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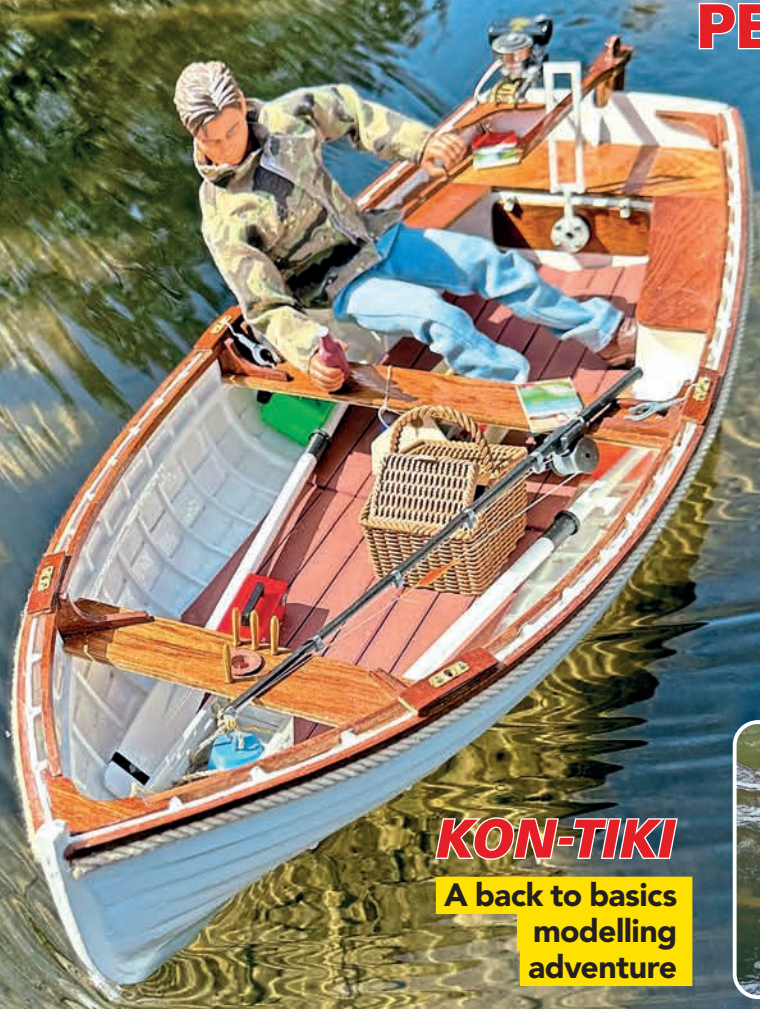

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NEWSAGENT RESERVATION (SEE PAGE 82)

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contents

WELCOME TO THE JUNE 2026 ISSUE OF MODEL BOATS

Well, as far as this issue is concerned, June really is bustin' out all over as, in no particular order, we have a whole carousel of thematic features, practical advice, news, views, a cutting-edge product review, an international show report and a very impressive and inspirational selection of Readers Models on the pages ahead for you.

As we've already been given a little hint of promise for the summer ahead here in the UK (although I appreciate a warm spring doesn't actually guarantee anything when it comes to the good old British weather), hopefully this means many more blissful (as opposed to freezing your butt off) days of sailing to look forward, along with plenty of outdoor events to attend – a great opportunity meet up with old friends and perhaps make some new ones, too. You will find a number of Open Days in late May/June flagged up in the Compass 360 section (see pages 8-9), but there is one more I would like to draw to your attention, details of which unfortunately came in after we'd laid these pages out…

In celebration of the 150th anniversary of the Model Yacht Sailing Association, the MYSA will, in conjunction with London Model Yacht Club, be hosting an open to all (not just members) sailing event at the Round Pond in Kensington Gardens, London. There will be some lovely vintage yachts both on static display and to admire out on the water, and the organisers would love anyone who owns an early tonner, a rater, a 12-metre, or perhaps even a rare 18-footer, to bring their own pride and along and participate. The gates (off the Bayswater Road) to the LMYC clubhouse will open from 9am and free parking will be available, with assistance in the form of the club's 'buggy' laid on for the transportation of heavier models to the water's edge. Further details, including gate entry, *etc*, can be obtained from the LMYC's Charles Clarke either via email at drcharlesclarke@doctors.org.uk) or by calling 0777 580 4197.

However, as I am fully aware that not everyone reads the mag from cover to cover, and neither am I conceited enough to believe my column doesn't simply get flicked past by many, please bear in mind, if *you* are involved in/responsible for planning an event this summer, that we are a monthly publication, with lead times. Emailing details to me as far ahead of the date/s as possible will, therefore, allow me to reserve space within the news pages where we can best present/promote/share your story.

Oh, and just one last little reminder… The July issue, which will hit the newsstands on Friday, June 19, will include another free Glynn Guest pull-out plan and build guide, so don't miss it!

In the meantime, enjoy your read,

Lindsey

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Compass 360

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

ACCESSORY ALERT

New crew from ModelU

Coming soon from ModelU will be two new sets of 3D-printed RNLI crew figures. Developed with the assistance of Paul Savage, OBE, these figures have been captured in a range of poses the crew would typically assume while in shoreline readiness and during their lifesaving operations at sea. Offered in a variety of scales, these 'Crew on Shore' and 'Crew on Deck' figures will be offered in ready to paint matt grey or pre-coloured resin (*i.e.*, already detail painted for immediate placement on your model) sets, with prices for the former starting at £19.95 per set and the latter starting at £29.95 per set, depending on the scale in which they are ordered). Pre-orders are now being taken at https://www.modelu3d.co.uk.

Watch out for a full review of these sets in next month's issue.

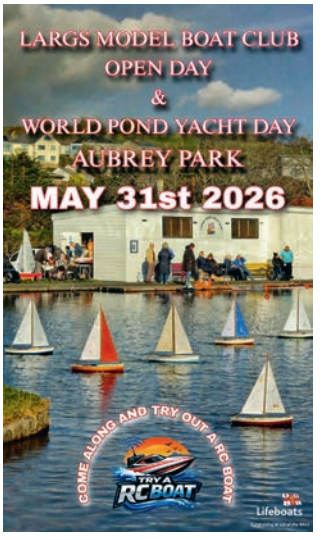
OUT AND ABOUT

Largs MBC Open Day

Largs Model Boat will be incorporating a celebration of World Pond Yacht Day into its Sunday, May 31 Open Day at Aubrey Park, Aubrey Crescent, Largs KA30 8PR.

From 10am to 4pm, visitors will be welcome to bring along their own pond yachts to a sail and/ or try out one of the club's 'have a go' R/C boats (members will be on hand to assist).

For further information and update, visit https://www.facebook.com/groups/largsmodelboatclub/



OUT AND ABOUT

The Bury Metro Marine Modelling Society Open Day

The Bury Metro Marine Modelling Society will be hosting an annual 'Open Day' on Sunday, June 7, 2026, at The Lido, Clarence Park, Milner Ave, Bury, Lancashire BL9 6NG.

Starting at 10am, visitors will be welcome to sail their own model boats (although please note, steam models will need an up-to-date certificate, and no IC models can be accommodated) alongside those belonging to members on the club's lake. Should it be raining, there will be a sheltered area from which models can be operated.

Other attractions will include:

- *A Bring & Buy sale, with stalls set up indoors at the Jubilee Centre building adjacent to the club house at the Lido*
- *Trade support from H.A. Kits, who will be bringing along lots of exciting products to browse and purchase*
- *A raffle sponsored by CPC Farnell (one of the UK's leading distributors of electrical, electronics and related products) in Preston*
- A chance to meet members (of the two- and four-legged persuasion) representing The Guide Dogs for The Blind Association, the charity the event will be supporting

Admission to the Open Day will be free of charge, as will onsite parking, while refreshments will be available to purchase in the club house.

For more information contact Ken Mears via the Bury Model Boat Club Facebook page.

OUT AND ABOUT

Yorkshire R/C model yacht club Open Day

On Wednesday, June 17, ROFWAC (the Retired Old Friends Wednesday Afternoon Club) will be hosting an Open Day to celebrate its migration to spacious new sailing water.

Bowshaw Whams Reservoir in West Yorkshire (program your Satnav to HD9 1RA) is situated near to Huddersfield and Sheffield, above Holmfirth in 'Summer Wine' territory, where, at around 1000ft above sea level, good winds can (almost) be guaranteed.

From 10am to 4pm visitors will be welcome to drop by, along with their own wind powered models to sail. Club members will also be on hand to meet and chat with spectators and/or anyone interested in building, sailing and perhaps racing a model yacht at some point in the future. There will also be some 'have a go' models to try out under expert supervision.

The club also plans to run a series of races for the Dragon Force 65 yachts members frequently sail, with a £5 fee (per model/per race) charged for entry.

Admission to the event itself will be free of charge and complimentary drinks and snacks (biscuits, cakes, *etc*) will be available throughout the day.

For further information and updates, call John Goodyear on 0798 9117562.

CLUB NEWS

Hats off to Pat!

For the past 16 years, Pat Reffin has served as both secretary and active committee member of the Kirklees Model Boat Club, during which time she has streamlined membership administration and management of the club's affairs while ensuring compliance with data protection laws, collated all the news and information for publication in the club's quarterly newsletter, and taken minutes at all committee meetings.

Please join us in raising a glass to Pat Reffin, who, after 16 years of loyal service to the Kirklees Model Boat Club, is finally stepping down from her roles of secretary and committee member.

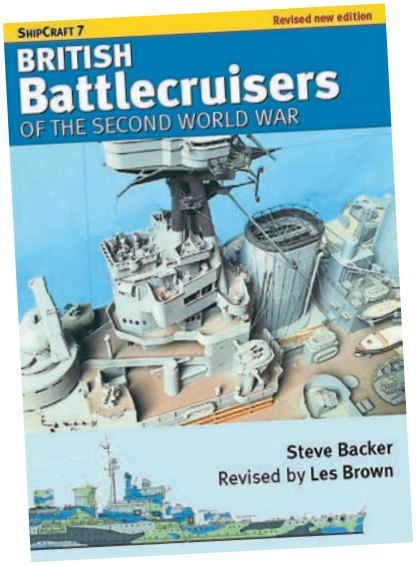
Prompted by some serious medical issues, however, Pat has recently decided that the time has come to stand down from the position in order to take things a big easier.

We would, therefore – no doubt along with all members of the Kirklees Model Boat Club, both past and present – like to thank her for the years of service she has dedicated to the role itself and the promotion of the hobby in general, while also wishing her the very best in her continued recouperation and more leisurely life going forward.

STRIKING IT LUCKY

British Battlecruisers of the Second World War winner

In the April issue of Model Boats, we offered you the chance to win a copy of the ShipCraft series newly revised edition of *British Battlecruisers of the Second World War, courtesy of www.pen-and-sword.co.uk. We are now delighted to announce the winner as:* Gordon Haig, Glasgow



Congratulations, Gordon!

Intermodellbau 2026

Modeller's wife **Monika Cybulska** reports back from this year's show in Dortmund

Friday, March 6, 4pm

With plans to attend this model show made, the chorus of *I'm So Excited* by The Pointer Sisters immediately started playing in my head. I reminded myself there was still a month to go and the bills weren't going to pay themselves, so get back to work, girl! And yet, somewhere between Excel sheets, invoices and yet another email announcing a very important meeting about absolutely nothing, all I could think about was Intermodellbau! For many people, that sentence sounds about as exciting as a sale on nails at a hardware store; for a modeller, though, it's more like hearing that a brand-new galaxy has just been discovered – full of models, paints, tools and things you *absolutely need*, even if you don't know why yet.

April 16–19, 2026

We arrived in Dortmund at dawn after an all-night drive. The day had started beautifully, though I can't say I was surprised. For years now, the Dortmund fair has felt like the beginning of spring to me – no matter the exact date. In the parking lot, I scraped the sleep out of my eyes and – wearing a sweaty tracksuit, additionally 'decorated' with coffee from an emergency brake – almost ran toward the halls.

For a Friday morning, there were plenty of people, so it took us a little time to make our way to Hall 3 – the one we were most interested in. There, I moved between the stands with the same enthusiasm as always. Shiny new releases, models refined to perfection, lacquer reflecting the light like a mirror, tools and accessories nearby – everything that can easily convince a modeller that this is exactly where they should be. The show just has something the internet can't replicate.

I come from a generation that likes to see things up close, compare them and sometimes simply pick something up and check if it really is *the one*.

Shopping in a place like this is a pleasure, but a fair is more than just stands and models. It's about people. At first glance, it may seem like the exhibitors are the main focus but very quickly it becomes clear that it's the visitors who create the real energy. Enthusiasts who often work alone in their workshops suddenly have a chance to meet – pause by a model, exchange a few words, ask about details, share experiences. No rush. No internet

The Fischkutterfreunde stand.

Warships from WSC Witten.

Radio-controlled tugs.


The impressive Liberty Shipyard, California, 1944, diorama.


A well thought out and detailed port diorama.

Finely crafted 1:1250 scale paper-built models of the Titanic, the Carpathia and the Californian.

Every day the pool attracted an enthusiastic crowd of spectators.

shortcuts. Conversations happen naturally, sometimes starting with a single question and ending 15 minutes later on a completely different topic. And suddenly, you realise you don't need to have known each other for years to connect. Because there's one thing that brings everyone together – passion. And that's something no screen can replace.

And somewhere between the stands, you notice something else. Kids. They stop in front of models, take photos, study the details with the same focus as adults. Sometimes they ask questions, sometimes they just linger a little longer – but you can see something has caught their attention. And in that moment, you stop wondering whether this hobby has a future.

Over the course of three days I walked more than I had in the entire past month, and by Sunday it turned out we had far too much month left at the end of our money.

Was it worth it? Absolutely! It was exactly what I needed.

Posters around the venue are already announcing the next year's event: **Intermodellbau, April 22–25, 2027.** I'll definitely be there. Will you? ●

A cut above the rest?

Nick Brown tests and reviews the Hanboost C1 ultrasonic knife

The smart white outer box and carbon-fibre style case snuggling housing Hanboost's C1 ultrasonic knife and a box of accompanying accessories.

The future is upon us. Technology that once seemed like science fiction or fantasy is now becoming a reality. The development of the 3D-printer as a relatively affordable home device was previously considered a concept from shows like *Star Trek*, with its replicators that could create anything on demand. While today's capabilities don't yet match that level of ease and precision, it's likely that within the next 20 years these devices will be able to produce items simply by voice commands.

In the meantime, the products that can be created, particularly with the latest 16K resin printers, are quite impressive. With current versions we need to deal with the structures that support the items we're printing. These scaffolding supports vary, depending on the fittings they're attached to, in size and bulk but, in all cases, need to be very carefully removed to avoid breaking/damaging the often very delicate detail parts you're trying to extricate them from. Frustratingly, however, using snips for this will often shatter brittle resin detail parts like a grenade, while a scalpel can sometimes tear into them as the supports are sheared away. So, let me introduce you to a potential game-change when it comes to tackling this task…

A friend of mine, Jennifer Wright, a modeller and YouTuber (Jenesis Designs and Modelcraft), has now tested two different ultrasonic cutters on her (highly recommended) channel, preferring the Hanboost C1 as its shape allows her to hold it more like a traditional scalpel. Her glowing endorsement of the C1 convinced me I needed to try this tool out myself, so I ordered one directly from the manufacturers website at www.hanboost.com.

When I took delivery, a few weeks later, thanks to Jen's video I already had a good idea of what was waiting inside the neatly presented packaging. Inside a smart outer white box there is a carbon fibre style case secured with magnets. Opening it reveals the ultrasonic knife itself and a separate accessories box containing 24 spare blades and a USB charging cable. The beautifully engineered ultrasonic cutter comes with a protective cover that makes it comfortable to hold. and tucked discreetly into the rear of the body is a mini hex wrench – better known as an Allen key – for changing the blades when necessary.

The knife, charger and two packs of spare blades.

A plastic cover cap for the blade is included. As you don't want to make the mistake of touching/handling the blade while the tool is still in its very quiet 'on' setting, it's advisable to get into the habit of switching off and replacing the cover between each useage,

Genesis of the lightsabre?

The cutter is built around an aluminium body measuring roughly 220 mm in length with a diameter

The blade, which can be easily changed easily via a grub screw, is small but very sharp.

A built-in LED light is incorporated for use during precision cutting work.

"The Hanboost C1 cuts like the proverbial hot knife through butter – and that's no exaggeration… I've tested it on a wide range of materials and plastics, and it handles all of them with ease"

of about 27 mm. Inside, it houses a rechargeable 3000 mAh 5 V battery that delivers a 30 W output, vibrating the blade at 40 kHz. A full recharge takes around two hours using the supplied charging cable, which connects to a port at the rear of the tool beneath a protective cover.

Along the side of the body are three buttons: the main power switch, a button to activate the builtin LED work light, and a powerlevel selector that cycles through three settings (1–3). A small display next to the buttons shows whether the cutter is switched on, which power level is selected, and the remaining battery life. When the blade eventually needs replacing, it can be swapped out easily using the included hex wrench.

Advantages

The Hanboost C1 cuts like the proverbial hot knife through butter – and that's no exaggeration. For everyday work, I usually stick to levels 2 or 3, but even on the lowest power setting (level 1), it slices cleanly and precisely through most plastics with minimal effort.

I've tested it on a wide range of materials and plastics, and it handles all of them with ease. The polystyrene used by model kit manufacturers, such as Airfix, to attach parts to a sprue (or more accurately, a frame) comes away effortlessly. With a bit of planning, resin cast parts can be separated from their blocks as well. It even slices through the thin attachment points on etched brass sheets, which makes it a surprisingly versatile tool to have on the bench.

The charging point is a conventional USB-C connection that you can plug into a standard USB plug. The storage for the Hex drive is next to this connection.

A common style of 3D-printed fittings with a 'cage' and scaffolding supports surrounding the fitting. The resin is brittle and can shatter if snips or a scalpel is used to remove them.

Disadvantages

There are a couple of things to be aware of…

- The first is the price – even the most affordable models are still over £100, though I expect that to drop before long. It's worth watching for discount codes and seasonal offers on reputable sites, especially around Black Friday.
- The second applies to all ultrasonic cutters and knives: you need to be extremely careful when using them. The only indication that the tool is switched on is a small light on the display. I, therefore, make a conscious mental checklist: turn it on, use it, turn it off, then put it down. If you forget to switch it off, it will automatically power down after about five minutes of inactivity – but during that window it's very easy to forget it's still active and accidentally touch the blade. It gets hot, it's razor sharp, and with almost no pressure applied it can cut you. My friend Jen learned this the hard way!

Conclusions

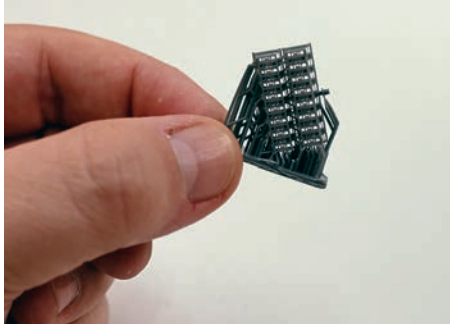
Despite having to change one's operating habits while using this knife-like tool, I see it as a significant leap forward for those intending to incorporate more 3D-printed fittings on their models. It can turn removing supportive scaffolding these parts from a laborious task into a quick and easy one.

There are other types of ultrasonic knife on the market, that may better suit your needs and abilities,Based on my own requirements, however, I can highly recommend the Hanboost C1. ●

The main body of the ultrasonic knife features a rubberised hand grip and three selection buttons for Power, LED Light, and Mode Switch.

An ultrasonic cutter makes quick work removing the cage around a component; in this case revealing a radar set from a new 1:350 scale Type 42 Destroyer by ForeArt Models.

The accuracy and power of Hanboost's C1 cuts through smaller lightweight scaffolding supports like a hot knife through butter.



Work in progress but with many of the supports now cleanly removed, with no chunks of the fitting missing, meaning there will be minimal clean up prior to use.

A 2200kv brushless motor on a 3S lipo battery gives Dave's 1:16 scale SR90-E lively performance at around 70% full power.

1:16 scale SRC90-E

Dave Wooley debriefs us on his latest mission

Although the model that is the subject of this article represents one of six LCPs that entered service between 2003-2005 with the Royal Danish Navy for operation from its *Absalon* and *Esbern Snare* Absalon class frigates, its original design and construction can be traced back to Storebro Bruks AB, Storebro, Sweden. Not surprisingly, therefore, the SRC90-E's basic hull design bears some resemblance to the Swedish CB 90 (see the September 2025 issue of Model Boats), but it's notably smaller, measuring 11.88m in length by 2.90m in beam, with a full load of 8.5 tons. Powered by a single SAAB Scania diesel coupled to a KaMaWa 410 water jet unit, it can maintain a performance of around 40kts.

The SRC90-E's purpose is to provide the Absalon class muti-purpose frigates with the flexibility to cover a wide range of tasks, such

1

One of two SRC90-E LCPs, fitted to the launch and recovery hoist within the mission bay of the Absalon. Image courtesy of Wikipedia.

2

Launching the SRC90E from the stern door.

"The SRC90-E's purpose is to provide the Absalon class muti-purpose frigates with the flexibility to cover a wide range of tasks, such as the transfer of personnel and light cargo, medical evacuation, rescue missions, insertion of special forces and surveillance work"

as the transfer of personnel and light cargo, medical evacuation, rescue missions, insertion of special forces and surveillance work. As mentioned in the article on my Absalon model (see the December 2025 issue of Model Boats), there is an opening in the ship's transom which permits an SRC90-E to be launched from an extended gantry (see **Photos 1 and 2**).

For defence the SRC90-E carries a single stinger missile launcher and one 12.7mm MG which can be mounted on the roof of its cab.

Construction of the model

During construction of my CB90 model, I became interested in another water jet powered craft, the SRC90-E, which was smaller and fitted with just a single water jet. As I had a spare WJ drive, it occurred to me that this would make an interesting follow-on project. And while the intervention of the *Absalon* build delayed the idea immediately being put into practice, it also added impetus.

Having found a free of charge basic constructors' drawing online, the next obstacle was to get this unscaled drawing translated into a meaningful working 1:16 scale plan (and after some discussion with Mark Hawkins at 3D Boats, he kindly obliged here), and, of course, to decide on the materials and method of construction. For the construction of the hull, 4mm thick marine ply was chosen for the frames and keelson, while I opted for a combination of 1-32nd marine ply for the deck and superstructure, and 1mm styrene for the fittings and deck hatches

Inserting keel and frames

I decided to have all the frames and keel accurately cut by laser. Having zero previous experience of the process (other than having

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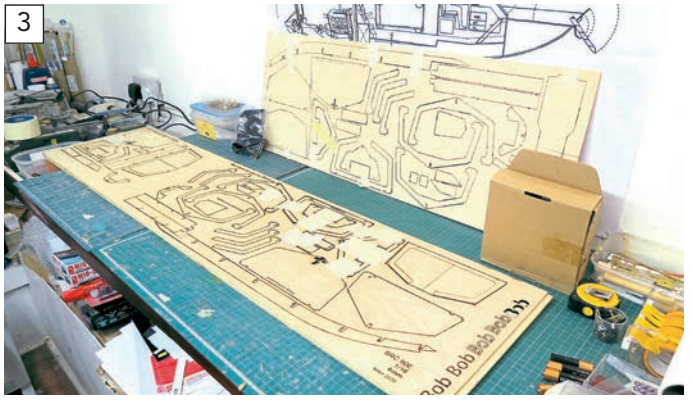
The laser prepared frames and keel for the model on a single sheet of 4mm marine ply.

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Assembling the frames to the keelson and incorporating the jet drive intake flat.

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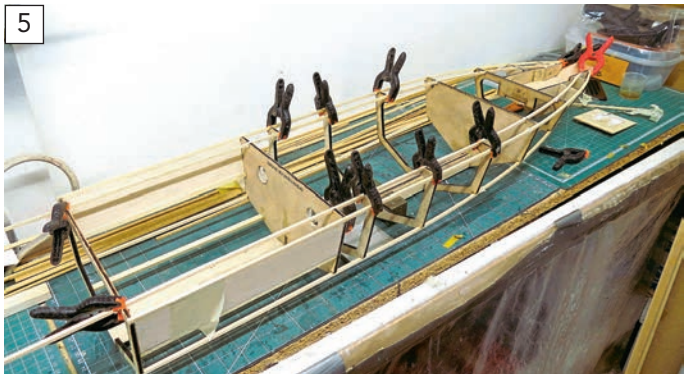
Securing the stringers and fitting the bow ramp.

7

The intake opening for the water jet drive cut into the keel flat and the exit opening in the transom.

6


The underside sheeted over with 1:32nd marine ply.

constructed the Huntress kit which incorporates laser cut parts), I, again, approached Mark, who very kindly created a .dfx file which could be understood by laser cutting machinery – the result of which can be seen **Photo 3**. There are two major advantages to using this method: the first being accuracy, and the second being no cutting required by the modeller, as the parts simply pop out from the prepared timber sheet.

Construction began in the time-honoured way, commencing with the keel, adding the frames, stringers to the chines, deck edge and deck, and then sheeting the underside with 1:32nd ply (see **Photos 3, 4, 5 and 6**).

Fitting the jet drive and electrics

As with a propellor shaft, installing the jet drives was undertaken at an early stage of the build. Firstly, therefore,

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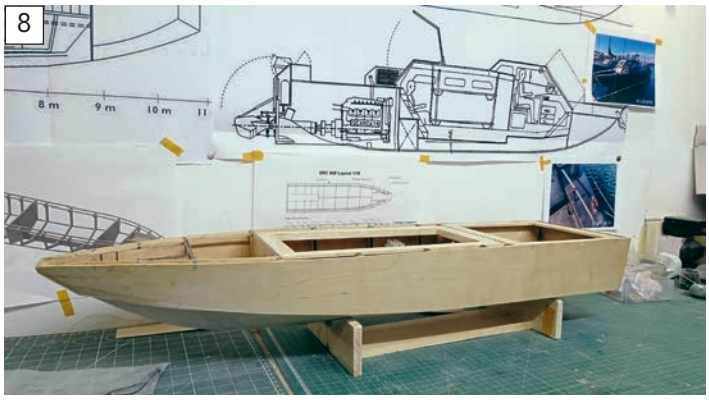

Sheeting over the sides of the hull using 1:32nd marine ply.

