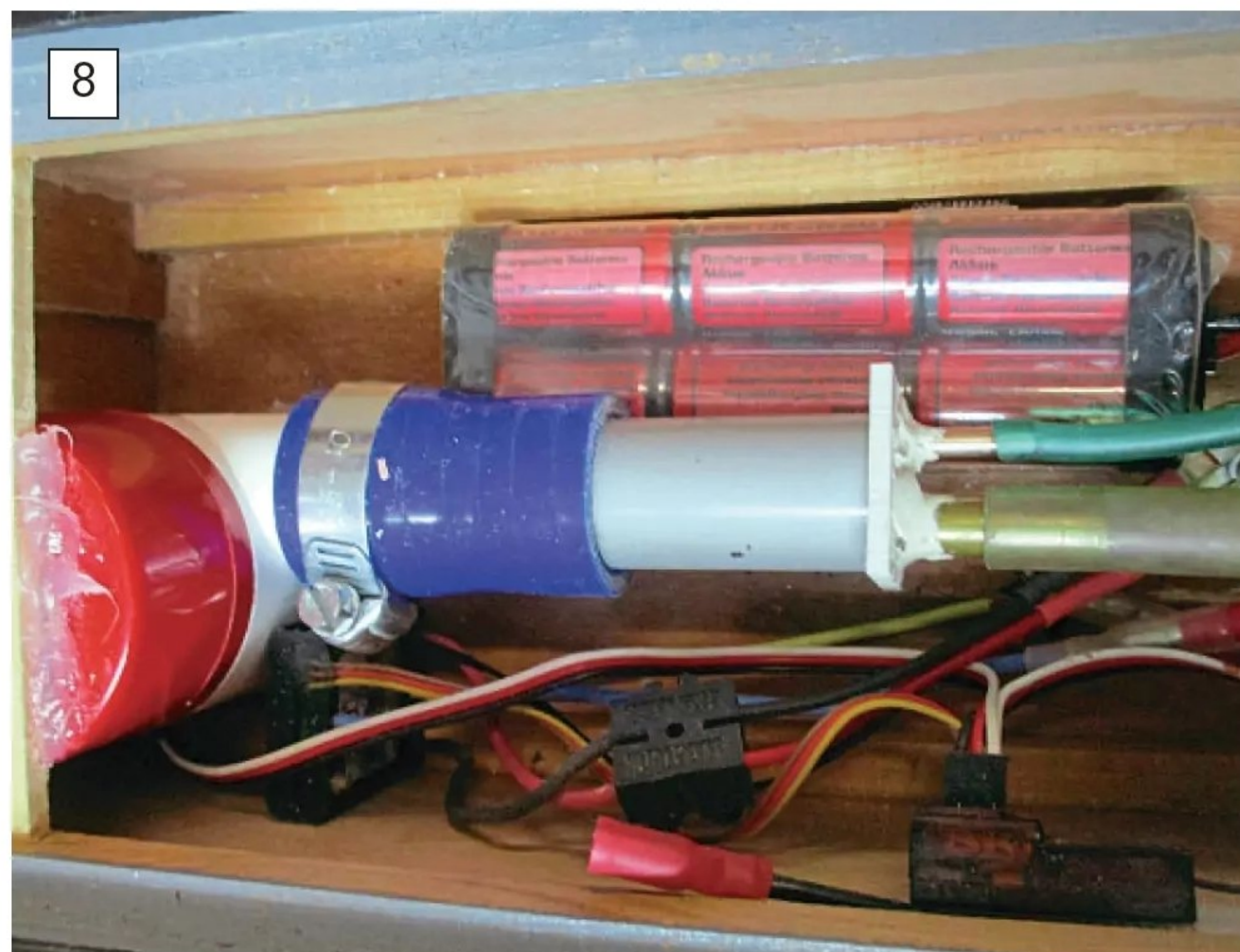
The hull is as simple as you can possibly build and was covered in the April 2025 issue of Models Boats. To recap, though, it's a bit like a canal boat hull, with a flat base,

5



6





“It always feels funny when making these tops, working on nothing but the deck upwards and not worrying about motors, coupling/propshafts, speed controllers and so on, but that’s the beauty of the GP hull idea!”

flat sides and vertical planking used achieve the bow shape and rounded ends, all powered by two 385 size can brushed motors.

It always feels funny when making these tops, working on nothing but the deck upwards and not worrying about motors, coupling/propshafts, speed controllers and so on, but that’s the beauty of the GP hull idea!

I didn’t need a speed control for the paddle drive as the geared motor is fed by teeing leads into the main ESC output, thus the paddle speed varies with boat speed. At the bow, a small ESC and the bilge pump already exist from the fireboat setup and will be used for the water features on this minion top, powered, as before, by a separate 3s Lipo.

Special features

The GP2 hull has a water pump built into it, the awesome bilge pump, and as I had a fireman minion it seemed rude not to provide him with a squirter. My pump easily powers 10 monitors on the *Sandie Shaw*, and so a triple outlet monitor arrangement was made for my minion firefighter, as the pump would provide him with more than enough oomph in the water department, 5000 litres per hour!

A 15mm copper plumbing bend had the end squashed and three pieces of 5mm copper-nickel brake pipe were soldered together for the monitor, with a bend and brass pipe underneath (see **Photo 6**). This bend is well supported under the deck (see **Photo 7**) as the water delivery tube is a ‘decent’ fit. Pump and brass tube were connected by a bit of thick wall silicone tubing. This was specially purchased, as with the bend being reasonably tight due to the narrow hull, silicone is more flexible and kink resistant than clear PVC pipe. At the pump, a piece of 25mm styrene tube was capped and fitted with two tubes (see Photo 8), one for the monitor and one for the specially modified minion at the stern. His function I will not elaborate on here, but my photos show the dirty deed!

Minion Munroe, the singer, needed a voice and an orchestra, and this came courtesy of a self-contained sound unit, a short, fat cylinder into which songs have been inserted via a suitably loaded Micro SD memory card; female vocalists, obviously, and, gosh, she sings a wide variety of material! Space for this had already been allocated under the bow during hull construction. Now it is simply turned on and inserted just before sailing and will repeat once it gets to the end of the playlist. Munroe herself stands on a sparkly stage, courtesy of some PVA and silver glitter. After initial testing, a few holes edged with tarpaulin eyelet brass rings were added here and there to emit more sound from the hull.

“The GP2 hull has a water pump built into it, the awesome bilge pump, and as I had a fireman minion it seemed rude not to provide him with a squirter”



10





“This is another area where the GP hull scores...”

deep and has considerable stability and buoyancy reserves by design.

Detail was kept to a minion minimum, as to be honest there's no need for detail. However, a funnel was squeezed in/on to give a bit of height to the deck. This also provided support for some colourful bunting (made up from string, felt triangles and PVA) which was tensioned by small springs positioned at either side of funnel's base. Each run, fore and aft, is separate, and the spring tensioning allows the bowsprit and funnel to be unplugged for storage purposes. At the bow, the aforementioned removable bowsprit has a golden minion tied to it with special scale rope, as found in the kitchen, doing duty as a figurehead, and provides the bunting anchor point at the bow (see **Photo 10** again for these bits).

Painting

I used acrylic paints throughout. White Rustins' undercoat provided the overall colour, while the exterior and interior vertical surfaces were coated with Halfords' gloss clear varnish. The deck was left in its matt finish. Other details can be seen in my photos. My minions came already painted, so there was no work there!

Bringing it all together

I now had a deck, some superstructure, a pile of minions

and various other pieces (see **Photo 9**). Minions first! A 3.2mm hole was cruelly drilled into the underneath of each of them, into which was set a bit of bamboo BBQ skewer. Holes were then also drilled into the deck at positions where the minions would stand. A spot of superglue fixed the skewer to the minion, and then the minion to the deck. They are jolly heavy at, on average, 25gm each. In fact, the entire crew weighs in at well over 700gm. This, however, did not prove a problem, as the GP2 hull is

Testing

This is another area where the GP hull scores. I know how the boat will perform, so as a mechanically proven item no checks regarding leaks or motor/shaft issues had to be carried out. All I had to do was to carry out ballasting tests and check the operation of the paddles and water squirters. There were no surprises here, excess lead ballast (used on the fireboat) was removed and the pump/water system worked just as expected.





On the water

Did this model boat live up to its *Ultimate* title? Oh yes, it's very surreal! Singing, splashing, squirting, rudeness, minions doing this and that at either end – just brilliant. The jetty side crowd love it; the kids love it; our boaters, well...

As usual, the hull performs adequately. The large propellor-overlapping rudder gives marvellous manoeuvrability, and the motors deliver sufficient power. Stability is great; there's about a ton of lead underneath, so the boat simply doesn't wobble at all. Unexpectedly, the

paddle wash is contained within the paddle 'mudguards' and doesn't go everywhere as I expected it to (see **Photo 10**), and the turning rate is well matched to the loitering speed the boat normally goes at. It's not fast and doesn't need to be it does, however, have a reasonable turn of speed. As per, well, most of the other GP tops, floating slowly past the jetty in good viewing distance is what it's all about, just so everyone can appreciate all that's going on.

At the bow, the triple squirter has a sufficient range – perhaps 2ft or so, as the outlets are not angled up by very

much, and puts out a good volume of water (see **Photo 11**). This can also be said of the wee minion at the stern (see **Photo 12**)!

Addendum

Although not shown in the photos here, since first getting the model on the water I have drilled a few more holes into the deck and superstructure (again, using large eyelets as surrounds) in order to blast out even more sound.

I've also had to sheath the hull below the waterline in glassfibre and epoxy resin, as the hull side paint began showing signs of lifting (no idea why) and hairline cracks started to appear in the region of the vertical strip planking, mostly at the bow (I believe this may have been due to the extremely heavy lead ballast strips underneath causing some hull flexing). Although not that bad, prevention is always better than cure, so a line 40mm below the hull top was drawn, masked off and the hull below this covered in one layer of epoxy resin/fibreglass before being smoothed off with P38 car body filler. It was an easy, if messy, job, considering the uncomplicated hull shape, and after a matt black respray with a Halfords' rattle can the hull once again looked very smart.

A year on, I am happy to report no further problems. (I should perhaps also point out that my smaller GP1 hull didn't suffer from any of these ill effects, having been fine since finishing the build a couple of years ago.

There remains one issue however: how can I possibly follow the build of the 'Ultimate' boat?! ●



Will it fit in your props department storage facility?

GP2 hull	
Length:	750mm
Width:	115mm
Height:	130mm (including external lead keel)
Weight:	Really heavy, man. Like, REALLY heavy!
Minion top	
Length:	750mm
Width of main body:	115mm
Width over paddles:	200mm
Height, from bottom of paddles to top of paddle boxes, with funnel de-mounted: 130mm	



Herzogin Cecilie on the stocks in the loft at Nev's former home. There was plenty of room, plenty of light, and it was really pleasant, for a while. But, at the bottom right-hand corner of this picture you can see the access hatch through which any models built had to pass en route to the outside world.

Shedloads to consider

Nev Wade shares his (moving) experience of, and top tips for, creating the best modeller's workspace possible

I like a sweeping generalisation. It can start you thinking about stuff; it can start a really good argument; it's not timid. And when I started building model boats back in 2003, I was soon presented with two of them: "All you need to build a model boat is a table and a sharp knife" and "There are those who build models and there are those who build workshops"

Both are forthright and uncompromising, both have the ring of long experience to them, and both gave me food for thought: what do I need in order to build model boats, and where do I do it?

The loft

The house we lived in back then had a converted loft. It was the biggest room in the house and, with the departure of our kids, was largely unused. That was the 'where' sorted, for the time being.

We also had an old, junior school desk, which became my bench, so I was in business. I bought the minimum of tools, to add to the ones I used in house and car maintenance, and away I went.

Six models and four years later I was on to my second square-rigger but, of course, I had to consider mast height and loft exit via a hatch and loft ladder when deciding how big to make my boats.

"The house we lived in back then had a converted loft... But, of course, I had to consider mast height and loft exit via a hatch and loft ladder when deciding how big to make my boats"

Along the way I'd had a near death (of marriage) experience when I used too much hardener in a resin mix and nearly set a hull on fire. It generated a tremendous stink, which permeated



Nev's first shed, in Sheffield, at the bottom end of the garden.

“We already had sheds, the simple sort, with no power. What was now on the cards, however, was a whole different animal...”

the whole house. As you can imagine, this didn't go down well!

An increasingly squeaky loft floor was beginning to drive the household, including me, crazy, too, so an alternative had to be sought, and a shed was the obvious choice.

Shed No. 1

We already had sheds, the simple sort, with no power. What was now on the cards, however, was a whole different animal.

To cut to the chase, I settled on one at 10ft X 8ft. Having got that far, I then had to grapple with reality. I needed a base, and I needed to get power 30 metres down the garden. Apart from one optimistic electrician who wanted to dig a trench the length of the garden in which to bury a cable, and to charge as much for it as he would for laying a transatlantic one, things moved relatively smoothly. By the end of a month, everything was there, including an armoured cable for the delivery of power.

Down to the shed went the desk, a scrounged cupboard and chair, and all my tools. The models duly followed. This was when I first encountered the 'shed challenge' – very limited space. Within an hour it was full, or so I thought. It doesn't matter that (later) I would cram in four times as much stuff, at that moment I knew despair. I took heart from the simple pleasures: I could turn on a light or a



The initial set up inside the first shed, including school desk, heater, speaker and the start of some shelving.



Seven years later, things had got cosy!

heater, I could plug in anything from a CD player (this was 18 years ago, remember) to a Dremel, and I was alone. I could make any number of sounds and smells.

I gradually learned the value of shelving and the dark art of squeezing shelves into spaces where no shelf should have to perform. I made a large 'flap' to which I could fasten drawings. I then attached it to a wall (over the door actually) with hinges, so that I could lift it into an 'ambush' position when not in use; it never fell on me as I entered, but I did sometimes have to

crawl out of the door. The cupboard became crammed, and the models ended up being double stacked around the walls.

In the fullness of time, a carpet change indoors provided me with more comfortable flooring for the shed, and I also fitted an old roller blind. In short, the place became home, and another six models arrived over the next seven years.

But no matter how complete your shed life becomes, there is still 'the real world' outside and, inevitably, it intervened. This intervention came in

The garden boatyard



The door.



The drawing board, in ambush position.



The drawing board in action.



Escape was still possible with the board down.



Some additional creature comforts came with the installation of a blind and a heater.

“This was the burden of the next bit, which, I feel, it is only fair to warn any fellow modellers contemplating ‘moving the tents’ about!”

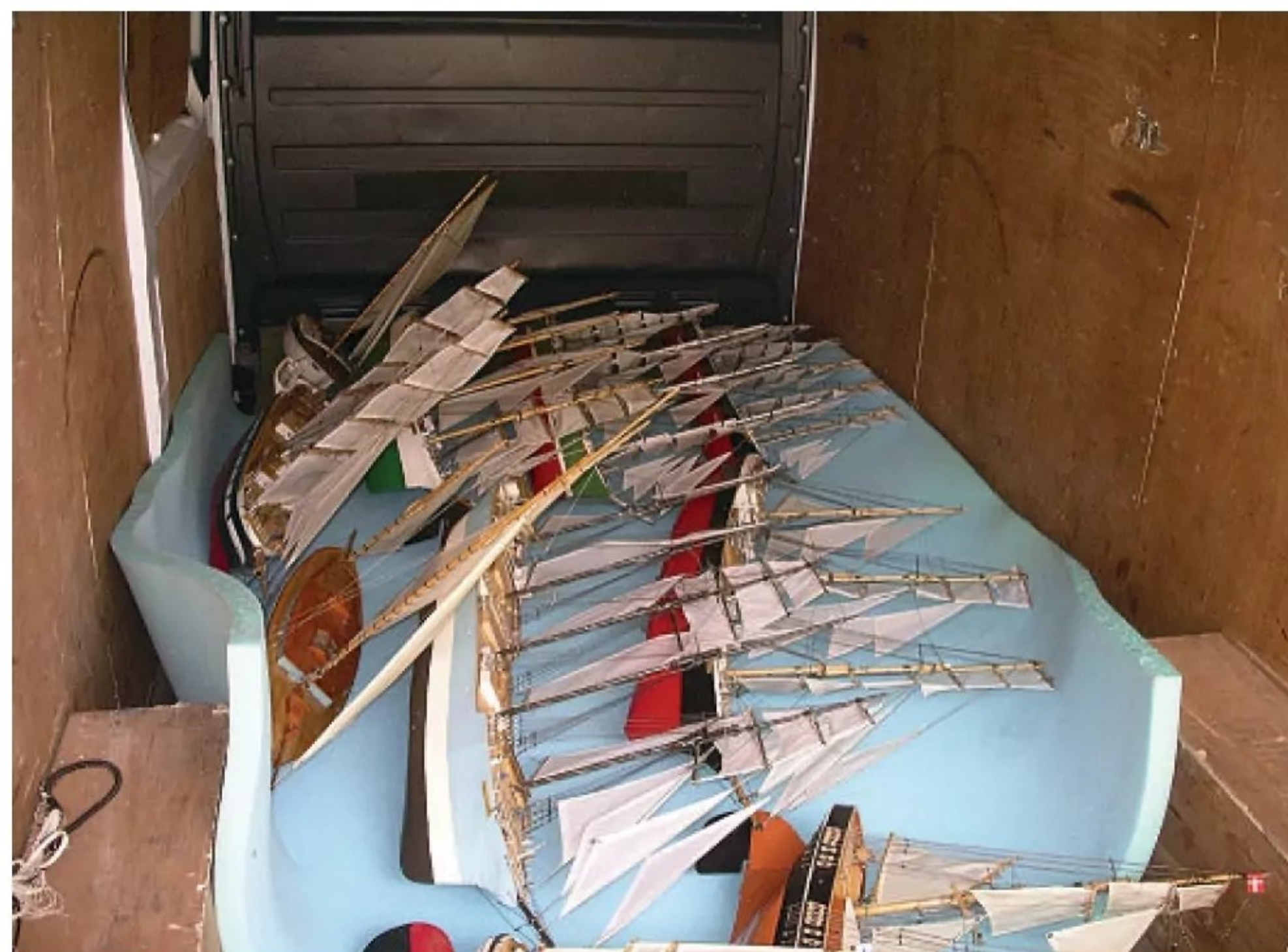
the shape of the desire to move house! Previous sufferers from this ailment will tell you that it is right up there, as a stress generator, with divorce and bereavement, but if you factor in a model building shed, nine square-rigger models and three yachts you'll get to, as sporting PR men are wont to say, the next level. This was the burden of the next bit, which, I feel, it is only fair to warn any fellow modellers contemplating 'moving the tents' about!

Professional limitations

Removal men are the masters of logistics. They are the gods of the humping and packing required by a house move. So, who better to be trusted with your model 'fleet'? Well, that's what I thought, anyway, so it was with the confidence only



Unable to transport his models along with all the household furniture that was to be handled by the removals company in the move north, the only option available to Nev was temporary storage. Here the big van he hired for this purpose can be seen outside the 'Stuff Hotel'.



Inside the big van.



Nev's models during their four-week sojourn as guests of the 'Stuff Hotel'.



Finally safe inside the garage in the North-east.

felt by the utterly ignorant that I led their rep. down the garden to look in the shed.

On opening the door and ushering him inside, I was expecting the usual 'ooos' and 'aahs' of previous visitors. NOTHING! His earlier cheerful countenance had disappeared, only to be replaced by the hangdog look of one defeated at his chosen sport.

"What are they worth each?" he eventually asked. I gave him a figure, per boat, which only served to drop his mood a bit further.

"We could make packing cases for each one, and then fill them with polystyrene bits, but it would be very expensive" was his only riposte.

I felt the gloom lift a little, as he ventured, "How do you transport them?"

"When I take one to sail, I put it on a piece of foam rubber and carry it in the car on its side."

He hesitated.

"Can you use a van, extra to the pantechicon, but big enough, and lay them all down together, on a big piece of foam?" says I.

"It's a long way from Sheffield to Newcastle" he pointed out, adding,

somewhat superfluously, I thought, "we couldn't guarantee not to do damage".

I could feel in him a certain conflict at this point, between shame at admitting he was beaten and relief to be getting off the field and escaping an insurmountable challenge. As so often in life at times like this, all I could manage was, "Oh", followed, after a moment's awkward silence with, "Well, at least you've been honest with me".

We retreated back to the house and the more comforting (to him) prospect of shifting sofas and cupboards. Clearly, all I could do was revert to my fallback position, storage...

Storage

"If I move the boats, can you store them for me, while you move the rest of the household up north?" This was my final move.

"Yes", he said, guardedly.

"How does that work?" I ventured.

"You bring them to our warehouse and put them into our 'boxes', a bit like small containers, then we store them."

"If I do that, can you guarantee not to move the box in which they're stored?"

"Clearly, all I could do was revert to my fallback position..."

"No".

Gaining confidence all the time, and sensing that I was faltering under this latest check to my game, he went on to describe all the slings and arrows that can assail a warehousing operation, leaving me sympathising with him! So, well aware that I had come up against the better man, I now conceded, and left the field, defeated, in my turn.

After this illuminating insight to the world of removals and storage, I was still left with the original problem, getting my 'fleet' to our new home. I was, by now, resolved to move the models myself. All that I needed was more suitable storage, and I found it in one of those self-storage places that you'll have seen around, where you, in effect, rent a room, in a 'hotel' for 'stuff'.

My entry into the removals business

As I've said earlier, when I take one of my models to the pond, it travels in

The garden boatyard



Destined for demolition, the old shed in Nev's then new back garden.



Nev's smart new bespoke shed.



The custom-built workbench made by the same craftsman who designed and erected Nev's new shed. Note the electrical sockets on the side of the bench.

my car, with the back seat down, laid on a piece of foam rubber. The foam cushions the model from shocks and stops it sliding about the back of the car – perfect. Why not simply upgrade that method to the size of lots of models, and a van? That was my rationale, so off I went, to buy lots of upholstery foam.

Surprisingly enough, there are such things as foam shops, equipped with experts in this field. At such an establishment, I bought a piece, about 4m by 2m, and 50mm thick. The idea was to place this in the back of a hired van, put the models on top, and whisk them off to their 'hotel'. Once there, we could get on with our house move, get off to the North-east, and then return with another hired van, after moving house, to collect them and bring them to their new home.

Only, it didn't actually work out like that, the problem being that even a long wheelbase van didn't have the capacity to carry all the boats in one go. From our old home to the storage building is only about five miles, so that wasn't a problem, two trips did the trick. The



Later laying a new carpet in the shed meant that much of the contents had to be moved outside for an hour or two.



Everything going back in, on the new (to the shed) carpet.



A typical scene these days: Penang being charged, alongside a radio-controlled garden railway steam loco.

foam, plus some odd bits that I already had, covered the bottom of the load bed, the boats sat well on it, and they made the journey without incident.

I don't know if you have ever stored anything. I hadn't, so the building was a revelation. I arrived early with the first load and found myself the only customer in the rather large building. My 'room' was on the first floor, so I used the lift. As I reached the correct floor, the lift door opened to, momentarily, darkness and silence (obviously, the 'occupants' of the rooms don't need light!). Rather disconcertingly, the lights then suddenly came on, and the muzak started. It was somewhat eerie. Seemingly endless deserted corridors stretched away from the lift, eventually leading to my 'room'. This strangeness wore off after the first trip or two backwards and forwards from the van, and, eventually, other people arrived, carrying in all kinds of stuff, from interesting looking bags and boxes to whole rooms' worth of furniture. I couldn't help but feel I stood out, though, like some of kind

of eccentric Punch and Judy show proprietor, as I carried in one boat at a time. Nonetheless, I persevered, and eventually had all my boats, complete with stands, together with the rolled-up foam rubber, safely locked away.

For the next four weeks, there they remained as guests in the silent and vaguely spooky 'stuff hotel', while we toiled away at moving house.

Delivery from purgatory

It had been 27 years since we'd last moved, back when we were still in our prime. By definition, we were now well past that, so the four weeks this took, while the boats were on holiday, weren't at all restful for us. However, as we started to see light at the end of the tunnel, I hired an extra-long van, hoping against hope that it would adequately accommodate ALL the boats. Having done so, I then set off on the long trek south, wondering whether I was being unrealistically optimistic in viewing the trip as a welcome day out after working like a dog, and living in, and out, of boxes, for the past month.

In the event, it turned out to be a very good day. The van was a delight to drive, and I got the chance to play at lorry drivers. It was long enough to accommodate all the boats in the back, with enough space for their stands and lead keels to join me in the cab, and we all made it to the North-east with no damage. The garage, which we had just managed to clear (mostly) of boxes, was available to take the boats, and was thus re-filled, so this unusual and rather anxious time came to an end without any fuss.

Shed No. 2

The house's existing shed had seen better days, so, as we were bent on re-modelling the garden anyway, some destruction took place. With space allocated for its replacement, I genuinely thought all I'd have to do was look up 'Sheds R Us' locally and I'd quickly be back in business. Not a bit of it, in this area at least!

You can order almost any kind of shed online, but it's just not the same as being able to make a proper in person inspection of what



The inside of the bench cupboard, with stuff in boxes at the bottom and Nev's oily model railway equipment stored at the top.

you're investing in. Plus, of course, construction will be a DIY affair, which you can't get stuck into (even if you are so inclined) until you've disposed of the old shed and foundations have been laid for the new one.

Hmm, I was going to have to dig a little deeper.

Eventually, I found just the man, a bespoke shed builder. He had a working relationship with a landscaping company that, while altering the garden, was also prepared to shift the old building and lay the foundations ahead of him delivering and erecting the new shed. The site, next to our greenhouse, would accept a 10ft by 8ft shed, which is the size I had previously, so that was it, the die was cast. What's more, he was also able to craft a custom-built workbench for my swanky new workspace.

Electrifying progress

The final knotty construction problem for a year-round 'shipyard in a shed'



Now beautifully blending in with the rest of the garden, the shed today.



One of Nev's models, *Fame*, being sailed at Tynemouth Boating Lake.

“The final knotty construction problem for a year-round ‘shipyard in a shed’ is, of course, the installation of power...”

is, of course, the installation of power, for light, heat, and, of course, your power tools. Certainly, you can plug an extension cable into a socket in the kitchen, and hope for the best, but we’re talking about an important resource here, years of model building (not to mention listening to music!). Also, in my case, this shed would have to house a vice suitable not only for model building but also for normal household maintenance jobs. I had, therefore, to dip my toes once more into the world of electrical contractors, not a reassuring place for an amateur.

Eventually, during the re-modelling of the garden and the fitting of a new kitchen, some concern arose in connection with the house’s consumer unit. To cut a long story short, we had a new one fitted, and at the same time, had an armoured cable run from the consumer unit, under the house, and out to the shed. Now the new shed was, literally, alive.

Creating a sense of order

It was finally time for shed re-equipping. Shelves, cupboard, bench, etc, etc, were all put in, on top of a

piece of remnant carpet, bought for a pound or two. In a matter of a few days, I was back in business.

Over the next eleven years the shed has seen the building of eight more sailing models. And, as a garden railway with radio-controlled live steam locos now graces our outdoor space, besides being a shipyard, the shed has become a loco and carriage works too – something that’s even led me to learn how to solder (well a bit). It’s been emptied once, to add a complete carpet, and has gone from strength to strength, with an iPod dock replacing the CD player (not far off smart ‘phone and wireless speaker now!).

Lessons

So, what are the take aways I can share based on personal experience? Well, if you can have a proper workshop the size of a double garage, go for it. If you can’t, a shed will give you most the things you’ll ever need/want, and you can improvise on the rest. What I would highly recommend, however, is that you:

Get a heater, preferably one with a timer built into it.

Install plenty of wall sockets. (I have

three 13A sockets screwed to the side of my bench that I can plug into from my seat.

Use shelves and cupboards; you can cram in more and still be able to find what you’re looking for

Use boxes to store stuff. Don’t just put items down, they’ll only go MIA! Spare part boxes, if possible, individually dedicated to stuff for particular aspects of the hobby, will house much more than any random flat surface.

Put the boxes in cupboard/s. If you can’t see them, then everything will feel a whole lot tidier.

Consider my ‘ambush board’ for drawings. My current one sits over the window now, so I never have to duck to leave the shed!

