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September 2026
Vol. 76 No. 910

SS Hjejle

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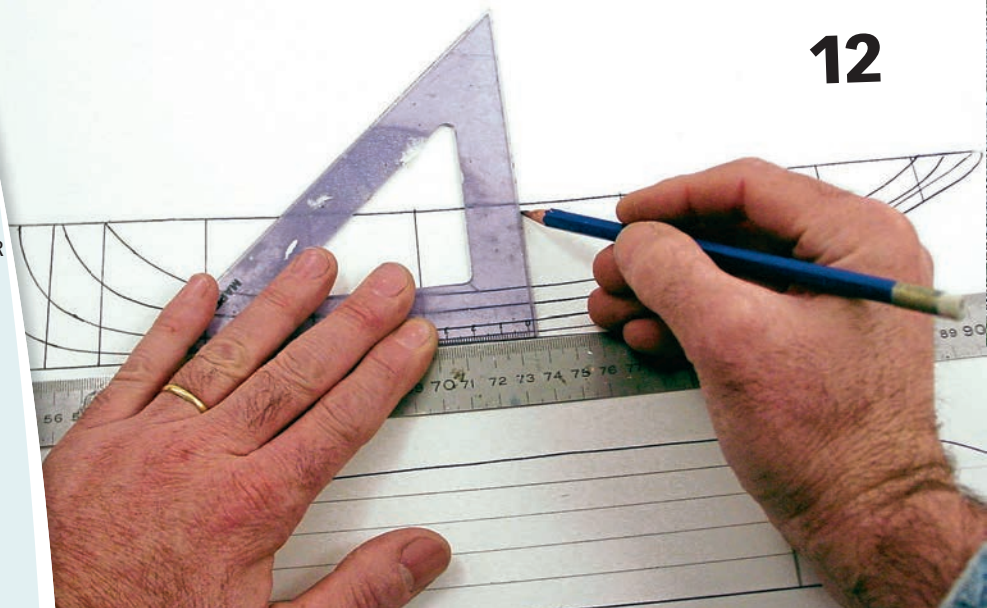
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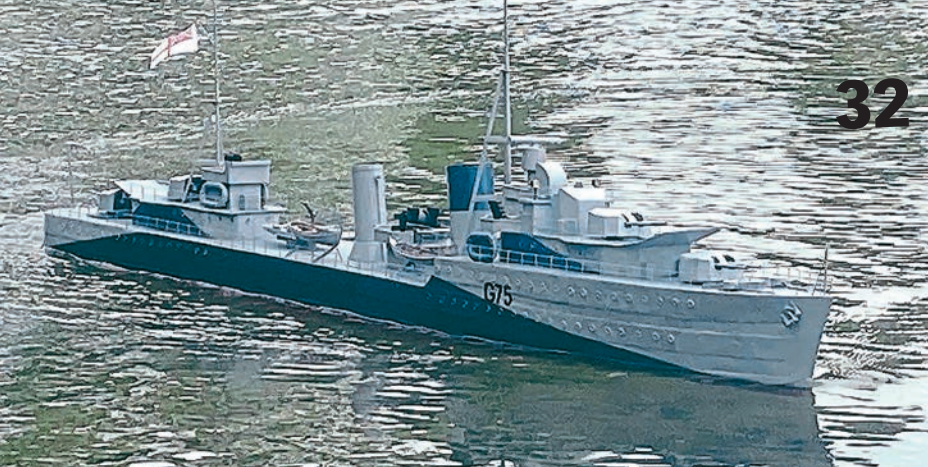
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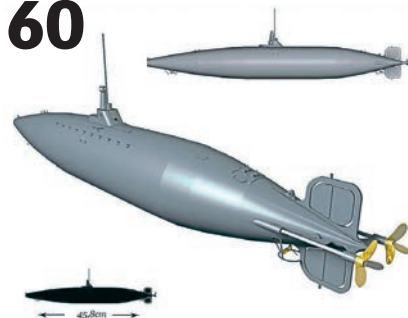
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When the government announced plans to seriously increase the number of apprenticeship opportunities for young people, my first thought was, well, why not also bring back some of the more practical, hands-on, lessons, such as woodwork and metalwork, in schools, too? After all, most under 16s are probably, considering the amount of time they spend on screen, already capable of running rings around their tech teachers! Realistically, I appreciate it's unlikely this is viable, due to the cost of equipment required, lack of staff with the necessary know how, and health & safety considerations, but it does seem a shame that the basics of these traditional but still very useful in everyday life skills are no longer on the curriculum. And a simple working model boat building project could introduce young people to so many different materials, methodologies and techniques in a really engaging way, with some design, electronics and physics thrown in to boot. We could even give them their digital fix by incorporating some 3D-printed parts.

Anyway, whether you're old skool or new to the hobby, what have we got lined up for you this month? Well, as you will have seen flagged up on the front cover, included in the centre spread of the magazine is a free pull-out plan for a very pretty little working fishing boat, along with accompanying build instructions. Also, if you've ever who've ever fancied designing a hull of your own and drawing up plans for it, there's an easy-to-follow picture-led guide to the process of doing this the traditional way. You'll also find modelling articles focusing on the first ever electrically propelled submarine, the oldest coal-burning paddle steamer still in operation, a Royal Navy Tribal Class destroyer, a magnificent wool cutter and a scaled-up version of Veron's Skid-Boat, along with news (including some great events taking place this September), views and a whole lot more.

Enjoy your read,

Lindsey



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OUT AND ABOUT

2026 BLACKPOOL MODEL SHOW

- SEPTEMBER 12-13TH | NORBRECK CASTLE HOTEL -
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To book your tickets / accommodation packages, scan the QR code or please visit www.blackpoolmodelshow.co.uk

This year's Blackpool Model Show is scheduled for the weekend of September 12/13 and will once again be held at the Norbreck Castle Hotel, Norbreck Road, Norbreck, Blackpool FY2 9AA.

As well as the individual exhibitors, 15 model boat clubs and a whole variety of traders have already confirmed their attendance.

Plus, of course, there will be the ever popular Bring & Buy stand. Those wishing to submit items for sale will be welcome to do so; there will be a small 10% commission taken (100% of the proceeds will be donated to the RNLI and Air Ambulance) on all items sold (there will be no fee charged on unsold items).

Entries are also invited for the show's prestigious competitions, with categories including:

- Best Scratch Built Model
- Best Semi-Scratch Built
- Best Fishing Vessel
- Best Tug

- Best Rescue & Lifesaving
- Best Pleasure Vessel
- Best Rigged & Sail
- Best Military Boat (includes submarines)
- Best Workboat
- Best Tank
- Best Truck
- Best Construction Model
- Best Novelty
- Best Club (or Individual Exhibitor) Display
- Best in Show.

Winners in each of these categories will be awarded an engraved glass trophy. Full details of how to enter can be found at <https://blackpoolmodelshow.co.uk/competitions/>

Tickets for both the show and accommodation (special packages are on offer) at the Norbreck Hotel for those wishing to make a full weekend of it, can be booked in advance at <https://blackpoolmodelshow.co.uk/tickets/>

For those travelling by car, there are over

800 parking spaces at the hotel itself (free parking is available to all those attending the Blackpool Model Show – just provide your registration number at the ticket desk when entering the show and you won't have to pay the normal car park charges, with additional on-street parking nearby).

The show's exhibits and attractions are laid out over the ground floor of the hotel and there is level access from the car park for wheelchair users.

For the last 10 years the Blackpool Model Show has been organised by the Component-Shop as a not-for-profit event, with any profits made either put back into the event itself or donated to charity. This year, however, the show will become part of a charity called The Modellers Society. It will continue to be run by same people, in the same way, but with a clear financial distinction between the show and the Component-Shop. Moving forward, the aim of his new charity will be to further support and promote the hobby.

Southport MBC Open Day/Bring & Buy Sale

The Southport Model Boat Club will be holding its final Open Day of 2026 between 9am and 1pm on August 30 at the Jubilee Pond, Rotten Row, Southport PR8 2PZ, conveniently coinciding with the neighbouring renowned Southport Flower Show staged right next door.

The club's admission free monthly events are promoted on social media to

model boat clubs across the northwest and attract members, traders, visiting clubs and model boating enthusiasts.

Visitors are assured a friendly welcome and along with the lake being open for sailing, there will be club, trade and 'bring & buy' stands to browse.