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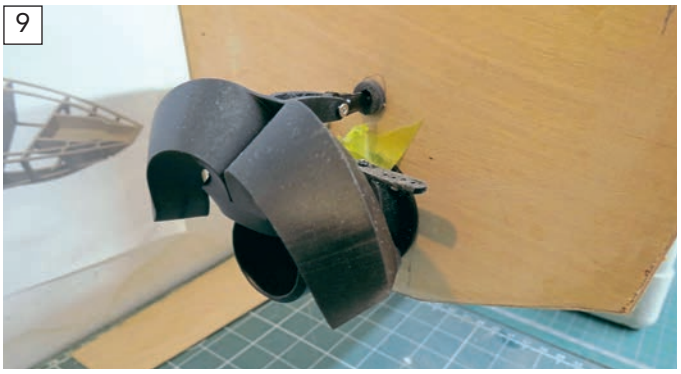
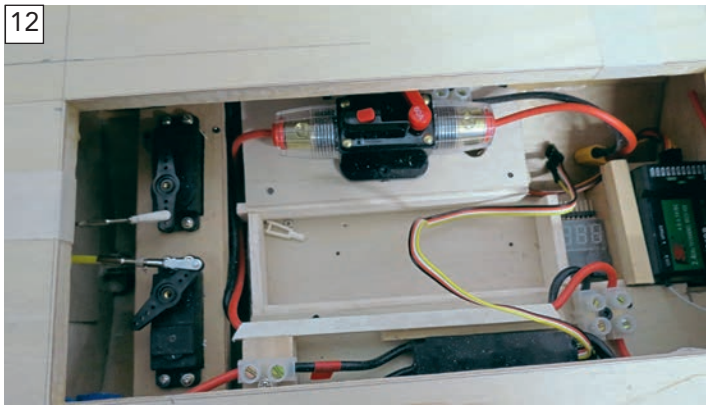

The water jet drive, stator and 3D-formed bucket fitted but not yet fixed into position. The shape of the bucket has been modelled as per its full-size counterpart.

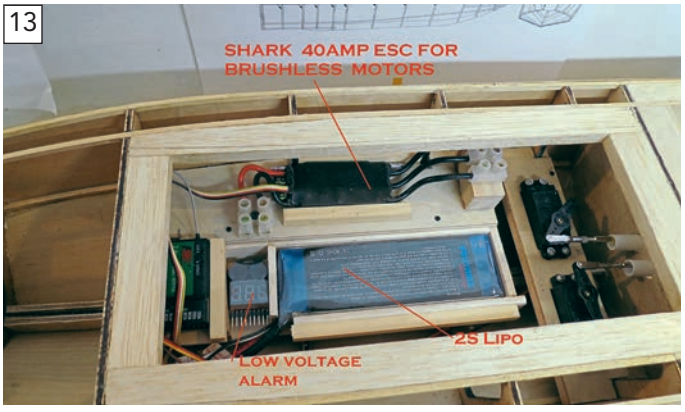
10

The 22mm jet drive, 2200KV brushless motor and linkages fitted into the hull but yet to be fixed.

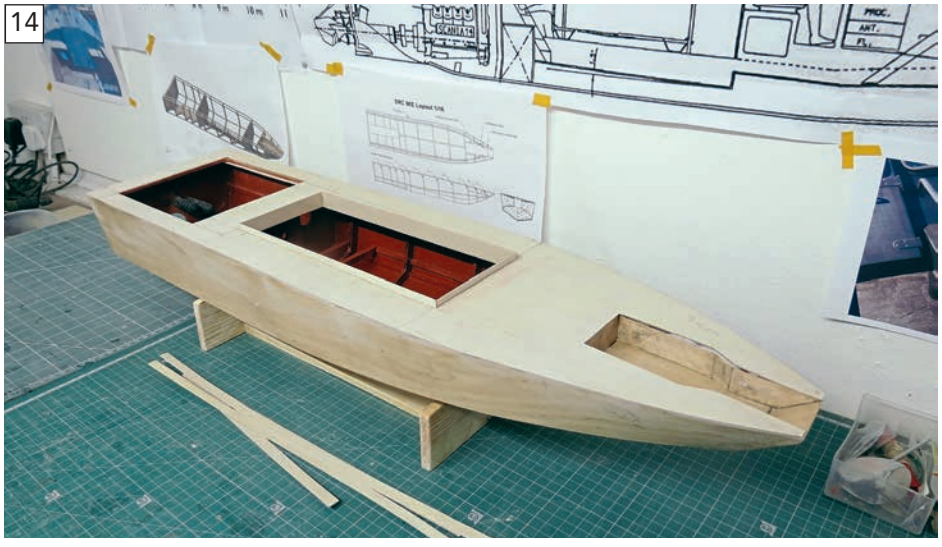
11

Forming the linkage tubes to the bucket and nozzle steering.

12

Note the load braker switch at the top of this picture.

13


The 2S battery installation with low voltage alarm.

14

The interior having been spray painted red.

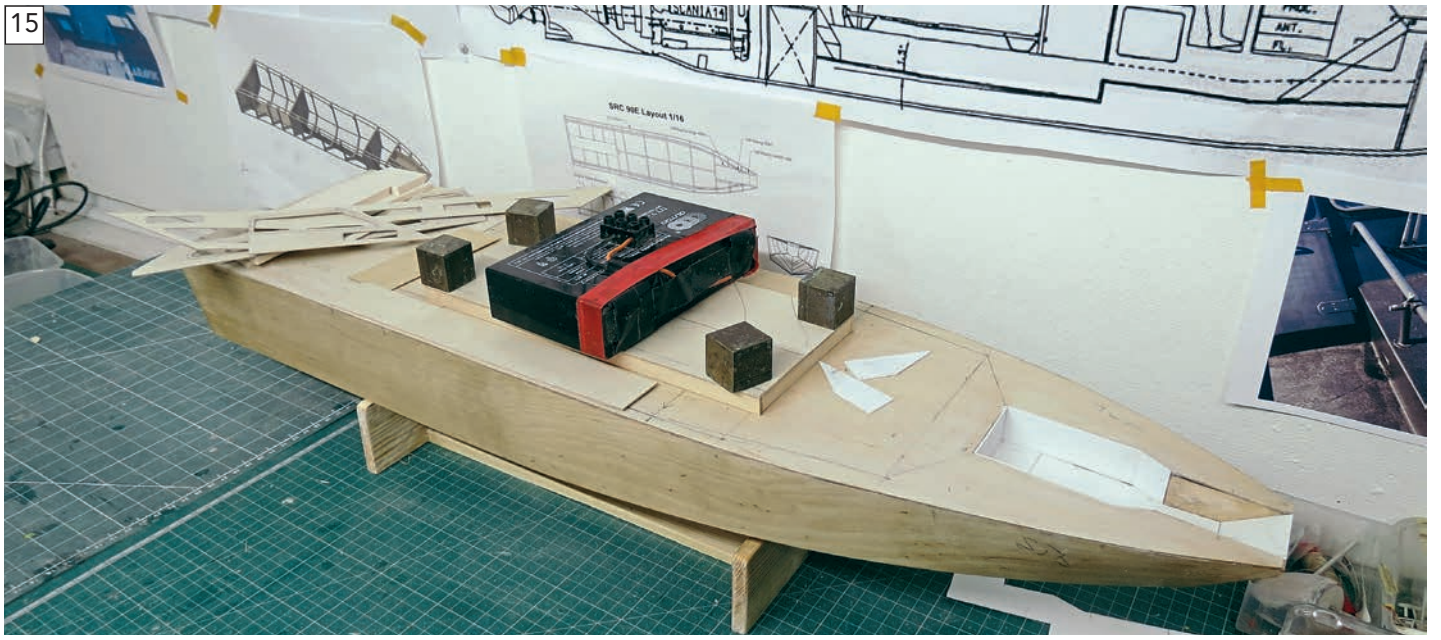
an opening for the intake in the flat of the keel, corresponding with the exit opening in the transom, was made (this can be made easy using the body of the water jet unit), after which the 1:32nd side sheets were set in place (see **Photos 7 and 8**).

In order to align the linkage points with the servos, the jet drive and reverse bucket were installed along with the motor and mountings – all designed to be removable (see **Photos 9, 10 and 11**).

The electrics

The electrics were also installed at this early stage, with both the jet drive and electrics all made as watertight as possible, something particularly important where water cooling is involved. The different components

15



Forming the access hatch, onto which the cab and superstructure will attach.

"There are two major advantages to using this method…"

were all housed in their own dedicated sections, thus ensuring the entire installation was kept tidy and so that going forward individual components will be easy to remove and reinstall as and when necessary (see **Photos 12 and 13**).

Next, I chose to paint the interior before fitting the deck and adding combings around the amidships access. Following this, the access hatch, which doubles as the support for the cab and superstructure, was fitted (see **Photos 14 and 15**).

Construction of the cab and upper works

The profiles for the cab sides, frontage and rear windows were lifted from the drawings and the openings cut to size. To minimise the weight, I made extensive use of balsa while constructing the internal supports (see **Photos 16, 17, 18 and 19**). After this, I began work on constructing the after deck access panel from 1mm styrene sheet backed by 3mm balsa. The styrene cover for the access hatch I added to the slopping rear of the model's superstructure (see **Photo 20**) is fixed – unlike the hatch cover on my CB 90 model, which provides access to the power switch. Attention then shifted to forming the various box fittings and the raft container sited right

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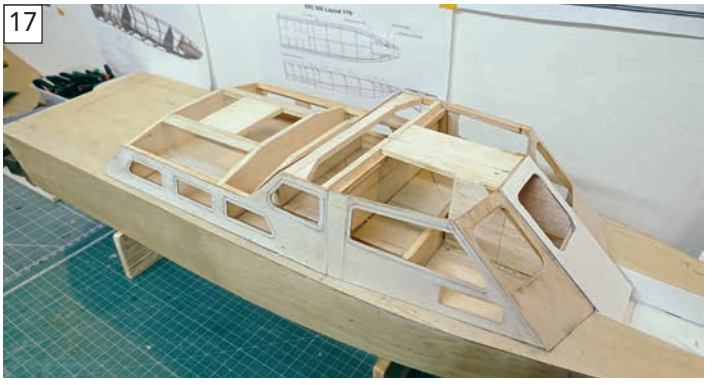
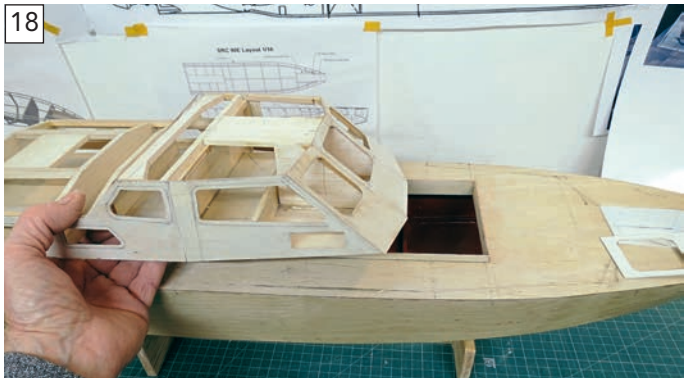
Building up the cab and after superstructure with a combination of 1:32nd marine ply and 4mm thick balsa sheet (which is extremely light yet structurally robust).

17



Fixing the three front windscreen panels plus access door.

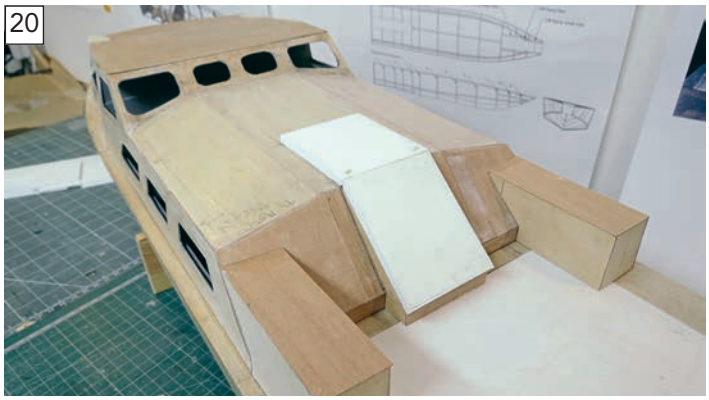
18

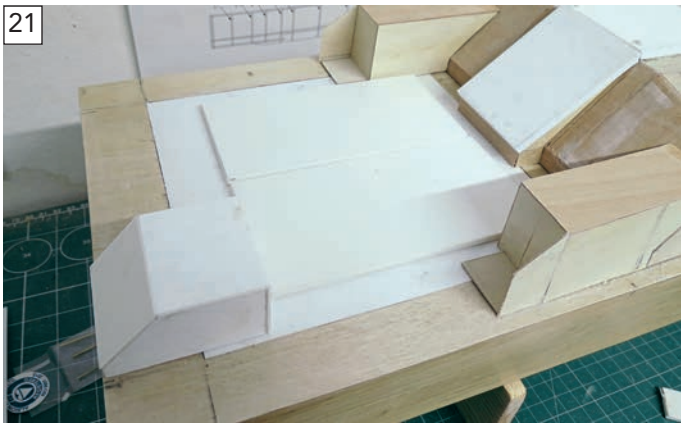


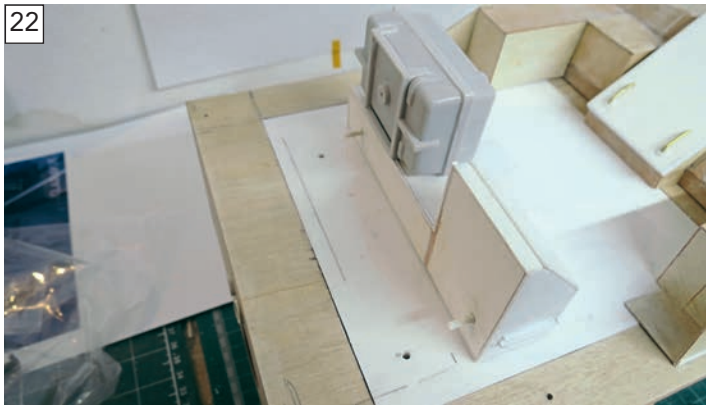
The combined cab and superstructure fixed to the hatch and removed from the deck.

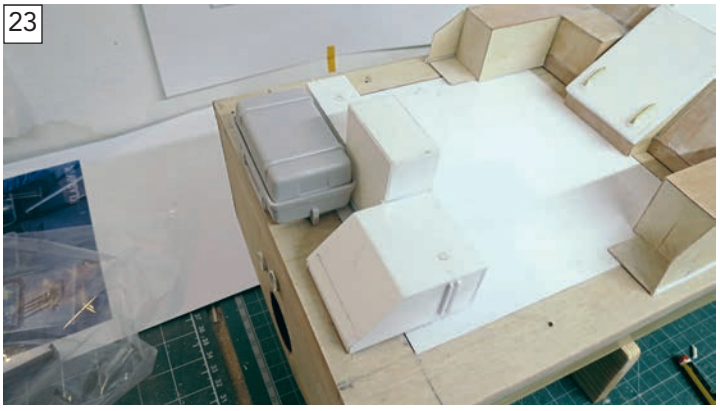
19

The cab roof and three superstructure roof panels cut to size, with only the latter fixed into place at this stage.

20

The Styrene access hatch fixed into place, along with the after engine space and vent housings on either side.

21

The two after engine bay hatches fixed onto the deck access hatch.

22

The styrene 2mm rod which will be used to locate and secure the series of after storage boxes and life raft container to the after access hatch.

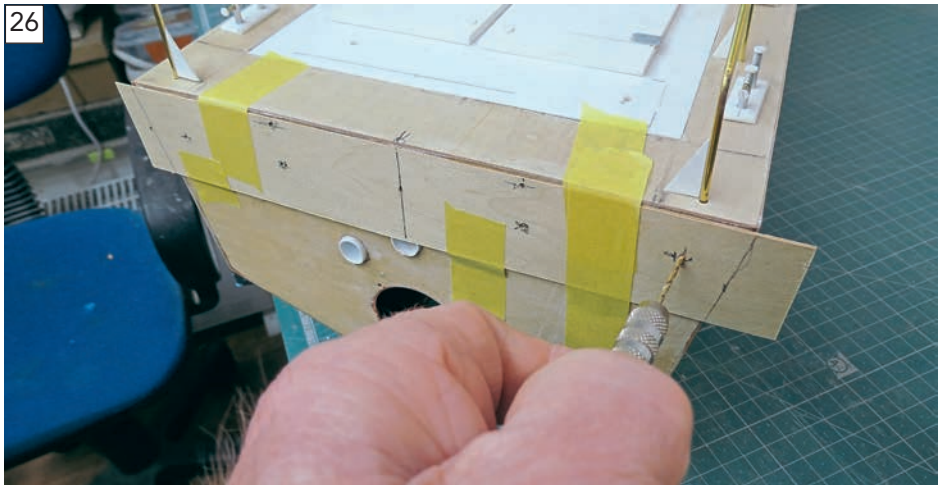
23

Each of the combined set of after storage boxes secured in place, with the life raft container temporarily located as this is to be painted in a buff colour.

24

1mm styrene cladding fixed to the inside of the bow exit ramp.

25

Each of the window frames after being marked, cut from .50mm styrene sheet and fixed.

26

Here, a simple jig is used to mark the exact location of the securing pins for the transom platform.

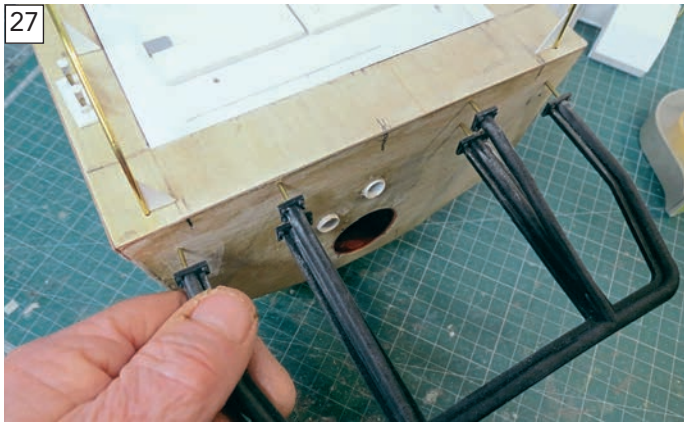
aft. To ensure these fittings could be removed for painting and then returned to their exact locations, they were all located with the use of 2mm styrene rod (see **Photos 21, 22 and 23**).

The insides of the embarkation ramp right forward were formed from 1mm styrene, while .50mm styrene formed each window frame (see **Photos 24 and 25**).

The transom platform

My intention had been to fashion this platform myself from 3mm brass rod, but ultimately a 3D-printer was able to produce a much lighter and more accurate framework. Using a simple jig, pilot holes were made in the transom to correspond with the positions of the

27

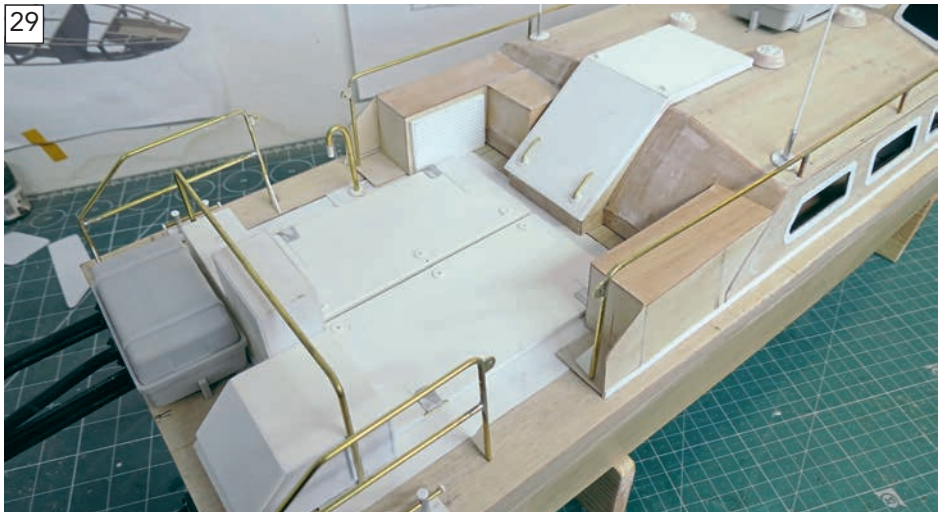


Locating the transom platform securing pins to their pre-drilled locations.

28

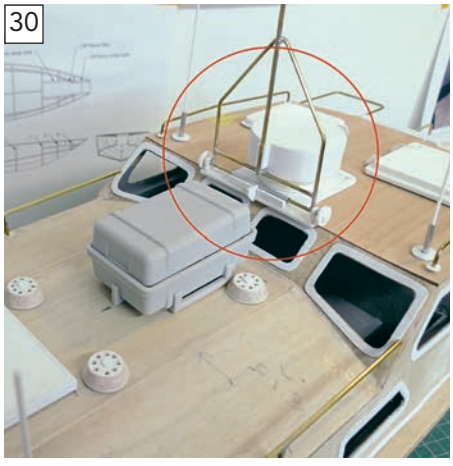
The construction thus far; it's worth noting that the transom platform had to be set higher up the transom than it is on the full-size vessel to ensure clearance for the reverse bucket.

29



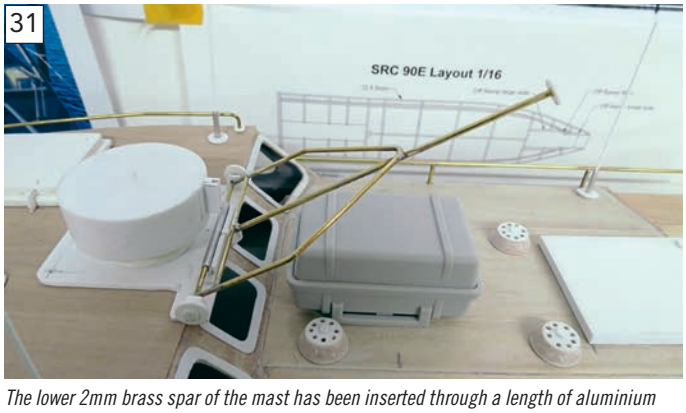
Shaping and fixing the brass handrails.

30



With the use of a jig and the application of solder paste, 2mm brass rod forms the fold down mast arrangement ringed in red.

31



The lower 2mm brass spar of the mast has been inserted through a length of aluminium tube, this allowing the mast to retract.

32

The more time spent preparing the surface for its final coats, the better the finish, especially on timber.

"My intention had been to fashion this platform myself from 3mm brass rod, but ultimately a 3D-printer was able to produce a much lighter and more accurate framework"

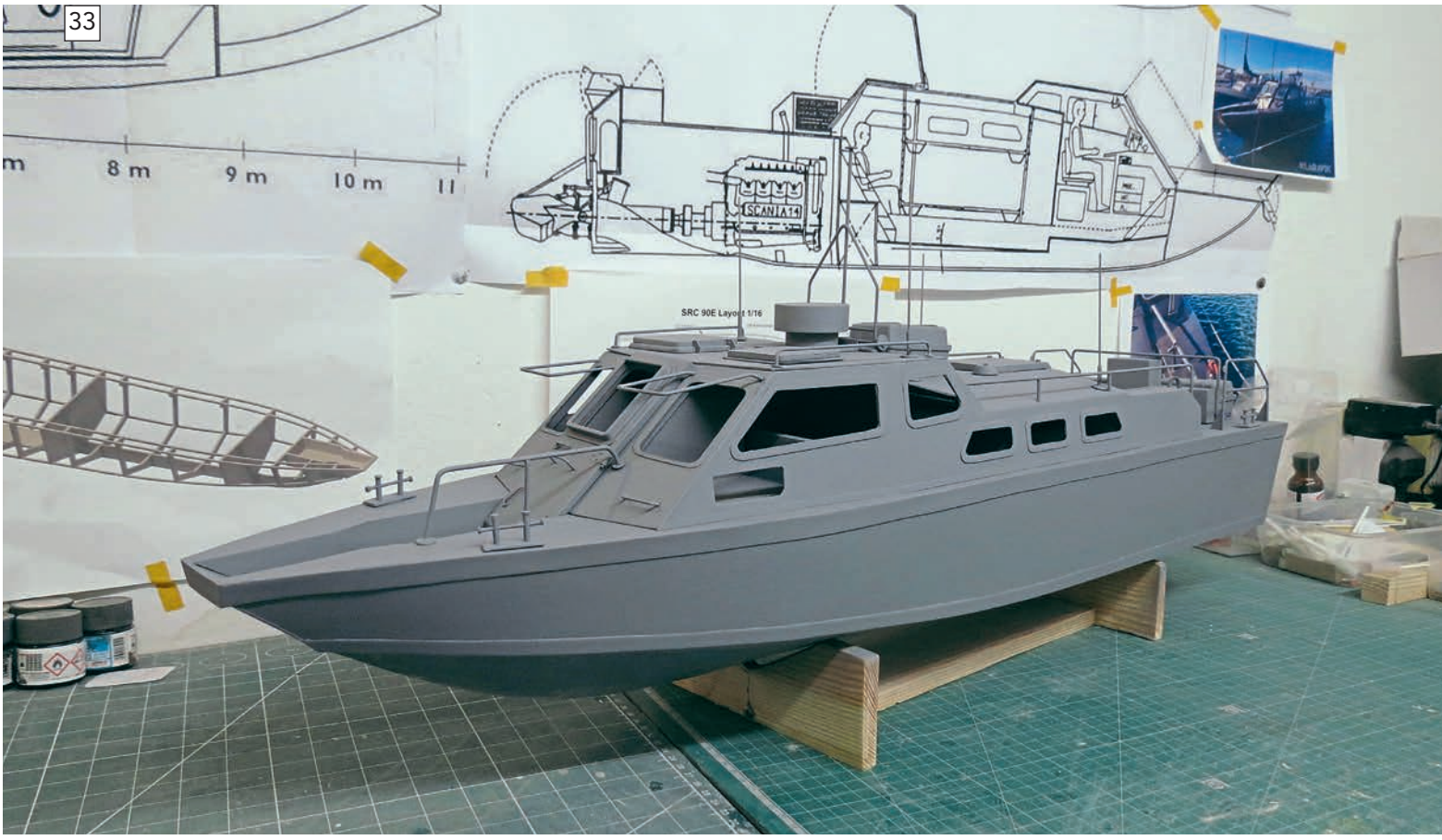
pins inserted into the frame. Deviating from both the drawing and the full-size craft, I located the frame at a higher level on the transom so that the reverse bucket on the model would comfortably clear the underside of the frame once fully up (see **Photos 26, 27 and 28**).

Rails, mast and fittings

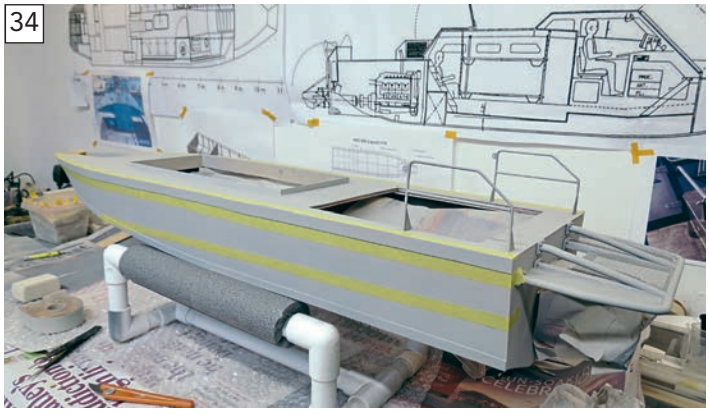
The rails were formed from 3mm brass rod, bent to shape and soldered (see **Photos 28 and 29**). A simple fold down mast was made using a jig and 2mm brass rod, with the bottom spar inserted through an aluminium tube, allowing the latter to be fixed to the base of the radar housing. As a result, the mast can be raised, lowered or stored; this also conveniently allows me to reduce the height of the model within my carry box (see Photos **30 and 31**).