Give some thought to where you store the tools you use most regularly. I have most of mine shelf behind me, so I can just reach out for them at any time.

Think forward when it comes to layout and use of space. You may, perhaps, have plans to add more power tools as and when they become necessary/affordable. Likewise, give some thought to possible improvisations. For example, I have created a ‘pop up’ spray booth that can be neatly tucked away when not in use.

As for the sweeping generalisations, well, your thoughts are as good as mine.

Good luck! ●

“So, what are the take aways I can share based on personal experience?”

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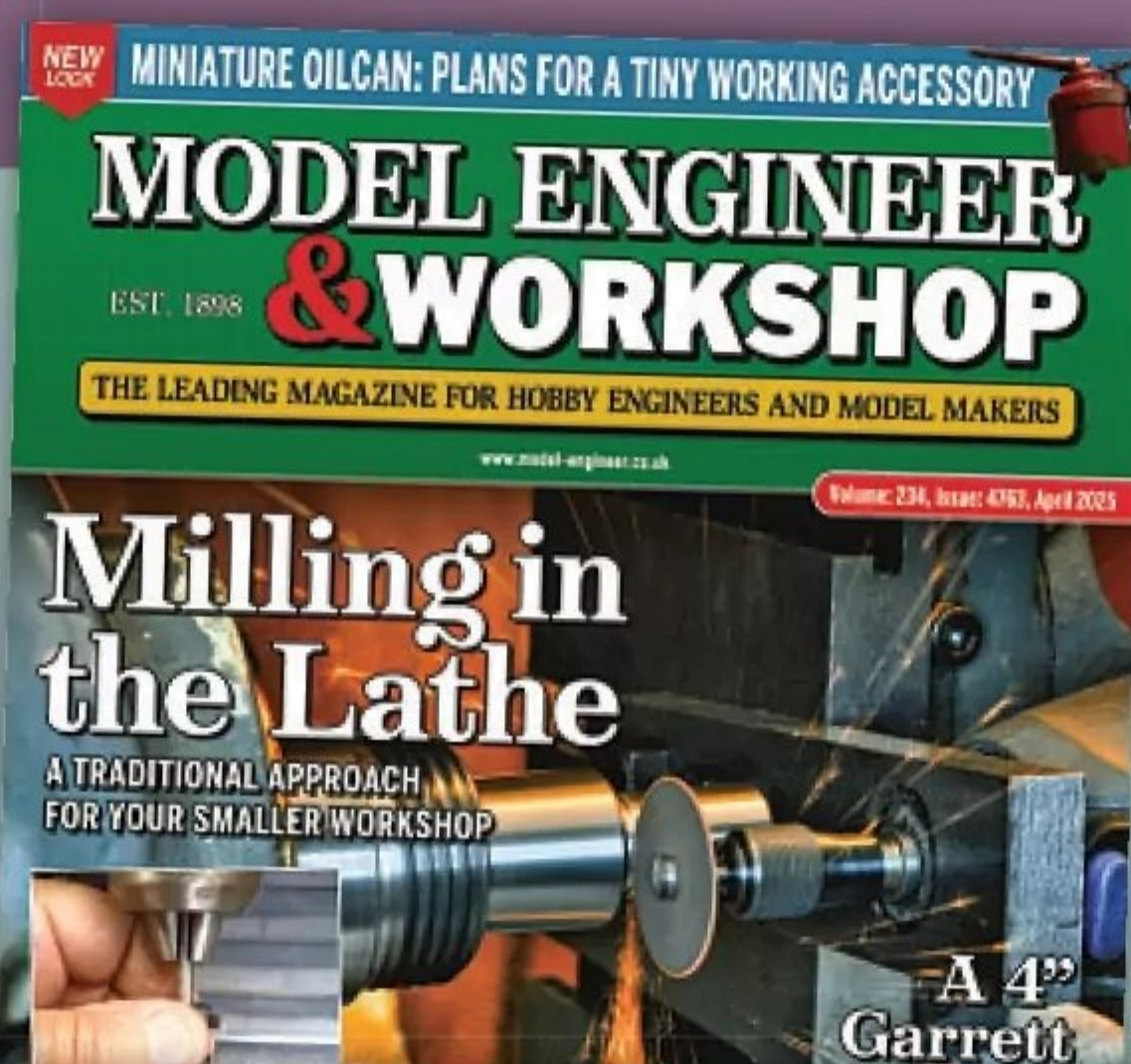
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Model yacht stability

John Watkinson explains why achieving this is far more complex than the uninitiated amongst us might ever have imagined...

Model yachts are seldom scaled down versions of real yachts. Invariably something has to be changed in order to get them to work. This problem was outlined and addressed by Norman Skene in his book *Elements of Yacht Design*, which although first published in 1904 has stood the test of time and is still available today.

Understanding the basics

All sailing ships present crude wings to the wind and these generate thrust which is seldom in the intended direction of travel. The hull and the keel convert that lift into forward motion, albeit with a bit of leeway. The greater the thrust, the greater the forward drive. However, the thrust is limited because it makes the vessel heel over.

One of the factors that determine

the maximum speed of a yacht is its ability to carry sail without excessive heeling, a characteristic referred to as *stiffness*. It's something we need in our model yachts but, unfortunately, the laws of physics dictate it isn't achievable without a fight!

Let's take as an example two yachts that are identical save for the fact that every dimension of one is twice that of the other...

The sails of the large yacht have four times the area, and their centre of pressure is twice as high above the water, so this yacht has eight times the heeling moment.

On the other hand, the weight of the ballast in the big yacht is eight times that of the smaller one. The length, height and breadth of the ballast are all multiplied by two, as is the moment arm when the yacht heels. So, the

"It's something we need in our model yachts but, unfortunately, the laws of physics dictate it isn't achievable without a fight!"

stability of the big yacht is $2 \times 2 \times 2 \times 2 = 16$ times as great. It has, therefore, eight times the heeling moment but 16 times the stability, so it's twice as stiff.

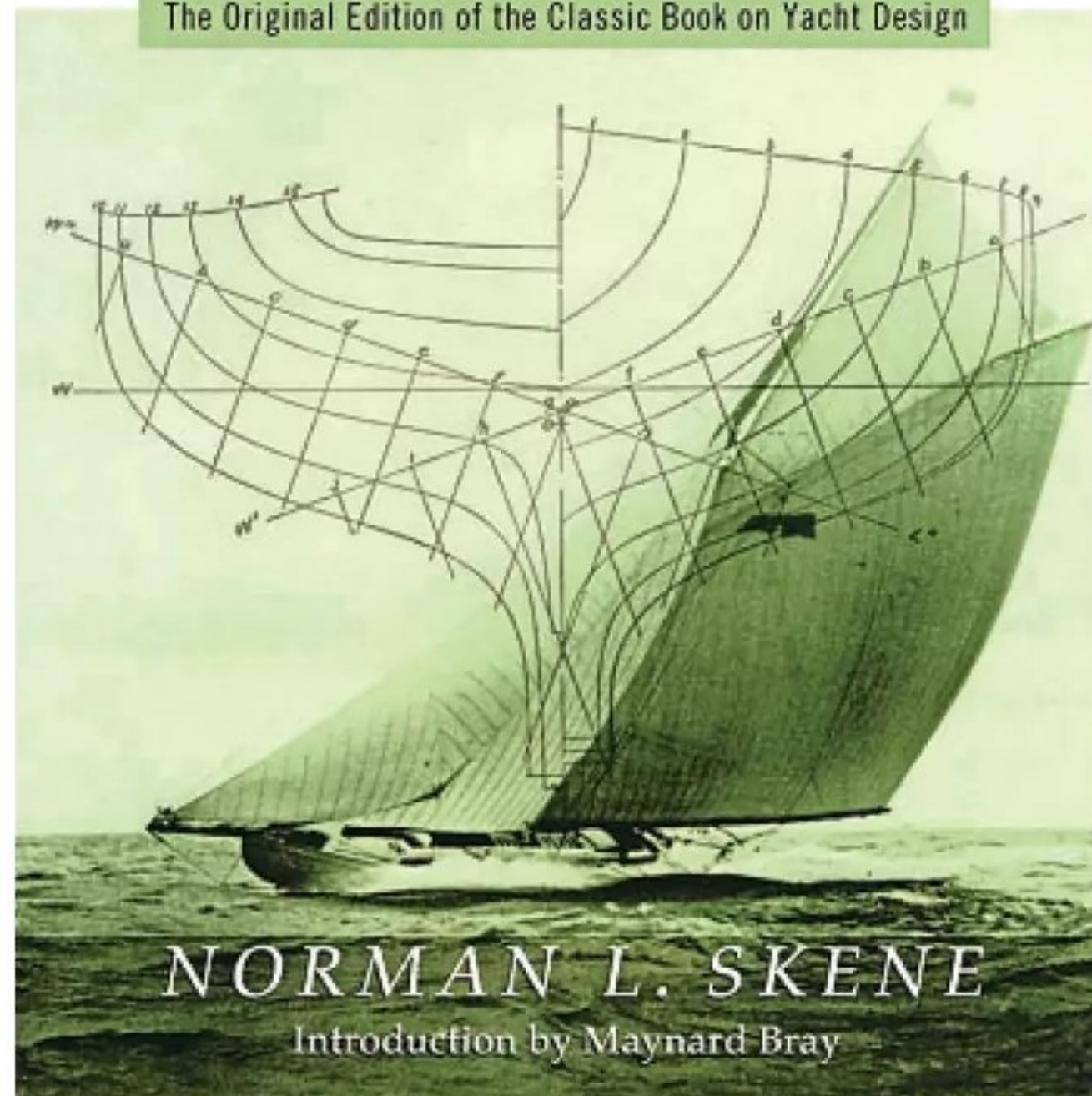
Basically, the smaller the model, the harder it is to keep it upright.

Another factor is that the speed of a yacht is limited by its waterline length. The big yacht will go 1.41 times faster than the smaller one, because 1.41 is the square root of the scale factor.

Rule number one of model yachts is that the bigger they are, the better they go (see **Photo 1**). They're easier to see on the water too.

Elements of YACHT DESIGN

The Original Edition of the Classic Book on Yacht Design



Norman Skene's classic book on yacht design.

It follows, then, that there's a better chance of achieving stability if the prototype is small and the model is large, thereby reducing 'the scale factor'.

The only break that nature gives the model yacht is that the wind is slowed down by friction with the water. The wind velocity near the surface can be significantly less than it is higher up. As the heeling moment is proportional to the square of the wind velocity, even a small reduction helps.

The resistance to heeling can be increased by enlarging the beam. This is known as form stability. The famous *Bluenose*, a large fishing schooner, had form stability, as her hull was quite broad. Her keel was made of wood, with the ballast packed inside her hull.

Heeling resistance can be increased by lowering the ballast, while the heeling moment can be reduced by reducing the sail area.

As a result, in comparison to real yachts, models tend to have more beam for their length, deeper keels and less sail area.

The drop keel

Another approach used in models is the drop keel. This is typically a dense metal bulb at the bottom of a narrow blade that hangs below the hull. Drop keels work, but they do have some drawbacks... They increase draught, requiring deeper water for launching and risking overtopping your Wellington boots, as well as being more likely to run aground. They collect weeds and in an encounter with water lilies they will get stuck. The traditional yacht keel has none of those problems.

Perhaps the biggest problem with the drop keel is that hardly any full-size yachts have one, so for a scale model they also destroy realism.

The metacentre

When a yacht heels, obviously the top of the mast will be lower, and the bottom of the keel will be higher. The part of the yacht that neither rises nor falls is called the *metacentre*; in most yachts this will be somewhere between the waterline and the deck. Anything above the metacentre will fall as the yacht heels and tend to increase the heel, whereas anything below the metacentre will rise as the ship heels and oppose this. Mike Vanderbilt, who steered three J Class sloops to America's Cup wins in the 1930s, wrote about this in his book *Enterprise*, published by Scribners in 1931. This is now a rare book; my first edition copy

is now worth over 500 bucks!

For best stability, the centre of mass of a yacht should be as far below the metacentre as possible. J-Class yachts had pine decks, because pine was lighter than hardwood.

The scale effect problem means that it's simply not possible for a model yacht to be too stiff. That means every trick in the book should be used to increase stiffness.

Ballast

Rule number two when yacht modelling is to try and achieve the highest possible ballast ratio. This means saving weight wherever possible so that more of the displacement consists of the ballast. A ballast ratio of 70 percent is perfectly feasible with modern materials. The centre of mass in your ballast also has to be kept as low as possible.

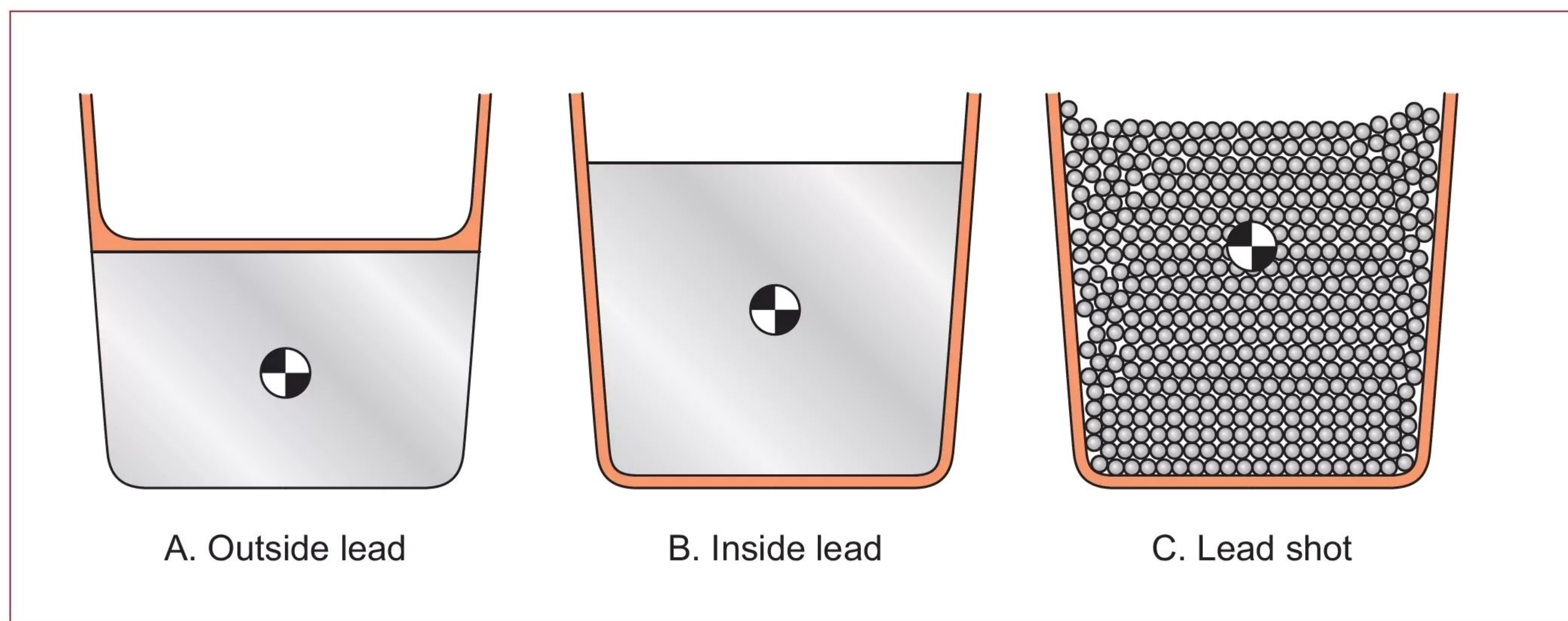


The bigger they are the better they go! John Watkinson is seen here with the true scale J-Class hull for his next project. This will displace 25kg, 70% of which will be lead – all recycled.

2



John sailing his trusty EC 12m, somewhere in Sweden.



a) A keel with outside ballast has a very low centre of mass. b) With inside ballast, the centre of mass is higher. c) With lead shot, the centre of mass is higher still.



John's copy of Mike Vanderbilt's book *Enterprise*, published by Scribners in 1931 – a now very valuable first edition.

Lead is the element of choice for ballast because it is dense, easy to work, and not that expensive.

There are a number of factors to watch for when ballasting...

In my diagram, a) shows a keel with outside ballast. The shape of the lead is the shape of the keel. b) shows a glass fibre hull with the ballast inside; note the ballast here is deeper because the glassfibre reduces the cross section available. The ballast's centre of mass is therefore higher, so the stability will be reduced. Another way of looking at it is that the average density of the keel is reduced because it is a combination of glassfibre and lead. c) shows the use of lead shot, which consists of small spheres that do not pack well. Lead shot has about 70 percent the density of solid lead and so for the same mass

the lead will be about 40 percent deeper and the stability even poorer.

About 25 years ago I bought an EC 12m model second hand for a suspiciously small amount of money. It showed beautiful workmanship, with a stunning planked deck and professionally made sails. But when I went to sail it, the least amount of wind put it on its beam ends. On investigation, the builder had attempted to ballast it with layers of sheet lead in the keel. But these layers were so wiggly that the effective density of the lead was halved. On the hottest day of the year, I poured with sweat in my protective clothing while melting lead to re-ballast this thing. All the discomfort, however, proved worth it, as this modification totally transformed how this yacht performed, and I am

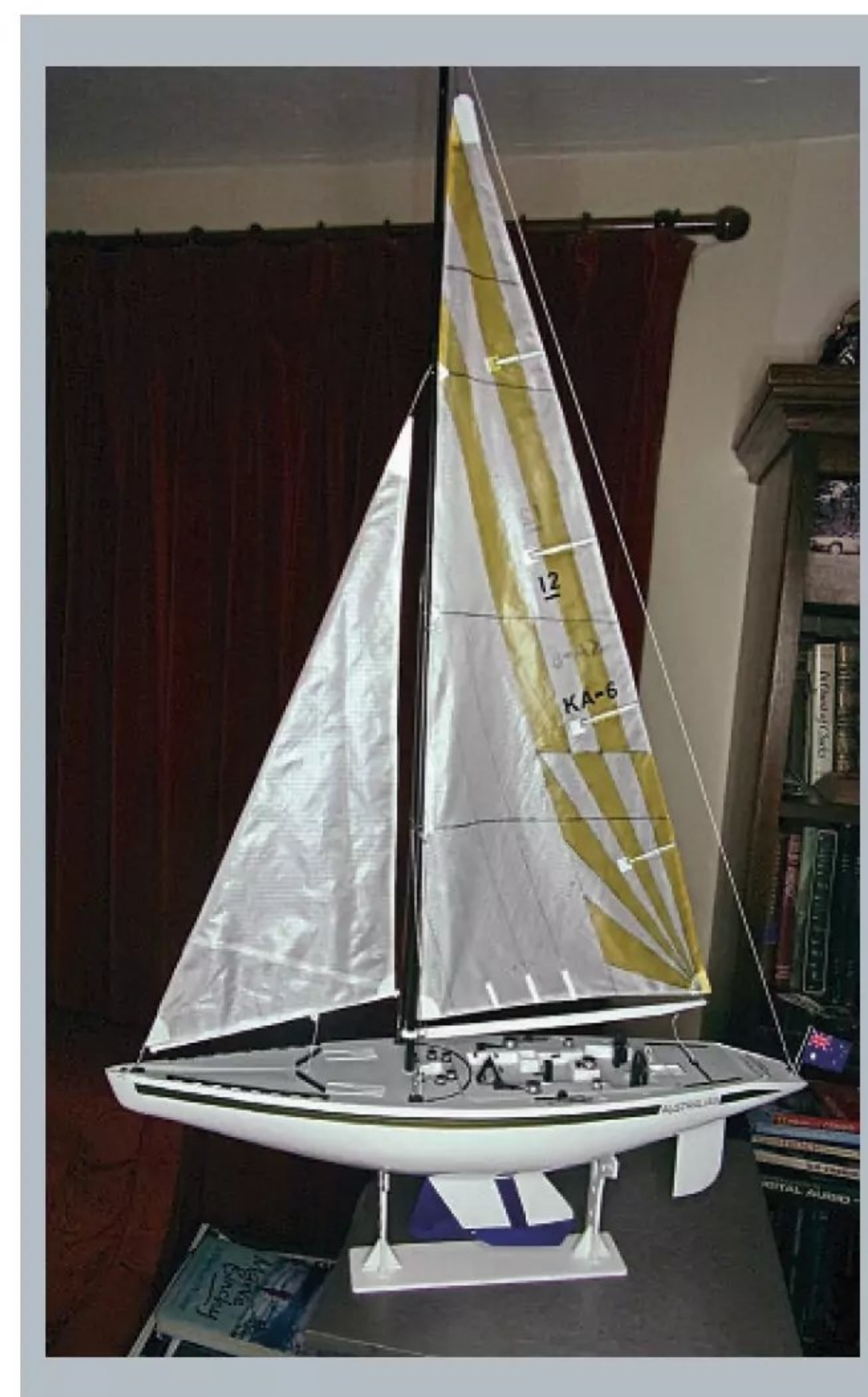
still sailing it today. It now lives in my motorhome and goes wherever I go (see **Photo 2**). My astonishment at the ineptitude of the builder was tempered by the fact that had the ballasting been done properly the yacht would never have come into my possession.

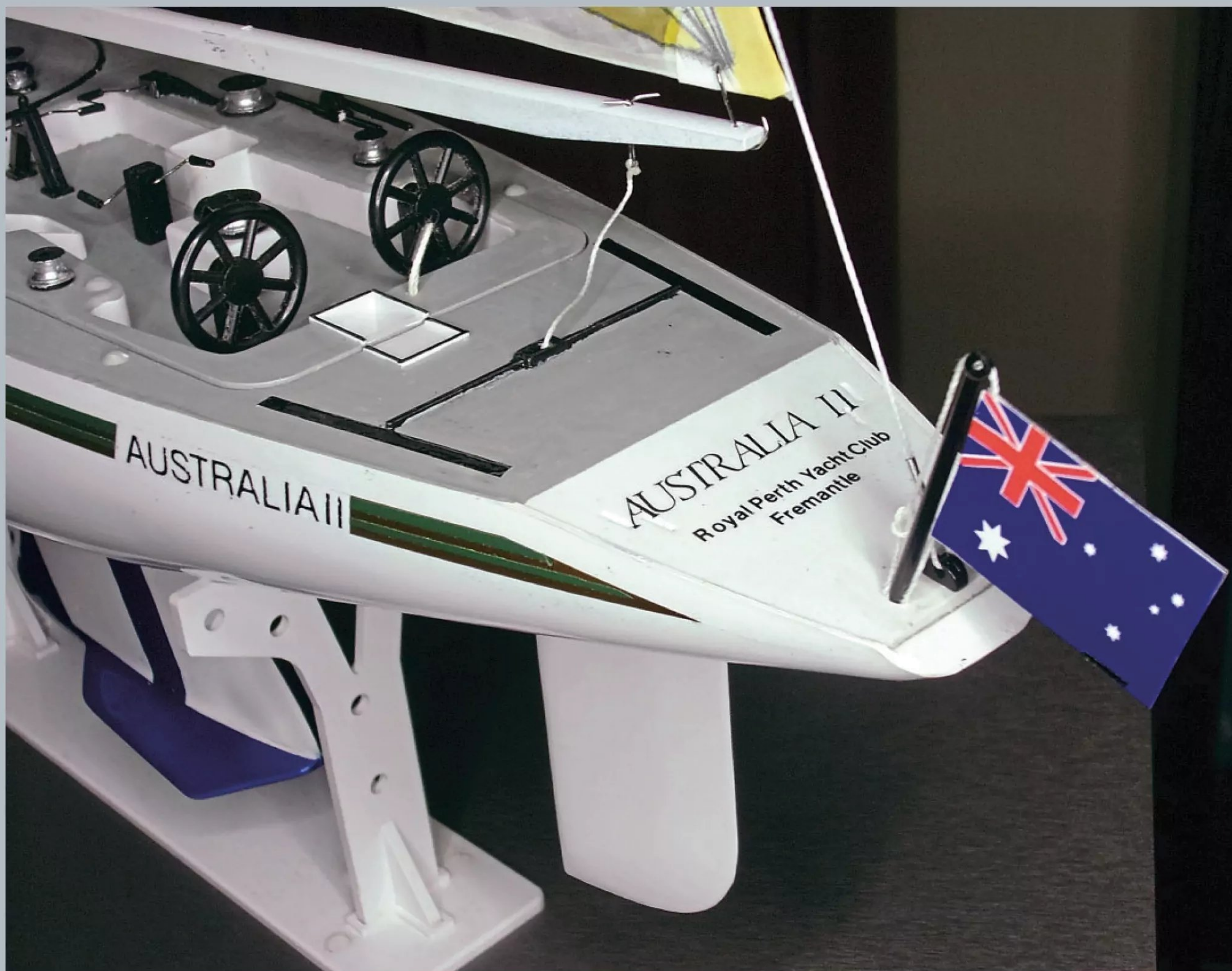
Where real yachts are concerned, the designer has access to equipment that allows the mass of every part of the boat to be added and the mass of the outside keel to be calculated so that when the vessel is finished, it sits at its design waterline. The modeller, however, doesn't have access to this technology, so the attraction of inside lead or lead shot is that it can be poured in until the desired displacement is reached.

In his book, Skene explains how it is perfectly feasible to adjust exterior lead on a full-size yacht. From a modelling perspective though, if the lead is cast a little overweight, resulting in the finished model sitting too low in the water, some holes can be bored into the surface of the lead to lighten it and be blocked with filler. Alternatively, the top surface of the lead can be milled away and a hard plastic spacer put in to maintain the shape.

The inverted keel

Full-size yacht design has evolved over the years and one decisive innovation has been the inverted keel. The traditional keel is long and wide at the hull and tapers downwards. The inverted keel is literally long and wide at the bottom and short and narrow where it joins the hull. This





John's build of the America's Cup winner Aussie II (from a Thunder Tiger kit) makes for a good-looking model and serves as an interesting point when it comes to innovative yacht design.

puts extra stress on the hull joint, but modern materials can handle that. The advantage is that the lead ends up with a lower centre of mass.

In 1983 a 12-metre yacht by the name of *Australia II* took the America's Cup from the Americans for the first time in history. The designer, Ben Lexcen, used an inverted keel that was fitted with wings that not only reduced water spill around the tip but also got the centre of mass even lower.

Inverted and wing keels are seen on some A-Class model yachts and suggest that a true scale model of *Australia II* would be viable, provided the wing keel was faithfully reproduced.

The *Aussie II* model in my photographs was built from a Thunder Tiger kit back in the 1980s, and is basically stock, although I made the sails myself. Although intended as a static display model, she's actually capable of sailing in calm conditions, which is quite remarkable considering the level of detail incorporated. ●

Top tool tip

Years ago, I bought a set of razor saws, having read that serious modellers needed them. I was, however, sorely disappointed because they just dug in and jammed on soft woods such as balsa and cedar.

Fast forward several years and I came across a feature that focussed on the special saws used by the finest Japanese craftsmen for their beautifully intricate work. They looked like razor saws to me, but with one very notable difference: the teeth were positioned backwards so that the saw cut when pulled, rather than pushed. This makes sense, because pulling has an upward component that stops the saw's teeth digging in.

This article promoted ads for these pull saws at some fantastic price. I realised, however, that I could make my own. All of my razor saws had a U-shaped spine that wrapped round the top of the blade. Within minutes, however, I was able to free the blade on one of them, reinstall it backwards, and nip the spine up in my vice. Hey presto, I was up there with Japan's finest craftsmen, at zero cost!

Yes, a pull saw really works, and pretty much any razor saw can be converted. I use mine all the time now.



JAPANESE SAW PRIZE DRAW

For your chance to WIN a superb Japanese Dozuki Razor Saw, manufactured by Gyokucho, courtesy of www.toolnut.co.uk turn to pages 42-43.



A JAPANESE DOZUKI RAZOR SAW!

ドズキカミソリ



Specifications

Gyokucho Japanese Dozuki Razor Saw Gold

* Tool Manufacturer:	Gyokucho (Japan)
* Blade Length:	270mm (10½ inches)
* Leaf Thickness:	0.30mm
* TPI (teeth per inch):	17
* RRP (Recommended Retail Price):	£42.98

Any serious modeller will tell you that Japanese saws are amongst the most accurate money can buy. So, this month, courtesy of the kind folks at www.toolnut.co.uk, we're delighted to be able to offer you the chance to win this magnificent Japanese Dozuki Razor Saw, manufactured by Gyokucho, and thanks to the generosity of Toolnut, two lucky winners will be drawn!