For more info, visit <https://www.southportmodelboatclub.co.uk/>



OUT AND ABOUT

Barry MBC Open Day

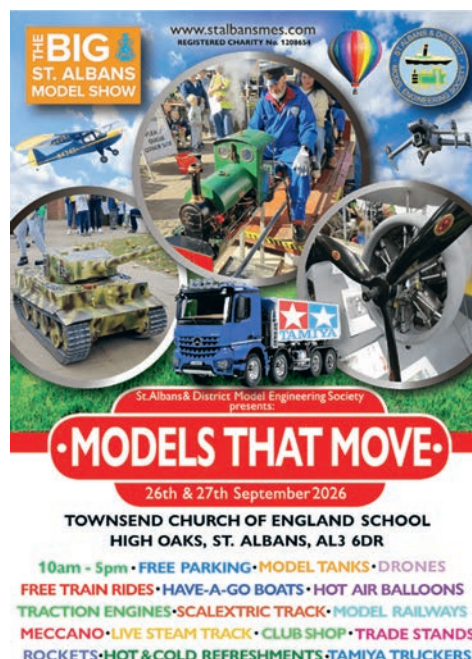


From 9.30am to 4pm on Sunday, September 6, the Barry Model Boat Club will be holding its annual Open Day at The Knap Lake, Barry, South Wales CF62 6YU (free parking will be available).

Visitors will be able to enjoy displays featuring all types model boats and the lake will be open for sailing, with some yacht racing in classes DG 65, IOM and DG 95 planned (depending on entries). There will also be

stalls to browse, family friendly activities and a raffle, with all funds raised on the day being donated to the Ty Hafan Children's Hospice.

The BIG St. Albans Model Show



Scheduled for 10am to 5pm each day over the weekend of September 26/27 at the Townsend Church of England School, St Albans, AL3 6DR is the BIG St Albans Model Show.

Visitors to this event, organised by the St Albans & District Model Engineering Society, will be able to view a huge array of exhibits (including models of all descriptions), browse numerous trade stands, and enjoy lots of family friendly

entertainment. Free onsite parking will be available and there will be hot and cold refreshments on sale throughout the day.

For further details, visit <https://stalbandsmes.com/>

Norwich MBC Tug & Steam Day



From 9am to 4pm on Sunday, September 6, the Norwich Model Boat Club will (weather permitting) be holding a Tug & Steam Day at the beautiful lake in Eaton Park, Norwich. All are welcome to attend. For further details, visit

<https://www.norwichmodelboatclub.co.uk/>



Model Boat Day at Museum of the Broads



From 10am to 4pm on Sunday, September 27, the Museum of the Broads in Stalham will be hosting a special Model Boat Day, featuring both static displays and on the water demos.

Admission to the museum is charged at £9.50 for adults (the price including free admission for the next 12 months from the point of purchase) and £5.50 for accompanied minors aged 12-17, while under 12s will be admitted free of charge.

River cruises (chargeable separately) will also be on offer.

Parking is available to visitors at Richardson's boatyard (a short 100m walk from the museum), although Blue Badge holders can park directly outside the disabled/wheelchair friendly venue itself. Other facilities include onsite toilets, a gift shop and a café.

For more details, visit <https://www.museumofthebroads.org.uk/>

DROPPED DUE TO DROUGHT

Knightcote MBC September 2026 Steam Day cancelled



The Steam Day planned for September 6 by the Knightcote Model Boat Club has, with regret, been cancelled. Due to the extended heatwave, the water level at the club's Newhouse Farm sailing venue has dropped to a level which now makes launching heavy models dangerous. With no indication of significant rainfall in the foreseeable future, the committee has, in the



interest of safety, therefore decided not to proceed with the event.

The club tells us that as these protracted heatwaves seem to be becoming the norm, and its pond is

susceptible to drought conditions, it is now in the process of rearranging its event calendar for 2027 so that the next Steam Day is scheduled for earlier in the year.

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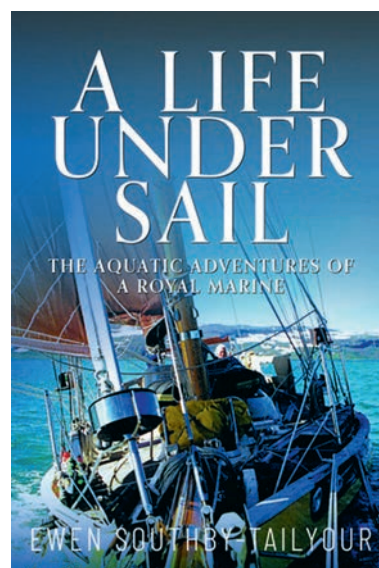
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Published in hardback format under ISBN 9781472874894, the book carries an RRP (Recommended Retail Price) of £45 and can be ordered directly from <https://www.ospreypublishing.com/UK/>

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probably wouldn't have survived.

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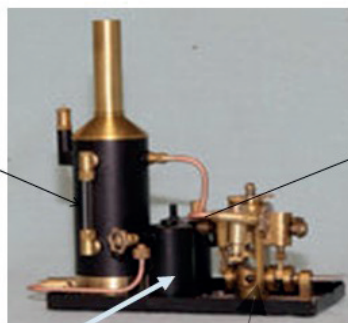
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Designing a hull & drawing the plans

Antonio Alcaraz provides a picture-led step-by-step guide to the process

Many model shipbuilders ask me about a wide range of subjects, but one question comes up time and again: "How do you design a hull?". Nowadays there are computer-aided design (CAD) programs that make the task much easier. However, there is no magic formula that will produce a successful hull design in the blink of an eye. Personally, I still follow the traditional methods used by the old master boatbuilders and begin by carving a half-hull model.

Until naval architectural drawings became commonplace during the 1930s, boats were designed by

the shipwrights themselves. When commissioned by a vessel owner, the shipwright would first carve a scale half-hull representing the proposed vessel, carefully respecting the required proportions of length, beam and depth specified by the client.

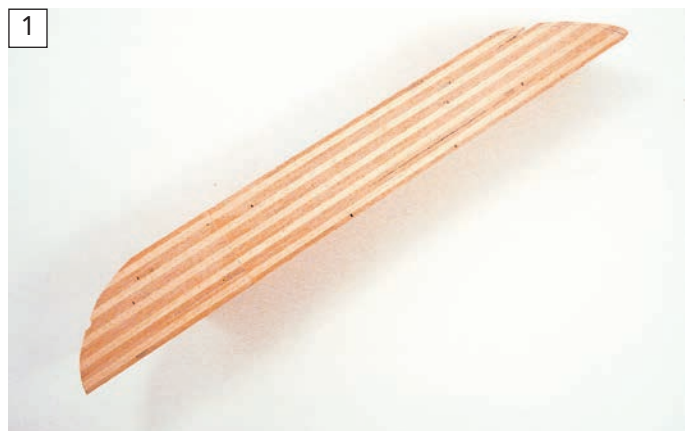
Once the owner had approved the model, the half-hull was sliced into a series of longitudinal sections to establish the waterlines, and into transverse sections corresponding to the frames that would make up the full-size vessel. The shipwright would then trace the profile of each half-frame and enlarge these drawings to full size for construction.

The reason for producing only a half-hull rather than a complete model is simply one of symmetry. By shaping the waterlines on one side only, each frame can later be reproduced as a perfectly symmetrical pair, ensuring the finished hull is balanced on both sides.

In many of these small traditional boatyards, particularly those building local working craft, once a successful design had been developed, a complete set of templates was produced. These allowed the same vessel to be built repeatedly, with only minor variations, usually in the deck layout or equipment, to suit individual owners.



La Voluntad de Dios and the resulting 1:35 scale model built from the hull design and plans drawn up by Antonio in the traditional way.



Since the half-beam measures 5 cm, we shall use five pieces of 10 mm plywood, fastening them together with a couple of nails or screws. The outline of the deck is then cut out, defining the bow and stern.



Once the deck outline has been cut, we shape the side profile of the hull, which will serve as the temporary keel profile. The hull is drawn without the bulwarks, as these will be added later. This leaves the frames extending only as far as the deck beams, making the hull much easier and less time-consuming to build.

Here's how its done...

To illustrate the process of designing a hull, we shall use as an example a *purse seiner* (commercial fishing boat) built in Melilla (on the northern coast of Morocco) in 1940, named *La Voluntad de Dios* (which translates into English as 'The Will of God'). The original vessel measured 14 metres in length, with a beam of 3.5 metres and a moulded depth of 2.1 metres.

Our model will be built to a scale of 1:35, giving overall dimensions of approximately 40 cm in length, a half-beam of 5 cm (since only a half-hull will be carved), and a depth of 6 cm.

These three dimensions determine the size of the timber block from which the half-hull will be carved. The block is assembled from several boards of equal thickness, the number of boards

corresponding to the number of waterlines shown on the drawing. In this example, boards 10 mm thick have been used.