Painting

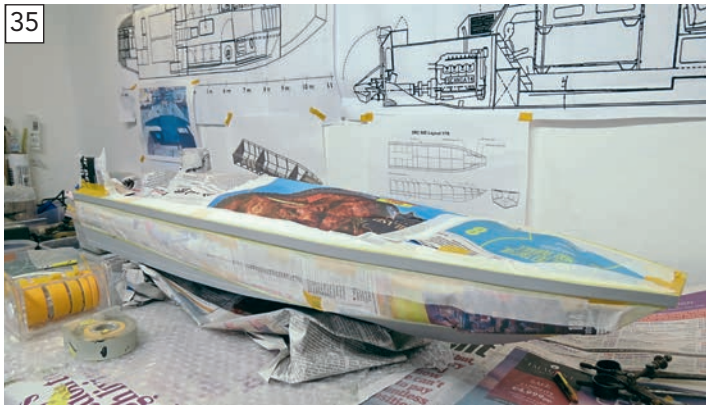
With most of the hull and cab having been constructed from marine ply, good preparation ahead of painting was essential. So, firstly all the exposed timber was sand sealed, then sanded down and a second coat applied. To improve the timber surface and fill any grain, I applied Hycote Plastic Primer Grey, which is a filler spray paint (see **Photo 32**). All of the brass work was given a coat of Halfords Etched primer,



All the surfaces fully prepared, with Hycote primers and ready to receive the finishing coats.



Masking off the surfaces with Tamyia Low Tak tape.



The exposed surfaces ready for spraying.

The underside and the bulwark strip spray painted using Colour Forge's Raven Black.

too. The timber surfaces were then sanded down once again, ready for coating with Hycote Grey Primer (see **Photo 33**).

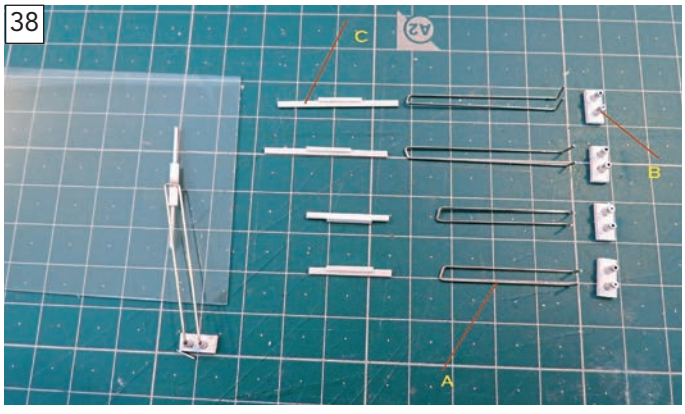
As with the *Absalon*, the grey shade selected was Colour Forge's Goul Grey – a single 500ml spray can containing more than enough for the application of several coats. The next step was to mask off the lower part of the hull and the band around the gunwale for the application of Colour Forge's Raven black (see **Photos 34, 35 and 36**). Using these spray cans as opposed to my usual 'go to' airbrush allowed me to achieve a top-quality finish at a fraction of the cost However, I should point out that while this approach lends itself well to larger scale models, where full control of the volume of paint is not an issue, for smaller scales and finer detailing the airbrush remains my favoured method

Glazing and windscreen wipers

As mentioned earlier, while constructing the cab superstructure provision had to be made to allow access for glazing once the spray painting had been completed. For this, the roof was made detachable, thus providing access to the rear and side window panels. The front three panels, slightly longer than the two side panels and having their own detachable ballistic frames, could be glazed independently, while the remaining side window panels could be accessed from beneath the cab frame (see **Photo 37**).

The SRC90-E is fitted with five

Several coats of Mr Hobby super clear semi-gloss finishing spray applied prior to glazing.



Forming the windscreen wipers.

With the model glazed, the front and side wipers are fitted.

wipers. These were simple to make yet compare well with those on the full-size craft (see **Photos 37, 38 and 39**). As indicated in **Photo 38**, you will see:

A. The wiper blade arms, fashioned from 0.6mm stainless wire
B. The wiper blade holder, made up from 1mm ID aluminium tube
C. The wiper blades formed from 1mm Evergreen strip.

Final touches

As you will see, wolf's head emblems now feature port and starboard, with a further wolf's head added to the rear exit hatch in the superstructure – modeller's licence having been taken with the latter. Lastly, a suitable storage/ travel box has been made to keep the model safe from the ravages of dust and the potential for damage in transit (see **Photo 40**).

On the water trials

My local sailing water at New Brighton on the Wirral having a raised wall around the lake makes for easy launching and recovery access. Initially, a single 2S 7.4v 5000mAH lipo battery was installed, but I soon realised that in order to achieve the best performance with a 22m impeller and a 2200KV brushless motor a change to 3S 11.1v 220mAH was required. Higher revs can, however, have negative effects, especially when used over extended periods. During the initial trials, the set up was run with bucket up and bucket down all at maximum revs. Initially all went really well, until, that is, the model came to an abrupt halt. The plastic impeller blades had fractured and sheared from the boss. Consequently, I decided to fit a brass impellor, which was superbly engineered by Simon at the Prop Shop (see **Photos 41 and 42**) – problem solved! ●

Acknowledgements

SRC90-E info source:
Combat Fleets of the World – 2006, page 156, ref SRC90-E

Thanks to:

- Mark Hawkins for producing the 1:16 scale drawings, the .dfx laser file, 3D reverse bucket and 3D life raft containers
- Dave Howard for his custom-made wolf's head motifs.

40

The fully completed SRC90E with custom storage/transit box.

Phantom

Tomasz Klyszynski brings Billing Boats' 1:15 scale kit for this classic American beauty to life

With summer – and the promise of long, leisurely days spent at the lake – on its way, Billing Boat's 1:15 scale kit for *Phantom* (which builds to a model mesauring 69 cm long x 15 cm wide x 15 cm high) had me at hello! According to the short note on the box, the model is styled after a tender (auxilliary boat) from the late 1920s, when these glamorous-looking craft were used to transfer owners between the shore and their large yachts, elegant water transport/short pleasure trips and racing. They were built from luxury materials, such as mahogany and teak – generously varnished, not only to protect the wood but to bring out its marvellous colour and depth, while the premium quality leather used for the upholstery guaranteed a comfortable, first class passenger experience. So, with their elegant lines, glossy 'shine like a diamond on the water' finish and plush interiors, what's not to love about these aspirational motorised runabouts?

There is no real mystery as to why the name *Phantom* was chosen for this particular dream boat of her day. During the 1920s and 30s status symbol boats for the very wealthy were often given names that evoked a sense of speed, exclusivity and mystique, in the same way that many of the most presigious cars were.

Kit contents

On opening the box to inspect its contents I was particularly hoping that the *Phantom* lettering would come as a decal rather than a sticker, and, fortunately, Billing Boats doesn't

Billing Boats' boxed kit.

"As an added bonus, Billing Boats' has accounted for the fact that some modellers will want to create an R/C operated model from this kit, so a shaft, propeller and rudder are included"

disappoint. So, with that established, let's take a look at the other components…

Included are several sheets of laser-cut parts made from plywood of various thicknesses, metal and plastic elements, and a moulding with the cabin and 'tarpaulin'.

The plastic parts for the rear hatch cover and the cabin outline are really well moulded and allow for different finishing options, both in terms of colour and assembly method.

A fully illustrated (including colour photos) instruction manual and a large 1:1 scale drawing of the model are also supplied.

As an added bonus, Billing Boats' has accounted for the fact that some modellers will want to create an R/C operated model from this kit, so a shaft, propeller and rudder are included"

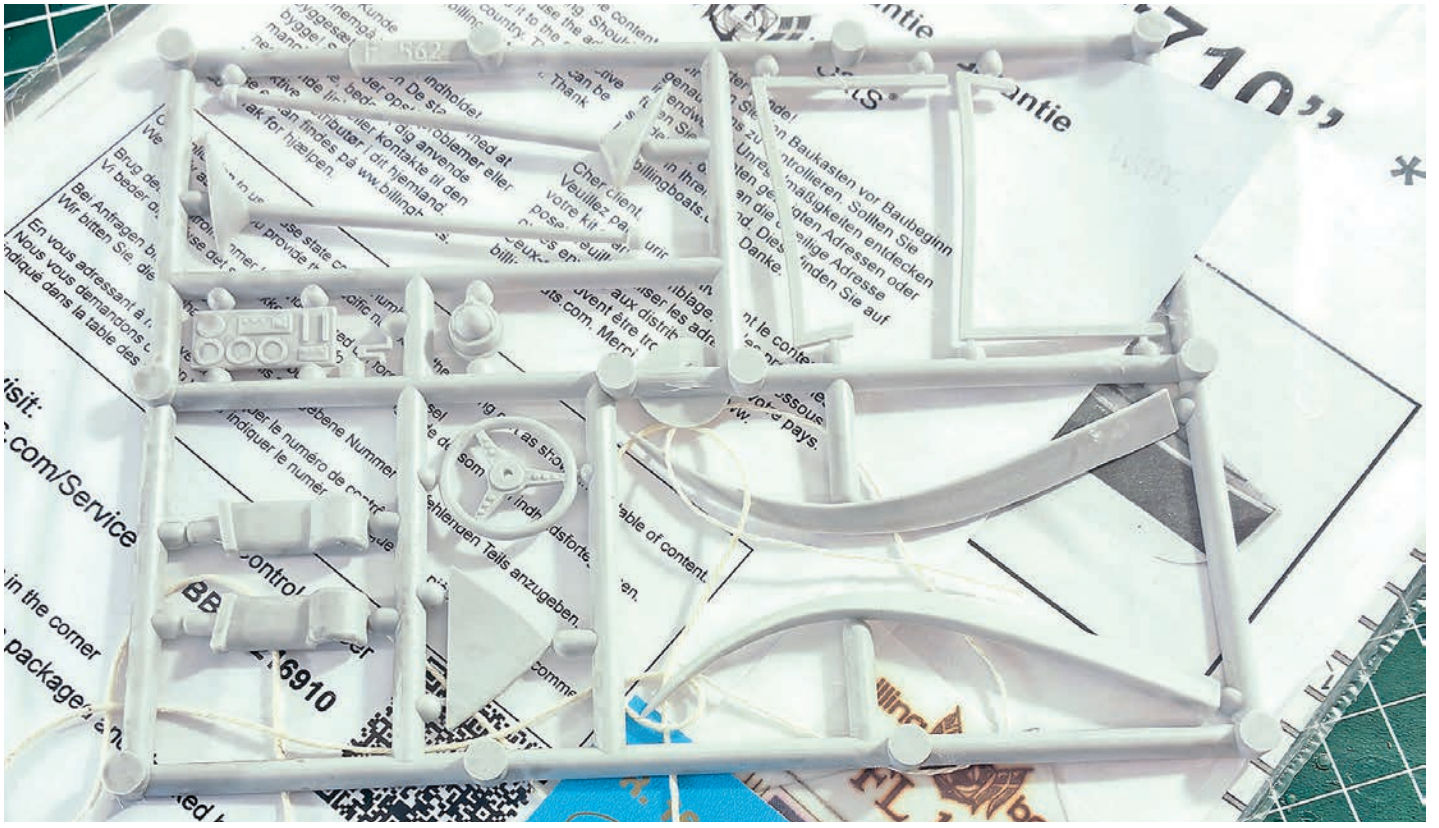
Hull construction

As soon as the 70 cm long solid keel and frames have been built from this plank-on-frame construction kit, it's easy to see that there willl be plenty of space for the accommodation of R/C components within the hull. *Phantom* can, of course, simply be built as a display piece, but as far as I am concerned the resulting model is far too lovely to simply sit idle on a shelf rather than actually being sailed.

The build

The thick plywood used for the framework has a very positive effect on stability and durability. The hull is planked on the sides and bottom with 1.8 mm strips, while the upper part is covered with laser-cut 1 mm plywood

The laser-cut parts and strips for the 1:15 scale Phantom model.



The instructions, decal for the stern and plastic parts still on their sprue.

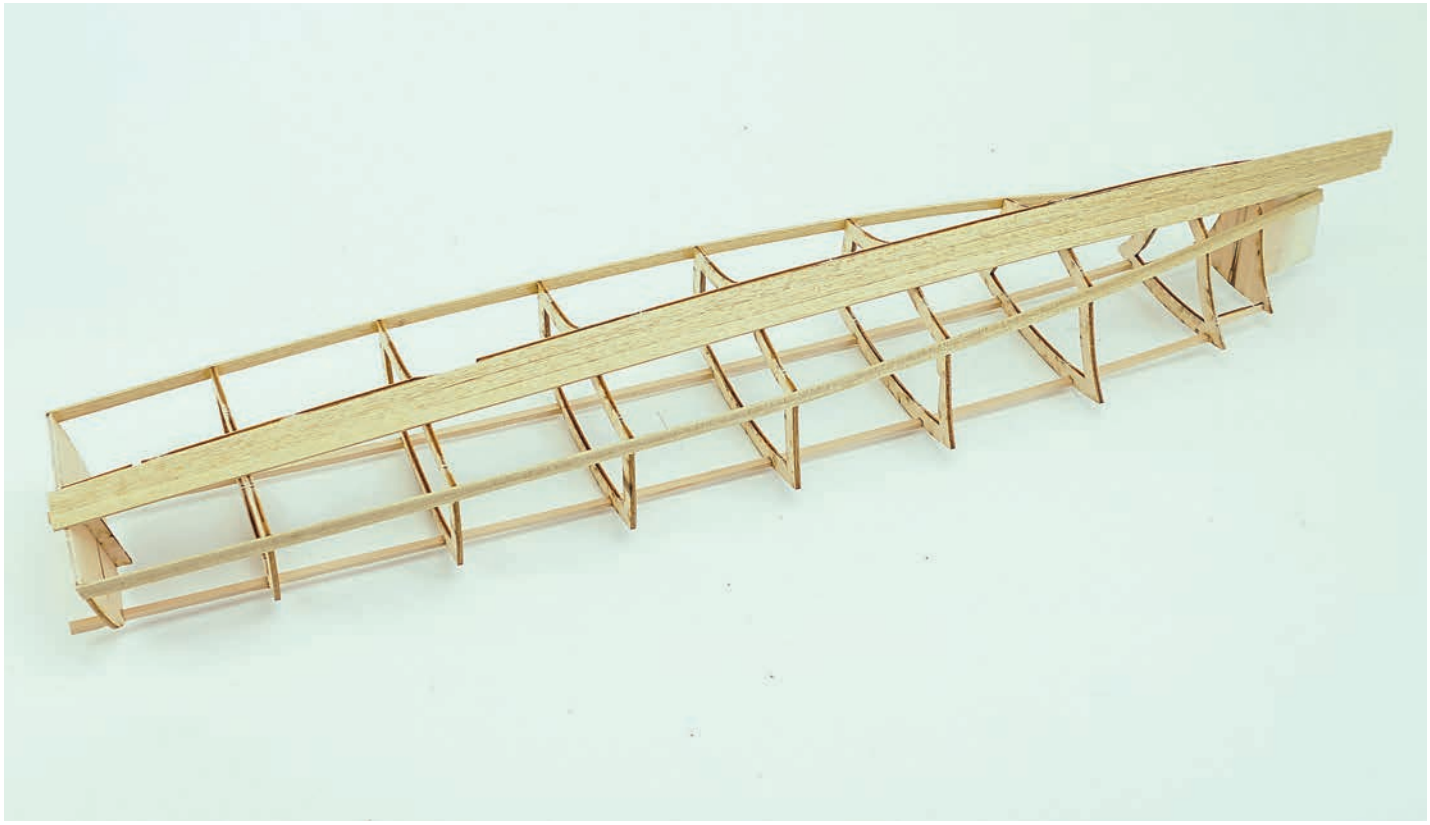
The metal parts and propeller.

"This weight distribution arrangement meant I didn't need any ballast – the waterline perfectly matched the one marked by Billings on the drawing.

(very flexible). Before you start planking, however, check that none of the frames protude beyond the hull's outline so that you can be sure that the correct profile is achieved. Then, as you work, you constantly check the symmetry of your upper and lower planking.

If like me you intend to get the boat out on the water, you will want to prepare for the placement of your R/C components before closing the hull. I used the rear section and the opening covered by the 'tarpaulin' to site my battery and servo. In the middle section are the receiver and ESC, while in the bow I installed a 15T motor. This weight distribution arrangement meant I didn't need any ballast – the waterline perfectly matched the one marked by Billings on the drawing.

Even if you're only building a display model, though, there's something else that needs your attention before the closing the hull. According to the manufacturer, the upper part of the hull should be stained, meaning the wood structure will remain visible. The joint line between this part and the side planking, therefore, should be



The framework ready for planking.

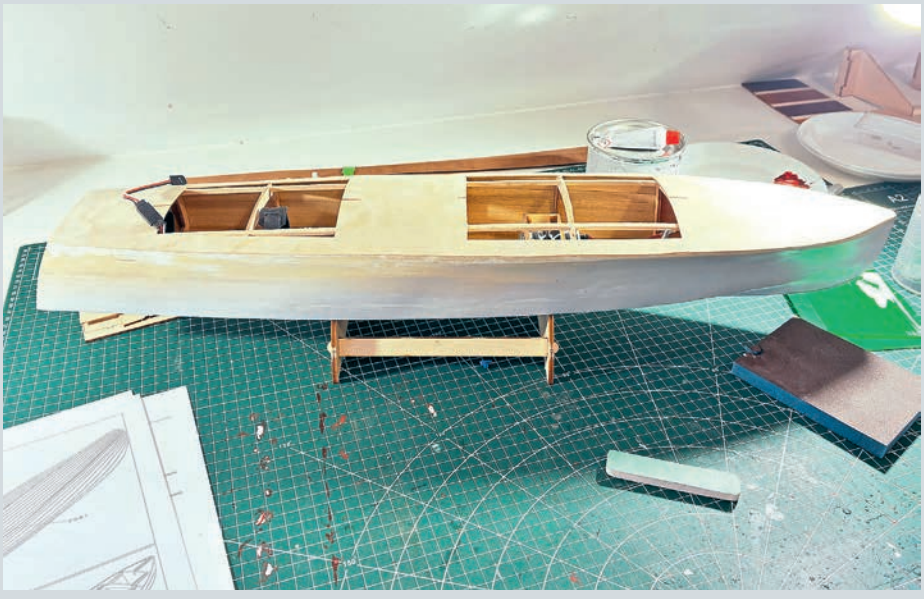
as perfect as possible – otherwise an unattractive finish line will appear. A rubbing strake is be added later, but this is mounted on the side, not on the upper hull, so it won't cover any imperfections. Test-fitting at framework stage, therefore, is highly advisable in order to ensure structural symmetry.

After closing the hull with the base planking, it's time to glue on the thin mahogany strips. These 25 mm wide and 0.7 mm thick strips are flexible but quite brittle, so they need to be handled carefully. It's worth sanding their edges before gluing – this way they fit better and gaps will be avoided.

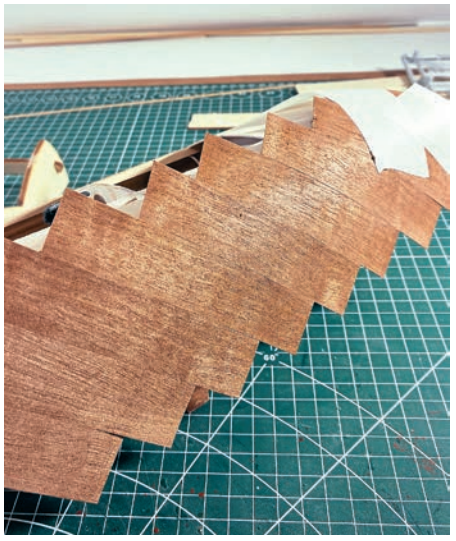
The strips on the sides go below the waterline and are laid roughly at a 30-degree angle to the hull line. Many of them are slightly bent and tend to spring back, so make sure you use a reliable adhesive that won't fail over time. Solvent-based glue seems a better choice here than water-based glue, as water-based glue can cause the strips to warp.

With the side strips glued on and the upper part of the hull stained, the wood begins to show its character.

You can now move on to the waterline and finish to be applied below it. The easiest way to do this is to first sit your hull the right way up (i.e,, not inverted) on your workbench, using the stand to keep it nice and level, and mark the waterline



Planking completed.



The Mahogany planking strips.

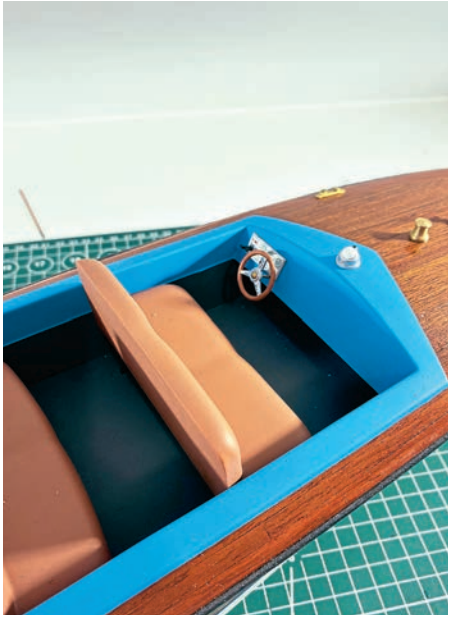
Finishing the underwater edge, using putty to seal any areas any potential leakage points in the masking.

The hull, waterline and deck preparation.

The simple homemade tool Tomasz uses for drawing symmetrical plank lines.

The planked hull, with the cabin compartment construction and hatch cover yet to be installed.

The cabin compartment now fitted with seats, which have been airbrush painted to effect an upholstered look.



The cabin, with instrument panel and steering wheel now added, in situ.

The decal, applied after a first coat of varnish, and the flag flying mast fitted.

The metal elements and cabin windscreen added.

Phantom gets a bathtub test – note, this should not be done until varnish has had time to fully cure.

Phantom finished.

Not included in the kit, the 3D-printed figures and luxury luggage now added by Tomasz to really bring Phantom *to life.*

(as indicated on the main drawing supplied by Billings). Once the bottom of your hull has been painted while, you will need to tackle the more tricky application of the approximately 2mm decorative line that separates the white bottom from the wood stained upper. Unless you've truly mastered the art of working with masking tape, achieving this without any bleed through marring your attempt at a clean, even and continuous fine line can prove a real challenge. There are ways around this, though. You could instead opt to use a liquid masking product, or affix commercially-available decorative adhesive strip. The latter may limit your colour choice, but it does have the advantage of making any small imperfections/errors easier to correct. Make sure, however, that on completion you remember to seal this adhesive strip with varnish so that it doesn't end up peeling off over tiime. You don't have to admit to this shortcut. If someone asks how you achieved such a fine line so very accurately, just smile and casually say, "*Very carefully, freehand*". You can then walk away feeling like Mark Court, the artist responsible for hand-painting the iconic stripes on *every* Rolls-Royce Phantom since 2003!

The next step is to start gluing 6mm mahogany strips alternated with 0.7mm strips on the upper part of the hull. Here, by referring to the both Billings' drawing and the photos, you will need to draw yourself an outline shape to refer to that factors in the 'cover' and the cabin openings while fitting these strips. For this i used the simple but effective homemade tool made up of a pencil and few strips of wood.

The outer strips follow the hull line, the inner ones define the spacing for the pencil. The main drawing is also a useful point of reference here when it comes to the shapes. I suggest starting from the middle section, as it's the easiest, trimming any excess from your strips once they've been glued on; this will allow you to quickly gain experience, which should then make work on the slightly more challenging stern and bow sections go more smoothly.

As the main strips are 1.8 mm thick, they stand proud above the hull and their outer line is visible, so a lot of test fitting before gluing is highly advisable.

On completion, sand everything lightly to remove any microfibres before applying your first coat of gloss varnish.

Finishing your *Phantom*

With the hull planked, it's time to prepare the seat bases, cabin and hatch 'cover'. The first step is to cut all elements from your parts sheet being sure to leave some margin for play – this can later be trimmed to fit.

"At this stage, it will be hard to resist a quick bathtub test to safely check watertightness in controlled conditions ahead of your model's maiden voygage. A word of caution, though…"

If you want to upgrade your model, the seats can be covered with leather, velour, cotton, or, well, basically, any material you like. If, however, you decide to avoid this additional work and simply paint your seats, it's better to avoid a brush and instead use an airbrush or rattle can, as this will help a achieve the kind of subtle texture that more closely resembles real upholstery.

The cabin and cover structures are pretty easy to fit and with a bit of planning can be made removable, which will greatly improve access to your R/C components. As colour/colours, there are no right or wrong choices here. Remember, these boats were designed and built for very wealthy people in whose world individualisation always plays first violin. I went with blue, simply because I like it and feel it really complements all that gorgeous mahogany (which I am coming to next). But the choice

Phantom *takes to the water!*

is yours. I must, however, once again point out that brush painting is likely reduce the 'Wow' factor finish this model so richly deserves.

Your *Phantom* decal should be applied to the stern only after the first coat of varnish to your wood has dried. Note I mention first coat, as it took three coats to achieve the gloriously glossy look I was aiming for.

Finally, there are just a few finishing touches to attend to – *i.e.*, fitting the metal elements and raising the flag on the mast.

At this stage, it will be hard to resist a quick bathtub test to safely check watertightness in controlled conditions ahead of your model's maiden voyage. A word of caution, though…Don't even think about doing this until your varnish has been given a good few days to fully cure. Trust me, patience will be a virtue here.

Suggestions for getting even more into the spirit of things!