In the 1970s, Gyokucho pioneered the invention of the first replaceable blade Japanese saw and continues to lead the industry with its commitment to quality and innovation. The blades undergo a unique surface treatment known as electroless nickel plating. This plating creates an exceptionally smooth surface that resists corrosion and prevents tree resin buildup, while also offering a reflective surface for precise cut alignment.

The wooden handle of the beautifully crafted Gyokucho Dozuki Razor Saw Gold being offered here is traditionally wrapped in rattan, while the incredibly durable 17 TPI (teeth per inch) blade has a surface hardness of 68 to 71 HR (Hardness Rockwell scale) and back reinforcement (a stiffening spine along the top edge of the blade) for enhanced control. It saw can be used on a variety of materials, including general lumber, laminated wooden board, decorated plywood, plastic, etc, and its exceptional cutting performance will facilitate fine, clean, smooth cuts that will require no additional finishing. This is a tool that will allow you to work smarter, not harder!



Toolnut is a family run business which specialises in and prides itself on providing customers with a wide range of fine tools: traditional tools, hand tools based on classic designs, and hand tools with a modern twist. As an example, you can find details of one the latest

additions, the Veritas Miniature Cabinet Maker's Trimming Plane, in this month's Compass 360 news section. To view the entire range, visit www.toolnut.co.uk



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:

The Japanese Saw Prize Draw,
Model Boats
Kelsey Media, Media Centre, Morton Way,
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Please note, the **closing date for entry submissions** will be **Friday, June 27, 2025.**

Good luck, everyone!

TERMS & CONDITIONS

N.B. For this particular prize draw we can only accept entries from those residing in the UK mainland and Northern Ireland. The competition closes on Friday, June 27, 2025. There are no cash alternatives available. Terms and conditions apply. To view the privacy policy of Kelsey Media Ltd (publisher of Model Boats) please visit www.mortons.co.uk/privacy

Japanese Saw Prize Draw

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1

Glynn's first analog multimeter, which always accompanies him on sailing sessions.

Most useful pondside tool?

Before you can resolve an issue, you first need to diagnose what the problem actually is. **Glynn Guest** provides some useful guidance, and a handy portable gadget recommendation, for doing just that...

You'd be an unwise person not to take a few tools along with you whenever you decide to go sailing your models. At the very least, it seems sensible to pack those you may need to fasten or unfasten screws, bolts and connectors. After all, while this is generally a very friendly hobby, it is perhaps a little presumptuous to expect someone else will always be able and willing to supply whatever tool it is you suddenly find yourself in desperately need of.

There is one 'tool' I always take when going sailing – although now I come to think about it, it's not one

I can recall seeing anyone else use at the pondside. It was bought in my late teens after encountering a few problems with my first R/C models, and quickly proved its worth, preventing sessions having to be abandoned, or even, on occasion, models being lost. What am I talking about? Well, it's a small but reliable multimeter (see **Photo 1**).

First use

When I originally bought this multimeter, dry batteries powered my radio gear and models. These had a limited life and once the chemicals

inside them had been consumed no electrical power would be produced. Luckily, during use, the voltage they generated would fall gradually, giving an indication of their remaining life. After every sailing session, however, I developed the habit of checking battery voltages with my multimeter – only a moment's job. If they had fallen worryingly low, replacement was called for before the next session.

Electrical faults

I then discovered the multimeter could solve other problems likely to stop me sailing.

“It’s worth noting a few points that may prove crucial when trying to diagnose and locate electrical problems”

One frustrating feature of electricity is that you cannot see it directly, so all not being well may not become evident until you start to encounter unwelcome smells, sparks, or, even worse, smoke! However, when an electrically driven model refuses to start despite repeated operation of the switches and no amount of tugging and jiggling of wires and connections, along with possibly a few rude words, resolves the situation, a Multimeter can often be used to locate the invisible issue.

Before going any further, it’s worth noting a few points that may prove crucial when trying to diagnose and locate electrical problems.

Firstly, I have encountered many pondside experts with questionable, if not actually dangerous, ideas on matters electrical. So, one tip before listening to such people is to check if they have a reputation for never being able get their own creations to run reliably!

Electrical devices depend on the flow of electric charge due to a Potential Difference. The flow of charge rate, termed the current, is measured in Amperes (starting with a capital letter because this unit was named after someone), often shortened to Amps or ‘A’. However, in formulas the symbol ‘I’ is used. In our models, this current is the movement of electrons along a suitable conductor. To make sure these electrons only move in the direction we want them to, an insulator often surrounds the conductors. This insulator is a material in which charge finds it very difficult to move.

What drives the current from one end of a conductor to the other is the charge losing energy. This is analogous to water flowing in a pipe under the influence of gravity, *i.e.*, always from the higher energy level to the lower one. Even if the charge or water is not flowing, it still contains more energy at the higher level, something referred to as ‘potential energy’ – and that’s an appropriate term for it, because this energy is being stored, just waiting to be released so it can do something, hopefully, useful.

One of the factors that govern how quickly the charge will flow from one point to another is the size of the energy drop between the points, like the height drop between the ends of water pipes. This is measured by comparing the difference in ‘potential energy’ that the charge has at these two points. This is the ‘potential difference’ that a meter can measure;



A more flexible digital multimeter.

its units are Volts (again named after someone) and usually shortened to ‘V’. In formulas, ‘V’ is still used.

These two terms can be brought together with idea of ‘electrical resistance’. No conductor material is perfect, and some energy is absorbed as the charge moves through it. The shape of the conductor also influences the value of its resistance. In the same manner that water finds it more difficult to flow in longer and narrower pipes, so does electric charge in longer and thinner wires. The unit of ‘electrical resistance’ is the Ohm, again someone’s name. Just to confuse, resistance uses the term ‘R’ in formulas. but its unit is usually identified by the symbol ‘Ω’.

Putting it together

The three basic electrical terms can be put together in a simple way, usually called ‘Ohms Law’.

$$\text{Resistance} = \frac{\text{Voltage}}{\text{Current}} \text{ or } \text{Ohms} = \frac{\text{Volts}}{\text{Amps}} \text{ or } R = \frac{V}{I}$$

The Ohms Law formula is often rearranged into $V = I \times R$, which handily shows the relationship between these terms. If the resistance is fixed and you want to double the current, then the voltage must be doubled. Conversely, if the voltage is fixed and you double the resistance, then the current will half.

Power

If a device, such as a motor, is using the charge’s energy to do some useful work, then it is handy to know the power of the device; power simply being the rate at which energy is

“A word of caution here...”

transformed from one form into any other and the useful work it does. The units of power are known as Watts, often shortened to just ‘W’, although in formulas ‘P’ represents power. Luckily, the product of the current flowing through it and the potential difference across it gives the electrical power consumed by a device.

$$\text{Power} = \text{Voltage} \times \text{Current} \text{ or } \text{Watts} = \text{Volts} \times \text{Amps} \text{ or } P = V \times I$$

A word of caution here: when converting energy from one form to another, like the motors in our models, most devices are noticeably less than 100% efficient. You may be putting 50 Watts into a device, but you will not be getting 50 Watts of the energy you want coming out of it. Heat is often the biggest loss in these energy conversions.

A convention worth applying in our models is to use the wires with red insulation to connect to the positive battery terminal and black insulation on the wires from the negative terminal. It is also handy if you use the same convention on the meter probes and wires.

Volts find breaks

The first example of where a multimeter might ‘save the day’ is when you switch on and nothing happens.

Taking a simple electric motor/speed controller/battery setup that you might find in a model (see **Fig 1**), the first thing to check is the battery, which can be done by placing a voltmeter across the terminals of the battery (as illustrated in position **V1 of Fig 2**). A lower than expected,

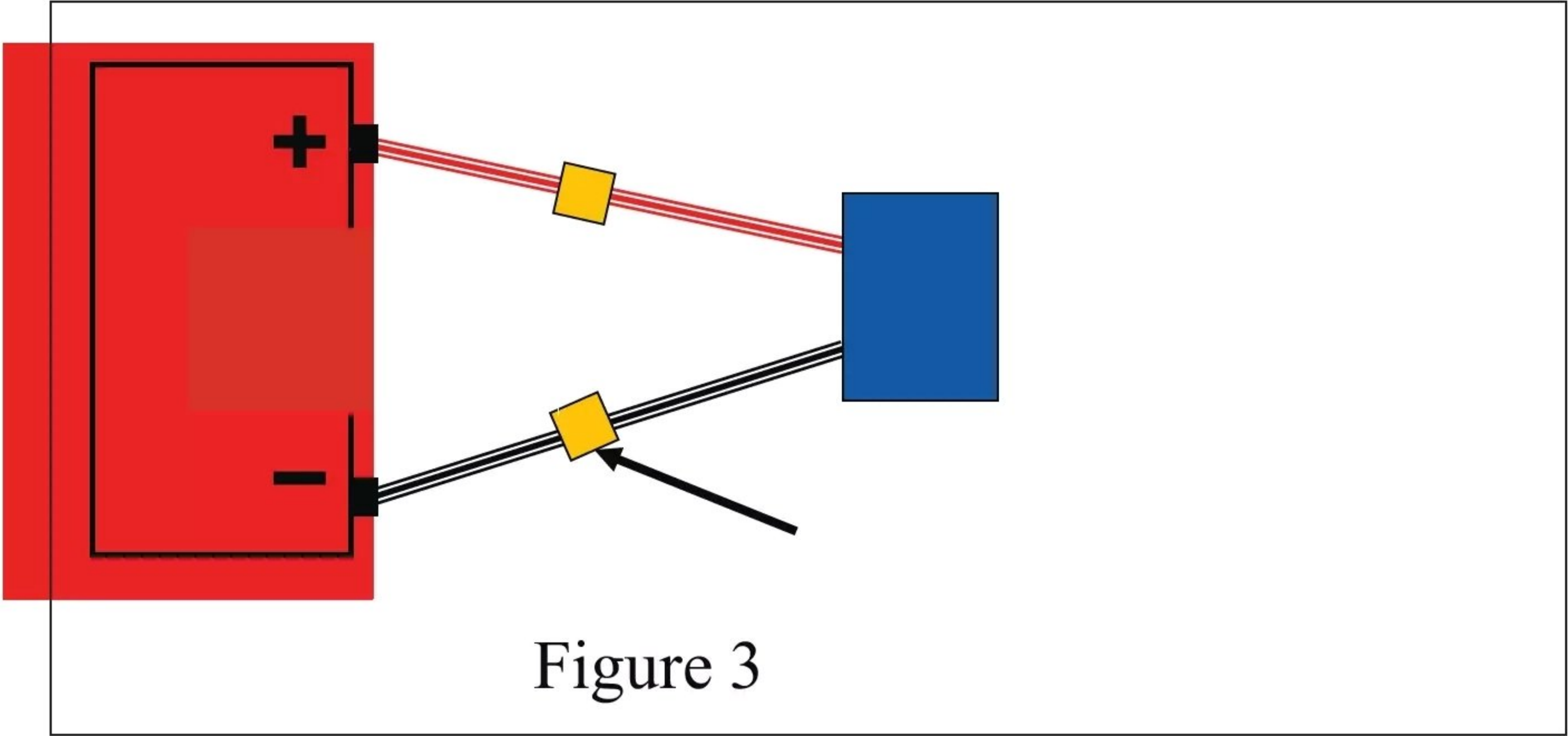
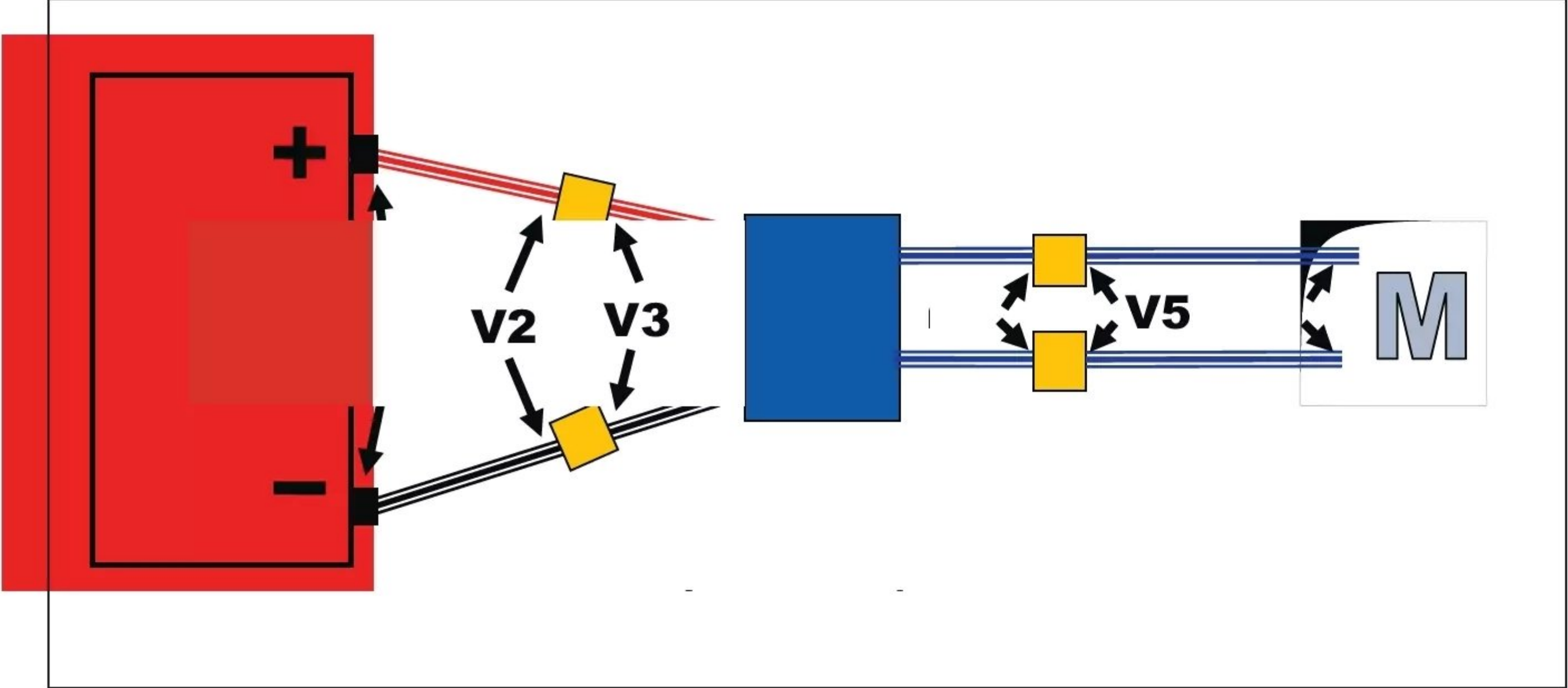
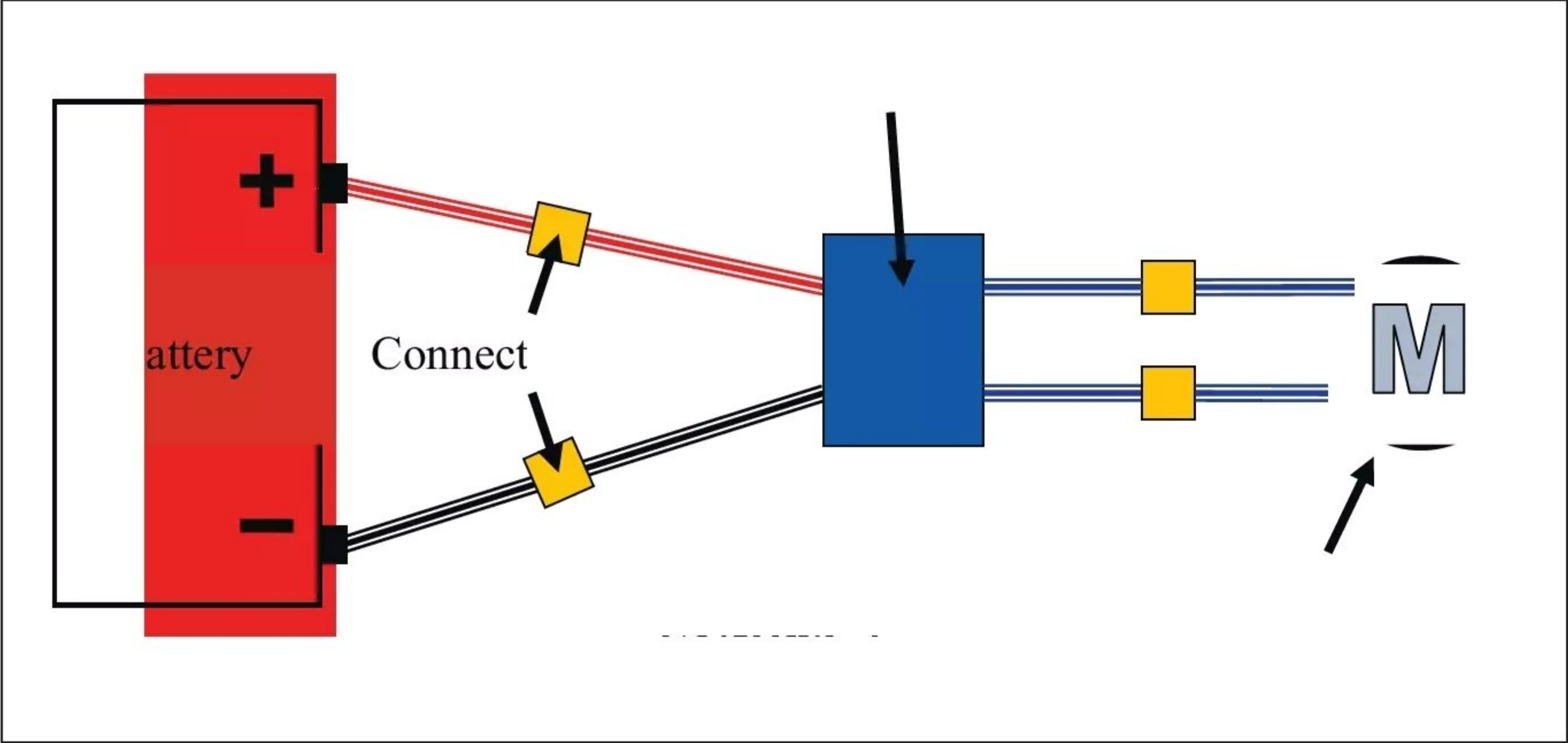
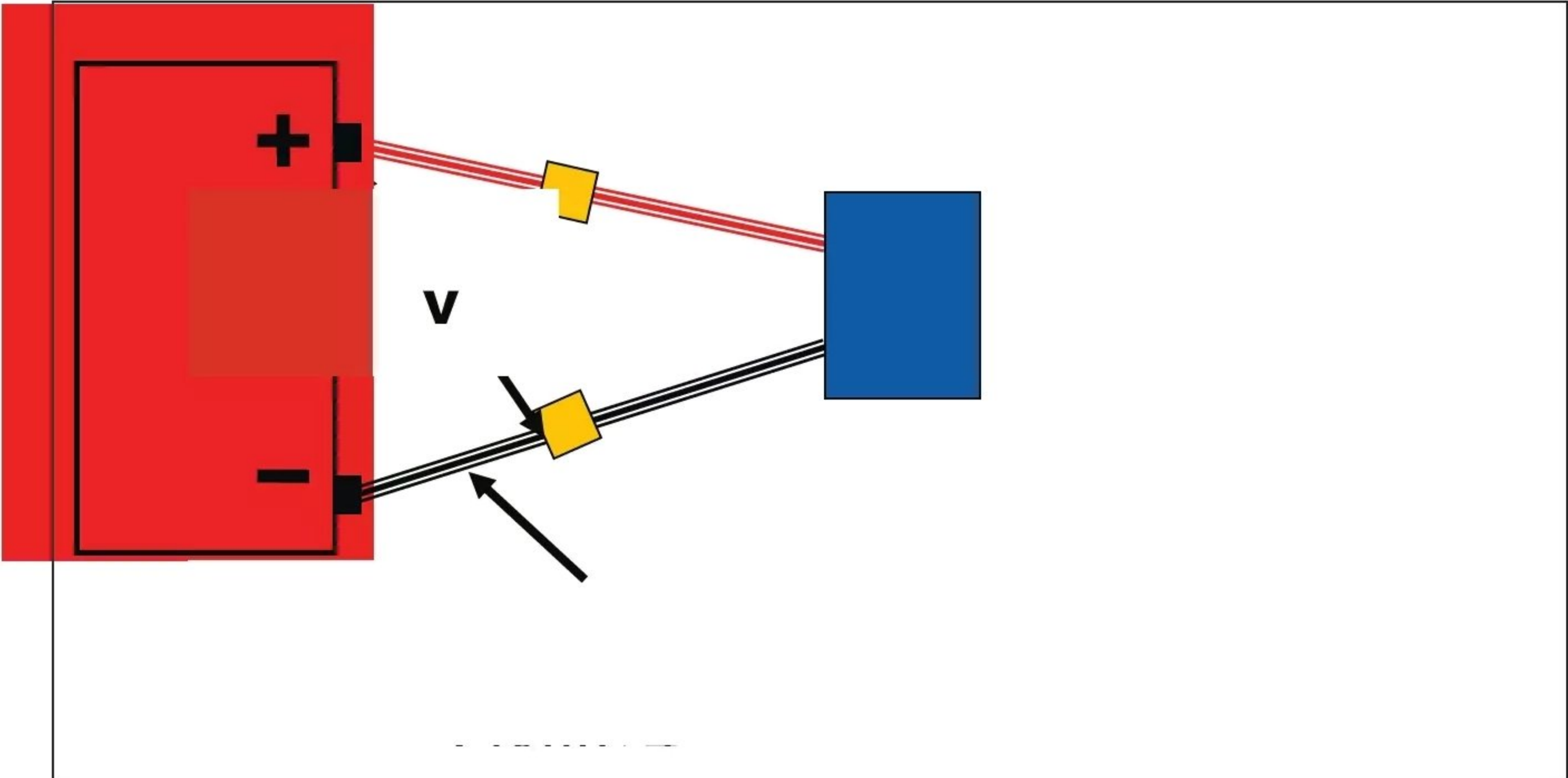


Figure 3



“The first example of where a multimeter might ‘save the day’ is when you switch on and nothing happens”

or even zero, meter reading has already located a problem! Trying to sail with flat batteries must be one of the most common operational problems in this hobby. Few will not have heard the plaintive cry of “But I only charged them six months ago” from a distressed model boater. Just a reminder, if your speed controller uses a BEC (Battery Eliminator Circuit) and this battery is flat, then nothing in the model will work. If it gives the reading that you expect from a fully charged battery, then the fault lies elsewhere.

In this circuit there are a further five positions to check with a Voltmeter. Some care is always needed to ensure the meters probes do not touch and create a short. Working from the battery towards the motor, the first zero meter reading will tell you where a fault lies, as described in the table illustrated. Note that voltage checks at **V4, V5 and V6** will require the speed controller to be operated by the R/C system.

Zero Voltage reading location	Possible Cause
V2	Faulty connectors
V3	Faulty connectors
V4	Faulty Speed Controller or wiring
V5	Faulty Connectors
V6	Broken wire between connector or connections to motor

With brushed motors, the **V6** reading requires placing the Voltmeter probes on the two motor terminals. If they show a voltage but the motor fails to turn, then disconnect the battery immediately. Somehow, a voltage is getting to the motor, and it may be converting electrical energy into heat, possibly lots of heat, which is never a good thing. You need to find out why it is not turning. Is the motor faulty? Or is the driveline jammed at some point? I confess to not knowing how you would use a Voltmeter to check a



A meter and auto bulb being used to check a battery pack.

3

brushless motor with three wires going from the speed controller into the motor. But, if any motor looks or sounds distressed and is not rotating, the advice is the same, switch off immediately!

Suspect connections

The meter checks in **Fig. 2** might not be able to provide the exact location of a faulty connection. For example, a good result at **V2** but zero at **V3** does not tell you which connector has failed or whether both have.

Individual failures can be found by placing the meter probes between the input side of one connector and the output side of the other (see **Fig. 3**). A zero reading tells you that the faulty connector is the one to which the meter probe is in the output side. A meter reading of the expected battery voltage suggests it is the other connector that has failed. But it is still worth checking by reversing the meter connections. Who knows, both might have failed?

It is possible that the wires going into and out of a connector are loose. Maybe the contact surfaces within the connectors are dirty or damaged.

Some enthusiastic 'jiggling' of the wires can restore life into a model, but this rarely a wise thing to rely upon. These kinds of faults can reappear at any time, often at the worst possible moment. Replacement of anything suspect is usually the safest, and in the long term often the cheapest, solution.

Broken wires

Without X-ray vision, breaks in wires cannot be seen due to their coat of insulation. They can, however, be located in a similar fashion to that previously described. Going back to **Fig. 2** and assuming that **V1** reading is fine but **V2** is zero, then it suggests that there is a break inside either wire going from the battery to the first pair of connectors. This is done with a meter probe on one battery terminal and the other on input side of the connector not joined to this battery terminal (see **Fig. 4**). A zero reading indicates that the wire between the connector and battery terminal has failed. Again, it is worth swapping over the meter probes just in case both wires have failed.

"If any motor looks or sounds distressed and is not rotating, the advice is the same, switch off immediately!"

Other multimeter uses

A multimeter can also be used to take other electrical measurements as well as the Voltages we have discussed so far.

It is often useful to know the size of the electrical currents flowing in a circuit. My first meter was limited to a modest size of current, but a later purchase of a digital multimeter (no longer being an impoverished student) allowed me to test up to 10 Amps (see **Photo 2**). This has proved an indispensable tool when installing electric motors into models and selecting the best propellers (or at least avoiding fitting bad ones!) to match the desired performance.

But this is a big topic – for another time maybe? For now, I will simply be satisfied if this article helps a few of you out there overcome the dreaded silence that can occur after switching on! ●

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Kadet challenge

Harry Smith tackles the refurbishment of a very battered old utility boat model

I am a member of the Marine Modellers Association in Hobart, Tasmania, and have been building and restoring model boats for about 45 years. We have about 20 plus members in the scale model section and so thanks to some great mentors there is always something new to learn.

With this in mind, I recently bought the most knackered example of Billing Boats' Kadet I could find going cheap on eBay, not only because I have always admired the look of this neat little motorised utility boat but because I wanted to present myself with a serious challenge.

Second thoughts!

Once the model arrived and had been unpacked, though, oh boy, what a mess! (see **Photos 1 and 2**). What is it they say about being careful what you wish for? I seriously feared I may have bitten off more than I could chew, not least because I'd never worked on an ABS hulled boat before.

Getting stuck in

In for a penny, in for a pound, however, so I first set about removing all of the old setup, including the two extra rudders.



"What is it they say about being careful what you wish for? I seriously feared I may have bitten off more than I could chew..."

I then cut the old floor up the centre with a hacksaw blade so I could use the two resulting sections as a template for a new floor (see **Photo 3**).

I also removed the hull frames and remade these, adding stringers to the hull (**Photo 4**).

Stripping away all the layers of old paint proved arduous and, as you can





imagine, involved a lot of sanding (see **Photo 5**).

What's more, filling in the holes from the two extra rudders necessitated, yes, you've guessed it, yet more sanding (see **Photo 6**).

Moving onto the cabin, I found there was no wheelhouse floor, and the cabin window areas were a total write-off too. I therefore had to replace these sections with new plywood (see **Photos 7, 8 and 9**).

Getting back to work on the hull, I added chine rails and a small half round strip to the sides, before painting, using a mid blue for the sides and much deeper midnight blue for the bottom (see **Photos 10 and 11**).

I then painted the cabin white and made a new one-piece windscreen for it.

12



13



“These serve as an inexpensive way to plank a model boat, the end result looks very pleasing too”

Having got the basic restoration to the point of final fitting, I was now ready to add all the necessary bits and pieces of detailing, including a new rubber strip around the hull.

I was lucky that despite the state of this model on arrival, it still had its forward handrails. The stern railings, however, were missing. Out, then, came the soldering iron and brass wire.

The stern hatch section I crafted using coffee stirrer sticks. These serve not only as an inexpensive way to plank a model boat, the end result looks very pleasing too.