The overall length determines the length of the block, the half-beam its width, and the moulded depth its height. Once these dimensions have been established, the timber blank is ready to be shaped into the hull. ●

3



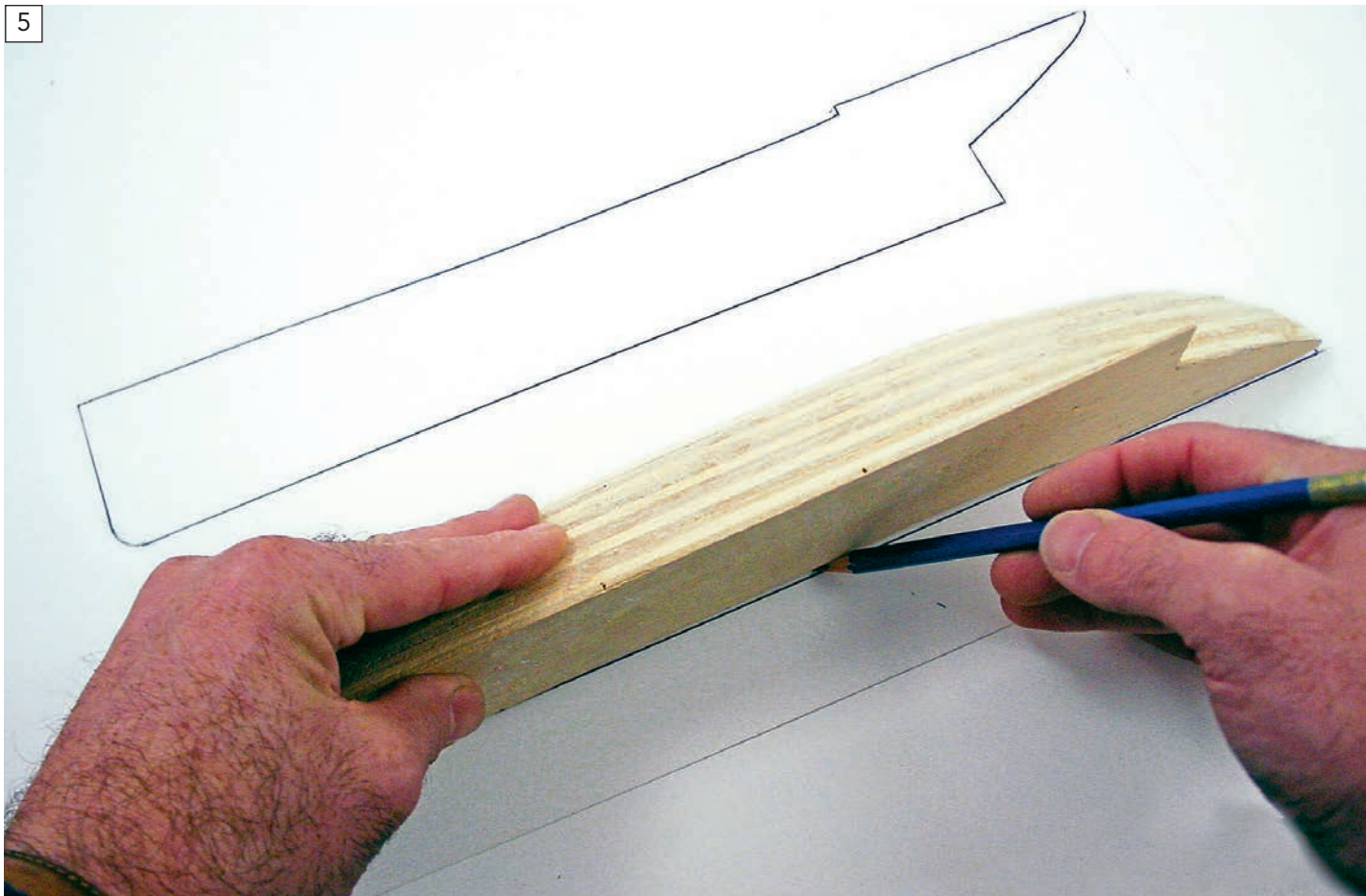
Using carving gouges, chisels and abrasive paper, we shape the half-hull, carving the entrance at the bow and the run towards the stern according to the form of the original vessel, in this case following the reference photograph supplied.

4



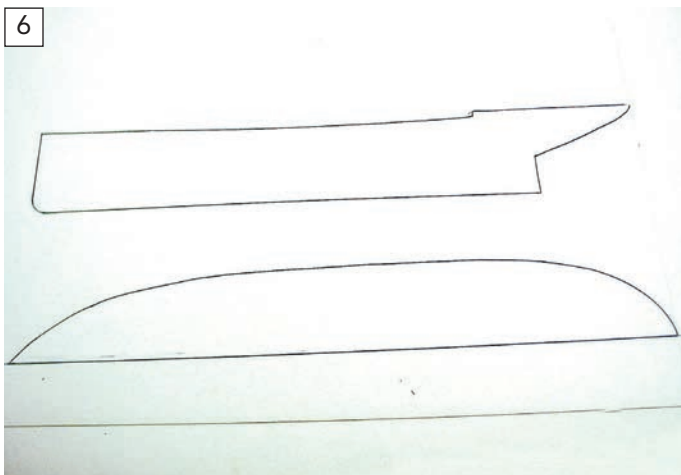
Once the hull has been carved to its final shape, the half-hull is placed on a sheet of paper and its outline is traced. This produces the drawing of the keel profile.

5



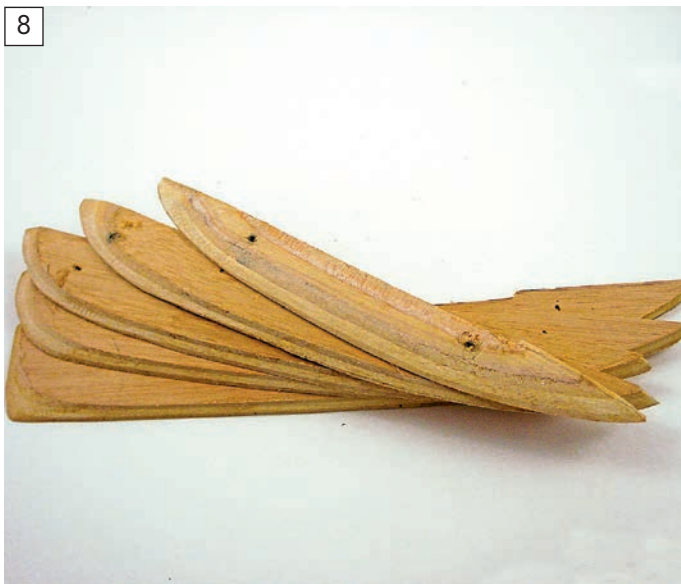
The same procedure is repeated for the deck, tracing its outline onto the drawing to produce the deck plan.

6



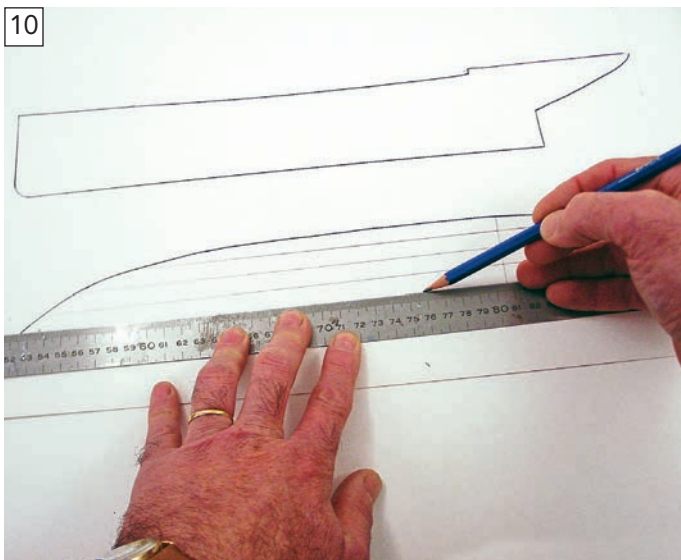
Here we can see the first stage of the lines plan, consisting of the hull profile and the half-deck plan. If we want other modellers to reproduce our design, the concept must be committed to paper by preparing a proper lines plan.

8



Once the nails have been removed, the five longitudinal laminations represent the hull waterlines.

10



On the deck drawing, a series of parallel lines is drawn corresponding to the number of laminations in the block, with the spacing between the lines equal to the thickness of each lamination.