For the most part, this is quite straightforward kit to build. That said, it's probably best suited to those with some experience of the type of planking involved rather than the absolute beginner. The resulting model, though, looks simply stunning,

Since getting *Phantom* out on the water for her maiden voyage, I have 3D-printed driver and passenger figures and some luxury luggage for the cabin. But there really is so much further fun you could have here. Because although the model is fabulous in its own right, at this scale it's practically begging for some champage lifestyle accessories – a Louis Vuitton scarf casually thrown down on one of the seats, or a picnic hamper and a magnum of the good stuff in an ice bucket perhaps! ●

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Fame

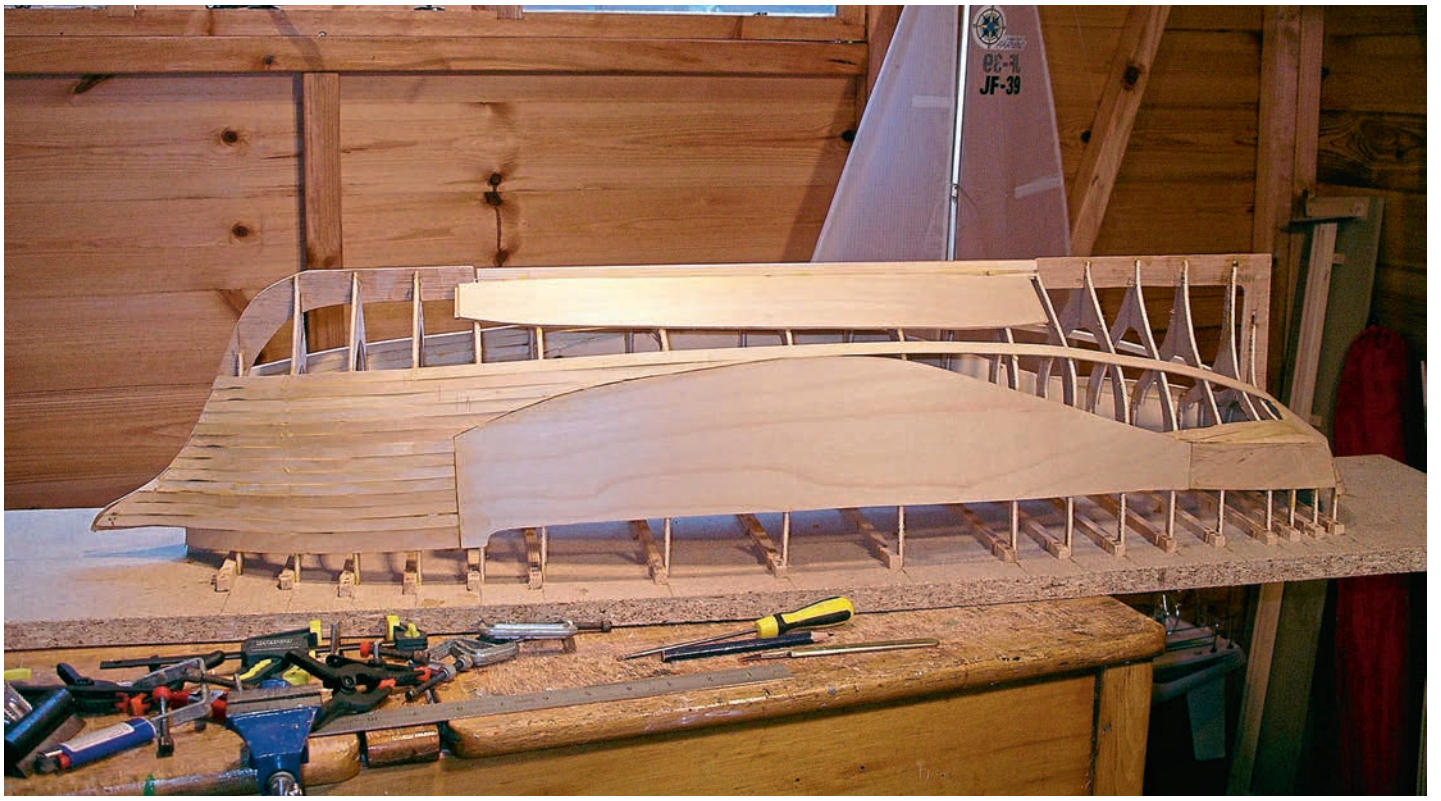
Nev Wade presents his Hooghly River Indian pilot brig build

In 1895 the R.I.M. (Royal Indian Marine) Dockyard in Bombay (Mumbai) built two brigs (two masts, both square rigged) for the Bengal Pilot Service. Their names were *Fame* and *Alice*, and they were the final word in the 200-year development of such vessels. They really were beauties, with good sleek lines, and the handiness, speed and sea-kindliness that such vessels required for their duty of welcoming inward bound ships and speeding on their way outward bounders at the port of Calcutta.

They were 'composite' ships, with wooden planking on iron frames, and of a build so durable that *Fame* was still doing duty as a lightship in 1949. Their rigging and sail plan harks back to times earlier even than 1895, with a very long jib boom extending beyond the bowsprit and single topgallant sails. Each carried two ship's boats hanging outboard from davits at the quarters to ferry pilots to and from the various ships they were to skilfully guide in and out of port; these boats gave the ships a very distinctive look, somewhat akin to whalers.

Consequently, I felt that a model of one of them would look good on the water, and would also sail, and handle, very well indeed. I therefore set out to build such a boat, based on the Underhill drawings.

Fame minus her royals (the topmost square sails). Note the pilot boat hanging from davits at the stern in front of the ship's ensign.



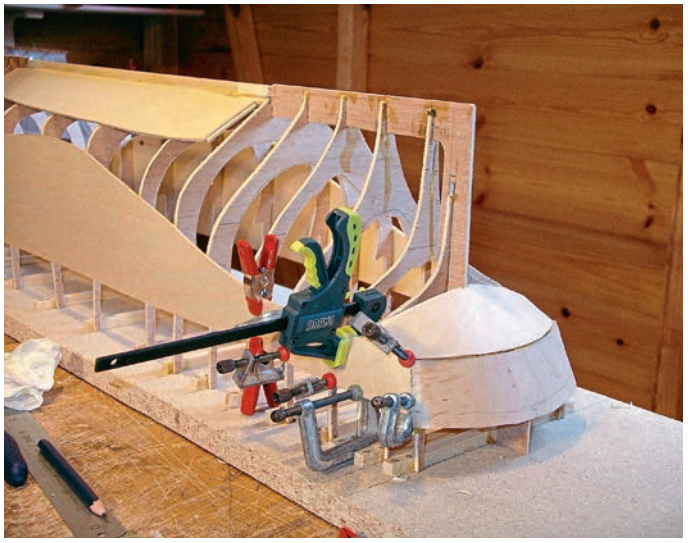
The hull, part built.

The hull

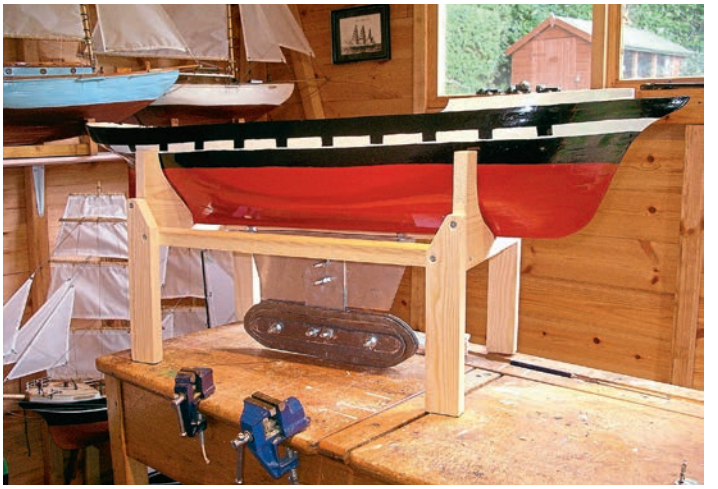
The hull was built plank-on-frame, with large pieces of thin plywood making up the long middle parts of the structure and 8mm x 2 mm lime wood strip used for the curvy bits. At the stern, I was presented with the challenge of bending bits of thin plywood, gluing them on and trimming them so that each would fit flush with its immediate neighbours in an effort to accurately mimic the counter stern. After completion, the hull's exterior was sealed, using filler and then let down wood glue. Glass fibre tissue and resin was then applied to the interior for final sealing and strength prior to rubbing down and painting. The keel frame was made with a thicker and wider piece along the middle part of the hull's length, backed by two large wooden blocks inside, through which I set two 8mm in diameter bolts to which the detachable sailing keel would be fitted.

It was at this point that I put the boat in the water, adding the electrics and sufficient lead to float it to an appropriate waterline. The weight of lead thus determined was the weight that I then built into a removable sailing keel as torpedo shaped strips. This keel was fashioned from an aluminium sheet, bent at right angles at its top end to attach it to the two 8mm diameter bolts mentioned above. Bolted to this sheet was an aluminium strip, adjustable fore and aft, to which I attached the weight of lead determined above, again using bolts. The whole is, therefore, adjustable side to side (by bending the aluminium sheet) and fore and aft, and its weight can be altered by unbolting lead strips. Following this, the model was returned to the water to check both its waterline and trim, so that the keel could be adjusted accordingly before I proceeded with the rest of the build.

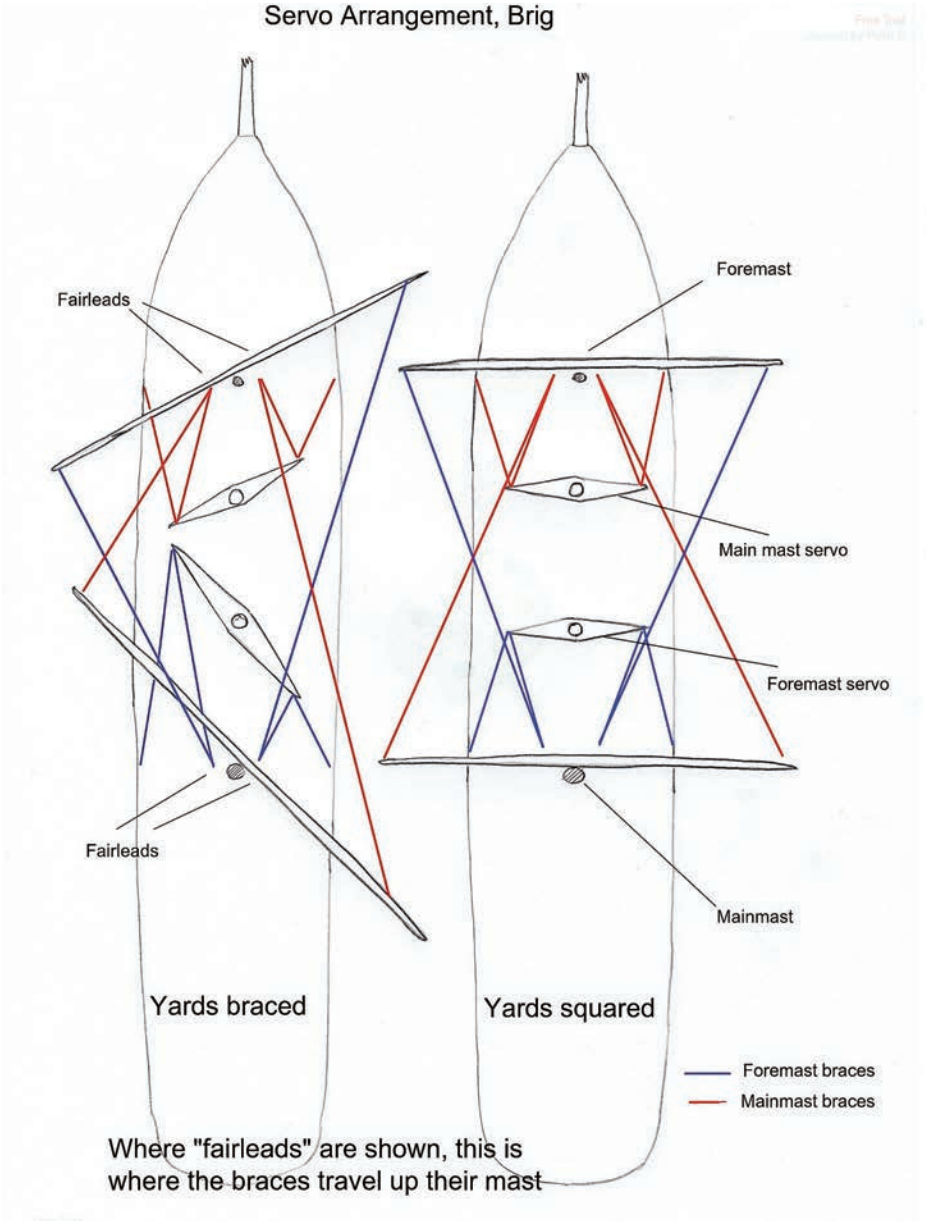
A vastly oversized rudder, easily ten times the scale size of the original, was



Bending and clamping, getting the stern sorted.



The finished hull on its stand, with the sailing keel attached. The legs of the stand allow the keel to be attached by the side of the pond, and the layout of aluminium sheet and lead strips can be seen on the keel.



The layout of the braces, in which the fore braces run aft from their yards and the main braces run forward from theirs. The braces are attached to fixed points in the hull and run round pulleys at the ends of the servo arms. In practice, the servo arms overlap when the yards are braced on opposite tacks.

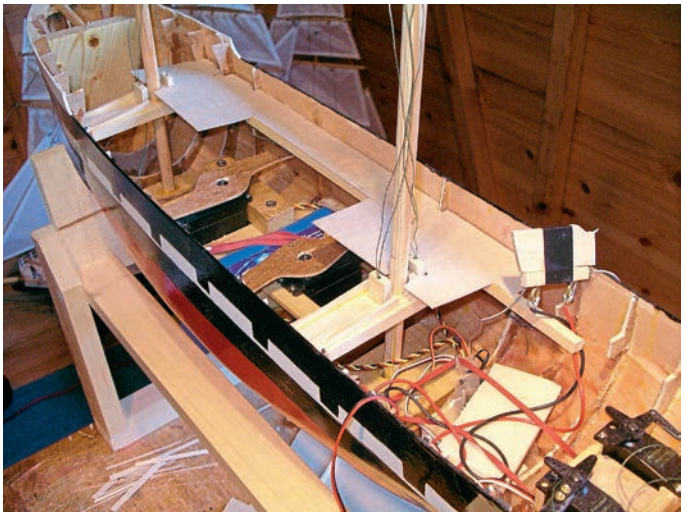
"A vastly oversized rudder, easily ten times the scale size of the original, was fitted for good control on the water"

fitted for good control on the water. Its pivot post was fitted through a brass tube into the hull and held by a small bracket made from brass sheet at its bottom end. The servos were mounted on wooden blocks glued into the hull using epoxy glue. Sites for them were chosen by trial and error, this process being straightforward for the rudder and spanker servos at the stern but much more awkward for the two sail arm servos with centrally pivoted arms used for control of the yards.

These vessels had to get to their customers quickly, in almost any weather, and be manoeuvrable enough to successfully launch a boat in which to transfer a pilot across to another ship. A well-shaped sailing hull, with sharp bows, good sheer and a good 'run' aft *(i.e.,* a good taper running aft from forward of midships) was therefore essential. This, however, meant space inside the hull was restricted, so the two sail arm servos were crammed together somewhat between the masts, with implications that I'll explain next…

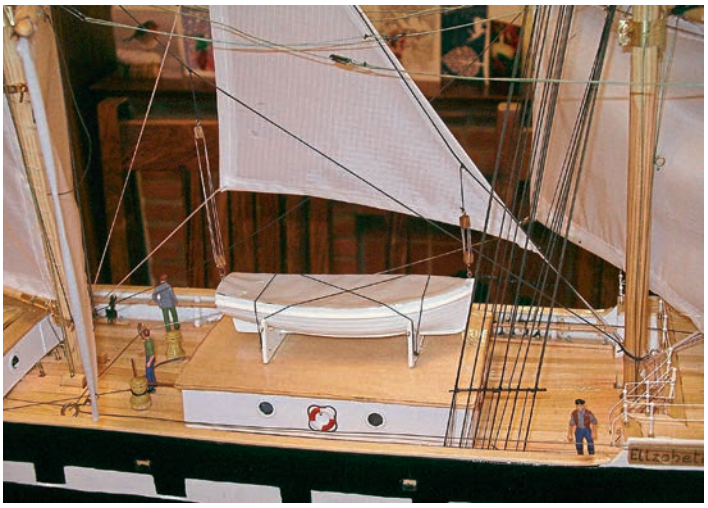
Braces on a square-rigger were usually led aft from the yards on the mast they controlled to the next mast astern, where they were then led to the deck so that they could be pulled. On a vessel where all the masts were square-rigged (a full rigger or a brig such as *Fame*) there is no mast astern of the aftermost square-rigged mast, so the braces for the aftermost mast have to be led forward to the mast ahead. On my model that required both sail arm servos to sit between the masts.

The interior of the hull, with the two sail arm servos for the yards between the masts, and those for the spanker and rudder at the stern.

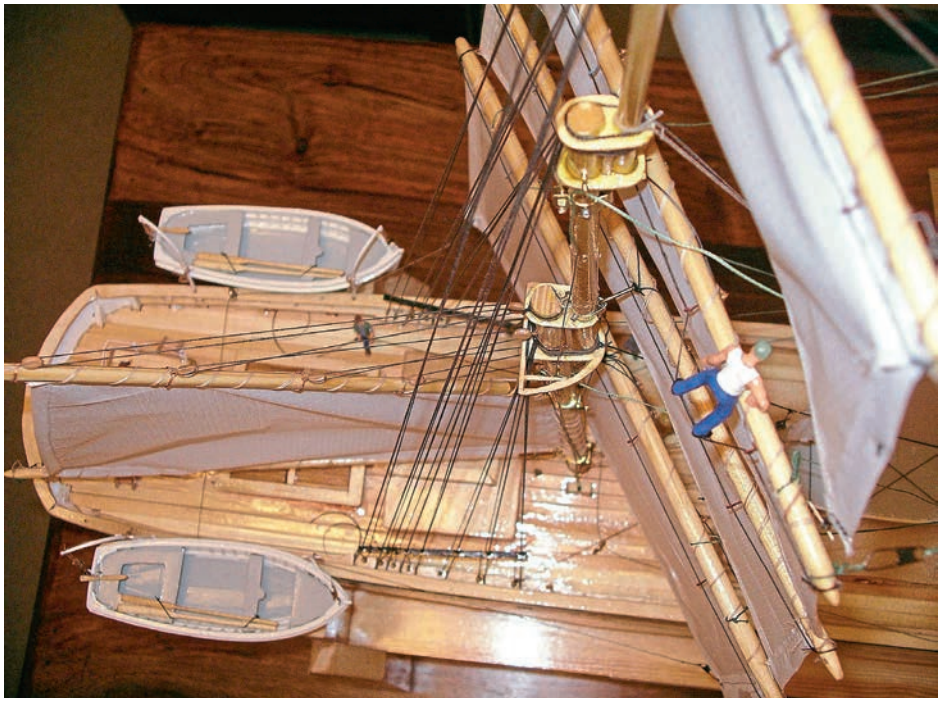


Starting to fit the 'false decks'. Note the fairleads set into blocks by the sides of the masts. The idea is to lift the tops of the fairleads up, out of the way of water across the deck.

The two sail arm servos seen through their hatch, with the servo arms overlapping, and the yards on opposite tacks.



The house on the main deck between the masts. The lifeboat is slung on falls rove to the main stay and main topmast stays. On the real vessel, it must have been the very devil to launch!



A view down from the main royal yard, with a sailor on the upper topsail yard. Note the pilot boats swung out from their davits.

The captain's view of the sails on the main mast, with a sailor on the footrope of the upper topsail yard.

The servo for the yards on the fore mast was located directly in front of the main mast. The inboard ends of the fore braces (two per side) were attached to the vessel's' frames either side of the main mast at each side of the ship from where they were led to pulleys at the ends of the servo arms. They were then run to, and through, fairleads either side of the main mast to get them through the deck. The pulley arrangement gives a 'multiplying pulley system', which increases the movement of the yardarms for a given servo arm movement. That, in turn, helps get the yards to brace round as far as is necessary for good sailing to windward. The braces were run up the main mast to heights suitable for sending them across to the yards they were to brace on the foremast. At these heights, the braces were led through ring screws, acting as pulleys, and sent across to their yardarms via bowsies to pulleys at the yardarms. They were then sent round the pulleys (fishermen's snap links, called 'swivels') and led back to the bowsies, where they were tied off. Attaching two lots of braces, to the foreyard and the fore upper topsail yard, ensures that the bracing effort is distributed evenly up the mast.

The servo for the yards on the main mast was located immediately abaft the fore mast, with the braces arranged in the same way as above, except that they run up the fore mast to the appropriate heights, before being led astern to the main mast yards. The space available meant that the centrally pivoted servo arms overlap when the yards on each mast are on opposite tacks, so had to mount them at different heights within the hull to allow for this.

This arrangement of the braces is exactly as it would have been on the real ship.

Radio and electrics

A four-channel radio set up was used, the whole being connected with a UBEC (Ultimate Battery Eliminator Circuit), a kind of voltage regulator in the circuit to control the 7.2V output of the system in such a way that electrical output to the servos is not compromised. The channels control rudder, the spanker (the fore and aft sail attached to the after side of the main mast), the fore mast yards and the main mast yards. The on/off switch

Going about, from port to starboard tack. The bows have gone across the eye of the wind, so the main mast yards have been braced round on to the new tack. The foremast sails are all aback and are pushing round the bows to complete the manoeuvre. Once success is assured, the foremast yards too will be braced round on to the starboard tack and the vessel will gather way again.

Fame was a very tall little ship, setting royals on both masts.

I mounted above deck level, beneath a deckhouse, while the charging points for the 7.2V battery appear through the deck just forward of the main mast; the idea being to minimise the number of times it's necessary to 'go below'.

Decks and masts

The lower masts were made from simple dowel and were fitted into blocks on the keel. They were then supported by thwartship pieces of wood at deck level, which also carry the deck. Their rake and vertical orientation were also set using these 'thwarts', and small, tapering pieces of wood were glued across the model on the thwarts to give the deck the proper camber when fitted. I made a false deck from thin plywood sheet, attached it to ledges in the vessel's frames at each side and laid it across the thwartship pieces to give it the correct height below the gunwales and camber across the ship. After attaching coamings around any deck openings and sealing them and the sides of the deck where it meets the bulwarks with decorators' caulk, I planked the deck with the same 8 x 2mm limewood strip that I'd used to plank the hull. I then sealed around the whole deck with resin and finished off with three coats of varnish all to ensure no water gets below.

I made the openings in the deck to suit the positions of the various

"I thought long and hard about this feature as, although it made the real ship look really good, it would be vulnerable when sailing a model regularly on a pond"

Almost becalmed, in the sunshine.

With wind and waves getting up, she's off!

The pilot gigs hung on their falls from the davits at the quarters.

components below and enable future maintenance. I should point out, however, that these openings do not correspond with the deck arrangement of the original vessel.

Both masts are made up of three sections: a lower mast, topmast and topgallant mast. Crafted from simple dowel, these attach to each other at 'doublings', just as they did on real ship. The dowel used reduces in diameter as height is gained.

A similar method was used on the bowsprit, which consists of a bowsprit proper with a jib boom attached to it, again via doublings. I thought long and hard about this feature as, while it made the real ship look really good, it would be vulnerable when sailing a model regularly on a pond. In the end, I decided to risk its small diameter.

"Sailing a square-rigger is all about moving the sails around to use the wind to the best advantage"

The yards, boom and gaff were also made from dowel and were attached to the masts by homemade pivots in the case of the yards and bought goosenecks in the case of the boom and gaff. The pivots are pieces of brass wire bent at 90 degrees and glued into the centre of each yard which fit into pieces of brass tube held at the fore side of the masts by clamping brass strips. Thus, the yards are positioned about 15mm ahead of the masts, allowing them to be braced round to within 30 degrees of the centreline of the hull, which is vital to the model's ability to sail close to the wind.

Sails, and their control

The sails were made from kite material and were laced to their spars using cotton thread. Most of them are not removable, but the two uppermost square sails on each mast, the topgallant and the royal, can be taken off the model when the wind becomes too severe to set them. The bottom corners (clews) of the sails have small hooks sewn into them which locate into 'goalposts' of thin wire glued into the yard below. To remove one of these sails, I simply have to unhook the clew from its goalpost and then lift out the yard from its pivot, leaving a bare topgallant mast. The uppermost fore and aft sail between the masts (the main topgallant staysail) can also be removed by unhooking its stay from the masts and its sheet from the base of the main mast.

The other item that is not obvious is the way in which the courses (the large square sails at the bottom of each mast) are dealt with. These sails need to be able to use the wind from both behind and in front**.** They do not have yards beneath them to which to their clews can be attached, so needed a means of keeping them set down to deck level. This was achieved by the use of a single piece of 2.5mm diameter brass wire sewn into both sides and across the bottom of each sail. This holds it down, preventing it from wrapping itself around the mast when 'caught aback' (taking the wind from in front). The sail is held back, into the wind, when being blown from astern by the use of an 'endless' sheet, run from one clew to the other via ring screws set into the deck further back on the ship. As the yards are braced round, this sheet simply moves through the ring screws and holds back the sail at any angle, catching the wind and pushing the ship forward.

Sailing a square-rigger is all about moving the sails around to use the wind to the best advantage. With the wind from astern and the yards squared, obviously, the vessel will move forward, but, with the wind from abeam, or from in front of the beam, it's less easy to envisage how progress is achieved. Here, it's all about bracing round the yards so as to present their after sides to the wind; the yards, therefore, need to be capable of bracing to within about 30 degrees of the centreline of the hull. With them in this position, it's possible to persuade a square-rigger to sail to about 65 degrees to the direction of the wind (a yacht will manage about 35 degrees) and sail upwind.

Eventually, the model will run out of sailing space, and the direction of

Despite their tough occupation, these vessels were dainty little ships.

This is why you build them, bowling along across the pond.

travel will need to be changed. If the model is travelling with the wind behind her, it's simply a matter of steering with the rudder. If, however, the ship is 'beating' (sailing into the wind with the yards braced 'sharp up' and swung right round on to the backstays on one side), it will be necessary to tack – this applying both to real square riggers and models of them.

I've covered the detail of tacking a square-rigger in other Model Boats articles, so it's suffice to say here that you must be able to control the yards on each mast separately, so as to put the main mast yards on to the new tack first when a vessel's bow is almost across the wind, leaving the foremast yards to finally push the bow round, with the sails aback. Once success with the manoeuvre is assured, the foremast yards can be put on to the new tack in their turn, allowing the vessel to gather way again on this new tack.

I use my 2.4GHz transmitter with all the return springs removed, except that for the rudder, so that the sticks stay where they are put. The left-hand stick controls the foremast yards from one tack to the other in left/right mode, and the main mast yards from one tack to the other in up/down mode. In practice, this means the stick can be used like a computer joystick in achieving any combination of positions for the yards, from having them on opposite tacks (as in tacking) to having them all squared to run before the wind. The right-hand stick can be left in any position in up/down mode, and this controls the sheet for the spanker out and in, while in spring loaded left/right mode it controls the rudder conventionally.

Detail

I am in considerable awe of modellers who are prepared to invest years in their vessels, faithfully reproducing all of the details and often scratch building every last item. I confess that I don't do that. On my models, items such as the ship's boats, handrail stanchions, crew, deck furniture, *etc*, are often commercially sourced items. That doesn't mean that I see detail as unimportant; on the contrary, without it, I believe that models look plain and somewhat sterile. So, aboard *Fame* you'll see a working crew, all the deck impedimenta you'd expect and the ship's all important pilot boats hanging on their falls from davits. Being a pilot brig, these boats permanently hung from davits and were a real feature of her appearance. Her lifeboat was slung from falls rove to the main and main topmast stays and must have been the very devil to launch in an emergency!