The final piece of the puzzle was the eight-piece mast, which I simplified down to four pieces by

14



15



using a 4mm one-piece main mast with plywood pieces for additional strength at its base. I also changed the stays to polycotton ones (see **Photos 12, 13 and 14**).

The Hobart Kadet

During 'sea trials', I did need to move the battery further to the stern on the first run, but I am pleased to report that on checking there were

no issues in terms of leaks. **Photo 15** shows my now fully restored Kadet off and running, with a nice scale speed (see **Photo 15**). Mission accomplished! ●

The Whitehead torpedo

John Parker traces the weapon that revolutionised naval warfare back to its origins, and considers the different approaches to propulsion taken by modellers

During World War II, some 3,500 Allied merchant ships were despatched to the ocean floor, mainly by torpedoes fired from enemy submarines. Had he still been alive, this would have been a sobering thought for Robert Whitehead, the man most closely associated with the invention and perfection of the torpedo, who naively believed that his device would make future wars too terrible to contemplate. Instead, it gave the submarine the weapon it needed to become the dominant naval vessel, and it remains, to this day, an immediately recognisable descendant of Whitehead's original weapon.

Origins

The term 'torpedo' originally referred to any means of explosive device, mobile or fixed (such as a mine), intended to inflict damage on an enemy vessel.

One such device, *Der Küstenbrander* (coastal fireship) was clockwork powered and steered by cables from the shore, intended for coastal defence. It was being experimented with by Captain Giovanni de Luppis of the Austrian Marine Artillery, who around 1864 turned to Robert Whitehead to help him refine it.

Whitehead was by that time an accomplished engineer whose marine engine designs were held in high regard and who had left his native England to seek his fortune abroad working at *Stabilimento Tecnico Fiumano* (STF) at Fiume on the Adriatic coast.

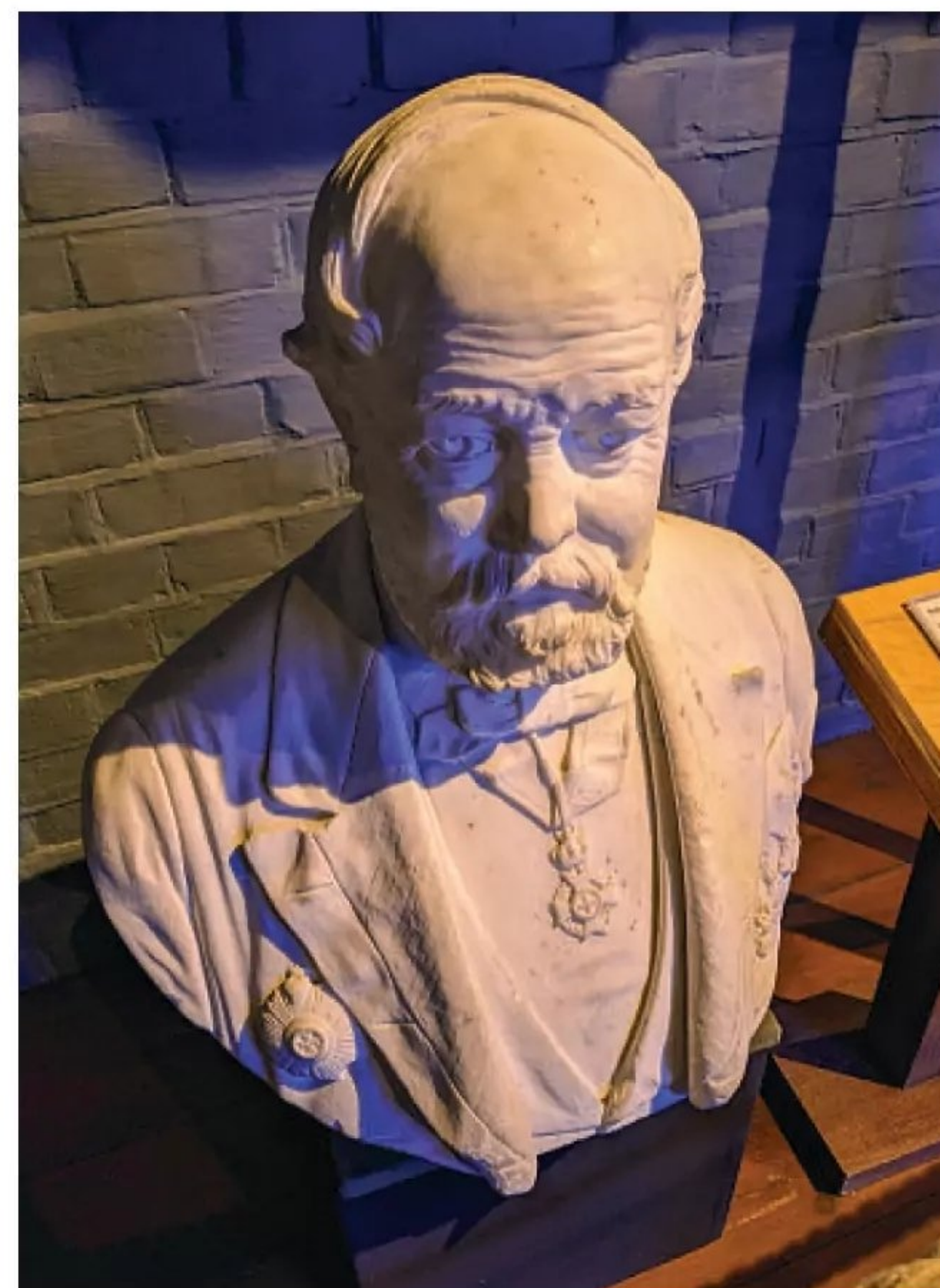
Whitehead made various improvements to de Luppis's device but was ultimately forced to conclude that the concept was hopeless: its speed was far too slow, and its steering cables endowed it with short range and erratic course keeping. What was needed, he concluded to himself, was a self-propelled fish that could travel unseen beneath the waves

"Robert Whitehead, the man most closely associated with the invention and perfection of the torpedo, naively believed that his device would make future wars too terrible to contemplate. Instead, it gave the submarine the weapon it needed to become the dominant naval vessel"

to unerringly expend its explosive charge against the submerged portion of a ship's hull, where it was most vulnerable. The thought remained with him long after the collaboration with de Luppis ended and led him to make the first automobile or modern torpedo in 1866. This required finding a solution to several problems.

Problem No.1 – Propulsion

Whitehead's inspired choice here was to use compressed air in preference to clockwork, flywheel or chemical means to propel his torpedo. His engineering skills enabled him to make an air flask far stronger than before, and he was able to devise a miniature twin-cylinder reciprocation engine that was able to convert, via a

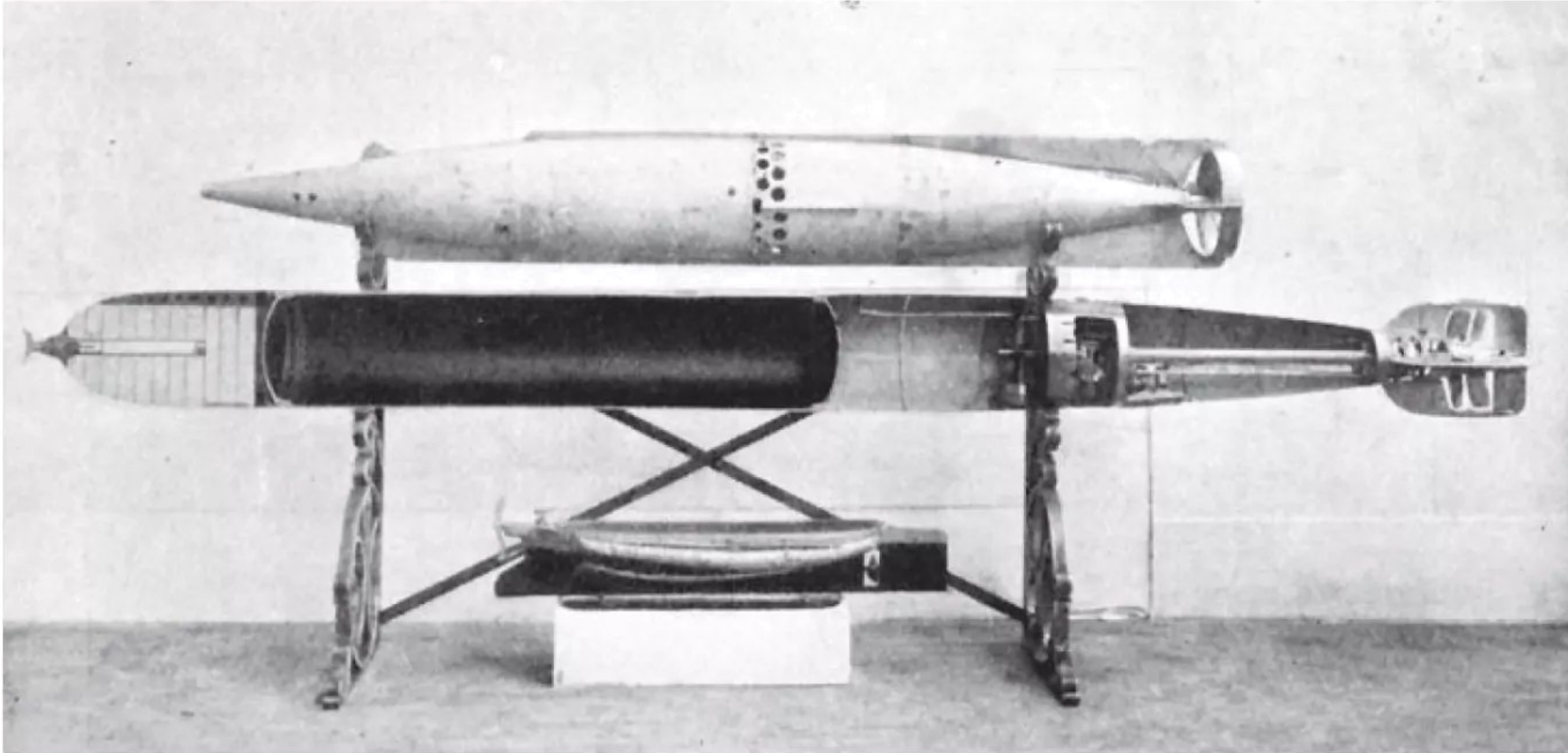


The bust of Robert Whitehead at the Explosion Museum of Naval Firepower.

"The term 'torpedo' originally referred to any means of explosive device, mobile or fixed (such as a mine), intended to inflict damage on an enemy vessel"



Whitehead-Werft und Torpedofabrik in Fiume.



A display stand showing (top) an early 1868-1870 Whitehead torpedo; (centre) a cutaway 1890s model less the secret hydrostatic controller; and (bottom) a Küstenbrander.



Robert Whitehead with a battered test torpedo, Fiume c.1875.



Argentinian sailors with a Whitehead torpedo, Fiume, Austria, 1888.

“It was here that Whitehead stole a march on his competitors...”

regulator, the pressure of the flask into rotary motion for the propeller. Later this was replaced by a three-cylinder radial reciprocating engine of 4-inch stroke and 3-inch bore, designed and made by Peter Brotherhood of Peterborough, that formed the basis of torpedo propulsion for several decades.

Problem No.2 – Physical form

In accordance with prevailing belief as to the best shape for minimum drag, Whitehead made the body of his torpedo with a finely pointed nose and elongated tail. However, in 1883, Dr. R. Froude of the Admiralty Experimental Works showed that a blunt nose shape actually caused less drag, and this was enthusiastically adopted since it also allowed more explosive to be packed into it.

To stop the torpedo rotating from the torque of the propeller, elongated fins top and bottom were fitted that extended from mid-body to the tail, where a shroud protected the single propeller.

When England bought the manufacturing rights to the torpedo it began to fit concentric contra-rotating propellers and Whitehead soon adopted this very worthwhile improvement, which eliminated the torque and obviated the need for the anti-roll fins.



Three-cylinder torpedo engine at the Quinborne Adult Education Centre.

Problem No. 3 – Depth keeping

It was here that Whitehead stole a march on his competitors. His torpedoes incorporated a highly secret hydrostatic controller in an 'immersion chamber' that responded to both the depth of immersion (water pressure) and the pitch angle of the torpedo to ensure it ran at a more consistent depth setting than ever before. The hydrostatic diaphragm worked the tail hydrovanes via a swinging pendulum that responded to the torpedo's pitch angle, as well as providing a damping effect on the motion of the torpedo. (The model submariner may be familiar with the modern electronic version of this device, known as a pitch and depth controller.)

Problem No.4 – Course keeping

Initially Whitehead's torpedoes had no course correction means; all had to be tested individually, and the rudders adjusted until they provided straight running. When Ludwig Obry perfected a precision gyroscope mechanism in 1895, Whitehead realised this could provide the answer to his course keeping problem and obtained the rights to it in 1896. He adapted the gyro wheel to be spun up to speed by a spring and run for five minutes, controlling the torpedo's course by causing jets of high-pressure air to the actuators of the rudders at the tail. It was the first application of the gyroscope to the control of mechanisms.

Later years

Whitehead had to deal with many other problems such as the launching, aiming, arming and safety aspects of his weapon, as well as the need to protect his business interests in a time and place of political upheaval. As the new century dawned, further development of the torpedo passed from his hands to that of the companies making them or making copies of them. His wife died in 1885 and thereafter he lived a lonely life, becoming stone deaf and dying in 1905, having lived just long enough to witness his torpedo play an important role in the Russo-Japanese war.

An interesting addendum to Whitehead's story is that his granddaughter Agathe, heir to his fortune, married Kapitanleutnant Georg Ritter von Trapp of the Austro-Hungarian Navy in 1911. Von Trapp

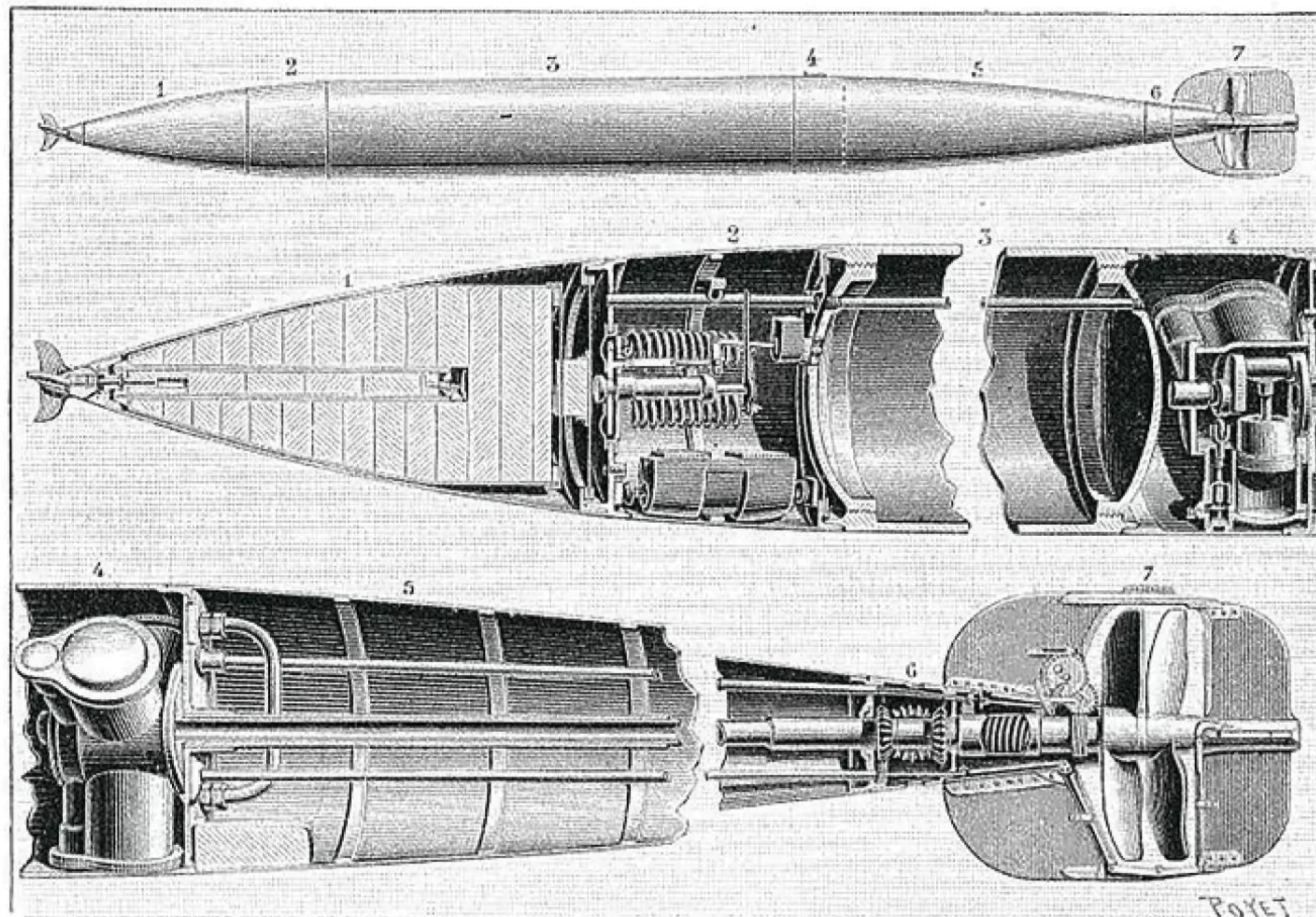
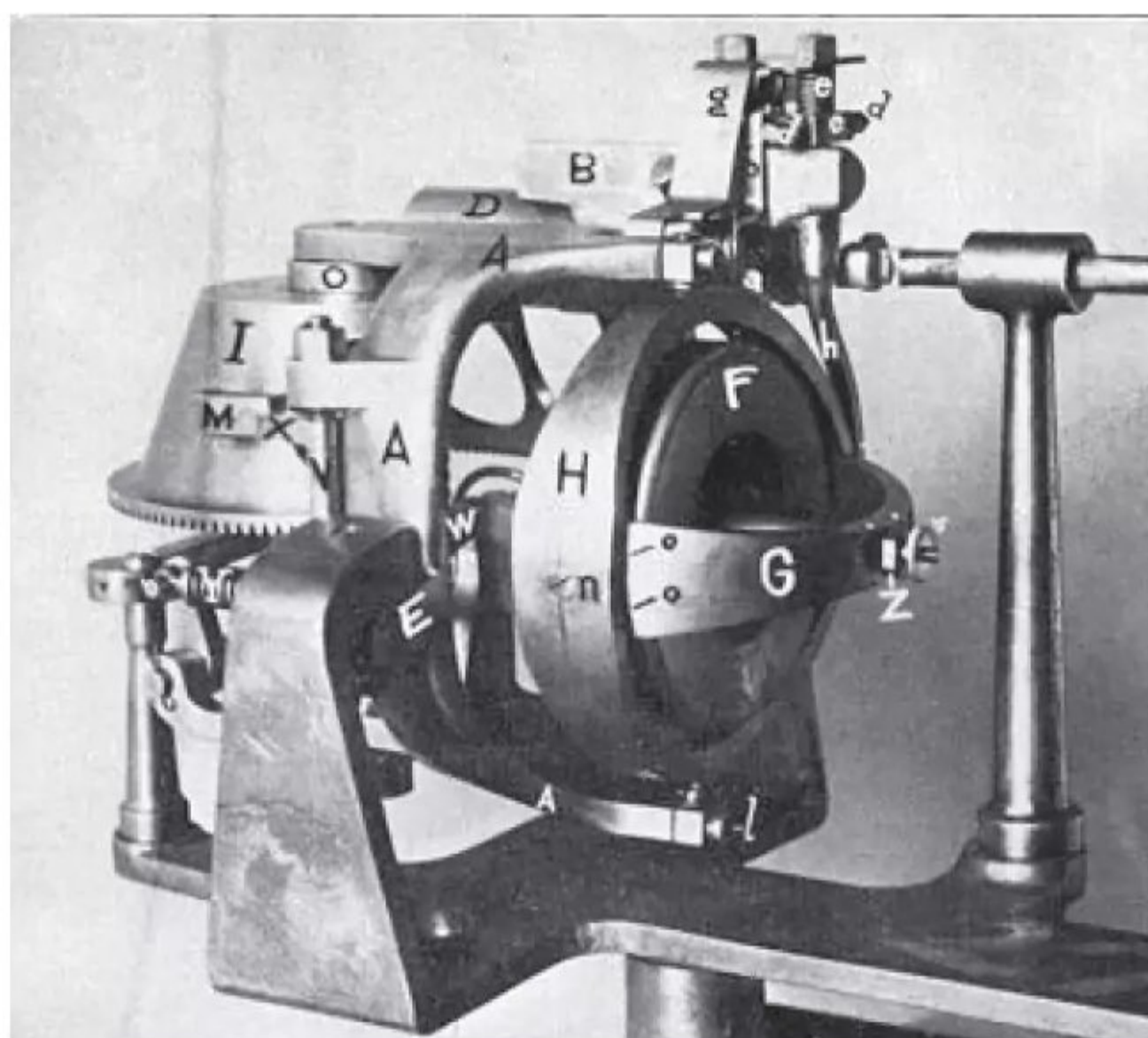


Fig. 1. — Torpille automobile Whitehead. — 1. Magasin. — 2. Chambre à secret. — 3. Réservoir d'air comprimé. — 4. Chambre des moteurs à air comprimé. — 5. Flotteur ou chambre de flottaison. — 6. Mécanisme de commande de rotation des hélices. — 7. Hélices et gouvernails.

Whitehead torpedo mechanism, published 1891.

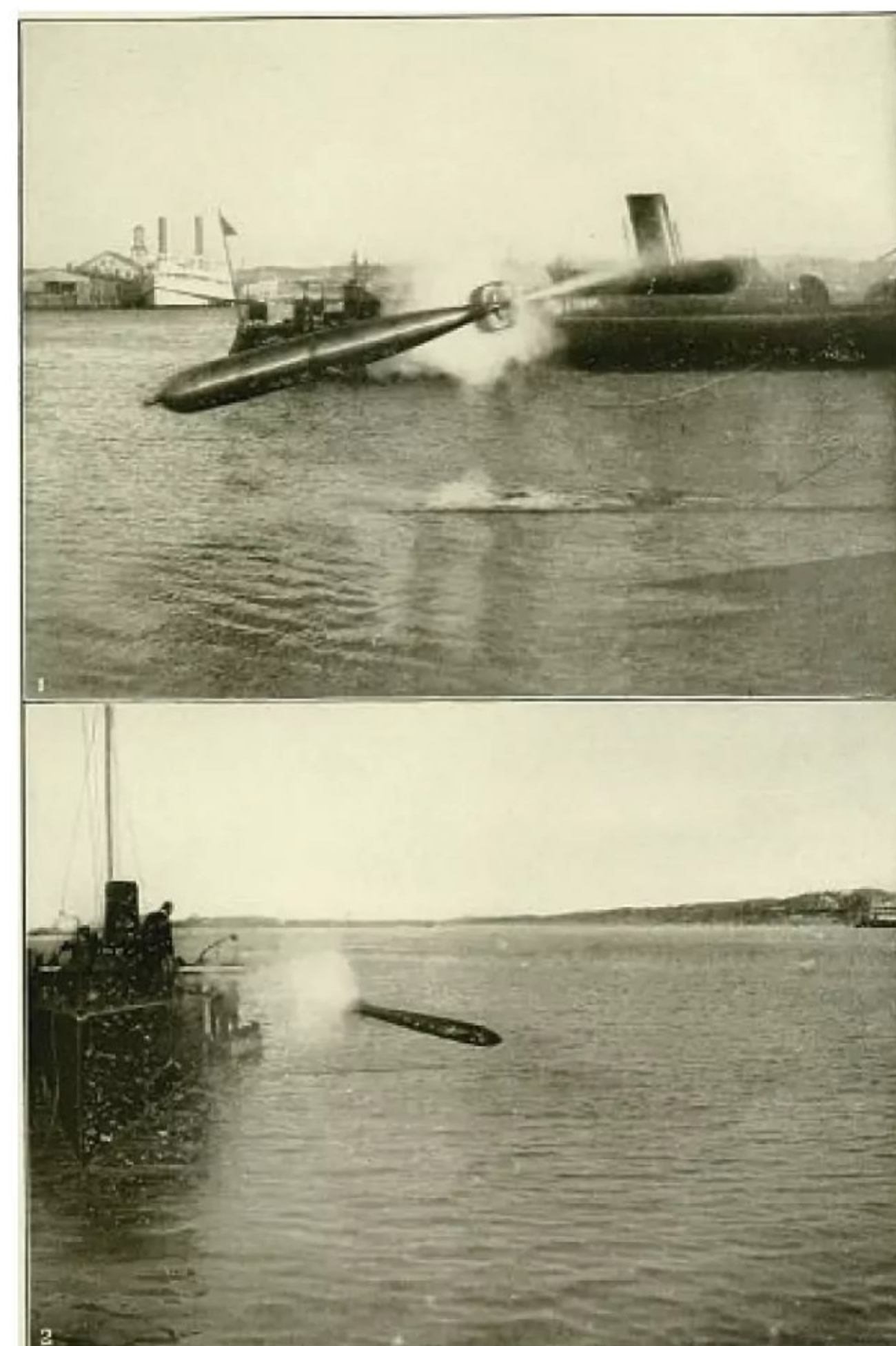


Obry gyroscopic gear installed in Whitehead torpedoes.

went on to have an illustrious career as a submarine commander, sinking, with the help of Whitehead's torpedoes, over 60,000 tons of enemy shipping. He also became the inspiration for the popular 1965 film *The Sound of Music*, which told a semi-fictional story of how he married the governess of his children after the death of his wife (see *The Sound of Asdic* in the December 2021 issue of *Model Boats*).

Model torpedoes

A model torpedo presents many intriguing possibilities to the experimentally minded model maker. A major challenge is making them small enough, unless the vessel to be armed with them is a patrol boat or a midget submarine. A 1:72 scale torpedo is about the size of a short pencil, and a charge of compressed gas such as Propel, used for air brushes, probably presents the only practical means of



Torpedo boats firing a Whitehead torpedo.

"A model torpedo presents many intriguing possibilities to the experimentally minded model maker"

propulsion. This has the advantage of leaving a nice trail of bubbles and having no torque.

Moving up in size, a 1:24 scale 21-inch torpedo is some 22mm diameter and becomes a candidate for electric



Proprietary 1:72 scale gas torpedo system by D and E Miniatures, USA.

“Don’t laugh, it’s ideal in many ways”

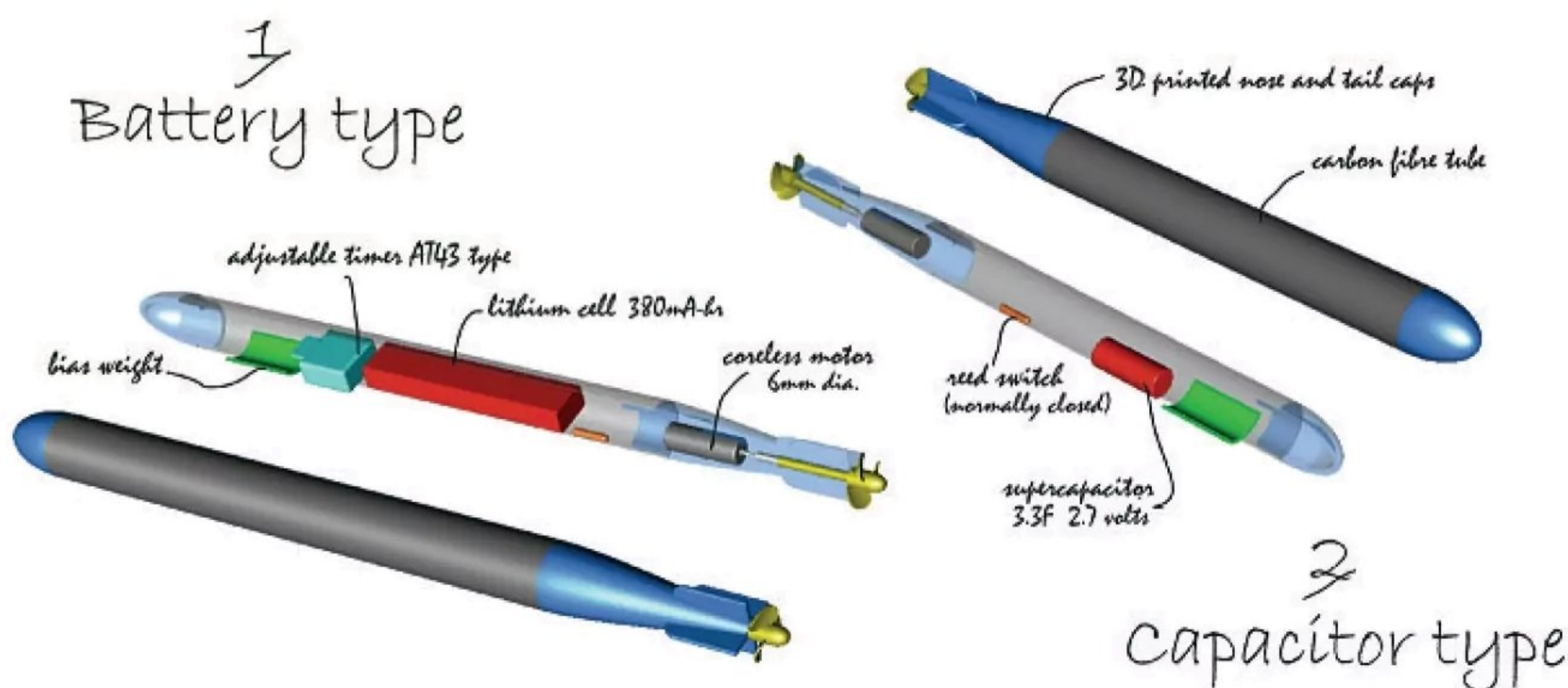
some means of collecting it at the end of its run, such as a rescue boat fitted with a trawling net.