7



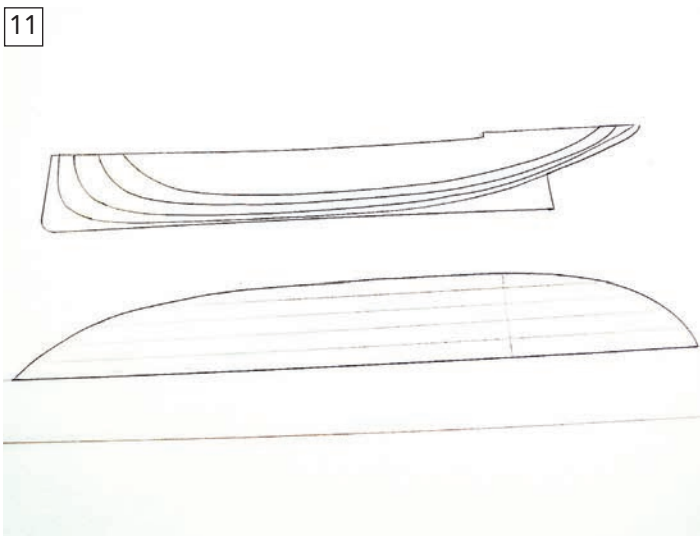
After completing the profile and deck drawings, the nails holding the five plywood laminations together are carefully removed with pliers. It is essential that the laminations remain perfectly aligned while the hull is being carved, otherwise the correct hull form cannot be achieved.

9



Each lamination is placed in turn over the original drawing and its outline is traced, producing the complete set of waterlines. These will later be invaluable for checking the hull shape or drawing additional intermediate frames if required.

11



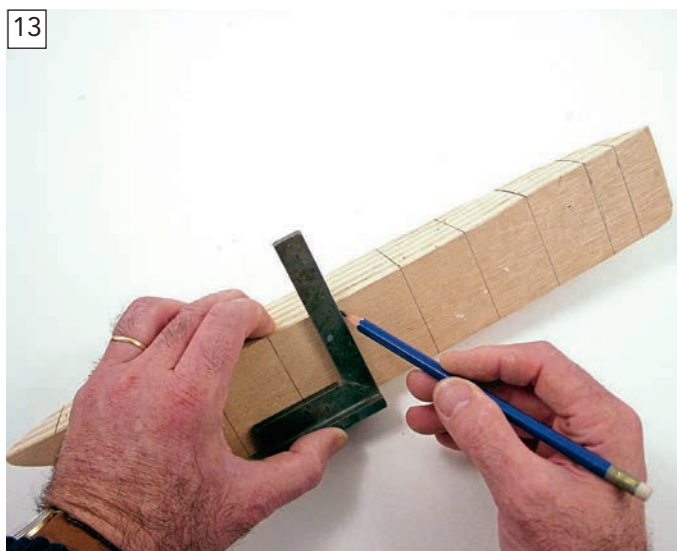
This photograph shows the second stage of the lines plan, namely the waterlines, which will later be used to draw the frames. Although the required frames can be taken directly from the carved half-hull, these waterlines make it easy to produce additional intermediate frames in the future if necessary.

12



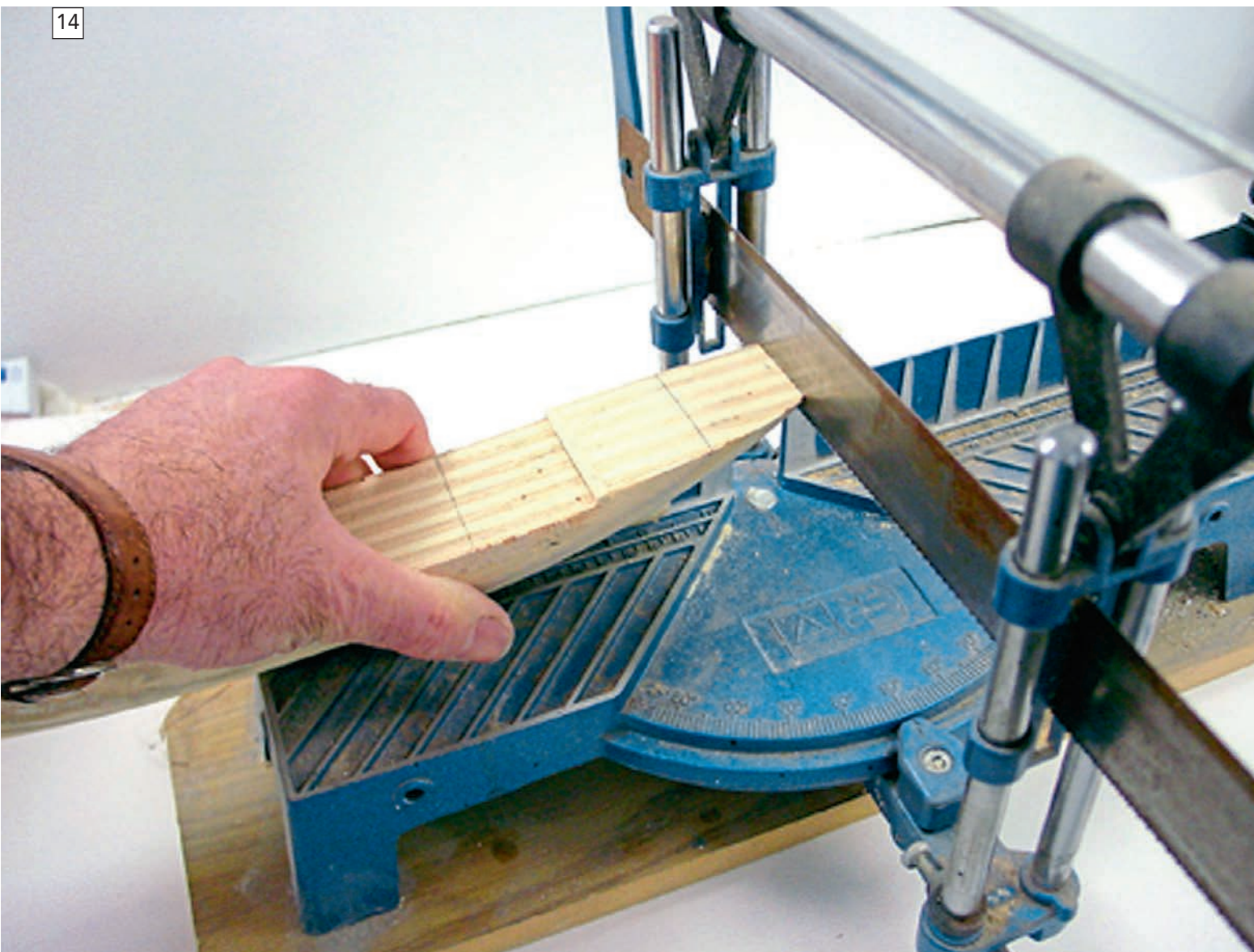
The five laminations are then reassembled and glued together using PVA wood adhesive, ensuring that they are returned to exactly the same positions in which they were originally carved. Clamps are used to keep the laminations firmly together while the adhesive cures.

13



Once the laminations have been glued together, the frame positions are marked using a try square. In this example the frames are set at 90° to the keel. On some vessels, however, the frames are not perpendicular to the keel because the keel itself is inclined relative to the designed waterline.

14



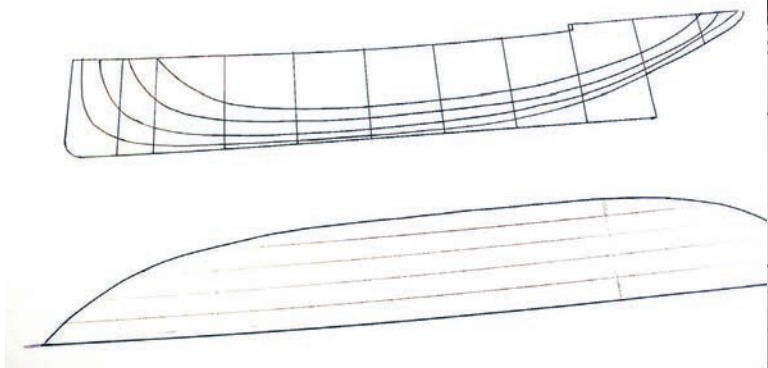
Using a mitre guide or other jig that guarantees perfectly square cuts, the half-hull is sawn along the marked lines. Each section is numbered, as these slices represent the individual frames.