On the water

After the initial waterline trials with the completed hull, the next trip to the pond was for *Fame*'s maiden voyage. Fully anticipating the likelihood of some tweaks being necessary, in the event, the keel had to be moved both forward and to the side slightly on its adjustments and the weight of it reduced by 0.5kg, to 3.9kg. After this, the model sailed well on that rather quiet day. It wasn't until the next sail, on a dull and somewhat more gusty day, that the model demonstrated just how effective this little ship would have been in the Bay of Bengal all those years ago.

With a keel weight that is relatively low by the standards of my other square-riggers, she picks up speed very well, and heels over spectacularly. The real acid test is the ability of a model (or ship) to go about handily, and so the first tack is always a nervous moment. When you put the helm over and the vessel starts to swing across the wind, you look for a hull which will keep steerage way long enough the get to the point when the main yards can be swung in order to get the force of the wind behind them on the new tack while the vessel is still moving forward. With this hull, that point was reached remarkably quickly. No sooner were the main yards swung than it was time to swing those on the fore mast and get under way again on the new tack. It is really re-assuring when a model does this, as it means that the side of the pond may be approached with confidence and, therefore, the whole of the pond can be used to make long boards and cover the ground easily.

20+ mph and the waves are building. You can see that the pilot gig on the port quarter is fully submerged. The little boat has a hole in the bottom, to drain out the water!

"She is a real pleasure to sail, and I wouldn't hesitate to recommend her to any first-time square-rigger model builder"

She heels over when the wind gets up, and it's easy to see why in the photo of the real ship she carried no royals – I reckon her operators believed them to be an unnecessary luxury, for *Fame* was a very tall little ship. I quickly found that it was a good idea to get the royals off my model, too; no speed was lost, and she kept her lee bulwarks out of the 'sea'. For the very windiest of days, I can take off the topgallants, so I'm sure she will be able to cope with wind better than most scale yachts, just like my other square-riggers.

There is one more deviation from the original on my model. *Fame* used to set a 'jib headed spanker', *i.e.*, one that had no gaff; it was a triangular sail spread between the main mast and the boom at the stern. In my opinion, such a sail doesn't look as good as a conventional spanker set up to a gaff, so I've fitted the conventional kind. This has resulted in the model needing more sail at the bow to counteract the extra area at the stern, so I have set a fourth head sail, the flying jib, to balance the rig.

She dips her side into the water so far that water quickly gets into the pilot boats hung on their falls, but the interior of the model has stayed completely dry, a re-assuring fact, directly attributable to all the careful sealing of deck openings and the joint between deck and bulwarks. The pilot boats have both had a hole drilled into their hulls to let out any water.

She can do all the 'tricks' that square sail allows, such as backing away from the side of the pond, and, when you run out of room, beating near the bank, as well as stopping almost dead in her tracks when you put the yards on to the other tack if disaster looks inevitable. Finally, and this is a bit of a bonus, when she runs with the wind she can hold her course without constant yawing, requiring few steering corrections. This means that, occasionally, I can simply let her go, for some quick, 'downhill' sailing, usually to a buoy, before steering quickly round the obstacle and beating back upwind. Altogether, she is a real pleasure to sail, and I wouldn't hesitate to recommend her to any first-time square-rigger model builder.

Specifications

Battery:	7.2V 4500 mAh NiMH
Radio:	6 channel Futaba 2.4Ghz, Hobbywing 8A Switching Mode UBEC
Servos:	HiTec HS 765 sail arms and Futaba S3003 for rudder and spanker
Height (keel to main truck):	848 mm
Beam:	184 mm
Length (bowsprit end to stern rail):	1227 mm
Keel weight:	3.9 kg
Boat weight:	4.4 kg (8.3 kg total)
Scale:	1:43.

Model Boats is a friendly, inclusive, community-led magazine that welcomes everyone, from the complete novice to the seasoned vet, aboard. As well as including a FREE PLAN in every other issue, no aspect of the hobby is off radar, with content embracing everything from scale static display models to radio-controlled, combustion engine-powered and steam-driven working renditions. From model yachting skills to Fast Electric thrills, we've got it covered!

Lindsey Amrani

Editor

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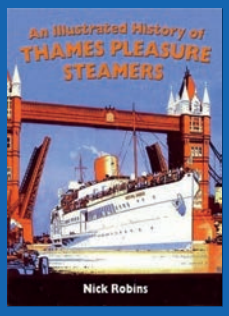

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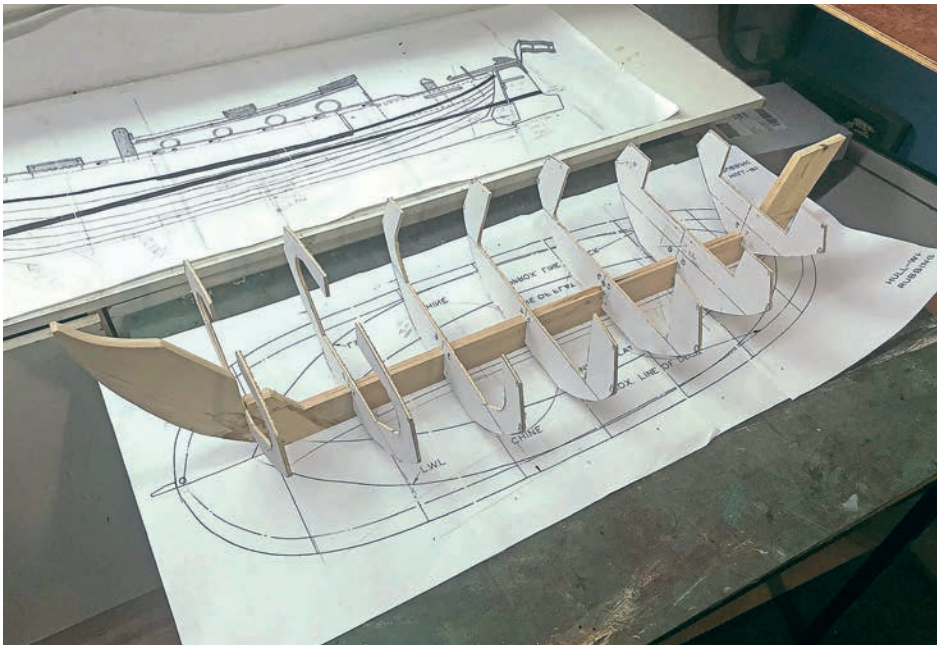
Going Dutch

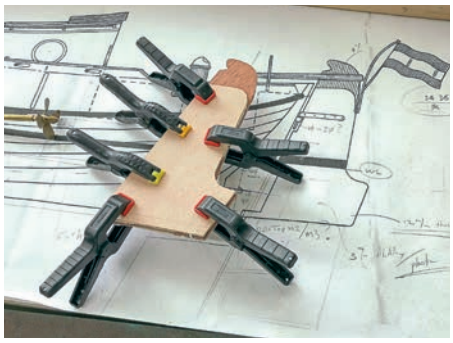
Andy Biggs shares the learns….

The design of a boat will evolve until it is ideal for its chosen waters. For example, a traditional Norfolk Broads sailing yacht, with its shallow draft, open side decks to facilitate 'quanting' the boat under a low bridge, easy to lower mast and large mainsail, was developed for the confines of the Broads but would be totally unsuitable anywhere else. Similarly, the flat bottom, shallow draft and leeboards of a Thames Sailing Barge are all attributes intended for specifically for navigating river's narrow, shallow tributaries and estuary. While on the other side of the North Sea, the Dutch developed their own version, best suited to the transportation of cargo in the shallow waters of the country's coastline and waterways.

I've always been impressed with the design of these Dutch sailing barges and after finding myself once again admiring them on my last cycle trip (I've visited the Netherlands many times) I

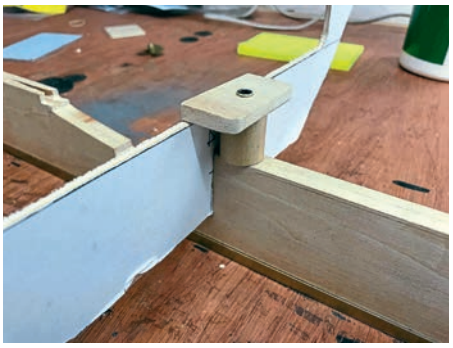


Work begins on the keel and frames.

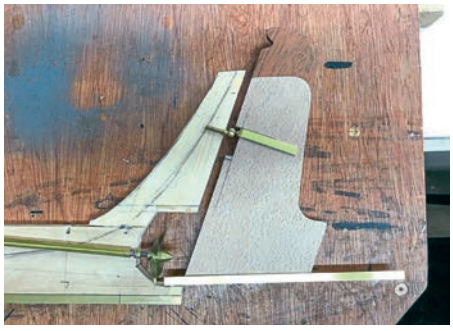


The rudder being assembled.

Checking the motor position.

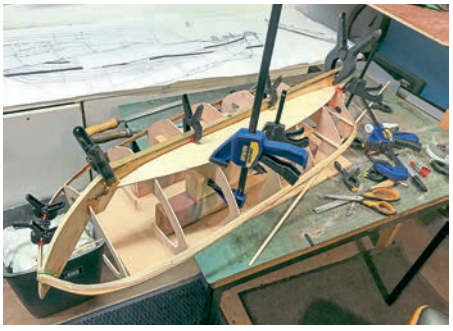


The brass tube for the keel.



The keel, rudder and motor prop.

Steaming the planks.



Placing the bottom panels.

Work in progress on planking the hull.

decided that on my return to the UK I would set about modelling one.

Dutch courage

The boat has a unique shape, so I was going to need some guidance. Finding a suitable plan or even basic lines to work from didn't prove easy. Eventually, though, online research revealed that Sarik Models could supply a plan for a Dutch yacht based on a circa 1900 Vollenhovense Bol design (as featured in the June 1975 edition of Model Boats). The plan is, however, for the build of a model with a hull measuring 18.5-inch in length, which wouldn't really be large enough for the working version I had in mind. The easiest solution, therefore, was to double the size, which would lead to a model of approximately 1:10 scale. From there, I could turn my attention to the best construction and further detailing ideas/methods, bearing in mind that the Sarik plans consist of just one sheet of line drawings which incorporate a very simple sail plan. Although the Vollenhovense Bol design was originally drawn up in around 1900 (in Vollenhove, the Netherlands), it still remains popular with the Dutch for yachts of (usually) 8 to 9 meters today, making it easy to source information on, and YouTube footage of, the full-size vessels. There is, however, very little in the way of guidance for would be modellers to be found.

There are, of course, modellers who are capable of producing a museum quality model that actually sails; the rest of us have to make some compromises. I therefore had to take into consideration that while I naturally wanted my Dutch sailing barge to 'look right', it was equally important she would sail correctly and be robust enough to endure the rigours of transportation to and from the water in the car. I sail at the Fleetwood Model Boat Club saltwater lake, so models also need to be washed down after each sail.

It can be difficult to plan for everything before starting work on a model, but there were some decisions that needed to be made early on... For example, the rudder would require a servo, as would the main sail, and the jibs would need a third. There was also some consideration given to making the lee boards raise and lower but, as I'd never built a boat with a motor before, it was decided that the fourth channel would be used to control this.

The build

The keel was constructed from two pieces of beech, with a groove cut into each half to accommodate the prop shaft. These pieces were glued together, and a strip of brass was fitted to the underside to both keep the keel straight and durable and add weight to the lowest part of the boat. It became clear, however, that for the boat to sail well an additional keel would be necessary. After looking at how Thames Barge modellers approached this, a brass tube was fitted through the boat so that an additional keel could be added for sailing and easily removed for transportation and/or display. To keep the boat in balance while sailing, due to the long bowsprit, it was necessary to position this keel slightly forward towards the bow.

> *"It can be difficult to plan for everything before starting work on a model, but there were some decisions that needed to be made early on..."*

The frames were cut from 3mm plywood and then fitted to the keel, with stringers attached afterwards. This skeleton soon began to illustrate how different the hull shape is from other boats. The bottom panels were made from 1.5mm plywood, and these were trimmed to fit against the frames, stiffening the hull and keeping it 'square and true'.

Next came the planking. The material I'd chosen was 7mm x 1.5mm basswood. In order to follow the boat's curves, where necessary these planks were soaked then bent using a steam iron before being glued in place using cyanoacrylate adhesive (superglue). The areas around the stern and main part of the hull were reasonably

The curvaceous bow.

The planked hull coated with glass tissue.

The initial stages of cabin construction.

The deck complete and work on the cabin underway.

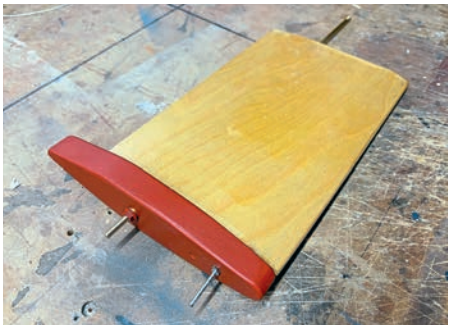
The finished hull ready for rigging.

A set of paper sails trial fitted before being replaced by ones made up from full-size sail offcuts they will serve as a guide for.

straightforward, but to capture the shape of the bow the use of shorter planks was necessary.

With the planking completed, I gave the insides of the hull a coat of West Epoxy resin to sealed and strengthened the model from within. The hull's exterior was then faired, using Isopon filler in some areas, before a layer of glass fibre tissue was added, followed by another coat of West Epoxy. Once sanded this gave a lovely smooth shape to which a coat of spray primer could be applied.

The design of the rudder incorporates a removable extension, which was made from acrylic. The rudder is controlled via two wires, which I led through tubes above the waterline to the servo.



The lead weights bolted to the removable keel.

I then needed to construct the top sides. These are, basically, flat but curved, so card templates were made before the final pieces were cut from 1.5mm plywood.

With the hull now reasonably strong, attention turned to the installation of the R/C equipment. Although I'd used winches on previous boats, a sail arm seemed a simpler solution here. To achieve the amount of travel needed for the jib sheets, a 2-1 system was used on this arm.

The sail arm for the jib was mounted at deck height, so the sheets could be led out through fairleads in the cabin sides; this also meant its movement would not clash with the arm controlling the mainsail. Installing a motor was a new experience, and this was initially bench tested to see how it would work before fitting. The receiver, batteries and motor controller were mounted on a platform to keep them clear of any bilge water; located to the port side, in retrospect I perhaps should have tried to mount the batteries lower down in the centre of the boat, although it should be remembered that this was never intended to be a performance craft.

With the control systems in place, I could move on to the deck and cabin, as well as the cockpit. The deck and cabin sides were straightforward enough; their sizes again being initially determined by creating card templates to experiment with. The fact the full-size boats are painted came as a bit of a relief, as it offered the reassurance that any minor errors could be rectified with a small amount of filler which in turn would be covered with paint. The rear cabin bulkhead and the cockpit, which are normally beautifully crafted, are, however, exceptions to this generalism, meaning some thought and care would be needed with taken with their construction. Using a selection of different woods, it was possible to create a visually interesting bulkhead, which I then finished with varnish. Making the cabin roof removable was quite easy; ensuring the rudder controls could be reached via the cockpit (held in place with a screw into the keel) proved a little more tricky.

The gunwale was laminated to the topsides, varnished and then masked, so the rest of the hull could be spray painted.

In this shot of the interior, note the wooden arm that controls the jib.

Andy's delightful Dutch sailing barge model finally finished.

The spars were made from hardwood dowel, while the curved gaff was laminated from three pieces of contrasting wood.

Although the leeboards were not going to be functional, there was need for them to look realistic, so they were profiled from a solid piece of wood.

Once the rigging was finished, I cut out a set of paper sails to serve as a guide for the real ones, which I then made up from full-size sail offcuts.

The last job was to make a removable keel to provide stability and improve the boat's performance, especially when sailing to windward. I started with two pieces of plywood bent around internal formers. A 5mm diameter brass rod was then run through this keel before being passed through a brass tube in the hull. To keep the keel in line, an additional 3mm diameter stainless rod was also fitted through it. Both rods were threaded at the lower end so that lead ballast could be attached. A test float in the bath showed that an additional 1.5Kg was needed to bring the boat down to its waterline. This weight was cast in lead, then fitted to the keel with the threaded rod so that it can be removed if/when necessary.

"The model now performs perfectly. My fellow members at the Fleetwood Model Club are suitably impressed, despite one of them having nicknamed her 'The Sailing Clog'!"

'The Sailing Clog'

The first test sail was undertaken on a bright, sunny day, albeit with slightly more of a breeze than anticipated. Generally, the boat performed very well, but there were some adjustments required. The top of the mast was too long and, even though I'd carried out a float test in the bath, the boat sailed a little nose down. I also discovered a leak! Thankfully, it was easy to shorten the mast and lower the jib halyard position, and with a small amount of lead added at the stern she then sailed on her waterline. The source of the leak was traced to the prop shaft tube and fixed by resealing and adding an additional washer.

The model now performs perfectly. My fellow members at the Fleetwood Model Club are suitably impressed, despite one of them having nicknamed her 'The Sailing Clog'!

All in all, this proved an enjoyable, if somewhat challenging at times, project, and one that's inspired me to start a model of a Thames Barge using the Veronica plans. Watch this space!

Sailing beautifully out on the Fleetwood Model Boat Club's saltwater lake.

Kon-Tiki

For authenticity's sake, Scale Marine Modelers Inc (Auckland, New Zealand) member **Steve Jacques** gets back to basics…

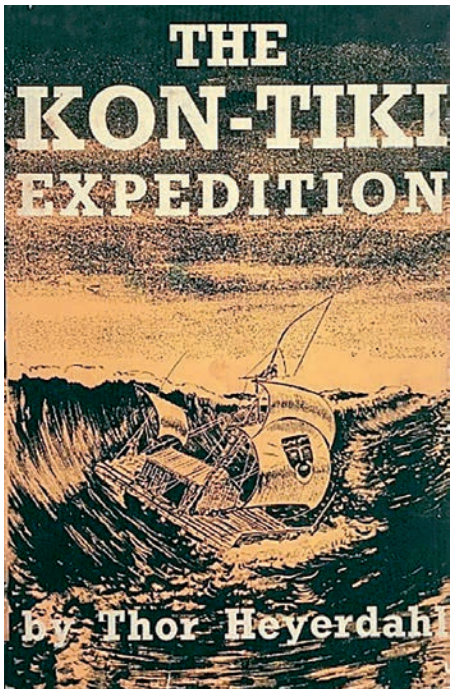
In 1947, Norwegian explorer and ethnographer Thor Heyerdahl – who wanted to prove his theory that a sun-worshipping ancient South America race, whom he called the 'Tiki people', could have crossed the vast Pacific and settled Polynesia in pre-Columbian times – embarked, together with his intrepid crew, on an epic 4.300 mile, 101 day, voyage from Peru to the Polynesian islands on a primitive hand-built raft named *Kon-Tiki*.

It was his book, chronicling this epic adventure, that, in late 1970s, first inspired me to model the raft, *Kon-Tiki*. Despite being somewhat restricted by both the cost and availability of materials back then, I did, in fact, complete the build, and I even sent details to 'Model Boats' at the time, although my submission wasn't published.

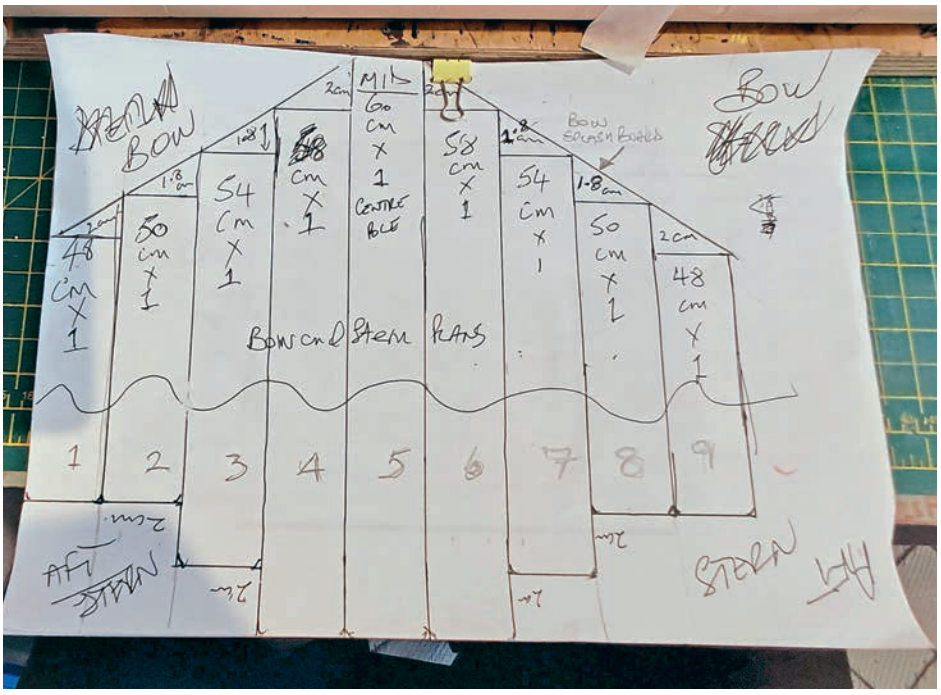
Fast forward almost half a century and, earlier this year, while waiting on the delivery of a much bigger boat building project, I decided to revisit *Kon-Tiki*. The same basic materials were used for this second build, but this time around I decided not to use any glue or nails/screws, just knotted string.

By the book

My first task was to re-read the journal of the actual expedition to rekindle all the excitement it evoked. Sourcing a copy proved surprisingly difficult, but eventually I managed to track the book down in an online library. It was certainly worth the effort, as along with all the thrill and spills of the journey it records, it also gives a lot of details on the overall size of the craft and the materials and



The Kon-Tiki Expedition by Thor Heyerdahl proved an invaluable source of reference for the build of Steve's build.



Steve's rough plan for the bow and stern.

methods used in its construction.

The original raft comprised of nine balsa tree trunks, up to 14 m (45 ft) long and 60 cm (2 ft) in diameter, fastened together with 30 mm (1¼ inch) hemp ropes. Cross-pieces of balsa logs 5.5 m (18 ft) long and 30 cm (1 ft) in diameter were lashed across the logs at 91 cm (3 ft) intervals to give lateral support. Pine splashboards clad the bow, and lengths of pine 25 mm (1-inch) thick and 60 cm (2 ft) wide were wedged between the balsa logs and used as centerboards.

The mainmast was made of lengths of mangrove wood lashed together to form an A-frame 8.8 m (29 ft) high. Behind the mainmast was a cabin of plaited bamboo, 4.3 m (14 ft) long, 2.4 m (8 ft) wide and about 1.2–1.5 m (4–5 ft) high, roofed with banana leaf thatch. At the stern was a 5.8 m (19 ft) long steering oar of mangrove wood, with a blade of fir. The mainsail was 4.6 by 5.5 m (15 by 18 ft) on a yard of bamboo stems bound together. Photographs also show a topsail above the mainsail, and a mizzen sail mounted at the stern – although on the model I chose to ignore these.

The raft was partially decked in split bamboo, while the main spars were a laminate of wood and reeds.

Constructing *Kon-Tiki*

By referring to the photographs and raft measurements/specifications recorded in the book, and watching the award-winning documentary released in 1950 featuring actual onboard film footage shot by crew themselves during the voyage (available to view on YouTube: https://youtu.be/gvBYfba8nv8?si=r0ZsnClDkTyOHEL5

"I was initially going to try and add R/C to the rudder but, in the end, I decided that, as per the original craft, the driving force for my model should be the wind, with ropes set to allow the rudder to work either with or against it"

and highly recommended), I was able to construct a rough template/plan for the bow and stern (the rest of the craft simply being made up of wooden rods) of my own 1:12 scale version.

For the base framework I used wooden broom handles and a hessian string. I did try some white string, but this proved too out of keeping and just didn't look right. I also purchased some bamboo sticks and used these to create the deck, thereby authentically capturing the bamboo deck of the original craft. The cabin was constructed from wooden skewers and topped with a roof made from Hessian cloth, this not only looking the part and being nice and flexible to work with.

The total cost for materials came to around $80 NZD (approximately £40), before the addition of the crew (more of which later)!

The wooden lengths of broom handle were roughly shaped, as the logs would have been on the original – no need for accuracy or good looks here! The ends were chopped rather like sharpening a pencil, and grooves were cut around the rods to allow the string to remain in place once tied.

Using the plan, I then laid out my cut broom handles to the required shape

The purchased materials for the build assembled.

and began the onerous task of tying them all together, placing the wood used for the center boards temporarily in place to ensure they would fit once I had completed this task.

Once the rods were all tied and secured, I added the splash boards onto the bow of the boat. I remember that when I built my model in the 1970s, I left these off to begin with but soon found that they were needed to stop the bow nose diving into the water!

Next came the construction of the cabin and rudder.

The broom handles with their ends chopped off and grooves cut into them, laid out ready to shape ready to tie together.

The rods tied together with Hessian string.

The splashboards added to the bow of boat.

The rudder section, with ropes set up that allow the rudder to work either with or against the wind.

The cabin and bamboo deck.

The deck tied all together. Looks like it's going to be shark for dinner, then!

The finished raft before the crew were fitted.

I was initially going to try and add R/C to the rudder. In the end, however, considering the whole point of Heyerdahl's expedition had been to cross the Pacific on a raft that was purely reliant on the wind (and ocean currents), I simply set the ropes that would enable the rudder to work either with or against the wind. To avoid potential damage while transporting the model to and from the water, I also made the rudder easily removable.

For the cabin I constructed a simple stick frame, using wooden meat skewers, which I topped with a roof covered in hessian – and here, I'll admit, I did concede and use glue. The thin stems of bamboo I used for the deck were tied together to keep them flat and in place and now look just like the real thing.

The mast, sail and flags

The mast was also made up of bamboo sticks and tied in place. Another piece of the hessian I had purchased was cut for the sail and, as per the real raft (which can be viewed at the museum in Oslo where it now exhibited – visit https://www.kon-tiki.no/en/home), this I adorned with the *Kon-Tiki* emblem, copying the now famous design from an illustration in Thor Heyerdahl's book).

The real craft flew a number of different flags, these representing the nationalities of crew, the various countries that had supported the venture and the Explorers Club. In order to add these to the model, I first printed out the individual designs, each from both a left to right and right to left orientation and coated them with clear nail varnish; I then cut them out and

The bamboo mast and hessian sail. Note the period accurate US flag and the crew's makeshift washing line!

"It's interesting to note that, for accuracy, the US flag only carries 48 stars as opposed to the 50 it does today – a fact often forgotten by modellers"

glued the mirrored images back-to-back, before securing the finished flags to the masthead ropes.