There are other options such as rubber band power (don’t laugh, it’s ideal in many ways), and I have heard of a scheme that used the energy stored in a thinly stretched piece of silicone tubing.

At a sub regatta many years ago, I witnessed a torpedo attack that holed the hull of a Black Swan class sloop - <https://www.youtube.com/watch?v=i25lROgRG1c> The only reason it didn’t sink was that the hole was above the waterline. Fortunately, both torpedo and ship were owned by the same modeller, so the incident did not result in any major repercussions. ●

Photo acknowledgements

All historic public domain images illustrated in this article were sourced via Wikipedia.



Model torpedo sketch page.

propulsion. The energy source may be either a lithium cell or super-capacitor, with the power held off by a reed switch until the moment of firing, which ejects the torpedo beyond the influence of a magnet and starts the motor. The battery powered version needs some means, such as a miniature timer, to switch the power off after a run of perhaps 5-15 seconds.

A weight bias and/or deflected fins may be sufficient to stop the torpedo

rotating, unless the modeller has sufficient skills to make a miniature contra-rotation gearbox and solve the torque problem with two propellers. A careful watch needs to be made on the weight of the torpedo as the envelope size does not provide much buoyancy – 3D printing is recommended for the nose, tail and propellers, with carbon fibre tube for the body. Of course, the torpedo needs to be positively buoyant with



Robert's completed 1:24 scale model of the Bluebird of Chelsea (Sir Donald Campbell's motor yacht) – a project into which he enthusiastically incorporated some newly acquired skills.

Tech to keep you on your toes!

Robert Bulbrook extols the virtues of embracing change

During the 1970s my uncle owned a business, based in March, Cambridgeshire, that built and sold yachts and speed boats. As a child, I could regularly be found there, hanging out with my cousin and getting into mischief around the works! It was there my fascination with boats began. Then, at the age of 14, I met Mick Reeves, at that time was a scale model aircraft world champion, who offered to teach me how to fly. It was a frustrating process. I remember on one occasion shouting out to him for help, as my remote-control seemed to have suddenly stopped working and I could not stop the rapid descent of my aeroplane. Mick quickly took over

from me and, after a momentary look of confusion, began to laugh when he realised what had just happened. There wasn't anything wrong, I'd simply been looking up at and trying to control somebody else's plane rather than mine. Did I feel silly or what! Eventually, after spending more time digging planes out of the ground than flying them, I decided it really wasn't the hobby for me, and that model boats may be a better option. What's the worst that could happen, I thought. My boat could only sink, right?

After leaving school to pursue a career in agricultural engineering, inevitably, I found myself with less and less free time and so models were put

“What I was looking for was a whole new approach to the hobby, something that would challenge me and rekindle my enthusiasm”

on the back burner for a while. In 1986, though, I got married and, once we'd settled down in a home of our own, I was able to set aside an area for model building again. By then, there had been a huge increase in the number and variety of models, radios and fittings available, and so my local model shop became an absolute magnet to me. It wasn't long before I was building all



“If anyone on a tight budget is reading this and wondering whether the expenditure is worth it, trust me, it is”

new Elegoo Neptune 4 Pro 3D-printer came complete with the latest Cura software – and the two work very well together.

The material you need to print is PLA, which cost about £15 for a good quality 1kg roll of about 300 metres. Prices do vary (£8 to £45) but shopping around and testing will show you get what you pay for. Personally, I am more than happy with the results at £15 a roll. And if you really want to add strength to your build, it's also possible to print using ABS.

Building Bluebird

To give you a better sense of what can be achieved by a ‘first timer’, let me explain how I used this new tech in the build of my scaled down model of Sir Donald Campbell’s *Bluebird of Chelsea*.

Photo 1 shows five large hull pieces glued together and a start having been made on the other cabin parts. I must stress that your printed parts will be smooth and very accurate only if you spend the time setting the printer correctly. Practice makes perfect (or as near as damn it), so I would suggest printing a small part time and time again, while adjusting the printer speeds, etc, until the result achieved is flawless. Do this before even considering moving on to the larger parts. Do not get put off by technology, it is just a learning curve, and it will be well worth it. If I can grasp it, anyone can!

“Your printed parts will be smooth and very accurate only if you spend the time setting the printer correctly”

Moving along, **Photo 2** shows the hull assembled. The deck was part of the individual printed hull section, so there was no need to worry about deck printing, assembling or how I would join the edges. It's a very quick process. How much time and effort you want to put into interior fittings and such like is, though, is of course, entirely, up to you.

I found the best glue to use for assembly was E.M.A Plastic Weld. As a matter of precaution, I also reinforced the joints on the hull internally with 1-inch-wide plastic

sorts of model boats and, much to my surprise, not one of them sank. I was a happy chappy!

Fast forward a good few decades and local model shops had become increasingly few and far between. (I have run my own business for 18 years, so I know it's not easy. Fair play, then, to those that have kept going, and indeed to any newcomers braving these difficult times.) This, there being no-one to chat with about ideas/build issues (unless, of course, you went online), and a general lack of inspiration, saw me become totally disheartened. I'll freely admit I blamed my lack of motivation on everything and everyone else, rather than looking closer to home. For a while, I even lost my faith in the Model Boats magazine (sorry!) and began contemplating giving the hobby up altogether. This situation vastly improved, however, when Lindsey was brought onboard as editor, because as she began to introduce more and more new ideas, giving the magazine a fresh new look, it occurred to me that if she could ring the changes, then so could I!

Delving into another dimension

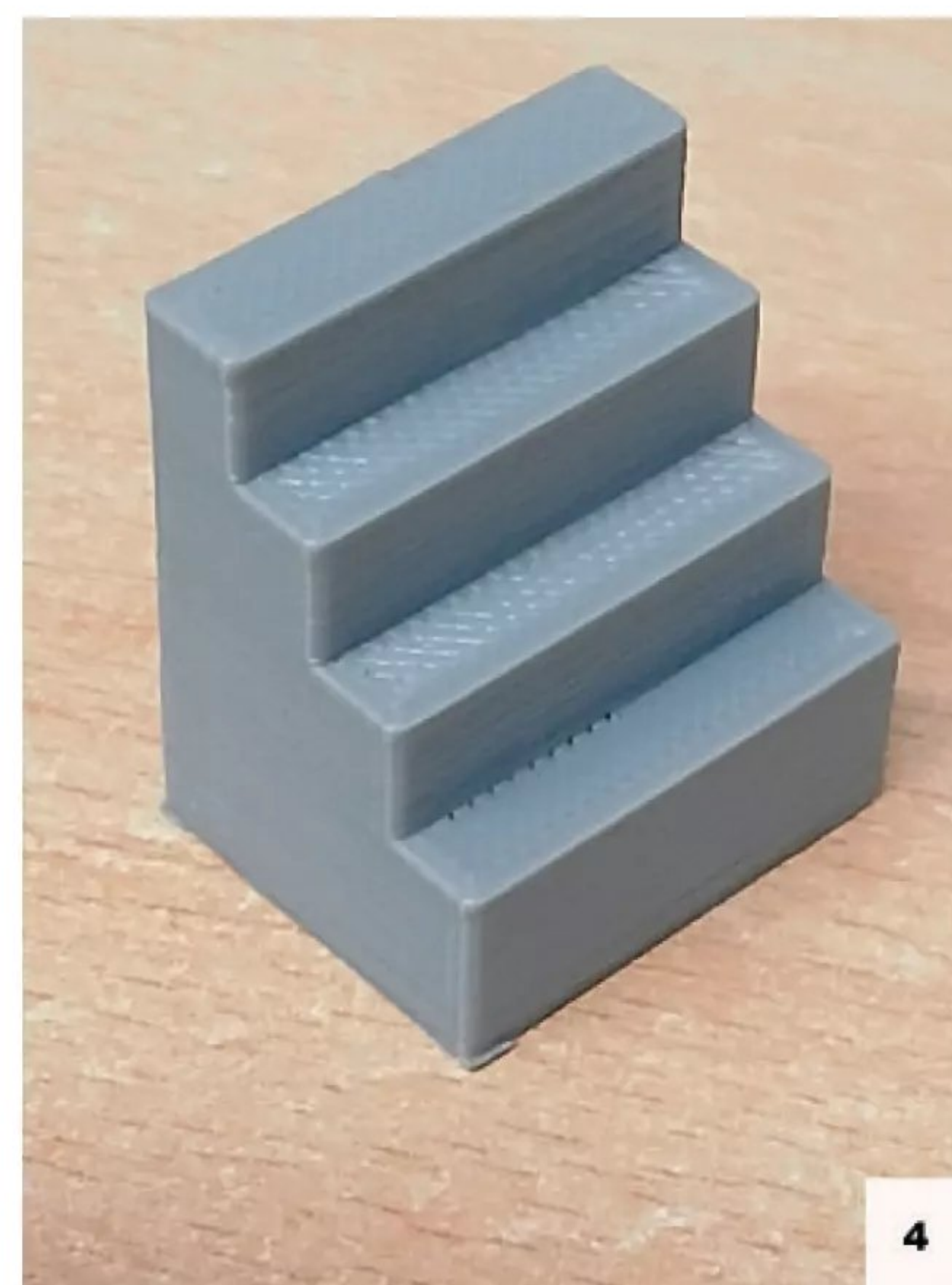
Where to start, though, what I was looking for was a whole new approach to the hobby – something that would challenge me and rekindle my enthusiasm. It wasn't until last summer that a new dimension finally presented itself, in the form of 3D printing – the application of which was clearly gaining more and more popularity within the modelling community. I wasn't entirely unfamiliar with this new

tech, as about five years beforehand my wife had bought me a 3D printer for my birthday. At that time, I'd done a bit of initial experimentation and had even got as far as printing out a few non-model related parts for my business, but to be honest I'd found the process a bit tricky, so hadn't used it since. It was only when I began wondering if, with a bit of practice, I, too, would be able to master the art of printing my own model boat parts that I began to view my 3D printer in a whole new light.

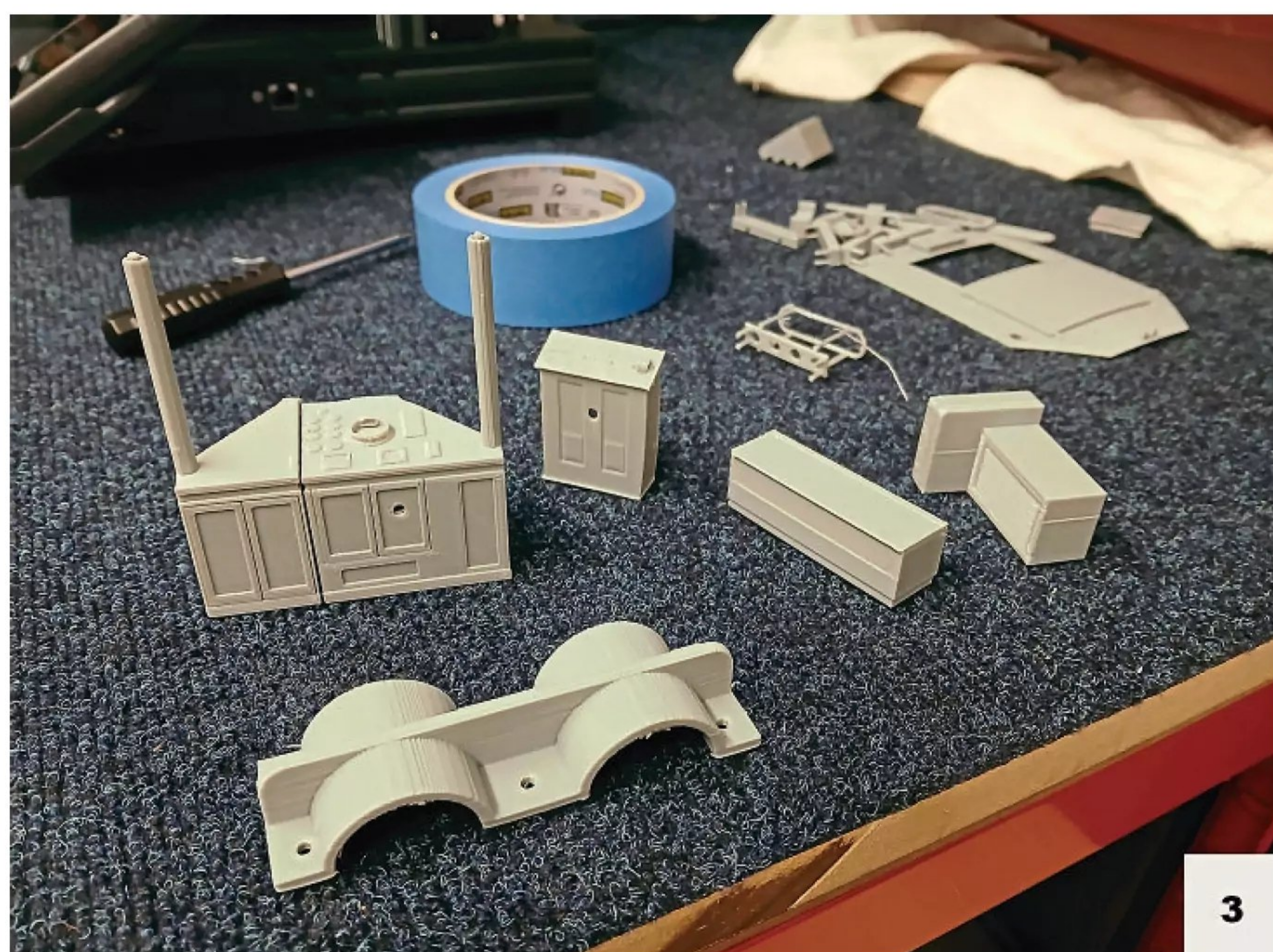
There are many websites where you can find a good variety of 3D printing files – Thingiverse and Cults, to name just two. So, after a bit of internet trawling, a file set was purchased for £19, and I was soon printing parts with which to make the *Bluebird of Chelsea* (Donald Campbell's Motor Yacht) in 1:24 scale.

Technology, however, clearly moves at a faster pace than I now do, as it soon became apparent that my printer was slow and (already) outdated. Fortunately, much to my surprise, I discovered that a faster, more accurate, and more user-friendly, new machine could be purchased for less (at £179.50 delivered) than the price that had been paid for my old(?) one! Hence, a few days later, a box arrived. Once unpacked, the other pleasant surprise was that I was able to get this printer assembled and up and running in about 15 minutes, as per the claims of the manufacturer.

If anyone on a tight budget is reading this and wondering whether the expenditure is worth it, trust me, it is. I am as tight as they come, but this



“Once you’ve invested in the relevant files for specific parts, you can use them over and over again”



sheeting, again using plastic weld to strengthen. I worked out with 3D printing that there was not only time to be saved but cost savings as well. This became apparent when printing the cabin in one piece with the top rails and door/window frames all done, so time and money was saved. Did I mention I was tight?

This was a learning curve for me, but I soon found I was printing lots of different parts (see **Photo 3**). With 3D printing, once experience has been gained it's like riding a bike, and the time will come when most of it feels like second nature. Do not try

to learn every aspect of the art all in one go though, as you'll simply not remember everything.

Another time saving exercise, which developed my skills along the way, saw me placing parts on the print bed just as I would lay them out when cutting from a sheet of plywood, i.e., positioning them to maximise the number I could get out of a single print run. This in turn saved on heating/start up time, hence one part to heat the printer took five minutes, but to heat up the printer to print 10 items in one go was still five minutes saving time.

As I became more familiar with

my new toy, I began to achieve very precise parts; in fact, some of them were of better quality than items supplied by certain model kit manufacturers. The quality of your parts will depend on the material you use. In **Photo 4**, you may just be able to determine that my cabin steps even have the tread pattern printed in, a big bonus for the rivet counters among us.

Believe me, once you get accustomed to your own printer and the programs available, you'll find yourself wanting to try printing all sorts of things! You won't be able to stop yourself, it becomes a bit of an addiction. Well, you've paid for it, so why not make good use of it.

Photo 5 shows some control horns for the rudders that I printed out. Having only having had my printer for a few weeks when I produced these control horns, I ended up printing lots more, both for friends and for future use myself, as once you've invested in the relevant files for specific parts, you can use them over and over again.

Moving on at pace, in **Photo 6** you will see my hull, having been sanded with fine wet and dry after a fine skim of P38 filler, then primed and top coated. The rudders and prop shafts have already been inserted into printed holes – there was no drilling involved here.

This is where 3D printing really comes into its own; it's like you've made your very own Airfix kit, only a lot stronger and designed for radio-control use. Excluding the expenditure



“Excluding the expenditure on the printer, motors, radio gear, paint, etc, the total cost involved in creating my ‘plastic kit’ for Bluebird was about £35”

on the printer, motors, radio gear, paint, etc, the total cost involved in creating my ‘kit’ for Bluebird was about £35 – this covering the print files and the material from which parts were then printed.

I decided the easiest way to finish the deck was to make use of an old stock of fine deck planking stock I happened to have stashed, which I finished in my favourite shade of homemade coffee stain. Likewise, some items were crafted from some wood strip left over from another project, which I’d put to one side knowing I would eventually find a use for it.

Getting back to 3D printed plastic parts, the only downside to them was that in some cases they needed to be carefully coloured to achieve a





faux wood effect. Here I had to learn a new skill and was drawn into the less familiar (to me) world of plastic kit modelling. I discovered a credible enough result could be obtained by first applying a coat of dark brown, then dry brushing a lighter brown over the top, and finally streaking a different tone through it to mimic wood grain. This process was actually much easier than I had anticipated. It was selecting realistic shades for the light or dark wood finishes that proved a little more of a challenge.

After a bit more work, I was on a roll, and began to ponder various accessories I could create that would further detail my model. My wife thought I'd gone mad, as, for example, after finishing a bottle of wine I would then excitedly measure both the empty bottle and the glass I'd been drinking from just to work out how these items could be correctly scaled down – very easy to do in the Cura program that came supplied with my printer. In **Photo 7** you'll see I even managed to print the seat cushions



9

“I think it’s worth considering new tech as a potential solution to a concern so often voiced in our community ...”

– not from the file set originally purchased but from another I easily sourced online. Admittedly, this involved printing an entire bench and then cutting its legs off, but I was very satisfied with the end result. My dog was scaled down to an appropriate size and printed in black filament, the bonus of this being he didn’t need painting. In fact, the entire process of printing him out and gluing him into place on the deck took less than 15 minutes (see

I also enjoyed trying out other methods and techniques that could be used to add further little touches of realism, as gleaned from fellow modellers (see **Photo 8**). Note the

copy of the model boats magazine on the counter and the rug on the cabin floor, which, if you squint, can just be seen in **Photo 9**. These items were made up from photos sourced online, which were then digitally scaled down before being printed out onto paper and cut to size.

Before I knew it, I had a model to be proud of. If you think I’ve moved on at a pace, that’s because I have. The thing is, I get bored easily, which is strange considering model boat building isn’t something that can be rushed. Or can it? It depends, I suppose, on what you want to achieve. Some of us want a model in days, others will take years to produce the finished article.

New age philosophy!

While, technically, it’s now possible to create an almost totally 3D printed model, I think the majority of model boat builders who’ve started to embrace this new technology see it

more as a way of taking the stress out of some of the harder and/or more fiddly to manually replicate elements or as a time saving way to produce multiples of any identical components required for their otherwise traditionally crafted models.

But I hope I have made you think about change and why it’s perhaps worth embracing. I feel I have to advocate it, as after taking a leap of faith and trying something completely new, my passion for the miniature world has been well and truly revitalised. And I’m now 62, so, yes, you can teach an old dog new tricks!

And, finally, I think it’s worth considering new tech as a potential solution to a concern so often voiced in our community: the difficulty of attracting newcomers to the hobby. Perhaps it will be the use of this new tech that finally makes the idea of building model boats a more interesting and appealing proposition to the younger generation. ●

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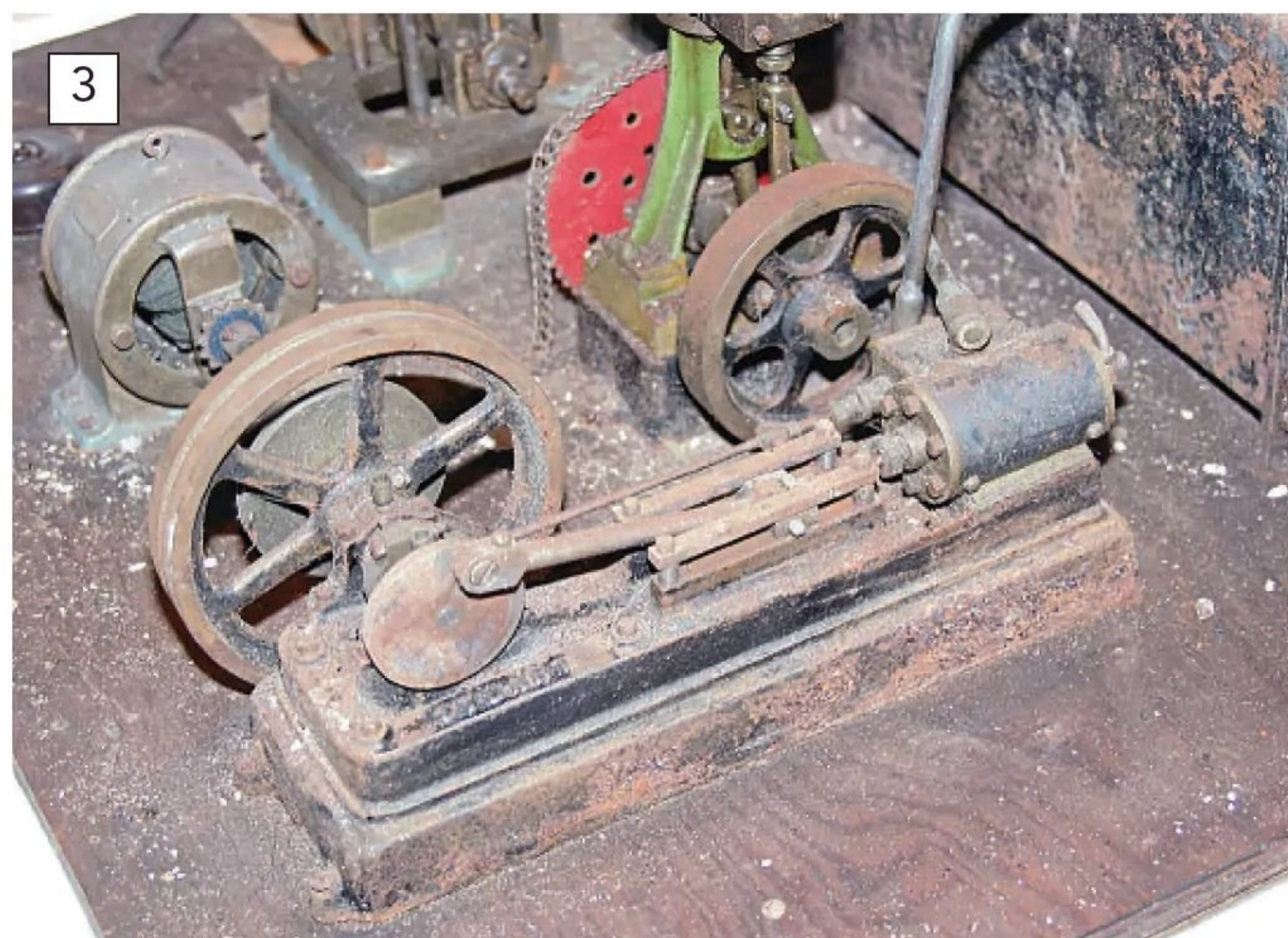
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BOILER ROOM

Richard Simpson talks us through how he tackled a more challenging than anticipated restoration project



On the arrival, the amount of work required to return the plant Richard had purchased in an online auction to operational use quickly became apparent (with apologies for the poor picture quality!).



The S50 engine was pretty much the same as the 10V, but the crosshead and the crosshead guides were basically rusted together. An overnight soak in WD40 was the first part of the process.

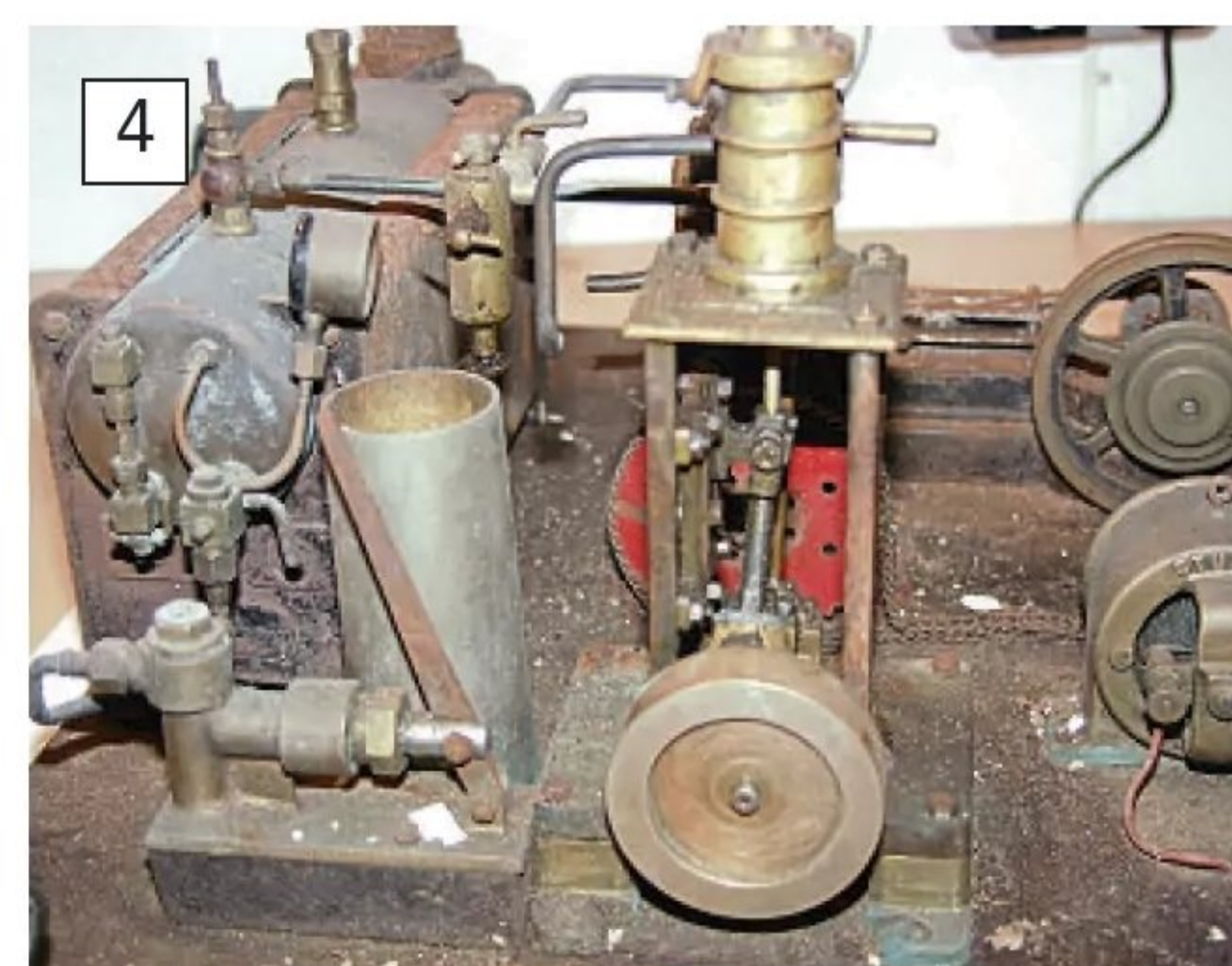
I think it's safe to say that most of us have, at some point, succumbed to the allure of a project on the promise of a wonderful end result, allowing this to completely overshadow the challenges likely to be encountered along the way. This was very much the case for me when, in around 2004, I came across an interesting listing for a steam plant on a popular online auction site (see **Photo 1**). The plant was described as a loft find in a house clearance and, while the photographs were not of the best quality, I could clearly see that the plant included a Stuart Turner boiler coupled to a manifold feeding a Stuart Turner 10V vertical single cylinder engine (see **Photo 2**); a Stuart Turner S50 horizontal single cylinder engine (see **Photo 3**); a third engine of unknown origin; a Stuart Turner dynamo, chain driven from the 10V; and even a Stuart Turner feed pump (see **Photo 4**). I had visions of the wonderful gleaming brass, gloss enamel and polished wood spectacle that would rise from the ashes, ready to be fitted into a beautifully polished wood open launch hull, so I gave into



The 10V engine was seized, rusty and covered in solidified lubricant and filth. At least it still had the drive chain, which was intact, although also rusty.

temptation and paid probably far more than I should have done for it.