15



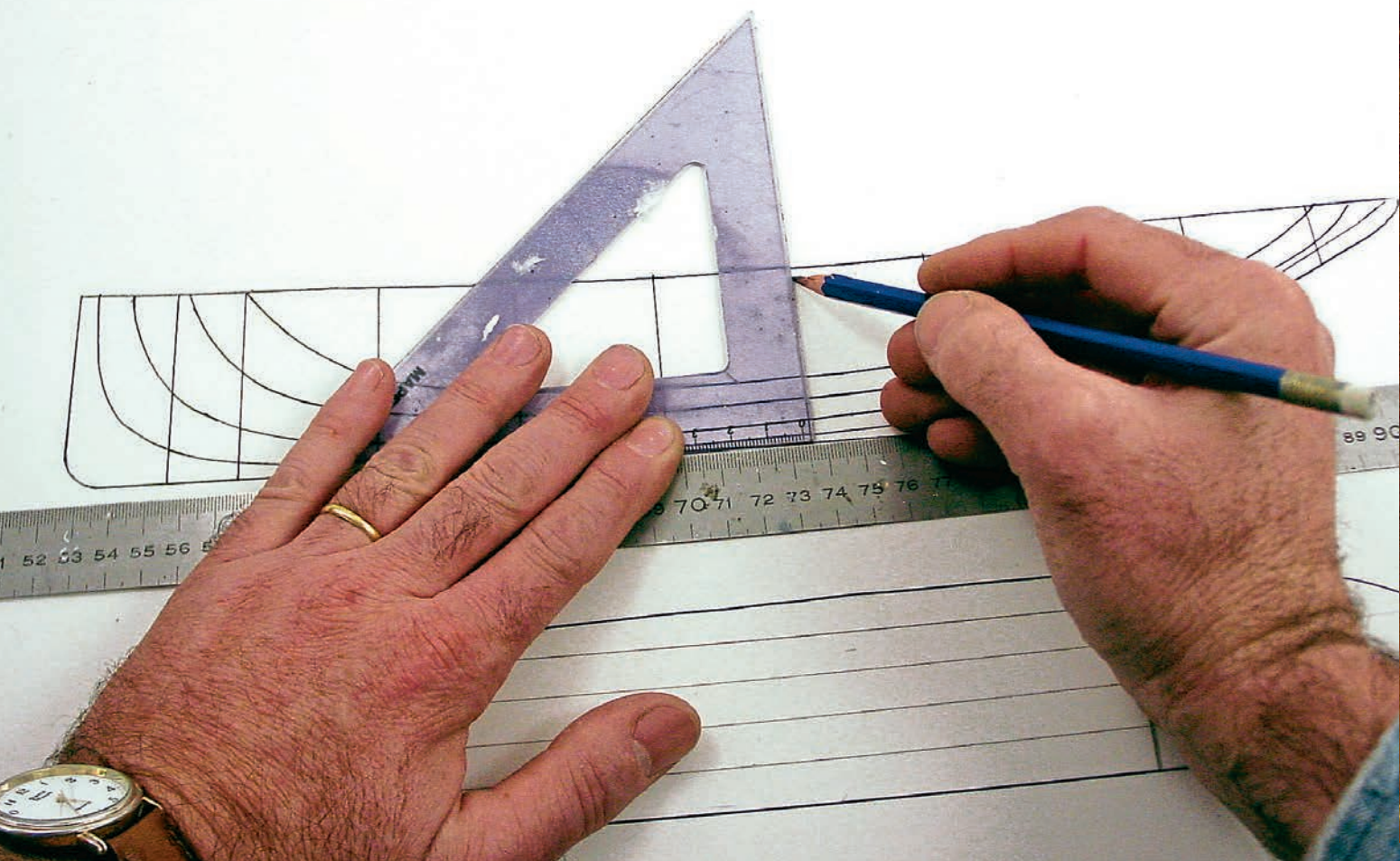
The half-hull after being cut into the selected number of frames. It is advisable to space the frames more closely together near both the bow and stern, where the hull planking undergoes the greatest curvature.

17

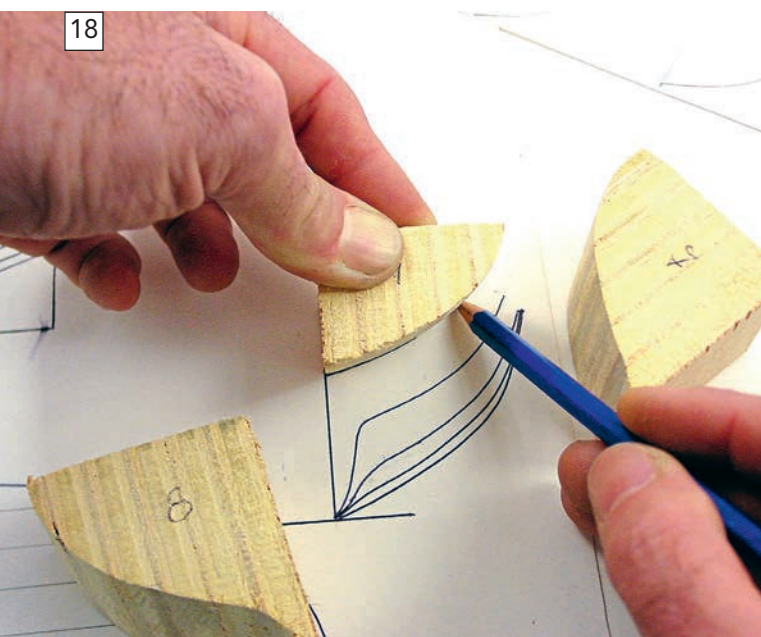


This photograph shows the third stage of the lines plan, incorporating the waterlines together with the positions of the frames along the keel.

16

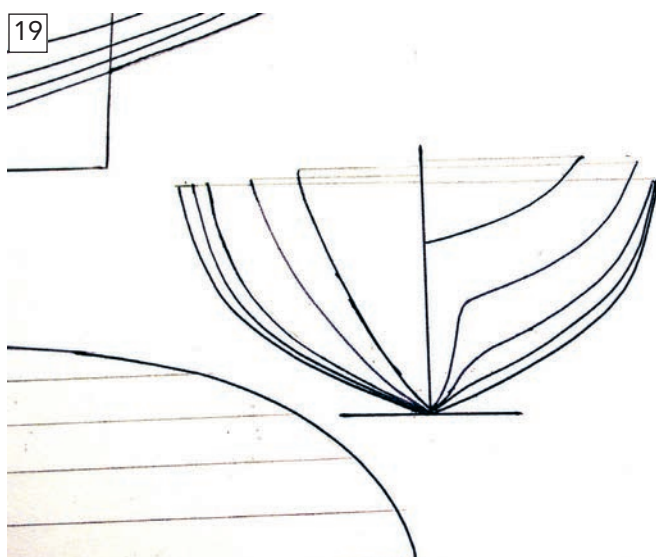


The spacing of the frame cuts is then transferred to the drawing so that the exact position of each frame relative to the keel is recorded.