It's interesting to note that, for accuracy, the US flag only carries 48 stars as opposed to the 50 it does today – a fact often forgotten by modellers. The current 50-star flag wasn't adopted until July 4, 1960, after Hawaii gained statehood in 1959.

Crewing *Kon-Tiki*

Because I was working to 1:12 scale, I was able to crew my raft with 6-inch *Star Wars* figures, after a few modifications and a repaint, of course! These are not cheap; in fact, the five I used cost more than all the rest of the materials I purchased for the project put together!

Mission accomplished

Having completed the project, I am delighted to say that my scaled down build of *Kon-Tiki* proves 'seaworthy' – although, admittedly, her crossing the Pacific might prove a bit of a stretch!

Note how Steve has faithfully reproduced the emblem that was carried on the real craft's sail, which features the Inca's depiction of the Sun God's face.

SS *Unity*–based tramp steamer

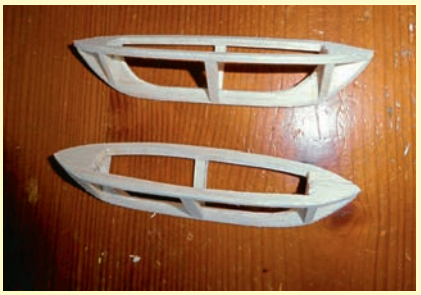
Part 2

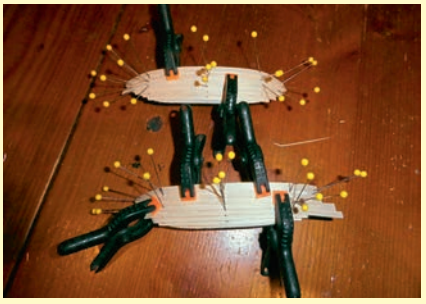
Having covered the construction of the hull, basic superstructure and R/C installation in last month's issue, returnee to model boat building **Nick Ward** now moves on to the fittings, ballasting and sailing of this model

Scratch building the fittings

As explained in Part 1, before starting this project I had not tackled a model boat build for many years (during which time I'd been more focused on building and flying R/C model aircraft). The appeal of Vic Smeed's original design of the SS *Unity* (which appears to have been intended as a beginners' introduction to steam-powered boats platform) was that it would give me the perfect excuse/opportunity to have a go at making various components and fittings myself, thereby enhancing the otherwise potentially bland look of the finished model while brushing up on my own lapsed skills.

While close up inspection (particularly with a camera!) reveals the results I achieved were far from perfect, they did elevate the finished





A reasonable impression of tramp steamer lifeboats was achieved by using 1/8in and 1/16in scrap balsa for their construction, with 2mm soft wire used for davits.

One of the best discoveries made during this project was the use of 1/16in in diameter split pins as anchors for the mast rigging. The rigging itself was made from steel fishing trace (this is available in different sizes and is easy to install).

1/16in split pins were wrapped around aluminium to create railings. However, having since read Glynn Guest's 'Nailing railing' article in the July 2025 issue of Model Boats, Nick intends to use the less fiddly method of soldering his railings from copper wire in future.
The vents seen here came courtesy of some left-over garden irrigation fittings, which were cut down to size, painted, and epoxied to the deck (after some roughing up to create a key on both surfaces, achieved with light strokes from a modelling knife).

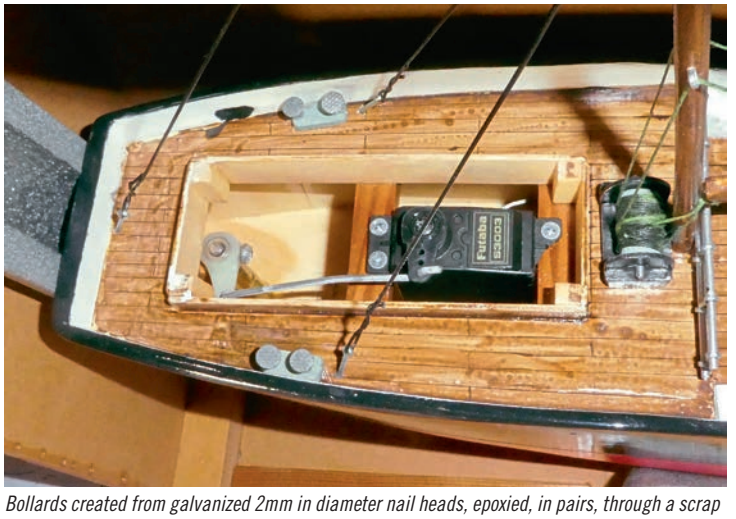
item to a level well within the limits of the '6 foot rule' (or 2 metre rule if using metric) – *i.e.*, when viewed from this distance or greater, the model appears fairly realistic out on the water. Of course, this is a pretty subjective viewpoint but, as I learnt a great deal from the experience, not least which materials will work for particular deck items, I feel obliged to share details in my photo captions in case other relative newcomers to boat modelling might find these comments useful. We all have to start somewhere…

Adding ballast

I realised at this stage I needed to assess whether the SS *Unity* would actually float anywhere near the waterline indicated on the plan. Having increased the dimensions (to 125%), the designed displacement would be approximately 195% (1.25 x 1.25 x 1.25 = 1.95) of the original 62-66ozs (around 1.9kg) indicated on the plan, giving a new displacement of 3.8-3.9kg. Weighing SS *Unity* with the battery, motor and R/C gear installed on the kitchen scales revealed just over 1 kg of ballast was still required. By drawing around the hull onto cm squared

The bridge, fashioned from balsa sticks and thin ply and painted to loosely resemble timberwork. Clear plastic (discarded packaging) was used for window glazing, this having been sandwiched between the outer ply and inner window frames and glued in with 5-minute epoxy.

Derricks, made from 6mm dowel, with rope guides fashioned from 1/16in split pins. Dowel/scrap ply was also used for the two deck winches and wire spindle, with coarse cotton thread representing the ropes wrapped around them and secured with CA glue.



Bollards created from galvanized 2mm in diameter nail heads, epoxied, in pairs, through a scrap piece of 3mm ply, and painted. The plan suggested the positions for these around the deck.

The rear hatch, simply made from scrap 1/8in ply and 1/16in bass sheet. Portholes were glazed on the inside with the same repurposed material used for the bridge windows – once again, secured with 5-minute epoxy. The deck was painted using a thinned 'wash' of wood stain to simulate decking boards.

"I had some reservations about adding this ballast to the insides the hull, seeing as the already in situ large lead acid gel battery couldn't be moved or placed any lower, therefore the model's stability could well be affected"

paper to calculate the hull plan view area, then multiplying by the draught indicated by the painted waterline, the approximate displacement of water was also calculated and compared with the suggested new displacement; thankfully, they were about equal, meaning my projected ballast required estimate was close enough for starters.

However, I had some reservations about adding this ballast to the insides of the hull as the already in situ large lead acid gel battery couldn't be moved or placed any lower, therefore the model's stability could well be affected. The plan recommends a weighted keel be used to counteract any top heaviness if a steam unit is to be used for power, so this, I decided, would also be my best course of action.

I had some old roofing lead sheet which I cut up to an appropriate size for the required mass, folded over several times and hammered flat to produce a long, slim rectangular ingot. This was encased in a ply-clad wooden frame about 12mm wide, which was thoroughly sealed with polyurethane. 10mm aluminium angle was drilled and fixed to each side to allow the keel to be screwed to the hull. After painting black to effect a degree of invisibility when underwater, the keel was screwed slightly aft of the CoG (Centre of Gravity) position once all running gear had been reinstalled in the hull.

I'd now reached the moment of truth, a bathtub test to ascertain whether my calculations had been correct, and, fortunately, I'd got things right!

On the water

I finally got an opportunity to sail SS *Unity* at the Halswell Domain model boating pond, Christchurch. As a first 'ship' build, this simple Vic Smeed design has great potential for personalisation, and, with a little effort put into the finishing details, the resulting model really looks the part cruising sedately around on the water. If crew figures were to be added, 1:72

SS Unity starting to look a little more 'scale-ish'.

The keel glued and screwed to brackets prior to painting.

SS Unity with the painted keel screwed to her bottom prior to a first bathtub test.

scale would be a fairly close match – although I am aware that some of the features on my model have drifted somewhat from this scale due to my own inexperience – something to work on in future boat builds. During this maiden voyage, though, my main objective was simply to check whether she would sail more or less trouble free for 10 minutes or so.

One notable consequence of the keel was that she tracked very straight, even at low speed. Scale-ish speeds were attained with only small throttle inputs, although the motor/gearbox proved to be much noisier than expected when higher throttle settings were used; I suspect some of this was caused by the use of a double universal coupling which can 'rattle' at higher speeds, although it does iron out any small misalignments between shaft and motor, keeping current draw to a minimum. If this becomes unbearable over time, I am prepared to either replace the unit with a cheap RS 370 planetary geared unit bought online or go for a direct drive RS385 or RS 550 type motor with a much smaller prop (25-30 mm).

Steering response appeared more than adequate, even at low speeds, proving the rudder size and deflection was good. I only tried reverse once at low speed, just to see if it would, but response was much more limited.

A few days later I managed to have another sailing session much closer to home (15 minutes' drive away) at the Kaiapoi Lakes. This time I was

The bathtub test proves Nick's calculations correct, as Unity floats almost exactly on her waterline. Next stop, maiden voyage!

After reading Glynn Guest's article 'Boxing clever' in the May 2021 issue of Model Boats, Nick constructed this protective carry/storage case for SS Unity, seen here just before her maiden voyage.

SS Unity on the water at Kaiapoi Lakes under Nick's command – while he was being kept busy, these shots were taken by his friend and fellow aeromodeller Jack Pepper. Listed as SKU MM1302, the Vic Smeed plan Nick based his build on is available from Sarik Hobbies at https://www.sarikhobbies.com/product/s-s-unity-plan-and-article/ – although, for some reason, Nick points out, the vessel has been incorrectly described as a Pilot Boat.

"As a first 'ship' build, this simple Vic Smeed design has great potential for personalisation, and, with a little effort put into the finishing details, the resulting model really looks the part cruising sedately around on the water"

fortunate to have fellow aeromodeller Jack Pepper with me, who happens to be a very talented photographer, so I sailed SS *Unity* around while Jack snapped happily away.

Getting SS *Unity* on this larger expanse of water allowed me to experiment with sailing her at higher speeds and to further evaluate how she handled. Again, she looked great, with the previous transmission noise slightly subdued due to pre-oiling the shaft/coupling and the model being further away. However, I did notice that on this occasion her bow seemed slightly further down in the water than anticipated (Jack's photos, shown here, confirming this). As a result, I have since moved the weighted keel back 3cm, just to raise the bow a little and (hopefully) improve how she sits in the water under higher power settings. Apart from this, though, I felt SS *Unity* certainly played the part of a semi-scale tramp steamer. Several passers by walking their dogs asked about the model and one even thought she was a scale representation of a real ship, leaving me very satisfied with the overall result of my efforts and looking forward to my next sailing session.

Horizon expanded!

This project prompted the research of a multitude of techniques to help with the build and scratch-built fittings via the Model Boats online archive. Of particular interest were Glynn Guest's articles, covering everything from prop shaft alignment to batteries, carry cases, homemade railings, *etc.* Glynn's articles are always informative and having built a couple of his designs many years ago (*Arcady* and *Bredette* spring to mind) I can see myself attempting a few more in the future.

Having now subscribed properly to Model Boats magazine, I must give wider thanks to all those who contribute to keeping the publication so varied and interesting – the dormant boat-building bug in me has truly been awoken!

My wife has even approved of my suggestion of a model boating pond as a garden feature, hopefully large enough to cater for some of the smaller free designs published in Model Boats. I'll take photos as I go to log my progress, so watch this space! ●

An admirable *Admiral*

Brian Knight delights in Billing Boats' 21st century take on a much-loved 1960s' pleasure craft kit

I am definitely slowing down when it comes to building model boats as, while I enjoy the construction process even more than actually sailing the models I complete, I am now running out of storage space! That said, I couldn't resist tackling the *Admiral* 619 kit offered by Billing Boats.

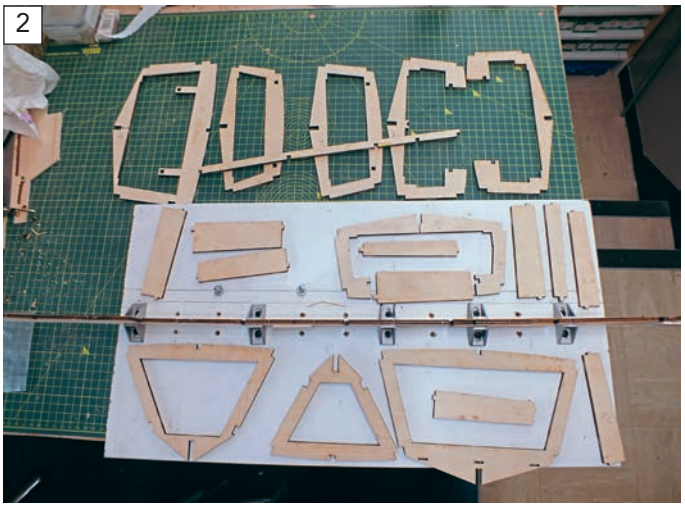
This now revamped and updated for radio-control operation 1:20 scale kit was originally designed and launched onto the market by DMI (*Dansk Modelflyve Industri*) back in 1965. Representing a true classic of the post-war period, I remember seeing a number of cabin cruisers like this while I was growing up and learning about boat handling on my father's own boat on the Norfolk Broads.

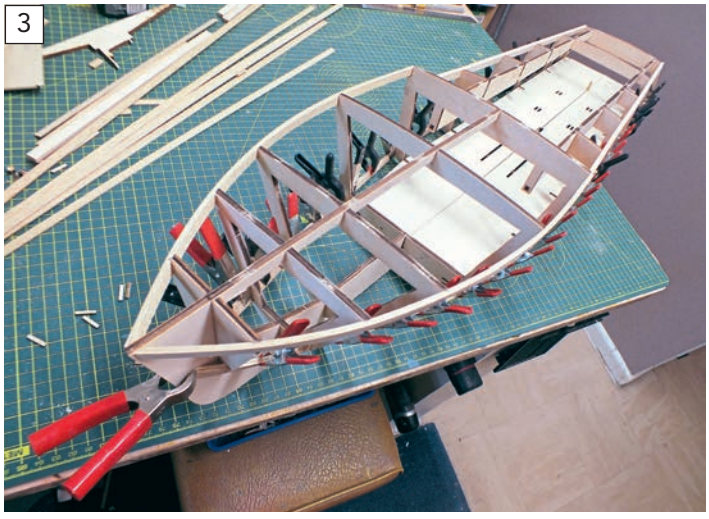
The nostalgia of this kit was, therefore, hugely appealing, and so when my purchase arrived (see **Photo 1**) I was very keen to get the project started.

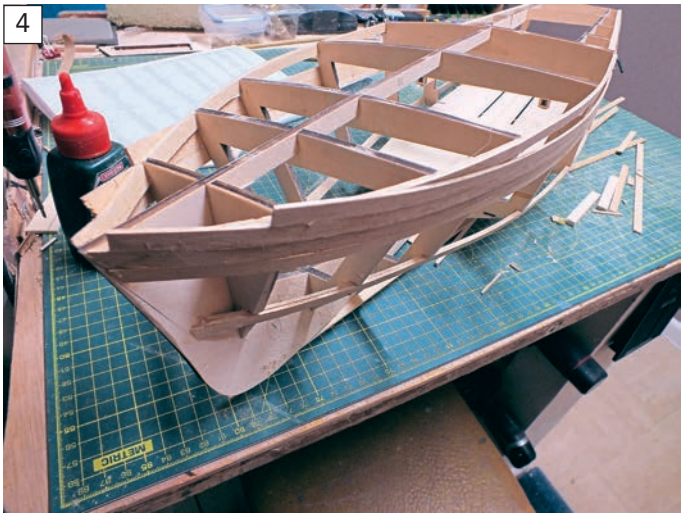
The build

Being of plank-on-frame construction, I immediately set to work with my trusted homemade jig (see **Photo 02**). The resulting frame construction, which required much care and attention to be taken, is shown completed in **Photo 3**, ready for planking (see **Photo 4**). There are many commercially available gadgets that can assist with this task, but I find my homemade ones, shown in **Photo 5**, do the job just as well.

The planking proved a little challenging, as the planks supplied are shorter than the hull so need to be joined. I, therefore, decided to stagger the joints, situating them, where possible, at alternate frames to add strength. The single planking also made properly sealing the hull particularly important; water, given the chance, water will always find a way in! So, after sanding the hull and using Halford's P38 2-part filler to fill any gaps in the planking, I also sealed, where possible, from the inside with white wood glue. Note the prop, and







"There are many commercially available gadgets that can assist with this task, but I find my homemade ones do the job just as well"

rudder shaft were fitted at this time **(see Photo 6)**.

As always, before I did anything more to the exterior of the model, I installed all the mechanical and electrical equipment and checked it was working before fitting the deck (see **Photo 7,** overleaf). The receiver was installed up in the bow, as far from any interference from the motor as possible.

With models that feature a planked deck, I prefer to plank on a separate 1mm ply sheet. In this case, as the deck planking sits inside the raised deck edging, I first made a template of the bow deck using the pre-formed bow deck edging shown resting on the supplied deck (see **Photo 8,** overleaf). This stiff white paper template was then transferred onto a sheet of 1mm ply for the cut out (see **Photo 9,** overleaf – to the left is the supplied deck and edging, in the centre is the paper template, and on the right is the 1mm plywood ready for planking). I also made a template and false 1mm ply unit for the aft deck.

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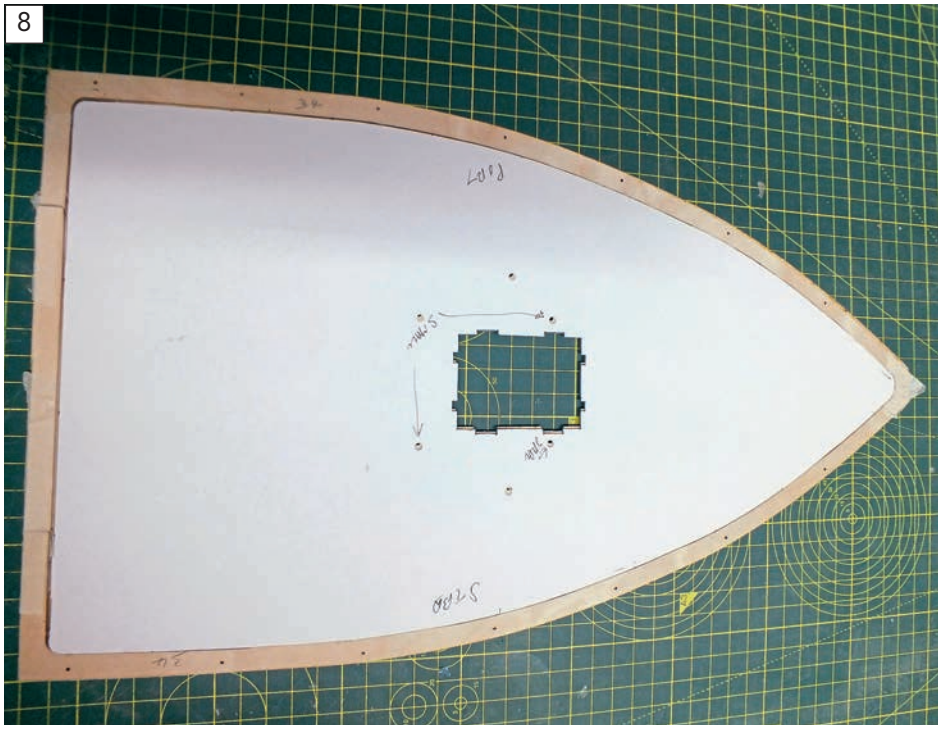

"Provided you show a little common sense, you can, as I did, deviate a little, especially if you want to make a few little changes and/or additions for a more personalised end result"

The deck edging was then fixed and the deck sections inside the raised edging were masked ready for the white primer and two coats of gloss topcoat (see **Photo 10**). The recessed areas of the bow and stern that can be seen in this photo were where the deck sections will be fitted.

As Murphy's Law would have it, the weather then let me down. I did manage to give the hull two coats of primer, but the top gloss coat would have to wait a while as I spray outside and needed a warmer, dryer and less breezy day – gloss paint is fussy!

In the meantime, I began the construction of the cabin. Here, I must compliment Billings on the neat and precise laser cutting of the mahogany plywood sheet. I started with the frame seen in **Photo 11.**

While the photo manual for this kit has been very well put together, it is not mandatory to stick to the build sequence shown. Provided you show a little common sense, you can, as I did, deviate a little, especially if you want to make a few little changes and/or additions for a more personalised end result.

Before fitting the tops (roofs) of the front and rear cabins, I decided to glaze the windows from within while I still had access to the interior, before then varnishing the mahogany sides and adding the exterior window and handrail trim (see **Photos 12 and 13**). This dealt with, on went the cabin tops and the handrails and brass detailing could be attended to.

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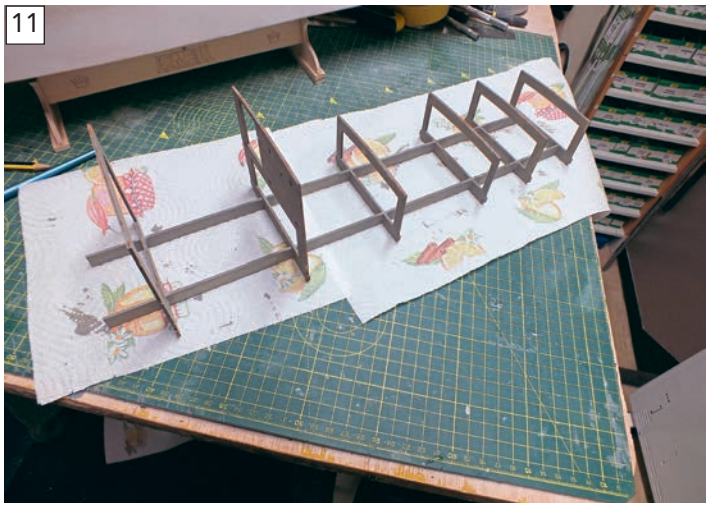
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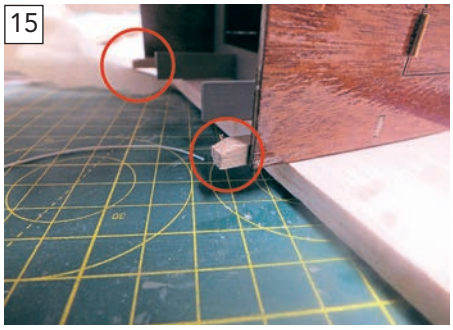
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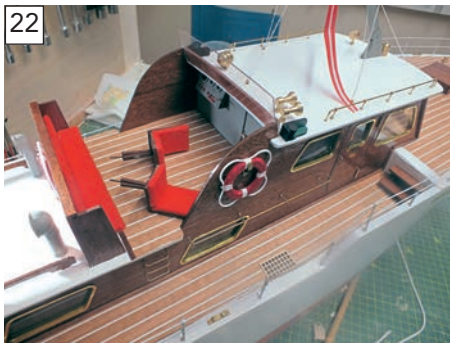
An important item I needed to change was the mast. As previously mentioned, I am now extremely short of space, therefore I modify the masts on all my models so that they can be raised and folded down via elasticised cord (see **Photo 14**).

I also wanted to eliminate the potential problem of the boat losing its superstructure on a very windy day, so I added two scrap pieces of wood to the bottom of the cabin front to slide under the front deck and a magnet at the stern of the cabin to secure the rear (see **Photos 15, 16 and 17**).

"Many luxury boats of the early post-war period used white deck caulking to give a classier-looking finish"

With an improvement in the weather, it was back to work the hull. Having sprayed with gloss white, once dry I masked the hull up down to the water line before spraying its underside red.

The porthole surrounds were installed after first glazing the apertures with small discs of clear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plastic. These discs were affixed into the porthole recesses with G-S Hypo Cement (see **Photo 18,** on previous page) – a product I have found ideal for this job, as it dries to a perfectly clear, unobtrusive finish and seals well.

On a recent visit to Plymouth, I spotted a cabin cruiser which looked a very similar age to the *Admiral*, but its deck caulking was white. I have since discovered that many luxury boats of the early post-war period used white deck caulking to give a classier-looking finish, so I did the same on the already made false deck for my model.

I then secured all planked decks using thin double-sided tape, eliminating the need for messy glue, before finishing with sanding sealer and matt varnish. This is a method I have been using for many years now and I've never had a plank lift.

The recessed sections now decked could also be fitted (see **Photos 19 & 20,** on previous page)**,** as could all the railings and deck bits and pieces. I soldered my railings, as I always feel this not only looks neater but proves much stronger than superglue.

Now almost close to completion (see **Photo 21,** on previous page), I added the helm and some seats. The latter I opted to cover with felt instead of painting. I also drilled holes into their bases to accommodate the 1mm brass rods that would invisibly and securely affix them to the deck (see **Photo 22**).

The model was now ready for a trial float in my test tank so I could lead ballast it (see **Photo 23)** to its correct waterline.

By the time the ready-painted figures (a helmsman and his glamorous cruising companions) I'd ordered from Martin at Dockyard Models arrived (see **Photo 24 & 25**), I had added extra handrails (as indicated by the yellow arrows in Photo 25) and handholds.

"Easy to handle, and with lots of power, she is actually, considering her length, much easier to manoeuvre than I had expected"

On the water

The completed model, looking a lot like the illustration on the kit's box lid, now sails beautifully. Easy to handle, and with lots of power, she is actually, considering her length, much easier to manoeuvre than I had expected.

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Collectables catch-up

John Parker treats us to a look at his latest acquisitions

I recently had a winning bid in an auction which netted me a Veron Huntsman 28 kit, complete, for A$260 (about £138). Examples are rarely seen 'Down Under', so I was pleased to see my maximum absentee bid still standing at hammer-fall. This could well have been because the auction was mainly for model railway items and didn't attract the attention of many boat modellers.

Bournemouth-based Veron brought out its Fairey Huntsman 28 kit in time for Christmas 1967 at a price of just under £8 (the equivalent of about £145 today); by 1974, at a time of rampant inflation, the price has doubled to over £16. For comparison, Aerokits' 36.5-inch Swordsman was selling in 1967 for a pre-decimal £4 5s 11d or you could buy a 46.5-inch Sea Queen for £6. Veron's Huntsman was quite large – 42 inches long by 13 inches beam (1067mm x 330mm), translating to 1:8 scale – and it needed to be to carry the heavy and bulky radio-control of the day. The intended motor was a 3.5 to 10cc diesel or electric, but even with a Taycol Supermarine Double Special the performance on electric would have been disappointing, and expensive on batteries.