When the plant arrived it started to dawn on me just what I had taken on.



The homemade engine could not be identified, so it was assumed to be of a one-off design or built from an unknown plan. Sadly, the machining was not particularly accurate, so things were sloppy and slack. Richard therefore decided to replace it.

Closer inspection revealed a pretty sorry state of affairs. This was not going to be the easy restoration I'd hoped for. The base was completely rotten but, as it was only ply, and delaminating, it was not going to be of any use anyway. All the engines were seized solid, thick with muck and rust, and were going to require a lot of work. The dynamo was also seized. The listed as being of unknown



Stripping the 10V down revealed the sheer amount of work required simply to clean it up. Everything was bagged to keep the bits together. Some parts, such as bearings, had already been marked up to ensure they were refitted in the same way.



Part way through the restoration of the 10V's running gear; the removed bearing has been cleaned, while the remaining bearing clearly shows the thick build-up of dirt.



A considerable amount of time went into the careful cleaning up of the 10V's running gear. The result, however, was worth all the effort. Things were free without being slack, so luckily the bearings did not need sleeving.

“All the engines were seized solid, thick with muck and rust, and were going to require a lot of work. The dynamo was also seized”

origin engine looked to have been homemade. The crankshaft and the guides were not the best of fits, and the remedial work necessary to try and turn it into a smooth-running engine would be extensive. Why it was included when everything else was Stuart Turner was a mystery.

As frequently happens with such projects, this plant was placed at the

back of a shelf where it remained for a good few years – until, that is, I found myself working on a new ship (a full size one – not a model!) which boasted superb workshop facilities, packed with state-of-the art equipment. This, I realised, would allow me to break the project down into stages, using my spare time during each three-month stint at sea to work on the refurbishment and restoration of one particular piece at a time.

I also decided that rather than restoring the plant for use in a model boat, I would restore it simply for display.

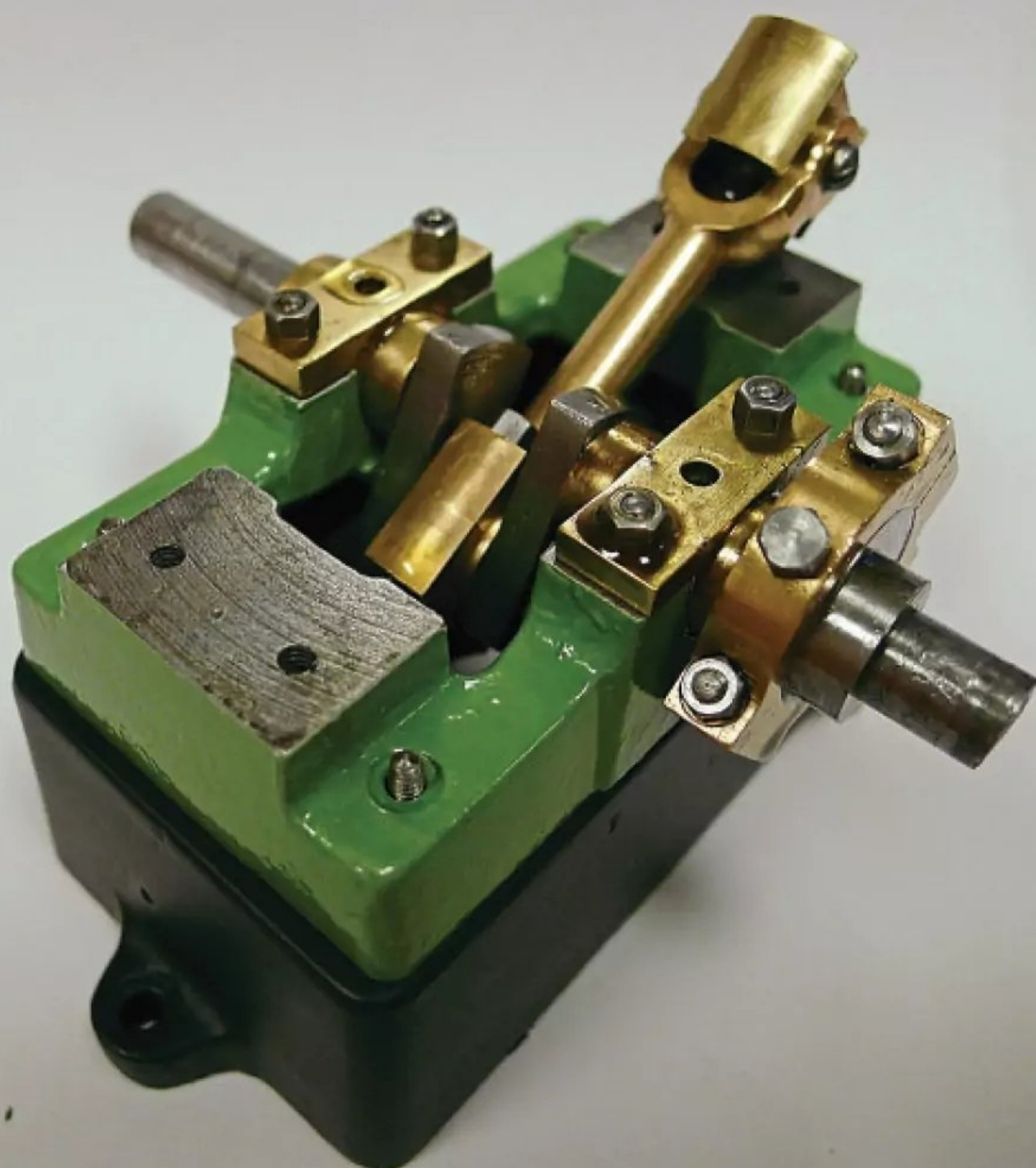
The 10V engine

The first engine to be restored was the Stuart Turner 10V. As this project

became the basis for the August to November 2012 instalments of Boiler Room, I won't go into too much detail here, but this first component certainly proved an eye-opener in terms of what I could expect going forward. With the engine seized, the last thing I wanted to do was to force it to turn and risk serious damage, so my first job was to strip it down. I discovered that the piston was packed with soft steam asbestos valve packing rather than proper piston rings, which had long since hardened and fused to the cylinder. Everything was seized with a combination of rust, muck and long since solidified lubricants, so dismantling had to be done very carefully (see **Photo 5**). Following this, decisions had to be made. Did I want to restore the engine to a pristine, as made, example or did I want just to make it operational again? I decided what I really wanted was for the engine to look well used but also well maintained and in the best condition. This meant that while I could go for a nice new paint job, the metalwork didn't need to be overly restored. Provided everything appeared clean and operational, it should look the part.

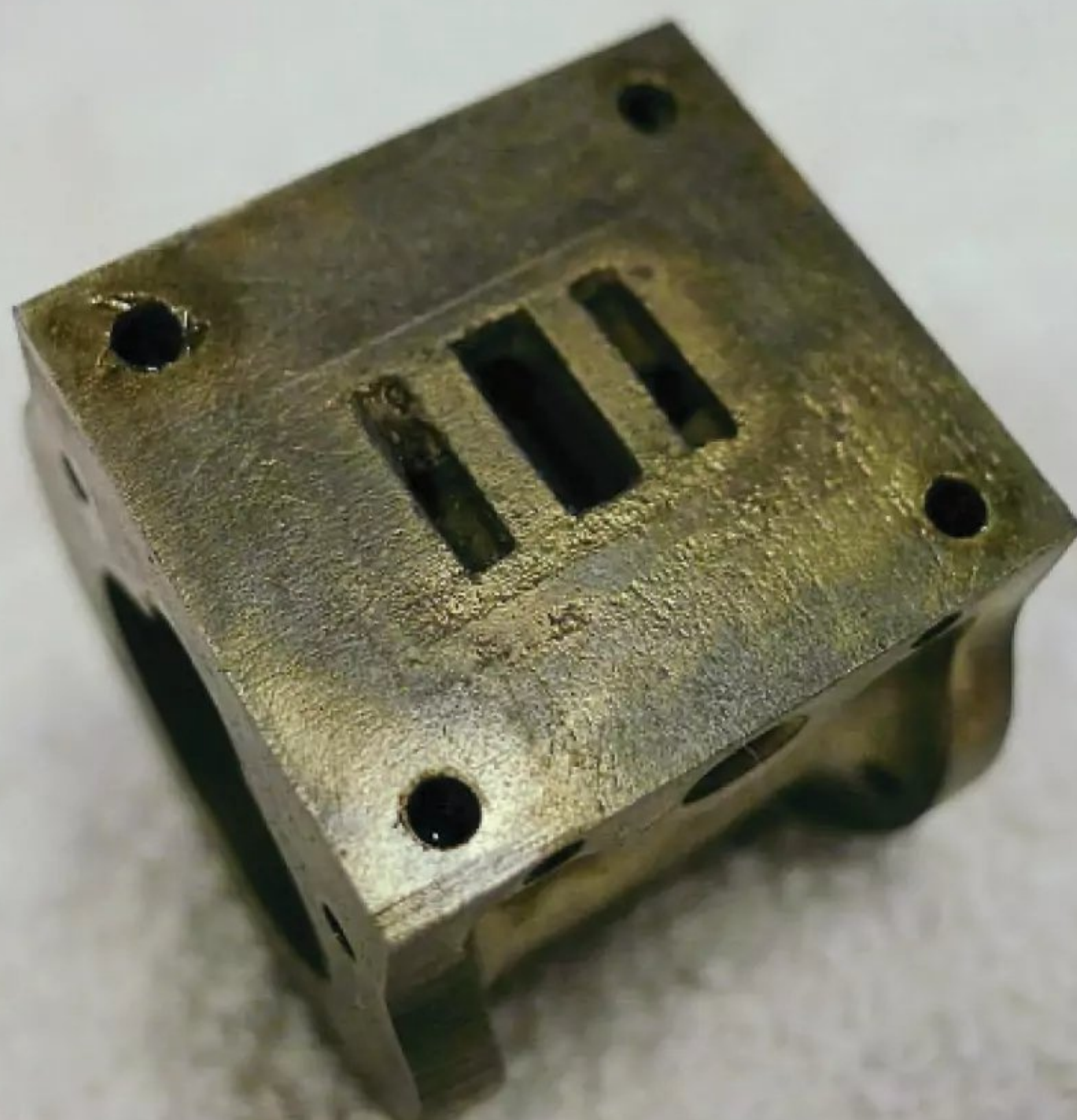
The big job then was to get to work with a small wire brush in a Dremel and take everything back to a clean metal surface. For realism's sake, rather than being highly polished, the brass components were left with a slight patina, while the steel components were simply cleaned back to bright metal and oiled (see **Photo 6**). After a lot of care and patience, the running gear started to look a bit more as it should (see **Photo 7**). The base was painted with matt black enamel and the main frame and associated painted parts were given a coat of primer, followed by a coat of two-part epoxy

8



The bottom end back together, with black matt enamel sprayed onto the base and two-part epoxy Machine Green hand painted onto the engine.

10



Once cleaned, it became obvious that the slide valve seat was badly corroded. Skimming this back to perfect would have removed far too much metal, so a compromise had to be made.

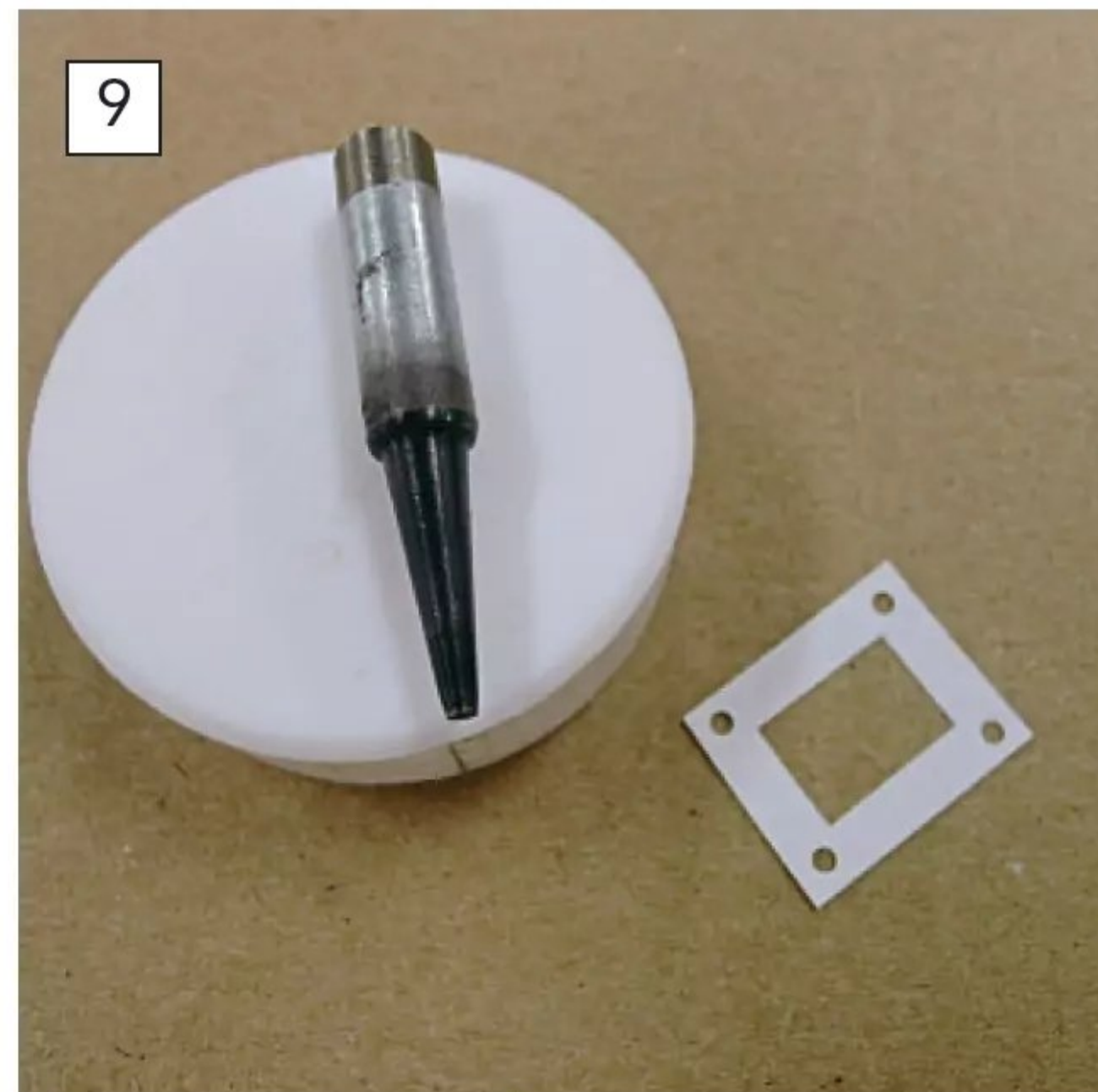
“What I really wanted was for the engine to look well used but also well maintained and in the best condition”

paint, as used on the ship's main engines (see **Photo 8**). The piston was cleaned up and new piston rings were machined out of neoprene bar, while, after first making a homemade hole punch on a neoprene anvil, new joints

were made for the cylinder covers and valve chest (see **Photo 9**).

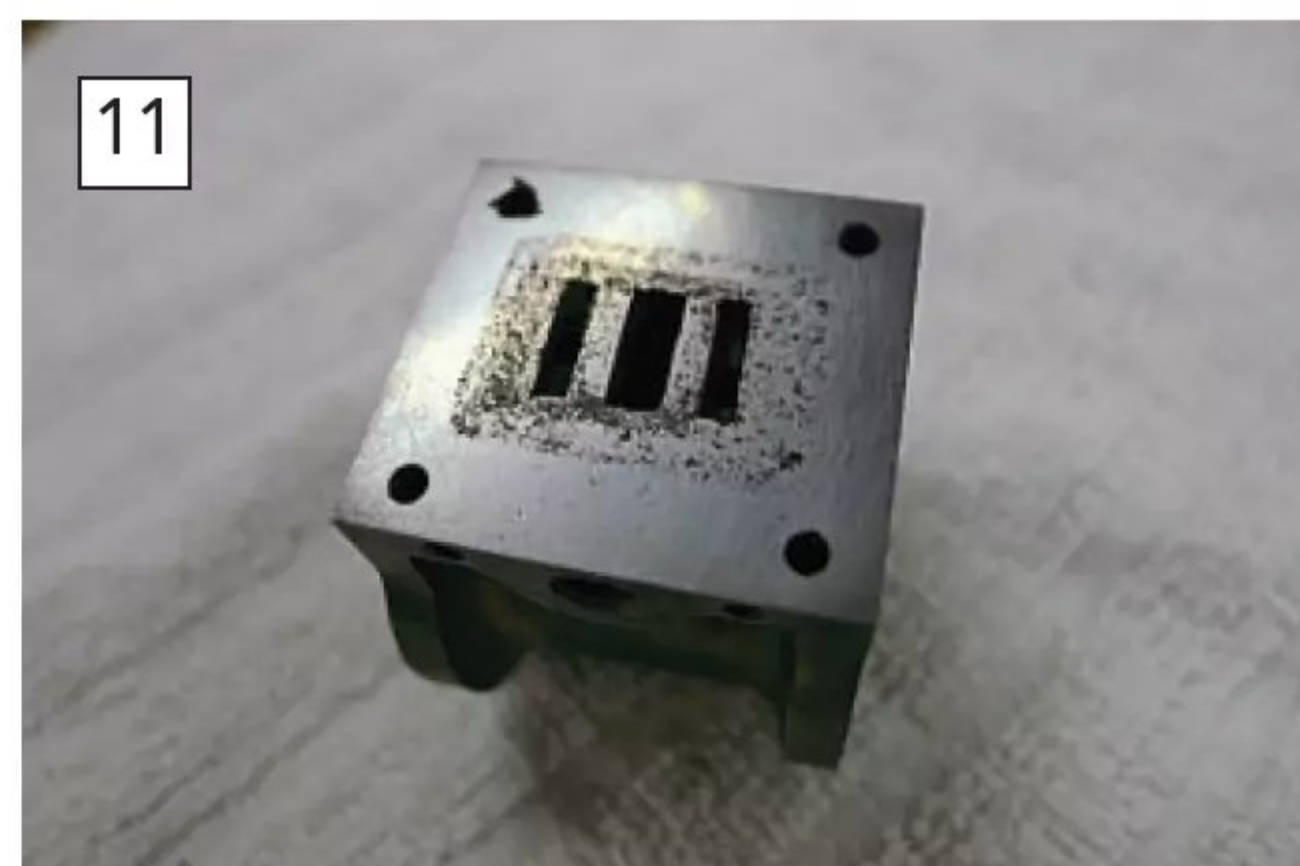
The slide valve running face was noted as badly corroded (see **Photo 10**) but skimming that back to a perfect face would have removed far too much material from both the valve and the cylinder. Consequently, I simply lapped the two together until such point a suitable compromise, i.e., a good enough surface without too much material having been removed, had been achieved (see **Photo 11**).

9



Making your own tools for a specific job is frequently required during restoration work. This is a hole punch that Richard made up with a neoprene anvil for making paper gaskets for the engine. The punched disc still had to be dug out with a pin, so not perfect but it did the job.

11



The engine will never win any awards for efficiency, but it should still run to an acceptable standard for a display piece.

12



Further reassembly revealed that the crosshead and guide was a decent fit and the engine turned over nice and smoothly. It had probably not done so for many years.

The engine was then reassembled (see **Photo 12**), retimed (see **Photo 13**) and given a test run on compressed air. I was extremely pleased to see that it ran extremely slowly on very little air pressure, so could consider the first



Setting up the piston stroke: the timing went well, probably as a result of the high standard of original manufacture. The slide valve was set centrally and the timing judged by the port cut off.

“The slide valve running face was noted as badly corroded (see Photo 10) but skimming that back to a perfect face would have removed far too much material from both the valve and the cylinder”

stage a success (see **Photo 14**). I still had a long way to go, though!

The S50 engine

Having already tackled the 10V, I thought I knew to expect from the restoration of the S50. This engine, however, proved, much more challenging. The crosshead had become well and truly seized on the crosshead guides, so I had to take particular care while dismantling it. Firstly, the entire engine was well doused in WD40 overnight so as to loosen everything up and lessen the chance of doing any damage while stripping it down. Again, all the pieces were carefully cleaned with a small rotary wire brush in a Dremel to try to maintain some of the original patina while ensuring all components actually operated as they should. Luckily, with this engine the slide valve was in slightly better condition, but it was lapped anyway to improve the seal. The base was painted with the same matt black enamel paint as the 10V, and the main body of the engine received the same two-part epoxy paint used on the 10V.

Once everything had been oiled up and reassembled with new joints and seals, I



Back to looking how it should! When trialed with compressed air, the 10V was found to run very smoothly on very little air pressure. Even the flywheel and the chainwheel ran true. So, after a lot of work, a good result.

was pleased to see that this engine also ran beautifully smoothly on very little air pressure. It would appear the Stuart Turner engines at least had been very well made initially (see **Photo 15**).

The third engine

Right from the start I'd known I was going to have to make a decision about what to do with the third engine. While part of me would have preferred to restore the plant to its original condition, refurbishing this homemade engine would take an awful lot of time and effort and I'd still be left with an 'odd-one-out'. Consequently, I decided to replace it with another Stuart Turner engine. As I already had a 10V and a S50, the obvious choice would be an engine that uses the same cylinder parts but in a twin cylinder configuration, i.e., the Stuart Turner D10 engine. I was lucky enough to find one of these on the same auction site, which was in an unfinished condition but looked to be very well made.

This D10 was obviously in significantly better condition than the rest of the plant, so simply required stripping down for a thorough checking out and then, after a paint job to match the other engines, rebuilding. Fortunately, the steam inlet to the manifold of the D10 could be easily aligned with the original plant pipework, so there weren't even any pipework modifications to be made.

The plant therefore now had three engines, all using the same cylinders and running gear, with all components being Stuart Turner items (see **Photo 16**).



The S50 went through a similar process, with particular care being taken when dismantling the crosshead and guides. At least with this engine you can get access to the sliding faces for a good clean, and the fit can be altered by adjusting the height of the crosshead mounting screw spacers.



Richard replaced the homemade engine with this secondhand Stuart Turner D10. Being well made and in good order, it simply required a clean and repaint to match the rest of the plant.

“The entire engine was well doused in WD40 overnight so as to loosen everything up and lessen the chance of doing any damage while stripping it down”

The boiler

As can be seen from the pictures, the boiler was in about the same sort of condition as the rest of the plant. Further inspection however revealed some strange aspects. Identified as a Stuart Turner 500 boiler, mainly due to its three external tubes (see **Photo 17**), stripping it down revealed that the original (quite likely to be asbestos based) insulation was still in place but,

17



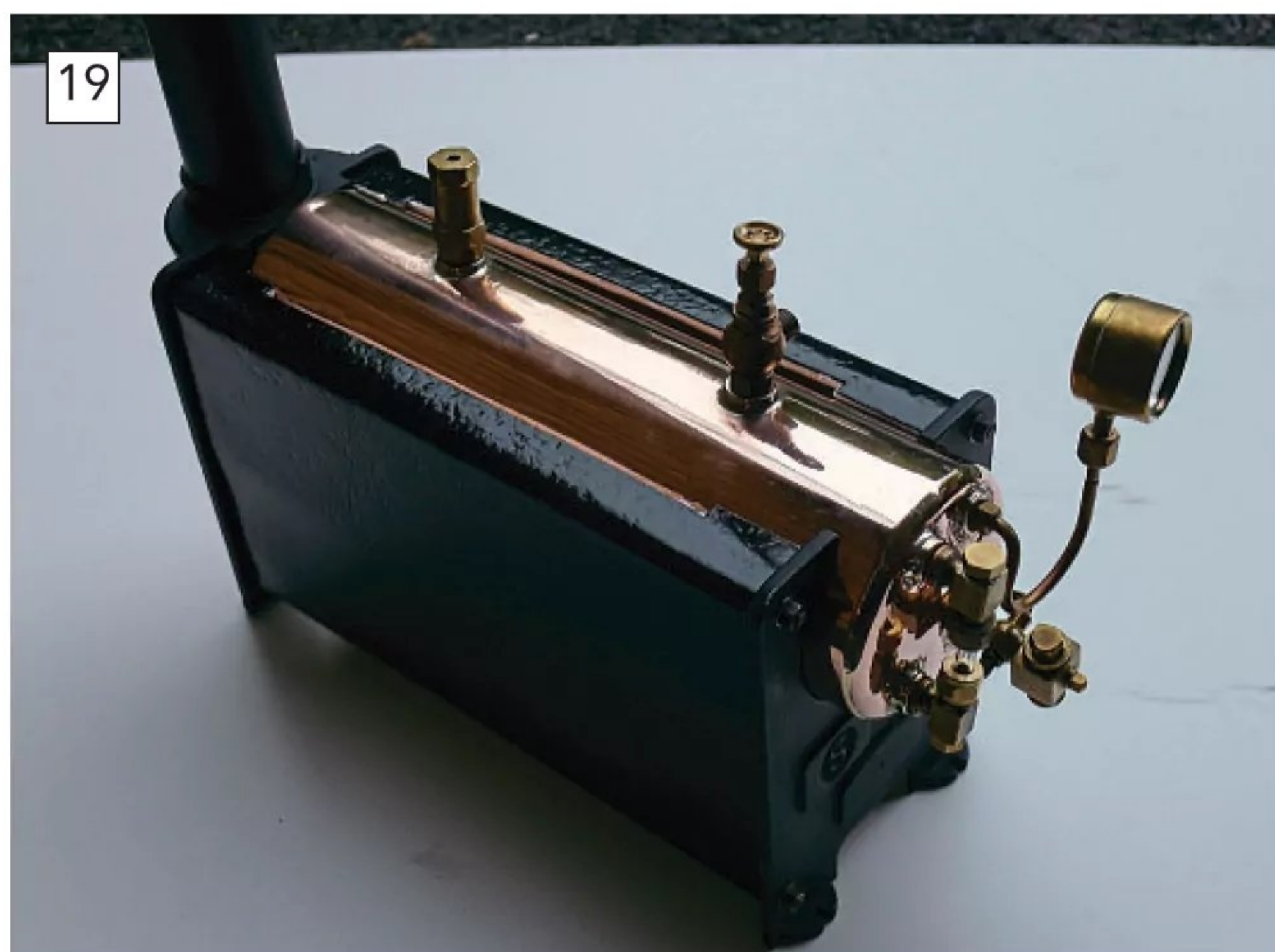
The Stuart Turner range of boilers are identified by the number of external tubes in the burner space. Three tubes mean you are looking at a Stuart Turner 500 boiler.