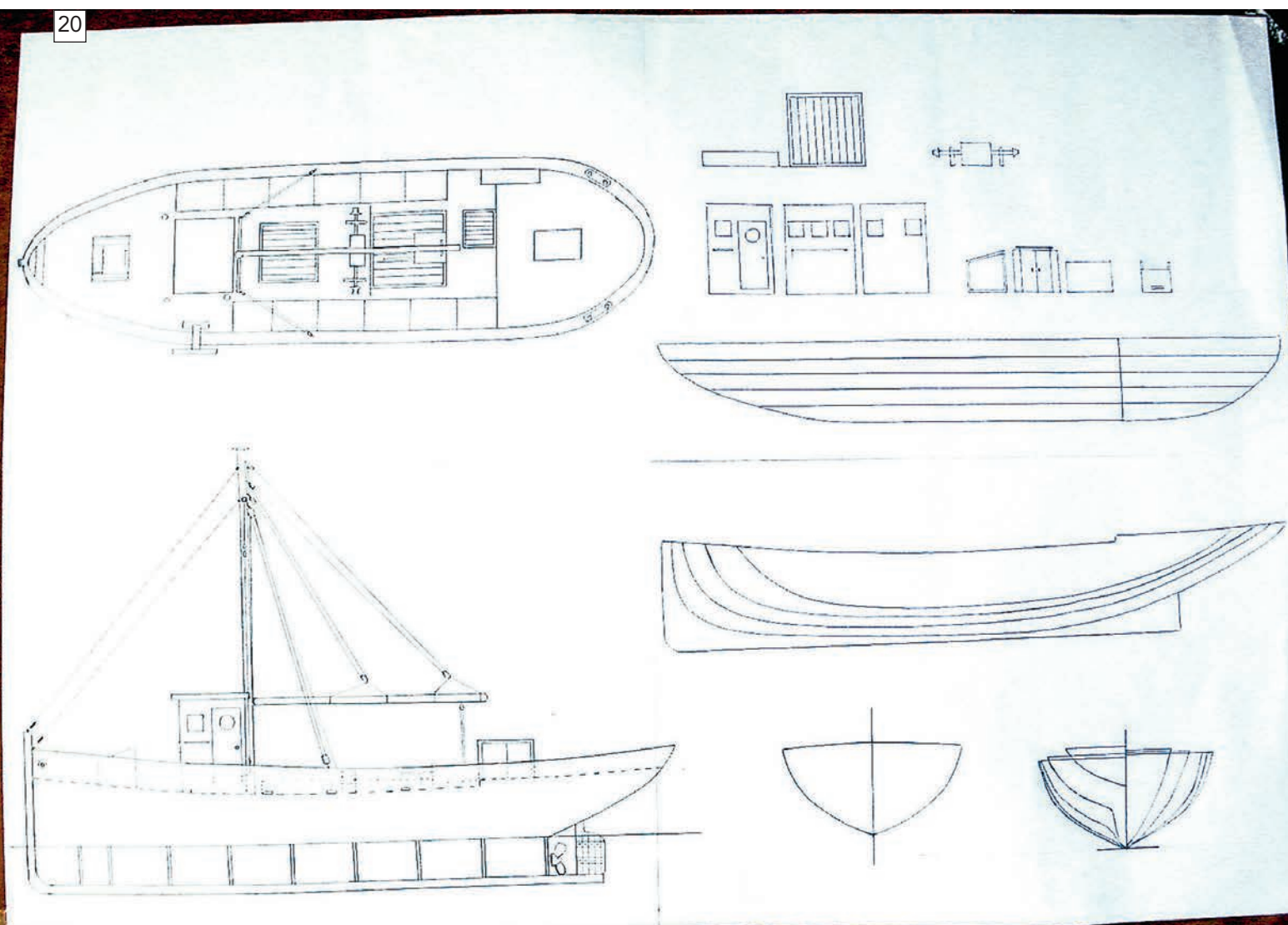
18

A vertical centreline and a horizontal baseline are drawn. Using the sections cut from the half-hull as templates, the forward frames are drawn on one side and the after frames on the other.



19

The completed frame drawings are shown here. These represent the frames from the keel up to deck level, excluding both the bulwark stanchions and the deck camber. To establish the deck camber, the moulded frame (the largest frame) is first drawn and its camber added. The remaining frames are then aligned with it and the same camber transferred to each one.



20

The completed lines plan. Although it is not a professional naval architect's drawing, it contains all the information required for any modeller to reproduce the vessel accurately and without difficulty.

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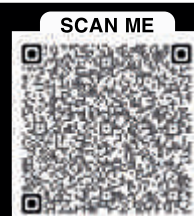
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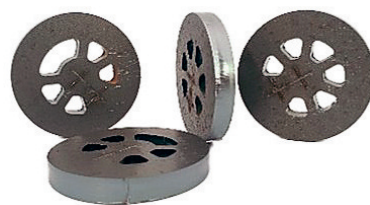
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SS Hjejlen caught on camera by Tomasz in Silkeborg.

Please, Mr. Postman...

Does Billing Boats' newly improved 1:33 scale kit for the world's oldest coal-burning paddle steamer still in operation deliver? Our correspondent **Tomasz Klyszynski** reports back on his build

During a visit to Denmark, I couldn't miss the opportunity to visit Silkeborg. This is where SS Hjejlen is moored – the world's oldest, still in operation coal-fired paddle steamer, and she's still powered by her original steam engine dating from 1861.

The Hjejleselskabet fleet currently consists of nine vessels operating on the lakes around Silkeborg. All the vessels in the fleet are named after birds. One of them is Hjejlen, which translates as Golden Plover – and an image of this bird also decorates the bow of the vessel. Hjejlen still sails under the flag of the Danish postal service. Does she still carry mail? I was unable to confirm that. Today, the flag appears to be more of a tribute to history and tradition than an indication of an active postal role.

Every August, a regatta of historic ships

"These may be small details, but they make the finished model look so much more authentic"



Tomasz's kit received and unwrapped.

is held in Silkeborg, while throughout the summer it's possible to take a cruise aboard all the vessels in the fleet.

What's new?

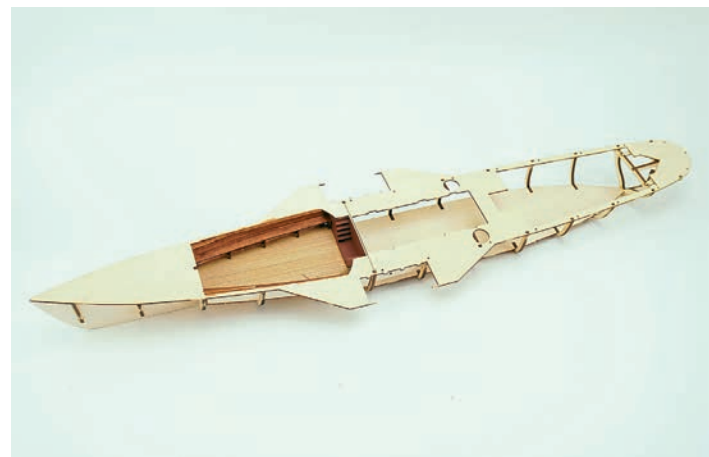
After seeing the real *Hjejlen* for myself, Billing Boats newly updated kit for this vessel obviously appealed. I cannot say exactly when the first version was released – the oldest instruction booklet I've encountered dates from around 1980. Having examined one of these older kits, though, the recent improvements are very noticeable.

Today, the kit includes laser-cut parts, a large number of brass components, and various strips and plastic parts. Indeed, the wealth of added detail becomes clear as soon as the box is opened. I particularly liked the bow ornament depicting the Golden Plover mentioned earlier; it's a very faithful representation of that featured on the full-sized vessel herself.

The impressive grating also deserves praise, with every individual opening precisely cut. Likewise, the 3D-printed components, once painted, look excellent and are every bit as good as detail parts produced using more traditional methods.



The original Golden Plover bow ornament.



The framework with the decks fitted.

"The micro motors now available will have no difficulty driving the paddle wheels"

Another very welcome addition is the set of stickers indicating the locations of lifejackets and other items of equipment. These may be small details, but they make the finished model look so much more authentic.

For comparison purposes, I've included a photo of the real vessel's bow ornament and a photo of the brass version supplied in the kit (along with various other components), which looks so good that it almost seems a shame to paint it!

The building instructions have been prepared to Billing Boats new standard. The large number of colour photographs not only makes assembly easier but also allows you to see from the very beginning what the finished part and its colour scheme should look like.

The first consideration to address

Before starting construction, it's worth making one important decision – will the model be displayed on a shelf or will it be launched on the water?

The manufacturer has allowed for the R/C option, and there's enough space inside the hull to install all the necessary equipment. The micro motors now available will have no difficulty driving the paddle wheels.

In my case, the choice was simple – *Hjejlen* would sail. For this reason, I gathered all the R/C equipment before closing up the hull.

Getting stuck in

Once all the decisions have been made, it is finally time to reach for the glue.

The framework and decks fit together very well, so the first stage of construction proceeds quickly and without surprises. There is quite a lot of space inside, although it should be remembered that the model is relatively narrow and shallow. The greatest challenge is at the stern, where the space available for the rudder mechanism is very limited. It's therefore worth choosing the size of the servo and the connecting components carefully.

To drive the paddle wheels, I used a small motor with an integral gearbox and two output shafts. These motors can be found on a popular online marketplace beginning with the letter 'A'. Unfortunately, I've not seen



The metal components supplied in the kit, including the bow ornament (centre).



The drive motor used by Tomasz.

"It's worth painting the areas behind the paddle wheels in advance, as access will become difficult once the wheels have been installed"

them offered by model shops, so I'm unable to recommend a particular manufacturer or model.

The remaining equipment consisted of an ESC with an integrated receiver to save space and weight, a micro servo and a 7.4V battery from a 1:12 scale car.