Opening the box, I was surprised by the amount of wood and its thickness. The keel is ¾-inch (19mm) thick and where the engine mounts there is a similar thickness doubler each side. The bulkheads are the size of serving plates and ¼-inch (6.5 mm) thick. Being used to building with 3mm bulkheads on a 6mm keel this was all a bit intimidating, but, of course, it had to withstand the rigours of engine starting, and I understand a bit of weight is no bad thing when it comes to sorting the handling of a deep-vee hull like this. The wood all looked to be good quality, well-shaped and remained free of warping after its 50 or 60 years in storage.

Fairey Marine's moulded plywood boat designs became famous in the 1960s, following their successes in the *Daily Mail* offshore power boat races and an appearance in a chase sequence in the James Bond movie *From Russia with Love*. They were sometimes referred to as 'the E-Types of the sea', because of their beauty and desirability in an era that spawned the famous Jaguar sports car. Models of them have never been absent from the pages of Model Boats for very long, showing there is an enduring interest in this family of types.

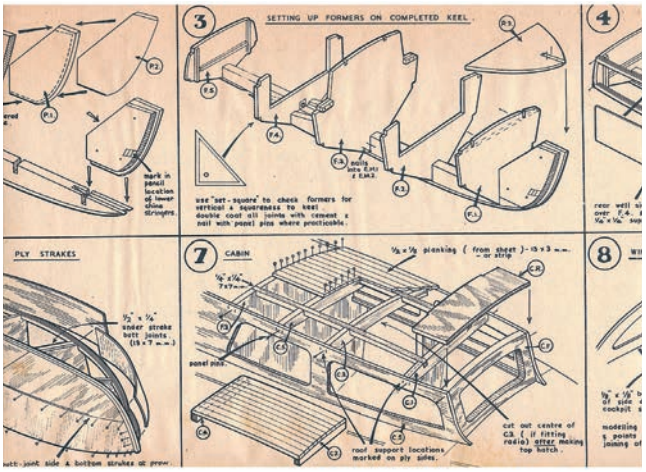
"Fairey Marine's moulded plywood boat designs were sometimes referred to as 'the E-Types of the sea', because of their beauty and desirability in an era that spawned the famous Jaguar sports car"

No doubt Veron would have been influenced by the success of the full-size craft in choosing the Huntsman as the subject for its second scale kit. Another factor may have been Vic Smeed's plan for the type, which was announced in the February 1962 edition of *Model Maker and Model Cars*. Allowing for the limitations of commercial production, Veron's kit is to the same scale and closely follows the structure of the *Model Maker* plan

Veron advertising for the Huntsman 28 kit

The February 1962 issue of Model Maker announcing Vic Smeed's plan for the Huntsman 28.

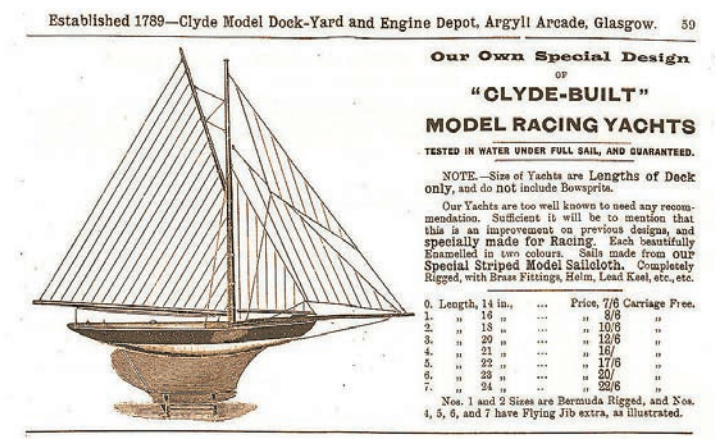
Contents of the kit.



Assembly sketches from the plan.

with its five main bulkheads. There was little for their designer Phil Smith to do other than add his own characteristic little sketches of the assembly sequence and write the instruction leaflet (silverfish evidently found the latter easy to digest and have reduced my copy to a delicate lace doily!)

I am very inclined to build this kit, rather than keep it for its historic value. In place of the single shaft intended for a diesel or glow plug engine I would fit twin shafts (as per the full size) and a pair of brushless motors, which could then fit under scale engine housings. I would plank the deck and fashion some fancy fittings – aluminium window surrounds, curtains, instruments and a 3D-printed driver figure. I've always fancied an E-Type!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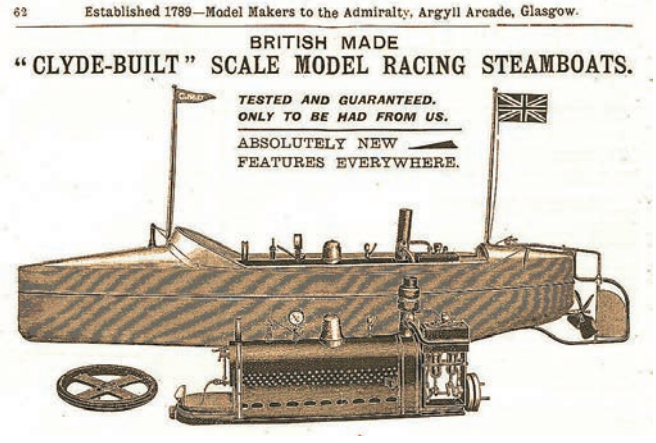
5.	„ 22 „	...	„ 17/6 „
6.	„ 23 „	...	„ 20/ „
7.	„ 24 „	...	„ 22/6 „

Nos. 1 and 2 Sizes are Bermuda Rigged, and Nos. 4, 5, 6, and 7 have Flying Jib extra, as illustrated.

Clyde model racing yacht.


63 Established 1789—Model Makers to the Admiralty, Argyll Arcade, Glasgow.

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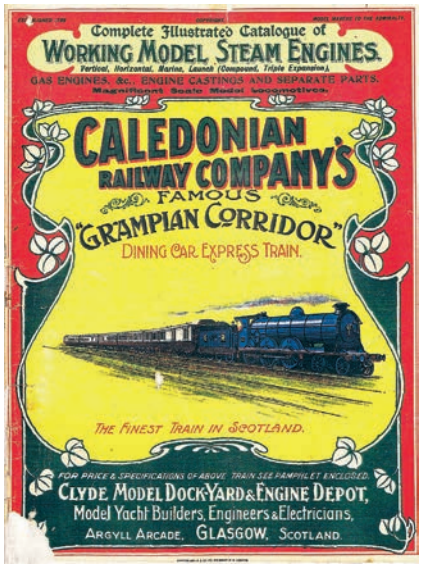
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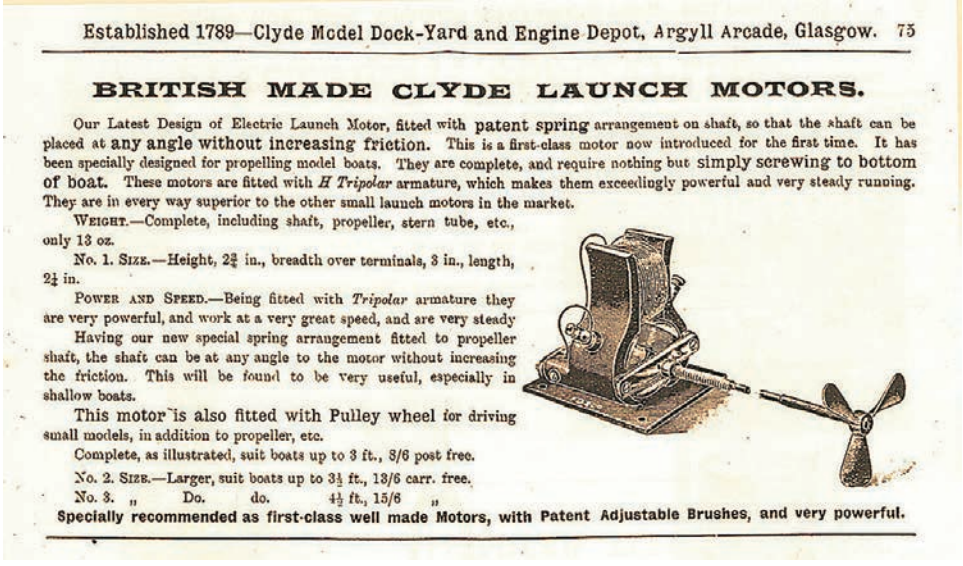
A Clyde Model Dockyard catalogue circa 1906.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Our Latest Design of Electric Launch Motor, fitted with patent spring arrangement on shaft, so that the shaft can be placed at any angle without increasing friction. This is a first-class motor now introduced for the first time. It has been specially designed for propelling model boats. They are complete, and require nothing but simply screwing to bottom of boat. These motors are fitted with *H Tripolar* armature, which makes them exceedingly powerful and very steady running. They are in every way superior to the other small launch motors in the market.

WEIGHT.—Complete, including shaft, propeller, stern tube, etc., only 13 oz.

No. 1. SIZE.—Height, 2⅝ in., breadth over terminals, 3 in., length, 2¼ in.

POWER AND SPEED.—Being fitted with *Tripolar* armature they are very powerful, and work at a very great speed, and are very steady

Having our new special spring arrangement fitted to propeller shaft, the shaft can be at any angle to the motor without increasing the friction. This will be found to be very useful, especially in shallow boats.

This motor is also fitted with Pulley wheel for driving small models, in addition to propeller, etc.

Complete, as illustrated, suit boats up to 3 ft., 3/6 post free.

No. 2. SIZE.—Larger, suit boats up to 3½ ft., 13/6 carr. free.

No. 3. „ Do. do. 4½ ft., 15/6 „

Specially recommended as first-class well made Motors, with Patent Adjustable Brushes, and very powerful.

Clyde electric launch motors.

Old catalogues

Other auction wins brought me an assortment of old catalogues. One of them is a facsimile edition of a Clyde Model Dockyard catalogue circa 1906 and another the Stevens's Model Dockyard catalogue 1927-1928 edition. Between them, these two suppliers probably provided the bulk of the country's needs in the way of model ships, steam engines, electric motors and associated fittings back then. To look through their pages today provides an informative insight into what was available to the model maker of a century or more ago.

Clyde Model Dockyard, established in 1789 at the Argyll Arcade, Glasgow, billed itself as "*Model Makers to the Admiralty, Etc.*". Although there is no date discernible on my catalogue, the page featuring a toy construction set called Mechanics Made Easy provides a clue, for this toy became better known after it was renamed Meccano in 1908. Model boat coverage begins on page 59, following an extensive range of model locomotives and fittings. Five pages of racing yachts follow, plus a schooner. The hulls are carved from wood, and all seem to have a similar style of keel; fittings are brass, with sails cut from striped sailcloth. All were offered in three to six sizes, from 14 inches up to 36 inches, but up to 6ft ones could be supplied to special order at a price of £7 10s (the equivalent of £795 today).

Power boats are shown starting on page 62, which depicts a steel-hulled racing steamboat. About 4ft long, this has a twin-cylinder engine with asbestos-lined cylinders

"Although there is no date discernible on my Clyde Model Dockyard catalogue, the page featuring a toy construction set called Mechanics Made Easy provides a clue, for this toy became better known after it was renamed Meccano in 1908"

driving a four-blade propeller, and an approximate weight of about 21 pounds (9.5kg) all up. It also boasts having a "*patent steering apparatus*" fitted, "*by which the Model can be steered from the side of the lake or river*" – no need for radio-control then! I wonder if this "*patent steering apparatus*" might have involved a long length of string? Pages of model ship fittings follow – the sales of which were encouraged by offering trophies to the best scratch-built models, followed by an assortment of clockwork torpedo boats and submarines. Surprisingly, given that there is a page of electric launch motors, there are no electric-powered model boats on offer.

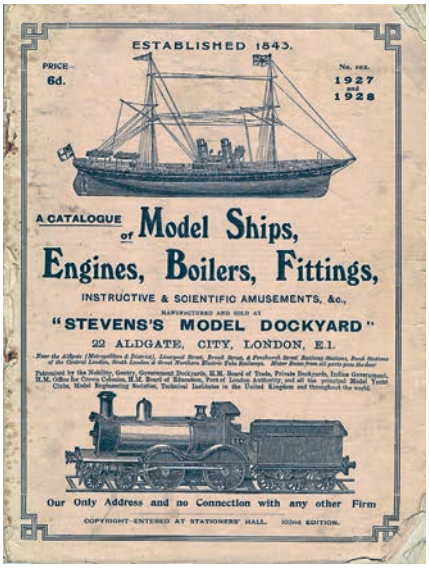
The Clyde Model Dockyard soldiered on through two world wars but faltered in the changing world of the 1960s, finally closing its doors in the early 1970s. The name has recently been revived for a business dealing in scale marine models.

Founded in 1843, Steven's Model Dockyard of London arrived on the scene a little later than Clyde Model Dockyard and proved to be shorter-lived, closing its doors sometime in the 1930s. The 90-page 1927-1928 catalogue of "*Model Ships, Engines, Boilers, Fittings, Instructive & Scientific Amusements &c.*" opens by proudly promoting the business as "*not a common toy shop*", pointing out that the proprietors "*have practical knowledge of all kinds of Model Steam Engines, Ships, Boats and the fittings appertaining to them*". Overleaf begins a presentation of racing yachts, cutter yachts and schooners, generally similar in style to Clyde's but more comprehensive, stretching to a 48-inch Bermuda rigged scale racing yacht with spinnaker and automatic steering gear for £10 10s (the equivalent of £575 today).

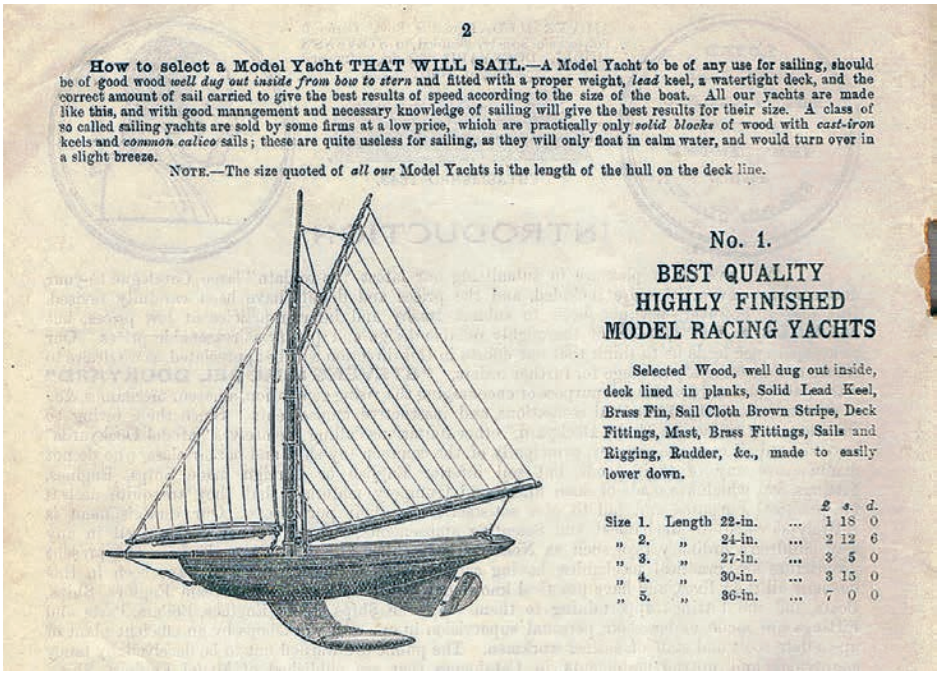
Steamboats were available in a bewildering range of sizes, up to 72-inch with a 10- x 8-inch boiler and twin-cylinder engine for an eye-watering £35 7s 6d (£1,900 today). Paddle wheel propulsion was available to order for a 20% surcharge.

For the first time we see some electric-powered launches, the *Lightning* and the *Meteor.* The *Meteor* was the larger at 34 inches long and was fitted with an 8-volt tripolar self-starting motor, switch and two horizontal accumulators for £6 10s, whereas the *Lightning* was a 28-inch model with half the powerplant for £3 15s.

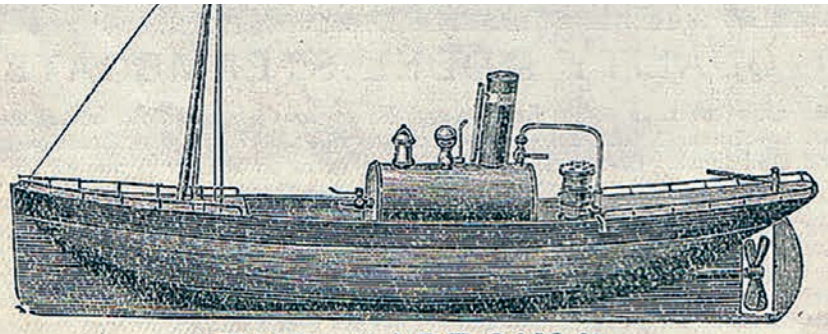
Marine steam engines, fittings and castings abound, followed by a page or two of electric motors. These are all built around heavy iron castings that were available separately if you wanted to make your own and tended to cost a little more than a similar size steam engine



Steven's Model Dockyard catalogue 1927-1928.



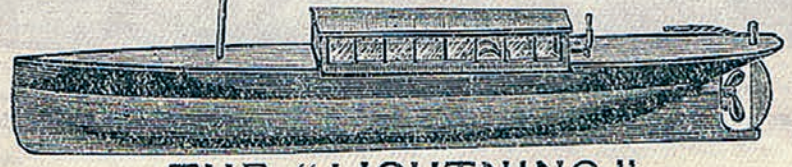
Steven's model racing yachts.



No. 28. THE "ARROW."

THE "ARROW." Ditto Larger, size 34-in. long, Double Action Engine, Cylinder $\frac{5}{8} \times 1\frac{1}{4}$-in., Copper Boiler fitted with Mast and Rigging, Brass Rail round Deck, a powerful and fast boat. *Our own make.* Price £6 10s. 0d. Fitted with best quality Clockwork, £5 5s. 0d.

MODEL ELECTRIC LAUNCH



No. 29. THE "LIGHTNING."

Electric Launch, 28-in. long, fitted with a 4-volt Tripolar Motor Switch for starting or stopping, 4-volt Horizontal Accumulator, 3-blade Propeller, Saloon Cabin and Mast. Highly finished. *Our own make.* Price £3 15s. 0d.

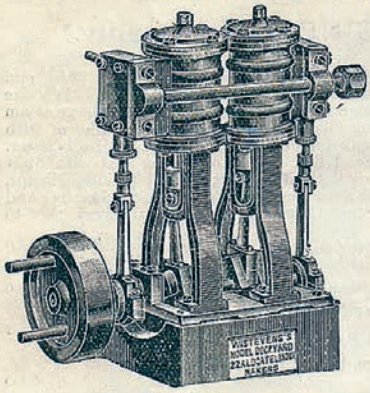
No. 30. THE "METEOR."

34-in. long, fitted with a 8-volt Tripolar Motor Switch for starting or stopping, two 4-volt Horizontal Accumulators, 3-blade Propeller, Saloon Cabin, Mast and Rigging, Rail round Deck. Highly finished. *Our own make.* Price £6 10s. 0d. Larger sizes to order.

Steven's steam, clockwork and electric launches.

41

No. 2006. DOUBLE MARINE SCREW ENGINE.



No. 2006.

These Double Cylinder Engines are the same specification and pattern as No. 2005. They are splendid value and finish, guaranteed British make, and first-class workers.

Size 1.	Cylinders $\frac{5}{8}$-in. bore,	$\frac{5}{8}$-in. stroke.	Price, 51/-
„ 2.	„ $\frac{3}{4}$-in.	„ $\frac{3}{4}$-in.	„ 69/-
„ 3.	„ $\frac{7}{8}$-in.	„ $\frac{7}{8}$-in.	„ 80/-
„ 4.	„ 1-in.	„ 1-in.	„ 100/-

Bright Polished Copper Boilers (see No. 509) and Lamp, connected up with above Engines, ready for steam, and fitting into a boat:—

To suit Engine.—Size 1, 33/6. Size 2, 43/6. Size 3, 60/6. Size 4, 68/-.

Steam and Water Gauges, fitted at list prices, extra.

A Steven's marine steam engine.

"Founded in 1843, Steven's Model Dockyard of London arrived on the scene a little later than Clyde Model Dockyard and proved to be shorter-lived, closing its doors sometime in the 1930s"

without its boiler. A typical 4- or 6-volt electric accumulator was cheaper than a boiler though, giving an overall slight price advantage to the electric power plant. Of course, you needed to have electricity in your home to be able to recharge your accumulator, unless there was a friendly radio shop nearby who could do it for you… ah, those were the days! ●

BOILER ROOM

Richard Simpson explains the various types of safety valves and how they (should) function

When writing new instalments for Boiler Room, one thing I try very hard to avoid is repeating myself – not always easy considering the series has now been running for 15 years! Having said that, there will always be certain subjects that continue to generate questions at pondside, and which are of such significance to us as steam modellers that they deserve revisiting.

The very first subject I chose for article number one way back in the January 2011 edition of Model Boats was safety valves. I revisited the topic in the October 2020 edition after I found various questions were still being posed at pondside. Recently, however, I was approached by a fellow steam modeller who just couldn't work out how to adjust his safety valve. On taking a quick look, the reason immediately became apparent – it was a non-adjustable type. Safety valves do seem to come in a wide range of shapes, sizes and types, so it's easy to understand his confusion; **Photo 1** shows just four of the many I have lying around the workshop, although these all fall under the same category, as we shall see as we further explore the topic in perhaps more depth than I've previously gone into…

The job of the safety valve

Let's start with a quick review of exactly what a safety valve is supposed to do, as well as why it sometimes might not.

1

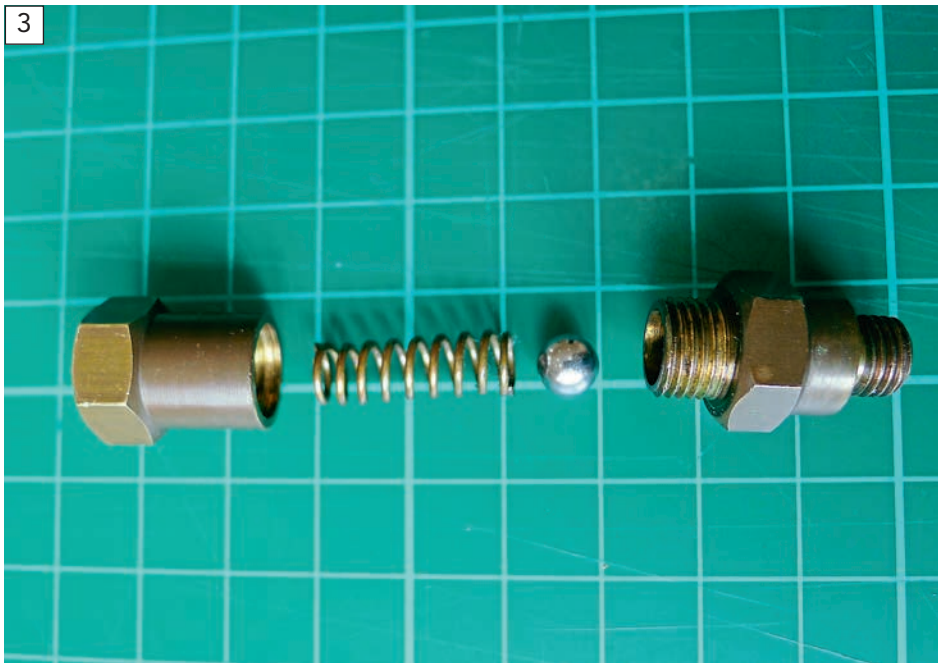
A small selection of different manufacturers' safety valves in various capacities.

Most of us are aware that a safety valve is there to vent pressure from the boiler. The safety valve should be set to lift at, or just before, the point at which the boiler's working pressure is achieved, which is precisely what a boiler inspector will be looking for when he performs an annual steam test (see **Photo 2**). The pressure is brought up in the boiler under full flame until such point as the safety valve lifts and the pressure in the boiler noted. That's only half the story though… The safety valve has a 'capacity', *i.e.*, its ability to vent steam, and this is dependent on such things as the internal design and sizes of the drillings and passageways, along with the size of such things as vent orifices, *etc.* Small bore drillings and small cross-sectional areas of steam escape paths lead to a restriction of the steam flow and so reduce the ability of steam to escape. Conversely, large bore drillings and openings will allow an easier path for escaping steam, giving the valve a higher 'capacity'. Balanced against this is the capacity of the boiler and, in particular, the burner to produce steam. This is determined by such things as the amount of water in the boiler, the available surface area for heat transmission and the burner's ability to generate heat. These factors all determine how fast steam can be produced. The point being, then, that the capacity of the safety valve to get rid of excess steam *must* be greater than the capacity of the burner and boiler characteristics to generate it. If it isn't, then, even with the safety valve fully open, the pressure in the boiler will continue to rise. The current Boiler Test Code Book, 2018, states that the pressure in the boiler must not rise above 10% of the working pressure during a steam test. So, what does this look like in reality?

2

One of the main purposes of the annual steam test is to check the operation as well as the capacity of the safety valve; to pass, it must lift at the correct pressure, with pressure not continuing to rise once it has lifted.

3



A typical valve will consist of a valve that sits on a seat, a spring and a body to hold it all together. How these components are arranged and the materials used frequently vary.

"The capacity of the safety valve to get rid of excess steam must be greater than the capacity of the burner and boiler characteristics to generate it"

I was once presented with a manufactured boiler for testing. The pressure gauge was calibrated successfully and refitted, and the boiler was ignited. The boiler was fitted with twin poker burners so had a significant capacity to generate steam. The pressure came up, and the safety valve lifted at the working pressure, so all would appear to be satisfactory at that point. However, an inspector will then want to wait for a good few minutes with the safety valve lifted to see what happens next. Sure enough, in this case, despite the safety valve being lifted, the pressure continued to slowly rise. What was happening was that the burner and boiler were capable of generating steam at a faster rate than the safety valve was able to vent it. Consequently, the pressure was still rising. The owner looked a little crestfallen when, after this, I informed him that the boiler had failed its test. I advised him that he could deal with the situation by replacing the existing safety value with a larger one, thus increasing its capacity, or install a 'Y' manifold and fit two valves. Alternatively, he could reduce the capacity of the burner/boiler ability to generate steam. He decided to blank off one of the twin burners and run on just the one. A subsequent test then showed that the safety valve was able to keep up with the production of steam from the one burner.

Problems with a safety valve can occur as a result of age, when the spring tends to lose its rate after repeated heating and cooling, and possibly even corrosion or a build-up of deposits such as limescale, rust and other foreign debris. When less than clean water is used as boiler feed, this can lead to the safety valve actually sticking on its seat and not lifting when it should.