18



Very oddly, the fittings on the boiler were mounted directly into the threaded end plate – most unsatisfactory. Consequently, bushes were made and silver soldered to the shell to give a much stronger fit.

19



The original insulation was replaced with a ceramic version, and the shell was polished up after being pickled and cleaned out. The matt paint on the flue and ends, and the gloss paint on the sides, is simply automotive high temperature paint from spray cans.

20



It took a bit of finding but Richard eventually came up with a replacement burner, which keeps things considerably more period. Meths is not his favourite fuel but, in a tabletop display situation, it can be managed safely enough.

“As the boiler was missing its burner unit, I once again had a choice to make, whether to go for a new and significantly more convenient and efficient gas-fired burner or whether to try to find an original Stuart Turner meths burner”

curiously, the sight glass fittings, the feed valve and the pressure gauge fitting were all screwed directly into threads cut into the copper end plate of the boiler, as opposed to the more normal practice of them being

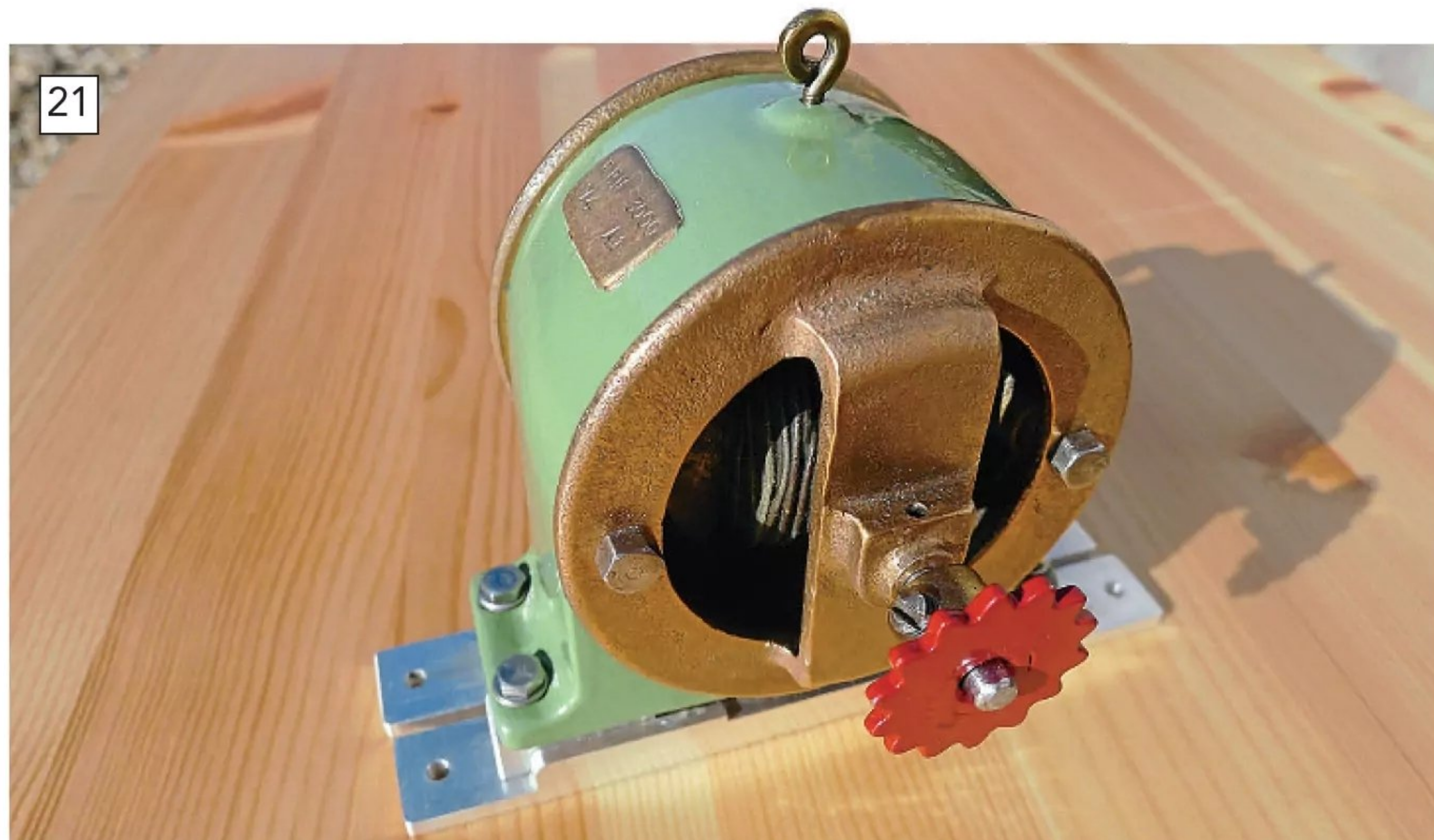
screwed into threaded brass bushes, silver soldered to the end plate. Communications with Stuart Turner confirmed that this is not a normal method of construction, so quite what the history of this boiler is remains a mystery. To make things significantly safer, brass bushes were manufactured and fitted into the end plate with silver solder (see **Photo 18**).

The insulation was very carefully removed. This was done in the ship's workshop welding bay, with the extraction fan on and all other precautions (such as wearing masks, goggles and gloves) taken. The boiler unit was then stripped down, acid pickled, cleaned and repainted before a twice working pressure test was applied to confirm the new fittings

were sound. Next, I polished the boiler shell and glued new ceramic insulation to the insides of the side plates. All the original fittings were cleaned and replaced, too. The pressure gauge was checked against a calibrated gauge and found, amazingly, to still be reasonably accurate (see **Photo 19**).

Finally, as the boiler was missing its burner unit, I once again had a choice to make, whether to go for a new and significantly more convenient and efficient gas-fired burner or whether to try to find an original Stuart Turner meths burner. While not being a great fan of meths burners, I ideally wanted to maintain the plant's original character, so when a Stuart Turner poker meths burner became available, that decided the issue (see **Photo 20**).

21



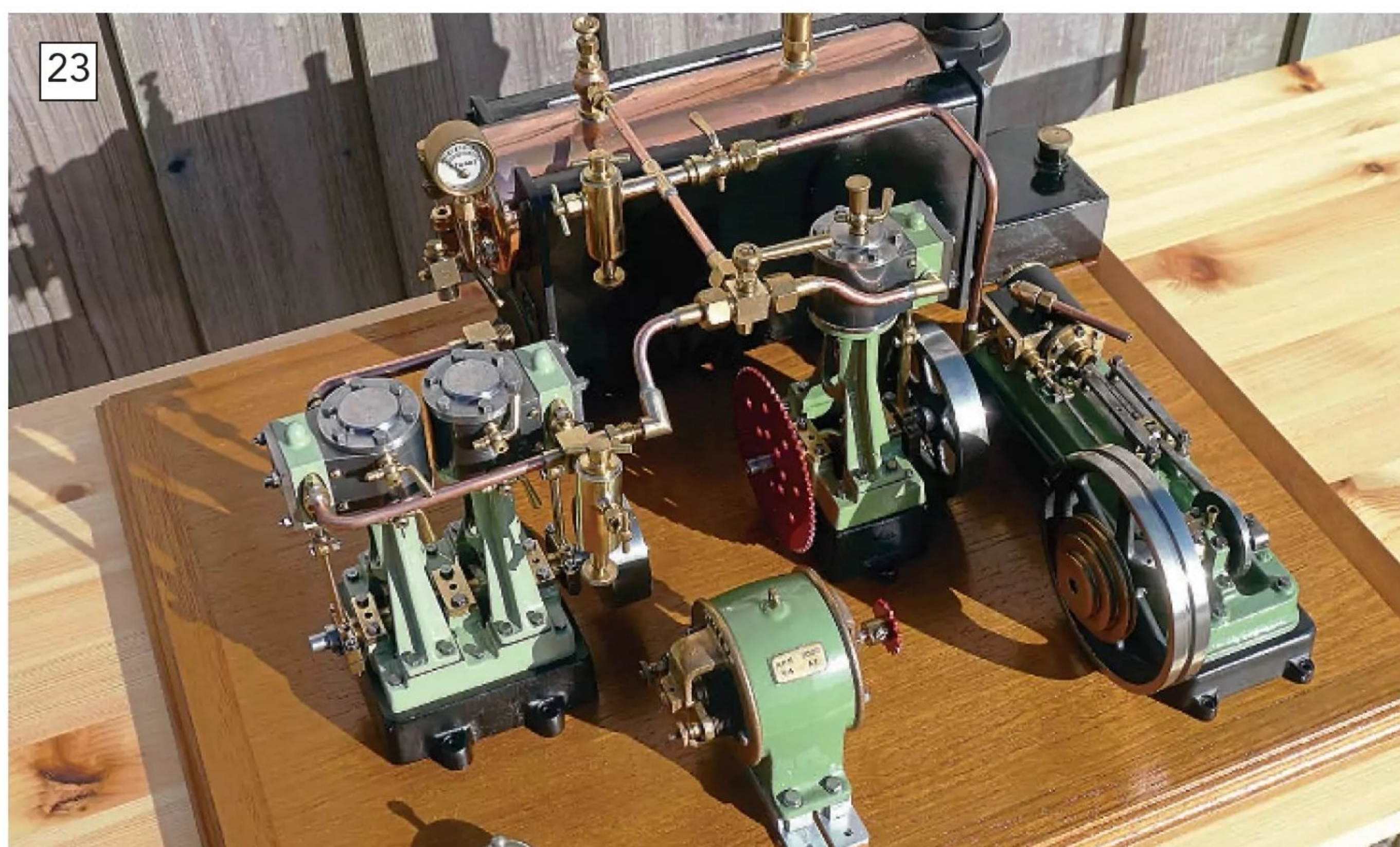
Even the dynamo received a good clean and a coat of two-part engine epoxy paint. The aluminum feet ensure that chain tension can always be maintained without having to redrill the base, as per the original arrangement.

22



The water feed pump was generally in good condition once the ball bearings were removed and everything was cleaned out. The seats weren't perfect, but they looked good enough to use without recutting. Time will tell!

23



There is a huge amount of satisfaction to be had by restoring old plant. There are also plenty of opportunities in sourcing such things as old educational set ups and repurposing components for marine use. Richard will keep this one as a demonstration piece for now.

Bits and pieces

One great advantage of working on a large cruise ship is the fact that they're equipped with an excellent carpenter's workshop. I was even luckier as, unusually, my Engineering Department had its own carpenter, so sourcing a nice piece of scrap mahogany for the base and getting it cut to size with a routed edge wasn't a problem. It was certainly a big improvement on the original and a few coats of a satin polyurethane varnish sealed it nicely.

I also wanted the 10V engine to run the dynamo as it did originally, so the dynamo was also stripped down, cleaned and painted with the two-part epoxy engine paint. This was then mounted on two aluminum runners, enabling it to be moved backwards and forwards so the chain could be properly tensioned when the dynamo was fitted; much better than making a multitude of holes in the nice new base or putting up with a slack chain (see **Photo 21**).

The Stuart Turner water feed pump was stripped down, cleaned and found to be in generally good order. The ball bearings simply needed a light clean, and the valve seats proved to be good enough without needing to be recut. A new water tank was made as the original thin brass tube was too badly dented and disfigured to be reclaimable. This new tank has an open top, so it can be quickly and easily filled during operation to keep the plant going (see **Photo 22**).

Conclusions

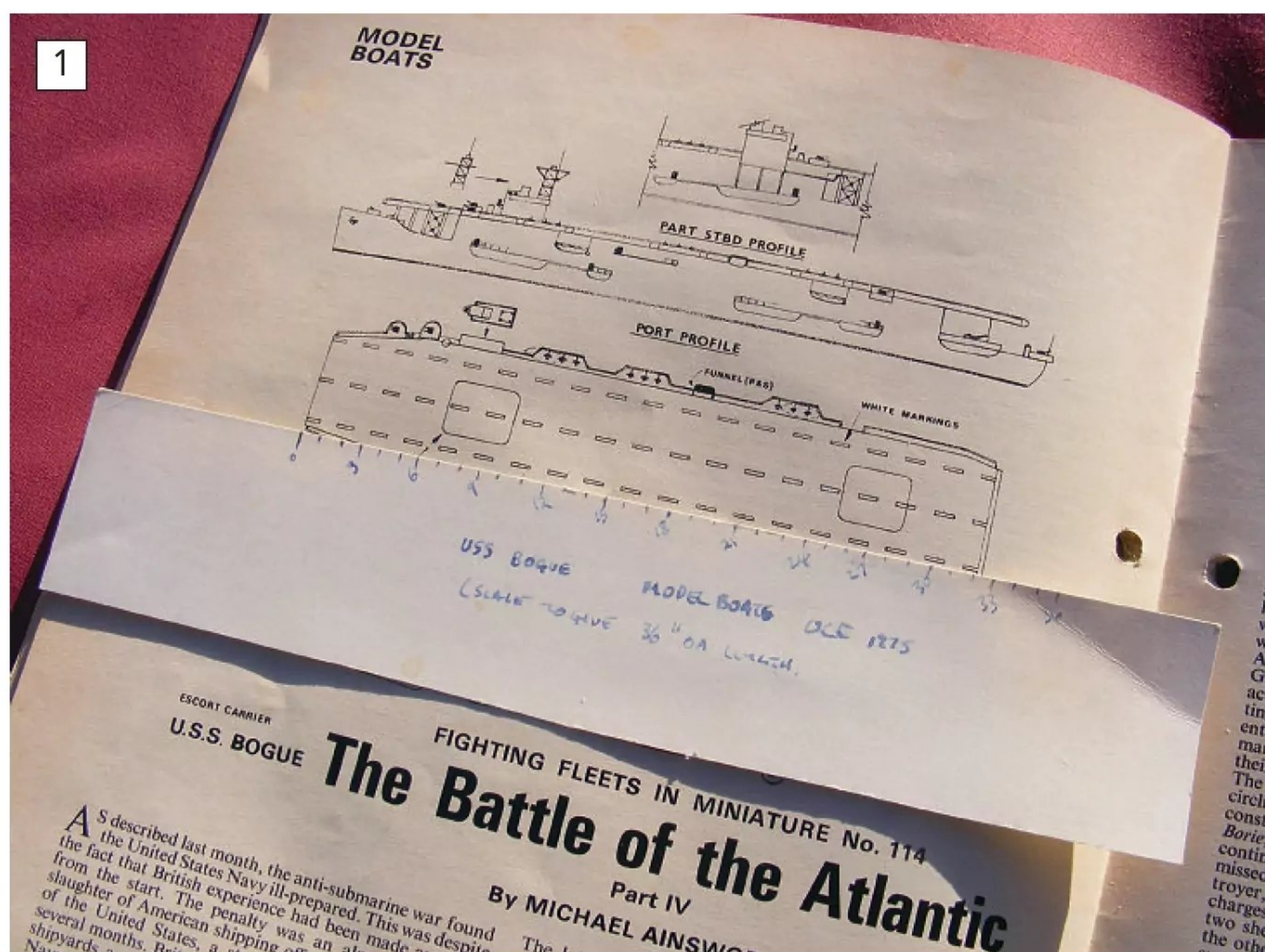
The project isn't quite finished yet. The base needs some sort of covering; I was initially going to tile it, but as a change from the norm I might go for a rough floorboard finish, with some polished brass handrails to finish things off. Everything will then just need to be fitted to the base and connected. That's just about it though, and I'm hoping to put the plant on display at a steam show later in 2025.

What this project has taught me is that nothing is ever quite as straightforward as it seems, especially when it comes to very old plant, and there will invariably be a great deal of work involved in a restoration job. Having said that, giving old plant a new lease of working life is guaranteed to put a smile on your face. From a model boat perspective, as long as you have a good understanding of what you're buying and know what you're doing, job lots can be a very convenient and less expensive way of getting your hands on a vintage steam plant for your models.

I will, of course, bring you an update on mine once it is finally operational again (see **Photo 23**). ●

DIY scale rule

Glynn Guest explains how to create one of these simple and very useful measuring tools



Making a rule for a 36-inch-long model based on a small plan.

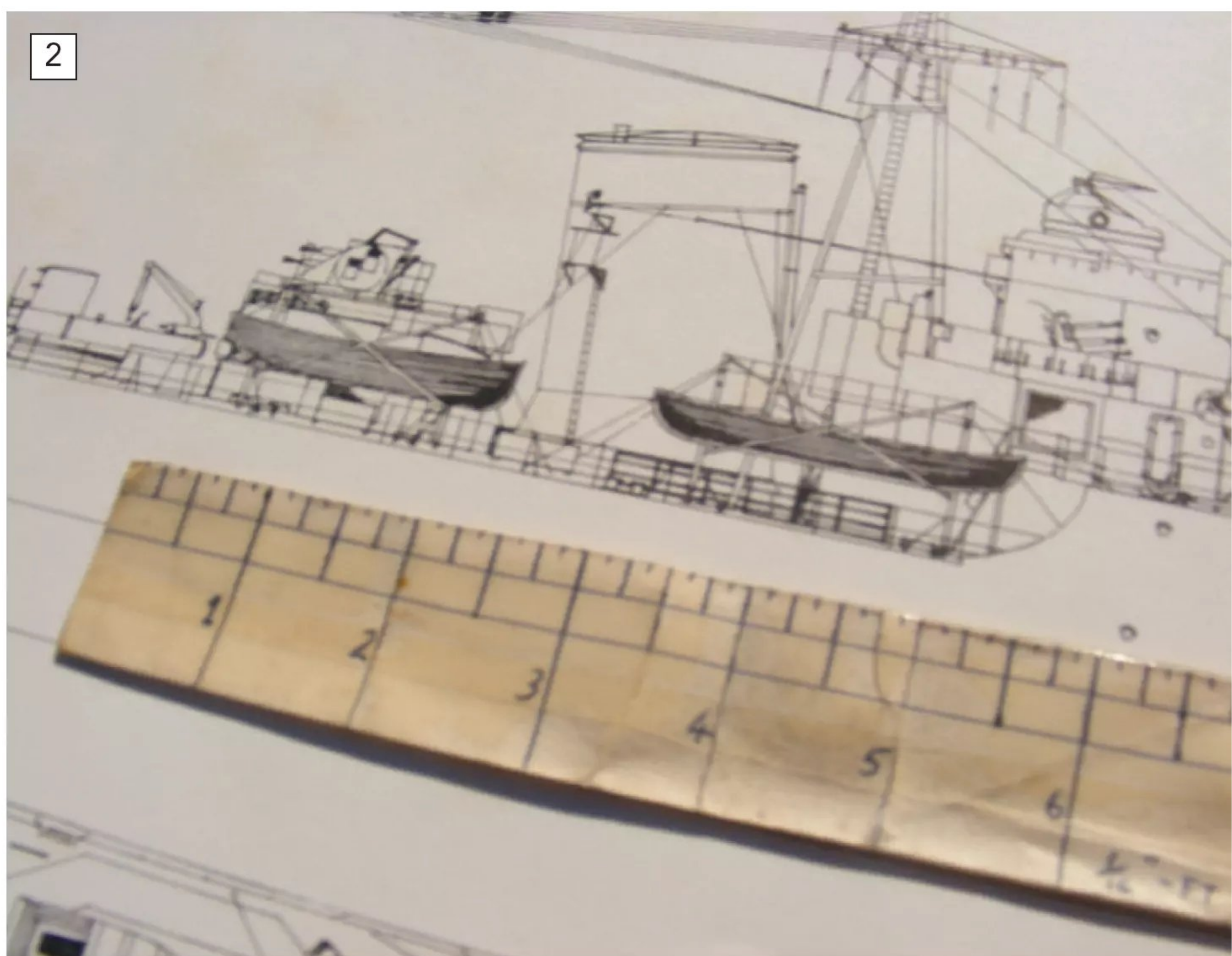
My early attempts at designing and building working models based upon warships made great use of the *Fighting Fleets in Miniature* series. These were side and plan views drawn to a common scale of 1:1200 by Michael Ainsworth. They started in April 1966 and ran in most issues of the magazine until March 1994. Intended for making static models at this scale, they were quite accurate and illustrated the layout of the vessels, but they were clearly way too small to make a practical R/C model directly from. I had already started using a scale around 1:144 (1 inch = 12 feet) since this allowed a model based upon a destroyer to be built using the standard 3ft lengths of balsa sheet. A little thought and it was realised that these plans could be conveniently scaled-up using the close approximation of 1/8-inch on the 1:1200 plan corresponding to 1-inch on my models. True, not exactly right but close enough for a decent looking semi-scale model.

To make life a little easier and avoid making mistakes when reading off the

“There may be clever methods using CAD, but I’ll show you a simple way with just pencil and paper...”

1/8-inch segments on my standard rule, a simple ‘scale rule’ was drawn onto a strip of card so the model dimensions could be read off directly (see **Photo 1**).

Becoming more ambitious and, hopefully, a little more skilful, I started using more detailed plans such as those by Norman A. Ough. These were usually at a larger scale, something like 1:192 (1 inch = 16 feet), but wanting to carry on building models in 1:144 they could not be used directly. So, rather than multiplying all the plan dimensions by 1.33 (and this was pre the ubiquitous electronic calculator days!), a scale rule came into use again (see **Photo 2**).



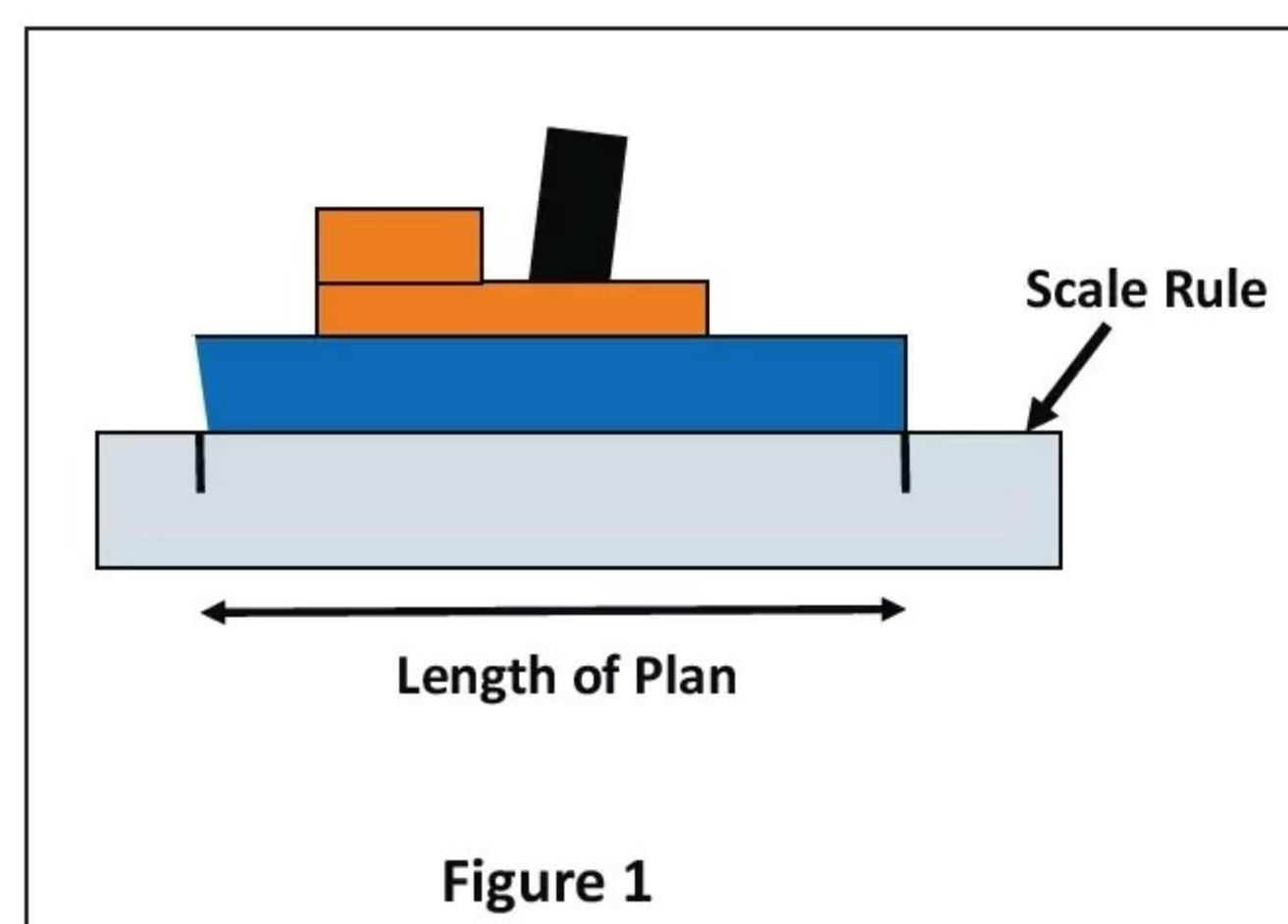
Glynn’s rule used to provide full size dimensions for a 1:144 scale model built from a 1:192 plan

“This method may not be able to supply the accuracy that some demand, but it is cheap, easy and well suited to drafting plans from any small drawings that may inspire you”

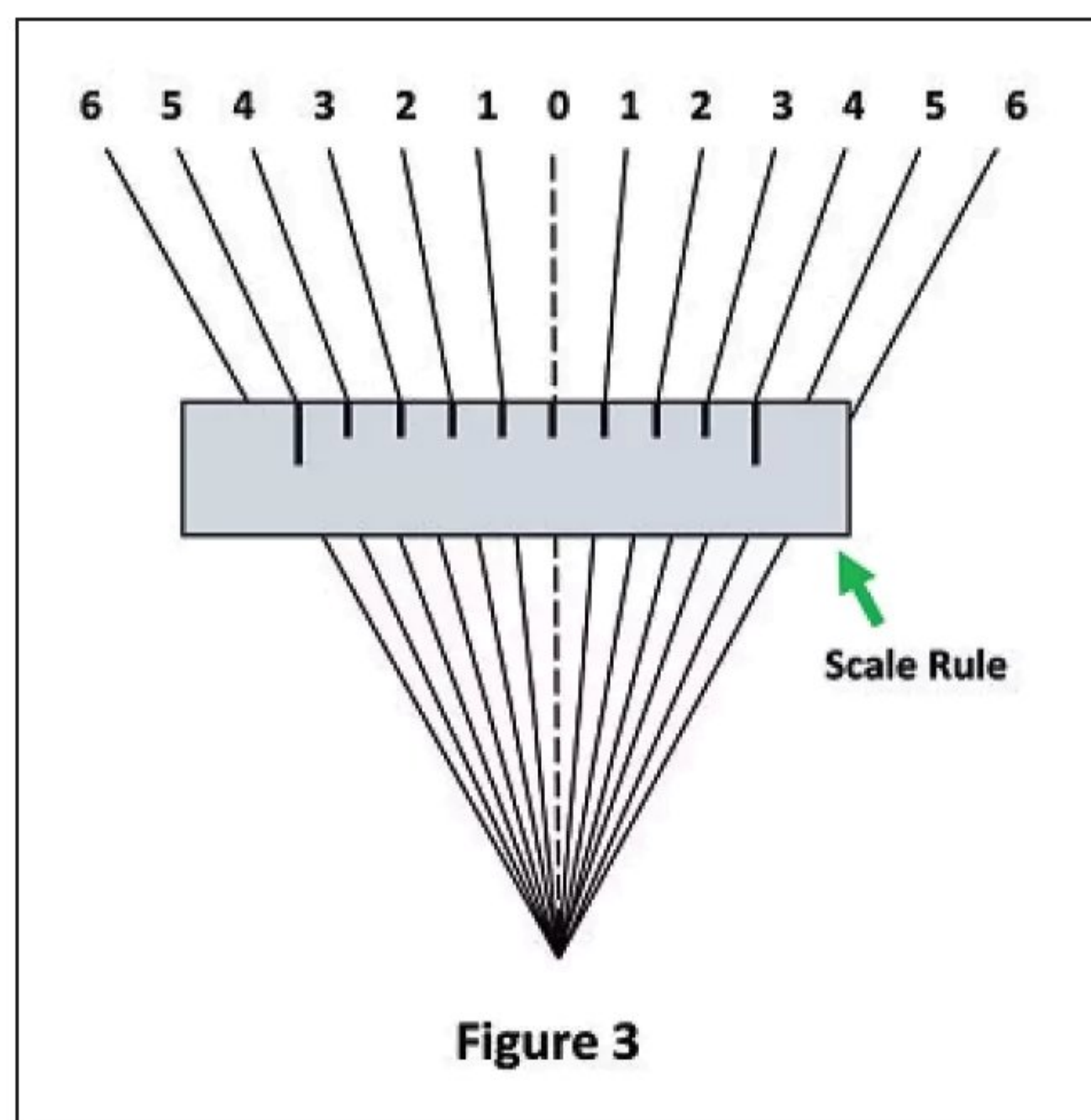
Since then, there have been many times when an interesting looking plan but with no scale or even full-size dimensions given has been spotted. Of course, once I figure out the size of the model I want to build based upon one of these plans, a suitable scale rule has to be made. No problem, as I've created an easy way to tackle this...