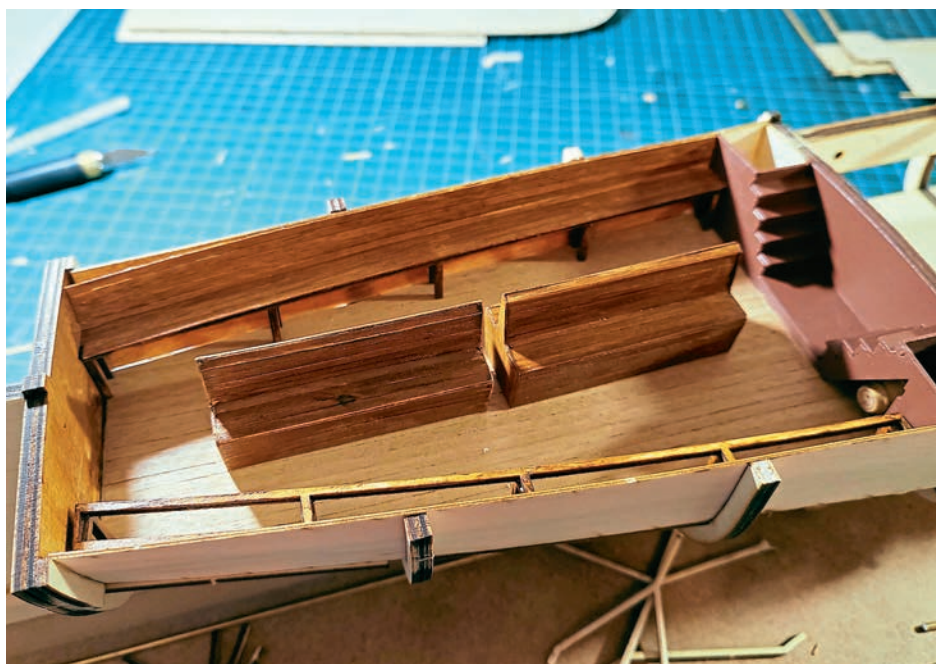
While I waited for some other R/C components ordered to arrive, the structure of the forward cabin was also assembled. At a later stage, it would be enclosed with windows.

With all the necessary R/C components gathered, work could resume on the model itself, and the hull could gradually be closed with the planking strips supplied in the kit. After gently smoothing the surface, filling and sanding until a satisfactory finish had been achieved, the waterline could be marked and the hull painted.

I used a brush and acrylic paints, which would later be protected with additional coats of varnish. It's worth painting the areas behind the paddle wheels in advance, as access will become difficult once the wheels have been installed.

The paddle wheels should also be reinforced with cyanoacrylate adhesive and, after painting, protected with varnish against moisture. The hull can easily be wiped dry after sailing, but the enclosed paddle wheels will be much more difficult to dry properly.

After completing the hull, fitting the deck planking and finishing the glazed



The front cabin assembly.

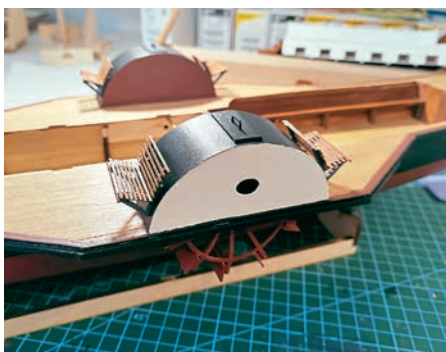
forward cabin, it was time to install the paddle wheels and motor.

I had seen in photographs of the real Hjejlen that some of the shaft components in the boiler room were painted red and gold. To bring the model a little closer to the original, I decided to do something similar by painting the couplings.

Once the motor and paddle wheels had been installed, they had to be enclosed. The entire housing consists of three components, one of which is a very flexible piece of 1mm plywood that conforms perfectly to the required shape.



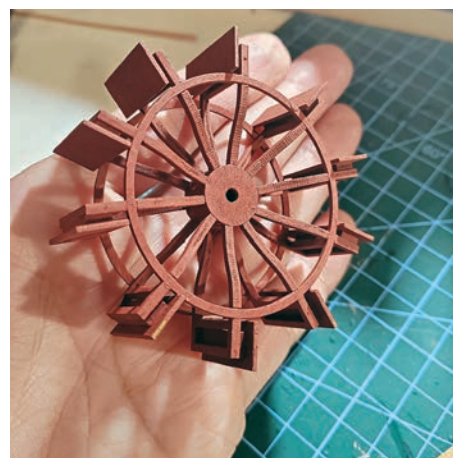
The hull finished in the colours carried by the full-sized Hjejlen.



The enclosed paddle wheels.

With the hull prepared, it was time to build the wheelhouse. As intended by the manufacturer, this provides access for servicing. It's important to remember, however, that the roof above the wheelhouse extends all the way to the stern of the vessel.

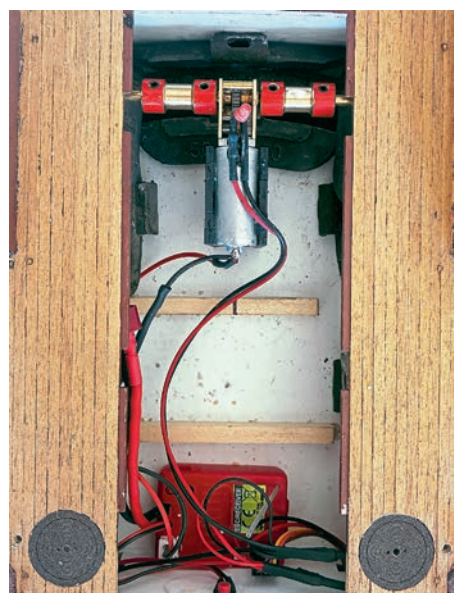
The wheelhouse structure, with two benches and a 'coffin' between them, is worth spending some time on. At the



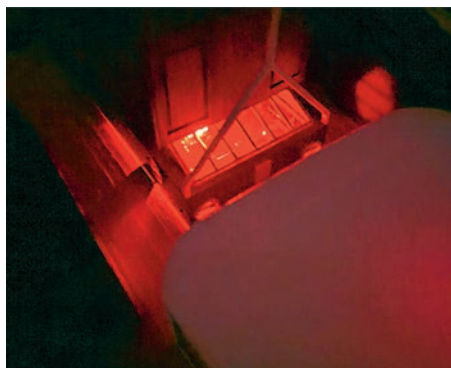
One of Hjejlen's paddle wheels.



The base of the wheelhouse.



The motor and ESC with receiver.



The red light in the boiler room.



The wheelhouse with its ventilators.



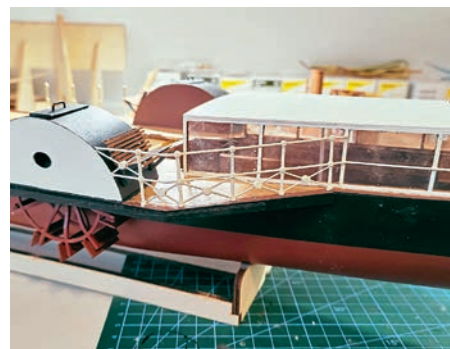
Benches on the passenger cabin.



Cabins in position.



The lifejacket stickers applied to benches.



The railings in situ.

“At the front is a skylight through which the boiler room can be seen. I fitted a small red LED above the motor to create a little atmosphere behind the small windows”

front is a skylight through which the boiler room can be seen. I fitted a small red LED above the motor to create a little atmosphere behind the small windows.

The wheelhouse itself is a single-person wooden structure. Behind it are two ventilators and the main funnel. The funnels supplied in the kit are made from brass and create a truly impressive effect. I considered leaving them in their natural golden finish, but common sense prevailed this time, and *Hjejlen* received the original colour scheme that I had seen in Silkeborg.

Once the funnels have been installed, the complete wheelhouse is quite heavy. This must be taken into account when levelling the model with ballast on the water.

With the wheelhouse complete, it was time to move on to the passenger cabin. This is partly concealed beneath the main deck in the stern section. On the real *Hjejlen*, there are small windows that reveal very little from the outside, but inside there is a magical display of luxury in fuchsia-coloured velour. Or perhaps it is pink. Or red. To discover the exact name

of the colour, ask a woman. A man recognises only three colours – nice, ugly and...

To see the interior, however, I invite you to search online. You will not find it in my model. The cabin itself

is also removable and built around a framework, so anyone wishing to add the interior can do so.

On the roof of the cabin sits the previously mentioned grating, together with the benches, and as a modeller there's a great deal of satisfaction to be had in just how closely they capture the those on the real boat.

Once the whole structure had been built, it was time to test-fit it on the model. If you intend to create interior cabin interior detail, the structure can



Test-fitting the roof to the model.



The colourful relief decorations added to Hjejlen.

be left loose to allow access. If not, it can be glued in place, which will make life easier later.

The previously mentioned lifejacket stickers create a very convincing sense of realism. When a model includes such fine details, all that is missing are a few figures to bring it to life, especially when it is sailing on the water!

With the cabins installed, it was time to add the railings and enclose the forward passenger area, which is used during cruises on the lakes around Silkeborg.

The thin wooden frames of the window sections on the real boat are glazed. In this case, that 'glass' is made from approximately 0.5mm transparent sheet, sandwiched between the two-sided wooden frames. Assembly is simple enough and on completion the structure is very rigid. It's worth using an adhesive intended for transparent components, as any excess that escapes from the joints will not leave such a serious blemish. Remember to paint the



Hjejlen in her natural environment on the lake.



wooden parts before joining the layers. Finally, before closing the cabin with the roof, clean the windows from the inside.