How the safety valve works

Just about all safety valves will incorporate a spring. This spring, which could be inside or outside the boiler, will usually be pushing a valve onto a seat; again, the location of the valve itself can vary. Sometimes the spring tension is adjustable, but sometimes it's not, so the safety valve lift pressure remains the same. Steam pressure pushes on the other side of the valve the spring is pushing against, so if the spring rate is adjustable then this varies the steam pressure required to open the valve. All safety valves use these same basic components but arranged in slightly different ways and perhaps using different materials. For instance, some use a stainless-steel ball as a valve, some use a brass plug, and yet others can use a rubber 'O' ring as the valve. The example shown in **Photo 3** uses a stainless-steel ball bearing as the valve.

Different designs of safety valve

The confusion of the aforementioned discussion regarding adjusting a safety valve highlights the first type we should consider: the non-adjustable safety valve. This type of safety valve may be found on some of the cheaper low-pressure boilers under the LO or LS class, such as the Mamod or Wilesco types. The spring is mounted internally and is simply held in place below the valve by a washer and a crimp on the valve spindle (see **Photo 4**). Also of interest is the fact that the

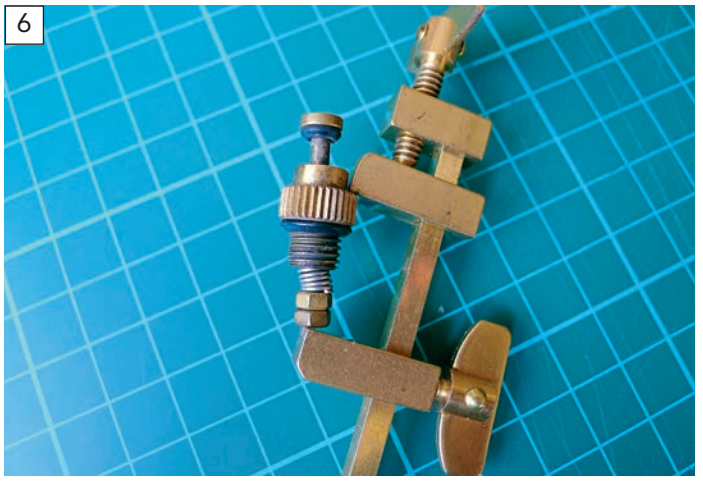
4

A safety valve in its most basic form frequently found on low pressure boilers of the LS and LO type. Despite being non-adjustable, these valves still have to meet the requirements of the Boiler Test Code, 2018.

5

Another internal arrangement, but this time adjustable. It is a bit of a performance having to vent the boiler, remove the valve, make the adjustment, refit the valve and bring it up to pressure again to see if the adjustment was correct. It usually takes a few attempts.

6



Compressing the valve against the spring shows the valve and seat. The clamp is just being used for the photograph – don't try this at home as the valve might decide to slip out of the clamp and go flying across the workshop! Note the scale on the 'O' ring.

7

Adjusting discs can be rotated by either putting a pair of tweezers into the vent holes or making a bladed tool that fits over the end of the spindle and sits in the slot.

8

Richard likes angled ended tweezers for adjusting this type of valve because being able to see what you're doing makes things much easier. Also, if you do decide to adjust the valve while under pressure, which Richard doesn't recommend, be sure to keep your hands out of the way of the vented steam.

9

Note the amount of steam that can be released when a safety valve lifts fully with the boiler burner under full flame. Wearing gloves and goggles is a sensible idea, as is keeping well out of harm's way.

valve is an 'O' ring on top of the valve body, as can be seen. It is technically possible to adjust the lifting setting of the valve by re-crimping the spindle at a higher or a lower point on the spindle, but, as you can imagine, this is an extremely laborious task. These types of valves, therefore, are generally considered as disposable. If the valve is getting old and either sticks or the spring rate is weakening with age and heat, then it's by far the simplest course of action to buy a replacement valve. One thing to bear in mind with this type of valve is that, while it's not possible to adjust the setting, the valve still has to comply with the requirements of the Boiler Test Code. So, it *must* lift at working pressure or below, and it *must not* allow the pressure to rise above 10% of working pressure (fortunately, this is highly unlikely with the boiler designs and type of burners used in these low-pressure boilers).

The next type of safety valve to consider can commonly be found fitted to the old Cheddar boilers. These have a spring fitted internally, held under compression by a washer and two small brass nuts locked together (see **Photo 5**). Again, the valve itself is an 'O' ring mounted externally. Consequently, this type of valve can be adjusted, although the process is a bit laborious. The pressure has to be raised first in the boiler with the outlet valve closed until the safety valve lifts. A note is then made of whether it's lifting too high or lower than preferred. Next, the pressure has to be vented off, the valve removed, and the lock nut loosened. The adjusting nut can then either be tightened to raise the lifting pressure a bit or slackened to lower it – by how much can only be determined through trial and error (and, ultimately, experience). All I can say is that a minute amount of movement will relate to a noticeable difference in lifting

"This is a very quick, easy and accurate way of adjusting a safety valve, but it does have some serious potential hazards"

pressure. You then have to lock the two nuts together again – without disturbing the position of the main adjusting nut, refit the safety valve and bring the boiler back up to pressure. Although you may need to repeat this process a number of timse, it should eventually get you to where you want the lifting pressure to be. To inspect both the valve and seat condition, push the valve up against the body to lift the valve and expose the seat (see **Photo 6**).

The next most common type of safety valve can be adjusted externally, and this is where we run into a couple of different opinions. This type of valve will usually have the spring on the outside of the boiler

10

When adjusting a valve under pressure there's the danger of slackening the adjusting disc off so much that it comes adrift. Make sure you're well aware of how much thread is available by measuring before you start the process.

11

Lifting the valve by pulling on its spindle is a good way to check for smooth operation of the valve. Again, it is not recommended you do this while the valve is fitted to a pressurized boiler.

shell, either exposed or contained in a housing with an adjustable cap or disc on top of it. Adjustment is made by either turning the disc clockwise to raise the lifting pressure or anticlockwise to reduce the lifting pressure (see **Photo 7**). Sometimes there may be a lock nut as well.

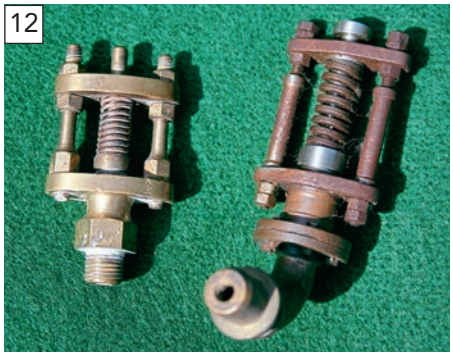
To adjust the valve safely you should first raise the pressure in the boiler until the valve lifts, note the lifting pressure, then vent the boiler and adjust the valve. Usually, the vent holes allow a pair of tweezers or fine nosed pliers to locate in them and permit the disc to be turned (see **Photo 8**). Once you have made the adjustment you should then raise pressure again and see what difference the adjustment has made. Again, this process may need to be repeated a number of times.

Another option is to adjust the value with the boiler under pressure. Here the process involves raising steam pressure in the boiler with the safety valve deliberately set to allow an increase of pressure above requirement. As the pressure in the boiler rises and reaches the required set pressure, the adjustment cap or disc is then slackened off until the safety valve lifts. This is a very quick, easy and accurate way of adjusting a safety valve, but it does have some serious potential hazards…

Firstly, you are going to be making the adjustment when the valve lifts, so both your hands and face could be in firing line of the vented steam when it's released – and as there likely to be a considerable quantity of steam (see **Photo 9**), this has the potential to cause a significant injury. Consequently, gloves and goggles are essential.

Secondly, if the valve happens to be stuck due to a build-up of scale or deposits and the operator continues to unwind the adjustment, there's a danger the adjusting cap or disc could be completely unwound causing the valve to become loose and be ejected by the entire contents of the boiler in one very dramatic event. As an example, looking at the valve in **Photo 10**, how does one know how much thread is left holding the disc in place, and therefore how much further it can be safely unscrewed?

12



These valves are of a much more substantial build and would normally only be found on much larger, higher pressure boilers. As you can see adjustment is by moving the top beam up or down to adjust the pre-load on the spring.

Not surprisingly, this method divides opinion and is precisely why I would never recommend it to anyone. Having said that, coming from a marine engineering background and being involved in setting full-size marine boiler safety valves for the inspection by Lloyd's surveyors, I can confirm this method is the way full-sized boiler safety valves are set. It is completely unrealistic to be

13

Many Cheddar boilers were supplied with the same safety valve fitted, which can be removed to adjust – certainly the safest procedure, if perhaps not the most convenient.

14

These are often replaced by modellers with an externally set valve, which is more convenient to use and doesn't have the 'O' ring valve that will be subject to deterioration over time.

raising and lowering the pressure in full sized boilers for the sake of adjusting the safety valves. However, my advice to modellers would be to vent the boiler to adjust it, then bring the pressure up again to check the blow off setting.

A handy feature of many examples of this type of valve is that the valve spindle protrudes above the disc, so the valve can be checked for free movement by pulling on the spindle with a pair of pilers (see **Photo 11**). Again, I would not recommend doing this while the valve is on the boiler and under pressure.

Finally, if you're dealing with a larger boiler, probably above what we might normally find in a model boat, you might come across the type of external valve that is set by adjusting a bar across the top of the spring (see **Photo 12**). These are usually for much higher-pressure ranges than we're likely to come across, but I have seen this type once or twice on fixed installations.

"Deliberately lifting the value to ensure it's still doing its job every now and then between annual steam tests will ensure a quick and easy test procedure can be conducted on the day"

Conclusions

Apart from the calibration of the pressure gauge, the setting and checking of the safety valve – where both the lifting pressure and the valve's ability to dissipate the steam pressure under full flame are assessed – are probably the most important aspects of the annual steam test. Some modellers tend to overlook the ongoing functionality of their safety valve, as frequently they can't be operated during normal running. But scale deposits can build up in the valve and prevent its operation, and with prolonged heating the spring can, over time, lose its rating. The type of valve that uses an 'O' ring is particularly vulnerable as the 'O' ring can deteriorate with age and heat, which can lead to hardening and eventual cracking.

Deliberately lifting the value to ensure it's still doing its job every now and then between annual steam tests will ensure a quick and easy test procedure can be conducted on the day. There is nothing more frustrating than conducting an annual test only to find that the valve is stuck shut and the model fails the test. So, become familiar with how your safety valve can be adjusted and set it up to lift at the required pressure.

Many safety valves are not the best at doing their job as a result of age, design, quality of manufacture, use of poor-quality water, *etc.* What we want from our safety valve is a nice clean 'pop' when it opens and an equally nice clean snap shut when it closes. What we invariably get is varying degrees of leakage going both up in pressure and back down in pressure, making it sometimes difficult to actually determine what the opening pressure is. I would recommend safety valves from Blackgates Engineering (https://www.blackgates.co.uk – Tel. 01924 466000), as I've always found that its valves do in fact 'pop' open and snap closed again and are by far the easiest valves to test. If you want to make life a little easier, it's also worth considering changing your safety valve from an internally adjustable one (see **Photo 13**) to an externally adjustable one (see **Photo 14**) – just bear in mind the capacity considerations mentioned above. ●

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**

Lapwing

You may be interested in my build of the dinghy that I've just launched at Canonteign Falls, the home of the Exeter and District Model Boat Club. *Lapwing* has been modified with 0.5mm varnished mahogany veneer on the seats, thwarts, knees, rudder, tiller and transom. The gunwales were changed for laminated mahogany strips and there's a rope fender around the gunwales.

Lapwing has a number of 3D-printed accessories for Frank the fisherman, including sole boards, a full toolkit for the Seagull, a picnic hamper, fishing rod and mud weight for an afternoon of fishing on the Norfolk Broads.

I took the decision to mount the Seagull to one side and use the supplied rudder for steering. The original rudder fittings are definitely robust enough for this. The scale Seagull outboard runs like a dream on a 450maH 3S battery. The battery is velcroed under the one of the seats as it was tight fit getting the battery, steering servo, ESC and receiver in the rear locker Steering is via a 3D printed yoke mounted to a servo in the aft locker, this is an idea suggested by Christian Pomeroy, and after some experimentation I printed the final version in transparent PLA filament.

Christian Pomeroy has done a great job in relaunching The Clyde Model Dockyard and the quality of the kits and engineering of the Seagull is absolutely superb. I'm waiting to see what he releases next!

NEIL WITT
EMAIL

Just wow! You really have taken this build to the next level in terms of finish and detailing – love Frank's casual attire, beer in hand, fishing rod, toolbox, picnic hamper, book, etc – you really have thought of everything. And that gorgeous, dedicated carry case is absolutely delightful, too. I'm so impressed. Ed.

Neil Witt's brilliantly finished and detailed build of the Clyde Model Dockyard clinker dinghy kit, fitted with Seagull outboard motor, also purchased from Clyde Model Dockyard.

The beautifully crafted and decorated dedicated carry case Neil custom build himself for Lapwing.

Lapwing on the water.

Connors Brothers II

I recently completed scratch building the freighter *Connors Brothers II*.

The wooden ship the model was based on, which measured 113 feet long and 24 feet wide, was too large to be built in Blacks Harbour, so it was instead built at the Hadfield and Wagstaff boat yard in Port Greville, Nova Scotia. The ship was launched in 1947 and was classified as a trawler. She was used by Connors Brothers o haul cargo and passengers from Saint John to Grand Manan Island, Campobello Island, Deer Island, Back Bay, Blacks Harbour, Beaver Harbour, St Stephen and Eastport, Maine, delivering goods that were required at the sardine packing plants and also hauling the finished product to Saint Andrews or Saint John to be shipped by trains to markets. The company stopped using the *Connors Brothers II* to haul cargo in the late 1970s, when trucks and trains became a faster and cheaper mode of transport. She was stripped of her engine and other salvageable items in the late 1970s/early 1980s, and then, sadly, towed into Birch Cove on Frye Island and left to die. At some point in the early 2020s, the *Connors Brothers II* along with two other sardine carriers abandoned in Birch Cove were cut up and hauled away as part of a coastal clean-up.

RUSSELL BOWMASTER
ST GEORGE, NEW BRUNSWICK, CANADA

What an incredible job you've done of capturing this vessel, which, as your potted history explains, once played such an important role in supporting local industry and serving as a transport link between various communities. Always love seeing your beautifully shot shoreline images. Thanks, Russell. Ed.

Russell Bowmaster's splendid build of the freighter Connors Brothers II, which, up until the 1970s, served both local industry and the surrounding communities.

MS *Oldenburg*

When you kindly published work in progress on my build of MS *Oldenburg*, working to Ray Wood's design which featured as a free plan in the January 2025 issue of Model Boats, you mentioned you would like to see some images once I finally got the model on the water. So, I am sending you a couple of shots of her recent 'sea trials'.

JOHN CORAH
EMAIL

She's looking fabulous, John. Many thanks for sharing these pics. Ed.

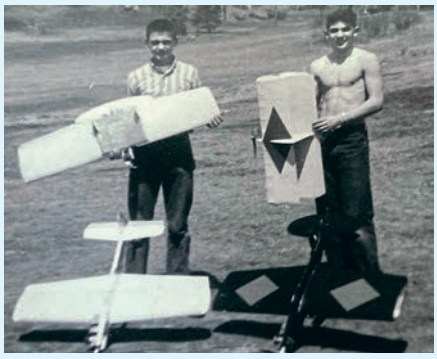
John Corah's completed build of MS Oldenburg on the water.

From control lines to waterlines

My introduction to model building began at the age of 14, in 1957, when several friends and I discovered the joys – and occasional heartbreak – of control line model airplanes. Our model of choice at the time was the famous *Ringmaster,* a popular kit produced by Sterling Models of Philadelphia, Pennsylvania.

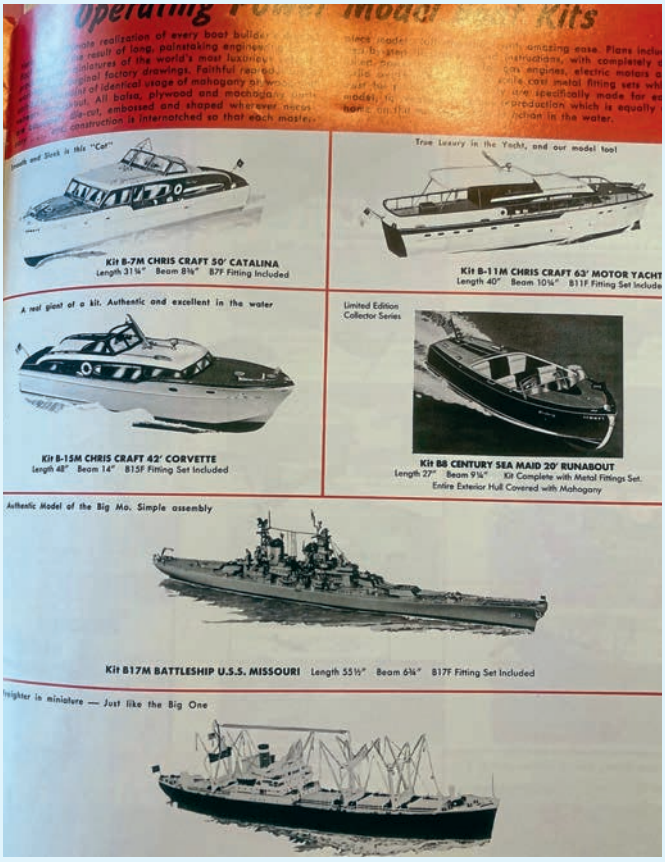
Sterling was one of the great names in model kits during that era. Its catalogue included more than a hundred 100 models ranging from simple rubber-powered aircraft to control line and radio-controlled designs. I still have my copy, and looking through it today brings back so many memories of those exciting early days when every new model seemed full of possibility.

Every Saturday our small group gathered in a park in Clifton, New Jersey, armed with our airplanes, fuel cans and great enthusiasm. The field became our flying circle as we launched our planes into the air. We attempted stunts, engaged in mock combat, and even tried low-level balloon-cutting contests, where the goal was to slice through a balloon tethered just above the ground.



Norman's interest in the hobby began back in 1957, when at 14 years old he began building and flying model aircraft with his buddies in a New Jersey park.

Unfortunately, enthusiasm did not always equal skill. Crashes were frequent, and the hard New Jersey ground proved unforgiving to balsa wood and fragile landing gear. Broken wings and bent fuselages were common sights. Fortunately, the weekdays gave us plenty of time for repairs. Most evenings were spent rebuilding wings, patching fuselages, and preparing our fleet for the next Saturday's adventures. Those hours at the workbench taught us patience and problem-solving—skills that would stay with me for the rest of my life.



During the 1990s, Norman decided to take up modelling again (after having abandoned it in his late teens), but decided to shift his focus to model boats, starting with the build of Sterling's Century Sea Maid runabout before moving on to its more challenging kits for the USS Missouri and the American Scout freighter.

As we moved into our later teenage years, however, other interests gradually took over. Girls, sports, college plans and career ambitions slowly replaced the hours spent flying and building models.

Fast forward to the 1990s, by which time I was married, my career in real estate development was well established and my children were grown. So, with a little more free time, my thoughts returned to those teenage years of building wooden models. I remembered how much I had enjoyed the building process – but I also remembered that flying had never quite been my strongest skill. Then I recalled that Sterling Models had also produced a line of radio-controlled boat kits, and that seemed to be the perfect solution.

My first project was Sterling's *Century Sea Maid* runabout kit (the finished model is still in my possession today). Building *Sea Maid* proved to be every bit as relaxing and enjoyable as I'd hoped.

Encouraged by this success, I decided to take on a much more

ambitious project: Sterling's kit for the battleship USS *Missouri*. I will admit that after eagerly opening the box and spread its contents across my workbench, excitement quickly turned into something closer to intimidation. The kit consisted of over 1,000 parts, and the detailed instructions supplied seemed to go on forever. Fearing I had perhaps bitten off more than I could chew, it took several months before I gathered the courage to reopen the box and begin the build. Once I did get started, though, modelling the *Missouri* quickly became s an absorbing challenge. In fact, I spent so much time in my workshop that my wife began jokingly referred to herself as a "battleship widow'.

As she kindly offered to help out in any way she could, I tasked her with making up the 40mm anti-aircraft guns required for the model. After carefully completing the first, she proudly showed it to me. She was delighted when I acknowledged what a done a beautiful job she'd done it but then asked exactly how many of these guns I would need. When I told her she only had 79 more to go, she gasped – but to her credit, she finished the entire batch. After that experience, however, she never again volunteered for model-building duty.

Completing *Missouri* proved incredibly satisfying. It also confirmed that model boat building had firmly taken hold as my new hobby.

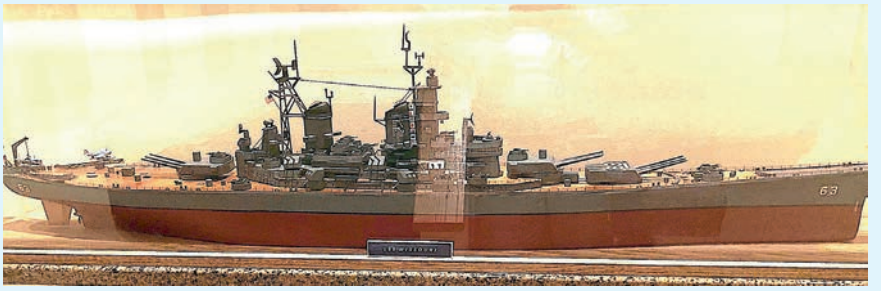
My next project was another highly detailed Sterling kit—the *American Scout* freighter. Like the *Missouri*, this proved a challenging but ultimately very rewarding build, and it further deepened my appreciation for the craftsmanship involved in model boats building.

Sadly, Sterling Models folded during the 1990s, although the influence it had on generations of modellers, including myself, remains strong.

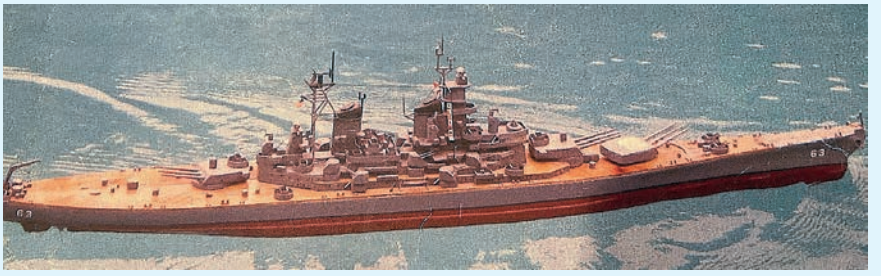
Fully committed to model boat building by this stage, the hobby then followed me through another major life change when my wife and I moved to Colorado. There I discovered an active community of fellow enthusiasts and joined a local model boat club known as 'The Crew'. The group meets regularly to sail their models and share ideas, techniques, and stories.

Each year we also hold an annual regatta at Keystone Resort, where members bring their latest creations to the water (this year's event being scheduled for August 21-23). Events like these remind me how enjoyable this hobby can be—not just for the building, but for the friendships it creates.

Looking back, it is interesting how a teenage hobby that began with balsa wood airplanes flying in circles over a New Jersey park eventually led to model boats cruising across lakes in the Colorado mountains.



Norman's finished build of the USS Missouri modelled from the Sterling kit.



Missouri on the water.

Another Sterling build by Norman, this time of the American Scout freighter.

More models in the fleet Norman has since built up on display. These are now sailed alongside the models built by fellow members of his local model boat club in Colorado, known as 'The Crew'.

The tools, the materials, and the models themselves may have changed over the years, but the satisfaction remains exactly the same.

NORMAN DREYFUSS
COLORADO, USA

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**

Bring & Buy Sale

On April 12, this year's annual Bring and Buy Sale hosted by the model section of Manvers Waterfront Boat Club in Wath-upon-Dearne, Rotherham, South Yorkshire, which you kindly flagged up in the magazine and on social media, saw an increase in the number of table stand vendors, with a wide diversity of used/pre-owned models and parts for building / modelling/powering, *etc*, offered for sale. There was also trade support from Tiger Hobbies, who set up stall with a nice assortment of plastic kits, glues and paints, and Mountfleet Models, who did likewise with numerous kits, hulls, fittings, model figures, *etc*, to browse and buy.

The doors opened at 10am and we had a steady flow of visitors throughout the day, meaning every vendor did brisk business right up until the event wound down at around 2pm. As many visitors had travelled from Middlesbrough, Lancashire and most areas of Yorkshire, they really seemed to enjoy this opportunity for a catchup with friends not seen since the Blackpool Show.

I would, therefore, like to thank all those who attended and traded, and my fellow club members who worked so hard to ensure the event went smoothly.

STEPHEN PERKINS
MANVERS WATERFRONT BOAT CLUB

Glad to hear it all went so well, Stephen. Please do keep us posted on any other forthcoming events, and indeed of the date and details for next year's Bring and Buy Sale. Ed.

From 10am to 2pm on April 12, the Bring and Buy Sale hosted by the model section of the Manvers Waterfront Boat Club in Wath-upon-Dearne, Rotherham, offered vendors the opportunity to sell and visitors a wide selection of goodies to browse and buy, while at the same time giving everyone the chance for a catch-up with old friends.

Back issue appeal

I wonder if any of my fellow readers have a copy of the July 2011 issue of Model Boats that I could either purchase from them or who'd perhaps be prepared to photocopy or scan the Alvis Stalwart article included for me? I have been searching for a back issue for six months now with no joy, and I would really like to read this feature before I kick the bucket!

Also, does anyone know what happened to Kingswinford Model Boat Club, whose members used to meet at the park in the West Midlands on Thursday mornings?

Finally, I don't know about others, but I really miss the annual show at the Ellesmere Port Canal Museum. It made for a brilliant day out and the live displays were always excellent – how I wish it could return. We also once had free ship spotting on the Manchester ship canal. Those were the days!

Love the magazine; keep up the good work.

CHRIS LLOYD
EMAIL

The Letters pages often come up trumps following appeals like this, Chris, so I have my fingers crossed for you. I will, of course, pass your contact details on to anyone who is able to offer some help here. Ed.

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You will find more about the exciting content coming next, features of particular interest you may have missed in past editions and details of the very latest subscription offers on our website at www.modelboats.co.uk

You can, of course, order you copy of the July 2026 issue, which goes on sale at all good newsagents from Friday, June 19, now, but why not treat yourself to an annual subscription, as monthly copies will then be delivered directly to your door.

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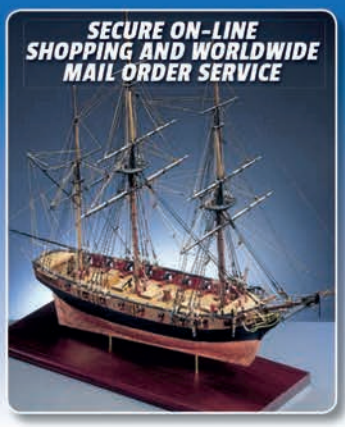

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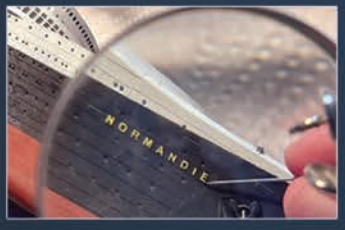

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