Drawing lines

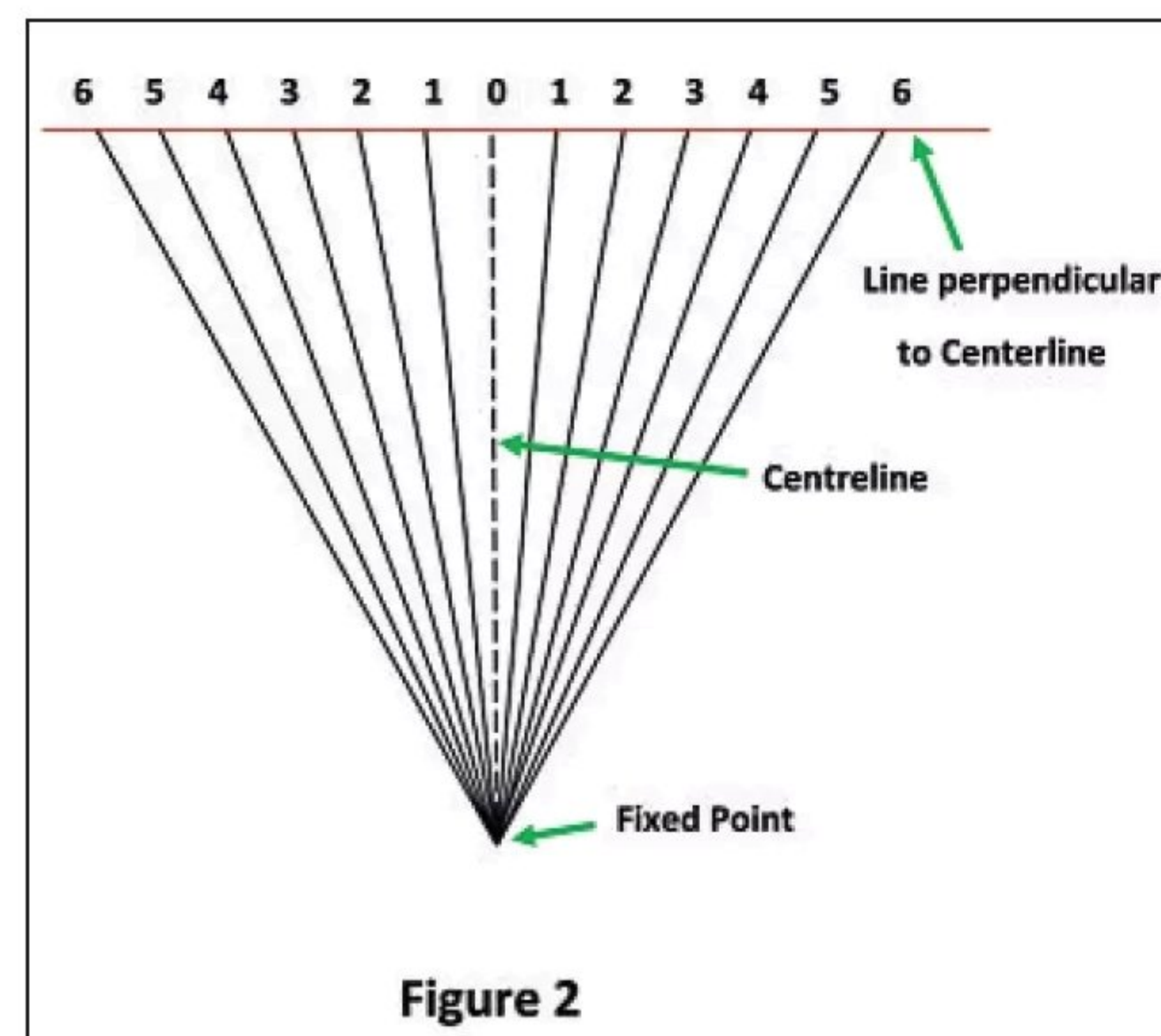
When making a scale rule, the first thing to do is to take a piece of card with a straight edge longer than the



Marking the plan length on the scale rule.



Marking units on the scale rule.



The pattern to mark length units on the scale rule.

image you are working from. Onto this card the positions of the bow and stern are marked (see **Fig 1**). Alternatively, you might know the width of the model you want to build or some other dimension (perhaps a fitting?) and its length on the plan could be used for the scale rule. Now the task is to subdivide the length between these two marks to match the units (i.e., cm, inch, or whatever) you plan to use when building the model. I was taught a method in my Engineering Drawing classes many

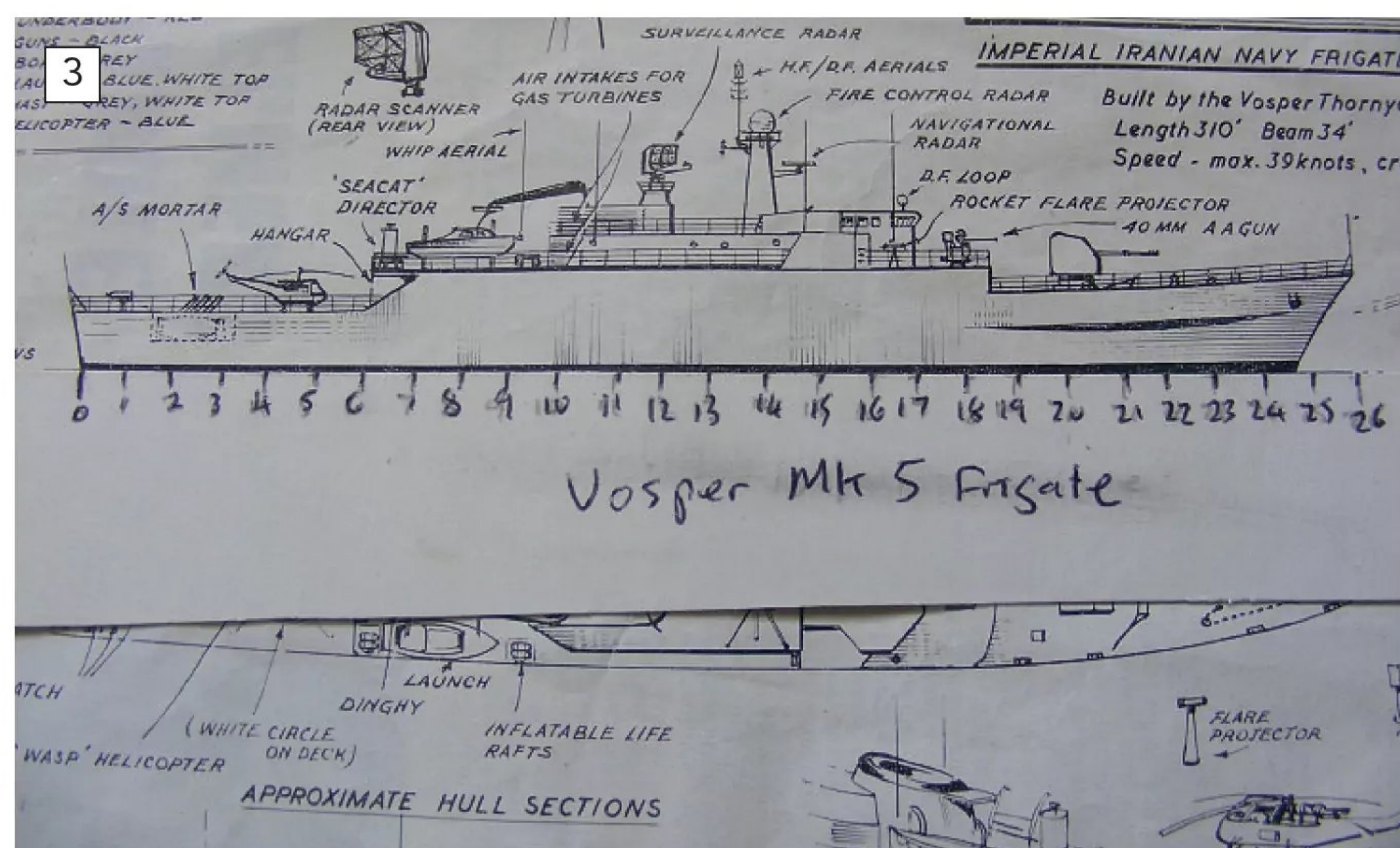
years ago, but it demands proper drawing equipment and the skill to use them. There may be clever methods using CAD, but I'll show you a simple way with just pencil and paper...

Let's make life easy and say you need to divide this length on the card into nine equal parts. Yes, you will almost certainly need more for the length of a model but it gets the right idea over without giving me the chore of drawing up a diagram with 30, 40 or more divisions! If it makes it easier, just imagine it's not the length but the beam I've taken off the plan.

You start with a suitably large piece of card; mine is the back of the calendar that a milkman used to give his customers each December – referring to the time when milk was delivered to your doorstep each day shows you how long I've been using this method! A central vertical line is drawn down the card and a point marked at the bottom. Across the top a line perpendicular to the centreline is drawn, and then equally spaced points marked to match the likely sizes of the models you might wish to build. In the example used in this article (i.e., nine units long), six units either side have been used. From the bottom point on the centreline, straight lines are drawn up to the points on this perpendicular line. It's also a good idea to number these lines starting from zero and moving away from the centre (see **Fig 2**).

Now, the piece of card being used as the scale rule is placed on this ray pattern of lines and keeping the measuring edge perpendicular to the centreline, moved up and down. The aim is to have the marks on this rule that correspond to the bow and stern positions of the plan you intend to work from match lines that will subdivide the rule to meet the number of length units you plan to build the model at. In this case it's nine units, so the bow position is on the left number five line and the stern on the right number four line. The scale rule can then be marked up (see **Fig 3**). Your scale rule can be further subdivided into smaller fractions using this method. **Photo 3** shows such a rule being used for a recent model based on a drawing published in the August 1968 issue of Model Boats.

This method may not be able to supply the accuracy that some demand, but it is cheap, easy and well suited to drafting plans from any small drawings that may inspire you. I have also used it when working from suitable photographs. ●



The scale rule used on a plan for one of Glynn's more recent models.

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



Ewan McKechnie's seriously slick model of SY Medea, built from the 1:48 scale Deans Marine's kit.

SY Medea

After having played with R/C helicopters (hovering) for the past few years, now living near the sea, with a fantastic model boating pond round the corner, building a model boat became the obvious next step.

So, as I love the magazine and look forward to seeing what everyone else is doing each month, I thought I would share some photos of my first completed build, from the Deans Marine kit for SY Medea, with the recommended power installed. In retrospect, there are things I could probably have done better/differently,

but being my first attempt it was rather a steep learning curve.

I am now looking forward to making a start on the next one.

EWAN McKECHNIE
SHERINGHAM, NORFOLK

What a sleek and gorgeous model, Ewan! I also adore how thoughtfully and creatively you've positioned all the charming figures onboard. Honestly, it's hard to believe this is your first build – bravo – you've totally captured all the glamour and romance of this stunning steam yacht! Ed.



MS Oldenburg

Greetings from New Zealand! I have been modelling for decades, in the last few years leaning more towards model boats. While we have a few great old boats here, there are not many plans available, so I really appreciate the ones you provide. I especially love the older English

style vessels and have currently built a dozen or so, so I was delighted to see the very attractive and worthwhile to follow plan for the MS Oldenburg in the January 2025 edition. Yes, it did stretch my brain, and my skills, a little, but I got there!

Keep up the great work!

LAWRIE ROBERTS
NEW ZEALAND

Kia ora, Lawrie! Thanks for your lovely email and for these great shots. You've done a fabulous job. Would love to see some of your other builds. Ed



Lawrie Roberts' excellent MS Oldenburg build, complete with Lundy bound figures, which he modelled by working to the free plan included in the January 2025 edition of Model Boats.

WSP 10

This is my WSP 10 from Billing Boats, which I built as a radio-controlled model – my first venture into R/C, and I'm now hooked, so it certainly won't be the last.

When I first put the boat on the water, she was pristine, but after being used all summer and then simply put away over the colder months she's admittedly not looking her best right now, being a little dirty and a bit rusty. Well, let's face it, most of us look a little pasty and depressed after a long winter, but I'll soon have her tidied up and ready for patrol again, which I am looking forward to, as she's great fun and very fast.

All the best, and I look forward to hopefully seeing my photos in the magazine.

TOMASZ KLYSZNSKI
EMAIL

Fabulous work, and photos, Tomas. A quick rap on the knuckles for not giving your model a good clean before putting her away for the winter, though – LOL! Ed





Island Girl & the William Underwood

I thought I would share a couple of scratch-built models I've recently completed with you...

The first is a Cape Islander style lobster boat. This style of fishing boat is common along the shores of New Brunswick, Prince Edward Island, Newfoundland and Nova Scotia in Canada, and also along the Maine coast of USA. She measures 31 inches in length. I built her for static display, but she has a fiberglass hull, so she could be converted for R/C use. I have named her *Island Girl*, as my wife is from Deer Island (a small island that lies between mainland Canada and the United States).

The second is the herring carrier *William Underwood*, which represents a vessel built in 1941 at the Simms Brothers boatyard in Massachusetts, USA. She measured 70ft 7-inches long and could carry 80,000 pounds of cargo. Her fo'c'sle was heated with a coal stove, so a coal chute hatch on the deck allowed coal to be dumped down into a storage area. This vessel also had sails in her early days, which is why the stove exhaust pipe is located where it is, i.e., away from the sails.

The Underwood family packed a variety of seafood products (clam chowder, fish chowder, quahog chowder, clams, clam juice, fish cakes and sardines) at plants in Jones Port and Bass Harbor and delivered herring to its own plants and others in Lubec, Maine. It owned seven carriers. Today, the company no longer packages seafood but does produce 'Deviled Ham' in cans that carry its logo,



depicting Poseidon holding a trident.

The *William Underwood* still exists but now, after many months of restoration (wooden boats need much TLC), serves as a private yacht.

**RUSSELL BOWMASTER,
ST GEORGE, NEW
BRUNSWICK, CANADA**

What beautifully crafted builds, Russell, and, likewise, what a gorgeously scenic part of the world you live in – very jealous! Ed







Russell Bowmaster's superb Cape Islander style lobster boat scratch build, named for his wife.





Another splendidly crafted scratch build from Russell's workbench, the herring carrier William Underwood.

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**

Lucky Luca!

Well, I did it – I told my family I'd won a luxury yacht! Hmm... Like you said, maybe not such a smart idea.

Initially, though, I'd wondered whether the joke was on me, as after getting a 'missed parcel delivery' message from UPS on April Fool's Day when I knew I hadn't ordered anything, it seemed likely just another scam. But no, I'd actually won the Mantua Models Galaxy yacht from the March 2025 issue prize draw!

I'll admit that even when reading some of your previous prize draw winner letters I'd had my doubts about whether draws like this were genuine, but now I know they are, and here's the proof [see accompanying pic].

I religiously enter each of the prize draws, always using my grandson Luca's name for good luck. I therefore feel obliged to build and name this model in his honour. And, as an added bonus, even though he's really into his Lego, he now wants to help me build this kit.

Thank you so much, and keep up the good work on a great mag. The variety of content and balance of genres is just right.

My thanks also to Cornwall Model Boats, whom I will be paying a visit to in June while on holiday in Cornwall to buy the remote-control gear.

**MIKE BUDIMIR
EMAIL**

LOL, I did warn you, Mike! Seriously, though, glad your win came as a nice surprise. I think a granddad/grandson build will be great fun and I look forward to seeing some pics of Lucky Luca on completion. Ed

Mike Budimir, together with his grandson, Luca, with the Mantua Models Galaxy kit won in the March 2025 prize draw courtesy of Cornwall Model Boats.



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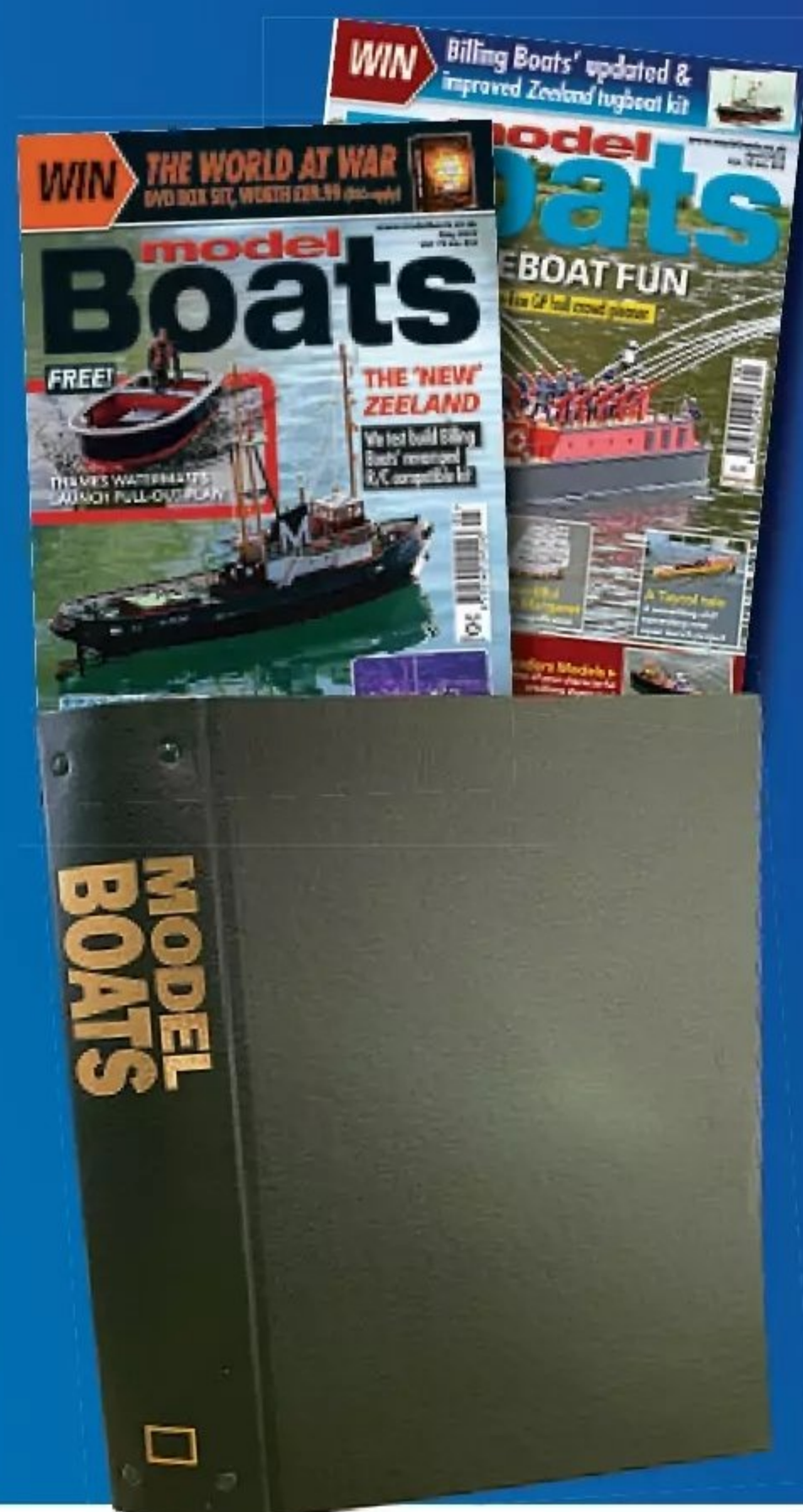
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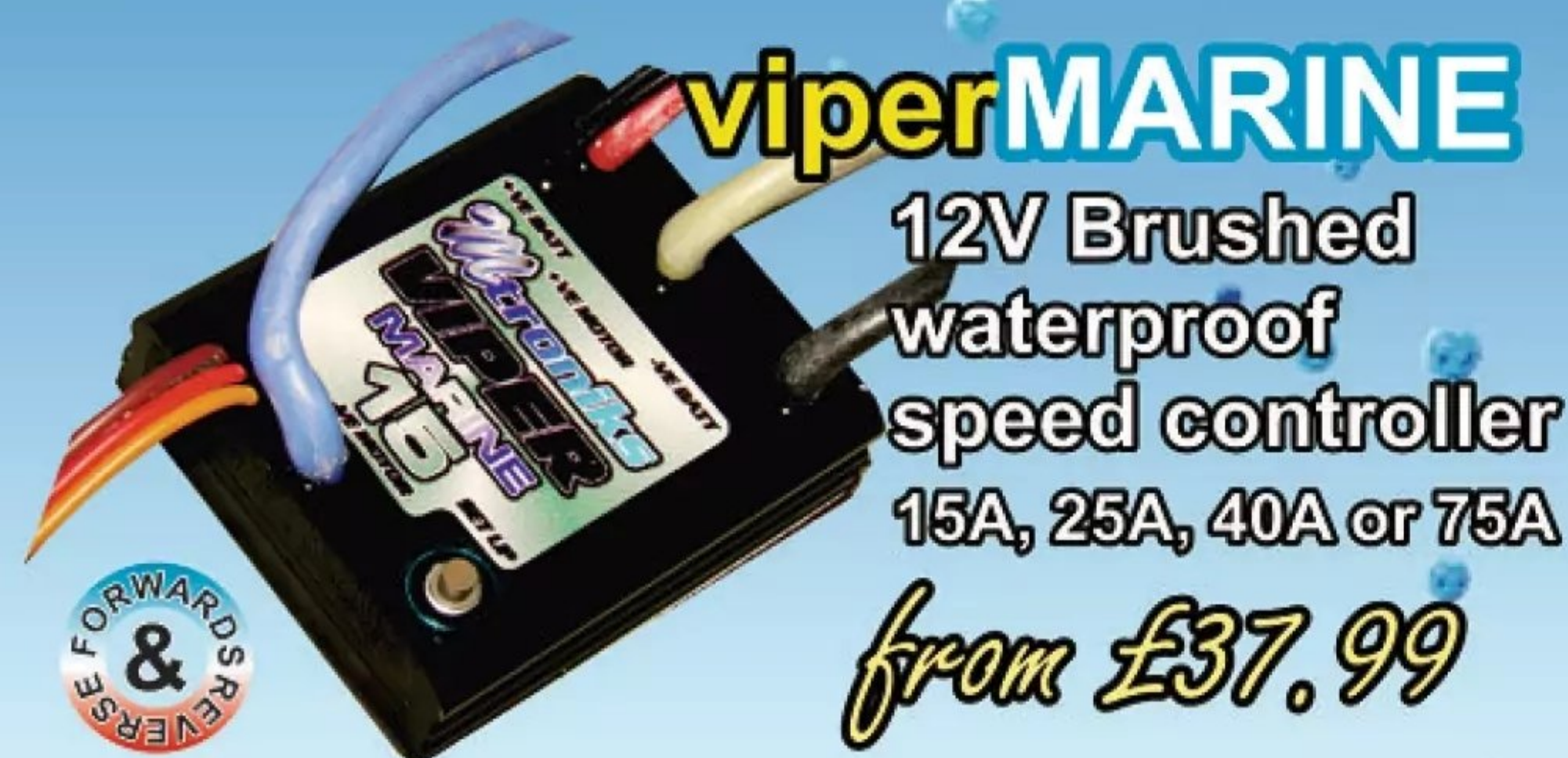
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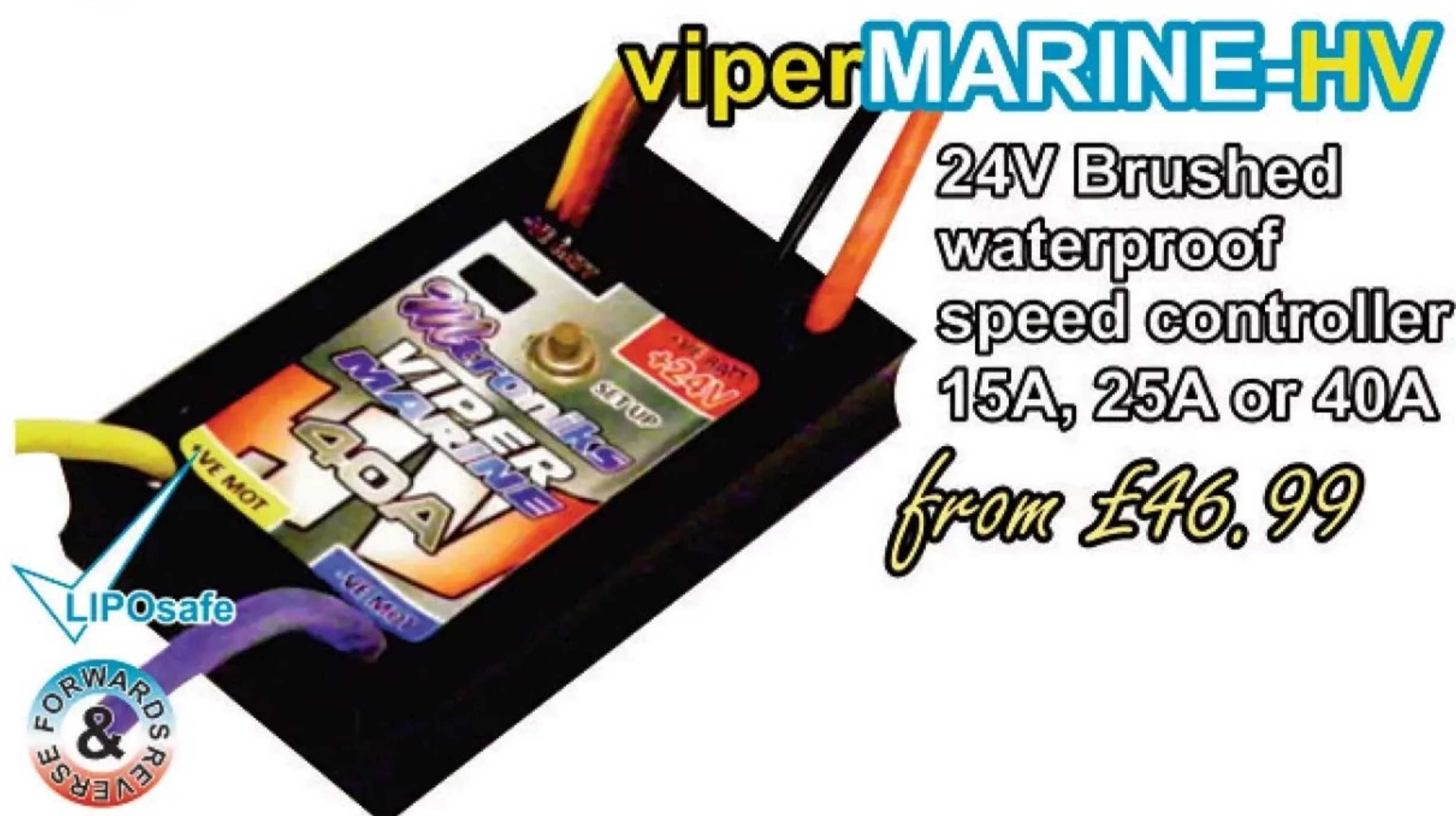
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