The railings involve several straightforward stages and several others that require patience. There is a great deal of bending and trimming to be done, followed by the installation of the decorative elements – two rods with a ring between them.

Before installing the railings in the central section, it's advisable to test-fit the roofs, especially if they are to remain removable. This makes it easier to align everything, drill the appropriate holes and adjust the components.

The final touch after completing the railings is the addition of the relief decorations on the paddle-wheel housings. At 1:33 scale, they are not very large and require a very fine brush if the colour scheme of the original is to be reproduced. Fortunately, the design and printing method make the task easier, and the finished effect can look extremely convincing.

Over to you...

Is this a project I can recommend? Absolutely! And sailing around on the lake she looks truly spectacular! I wish you many similar moments of joy. Fortunately, model making often provides them – alongside frustration, the urge to destroy something and the use of some very colourful language! ●





Scaling up Veron's Skid-Boat

Ashley Needham and his pal, Trevor, take on a tricky tandem build challenge

While clearing out some of my model boat magazine collection, I chanced upon an article on Veron boats, and in the bottom corner of one of the reprinted period adverts was a small speedboat, or as Veron called it, the Skid-Boat. I showed it to my mate Trevor at one of our discussions, oddly just as we were debating the thorny question of putting figures on model boats. Even in the tiny image we were looking at it was obvious that the glow or diesel type engine in the boat's centre in effect replaced the driver, which appealed to us both. To cut a long story short, a copy of the original

plan as included in the Veron kit was sourced from Colin Smith (the son of Phil Smith, Veron's chief designer), who has plans of virtually all the Veron craft, and a two-boat build was agreed on.

The 39 steps

The Skid-Boat was advertised in 1955 as a semi-kit, that is to say, the solid balsa hull, 14-inches long, was shaped on a spindle moulder, and wedges and other bits of balsa were included to be stuck on and sanded as per the plan – the box art showing you what the craft was supposed to look like (see **intro image**). We could put modern radio stuff in a boat this size, but experience

has taught us that bigger is usually better, so Colin supplied me with a 50% larger print, giving 21 inches by 7½ inches for length/width, a much more robust and weather tolerant size.

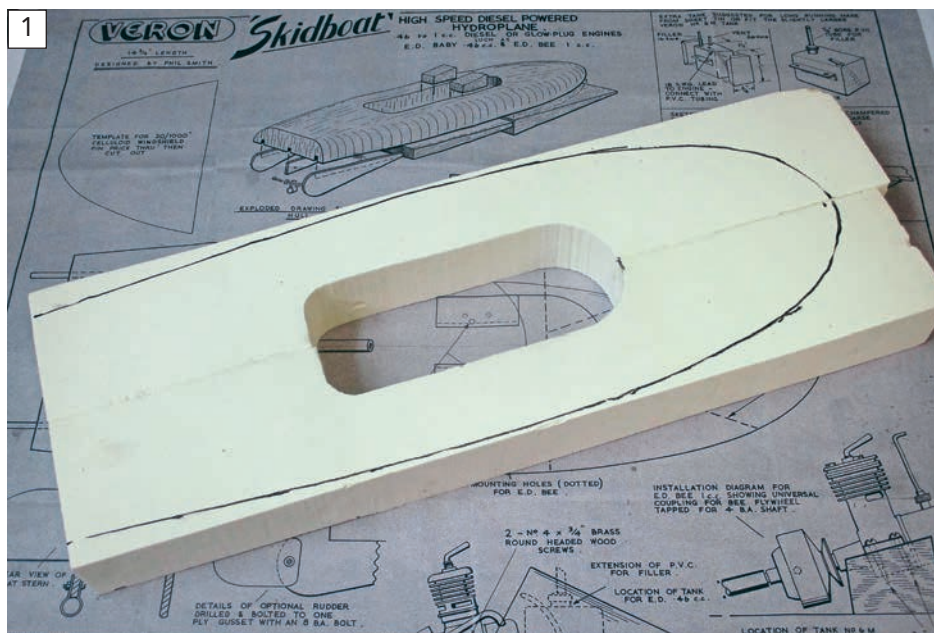
We had decided we'd each come at the build using different approaches, but the hull size and overall shape of our boats would be the same – game on! I was going to go with glass fibre covered foam for my build, while Trevor would be using balsa, although not solid but built up.

My first stop on this journey, therefore, was a walk to a skip down the road to recover some builders' insulation foam blocks. As a modelling



“We had decided we’d each come at the build using different approaches, but the hull size and overall shape of our boats would be the same – game on!”

material, while being very soft, with little mechanical strength, this foam does cut and sand very easily and once covered in fibreglass would do the job. So, two strips were cut to a size just over the required 21 x 7 ½ inches, and a template of the centre engine space was drawn up and used to mark the shape on the pushed together halves, whereupon a bit of bandsaw work removed the centre bits. Foaming Gorilla glue was then applied to join the halves together, with very heavy weights used to hold both pieces of foam down flat on the bench and keep them aligned while the glue cured (see **Photo 1**). Once dry, tracing paper was used to copy the plan outline, and this was transferred to the foam block, which was presented to the bandsaw once more. Finally, various grades of sandpaper were used to shape the



outside, while a drainpipe wrapped in sandpaper was used sand the inner cut-out, keeping the sides vertical and evenly round.

Trevor’s hull was made up in more or less the same way, but using various size balsa blocks, mainly 12mm for the sides and 5mm sheet for the top.

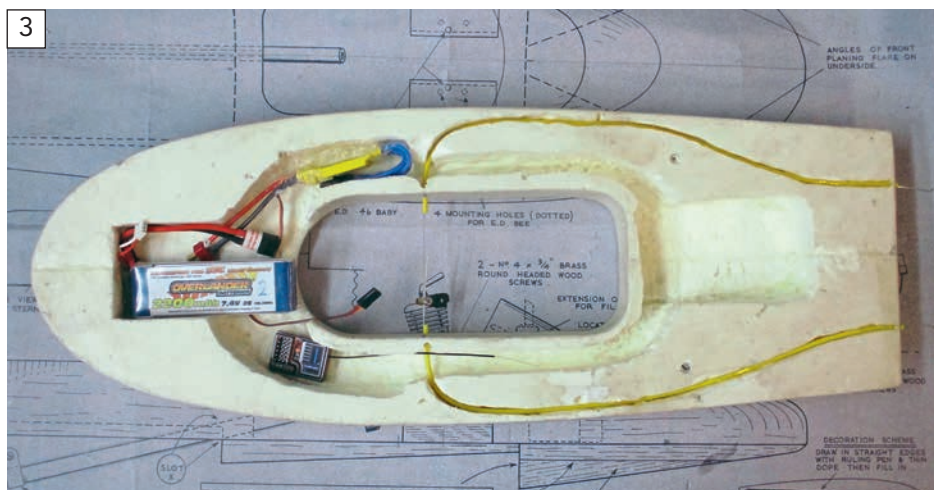
Photo 2 shows both hulls once shaped.

After sanding, my foam hull shape was covered in fine glass fibre woven sheet and epoxy resin, while the inside hole and underneath were treated to a brush coat of resin to stiffen them up a bit – otherwise, being so soft, the foam would have succumbed to finger marks, etc, while I was carrying out other work on the hull.

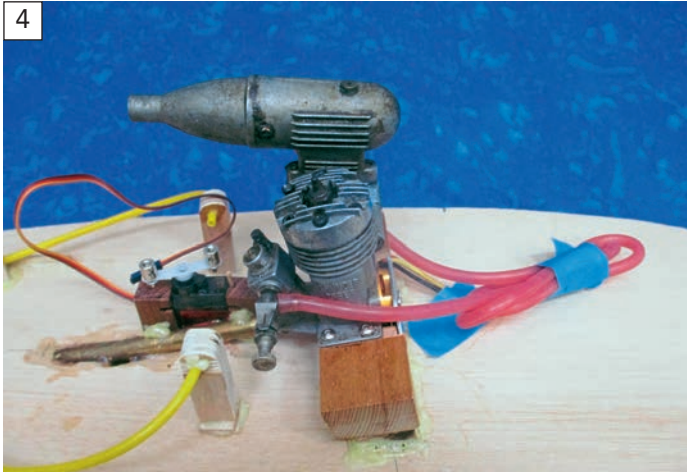
Once I had a hull to look at, it was time to decide on the internal layout. A rectangular box was cut out under the nose for the battery, but this left precious little room for the ESC and receiver. There was an amount of room at the sides though, and, although I needed the side walls of the engine bay to be in place for authenticity, I was



able to hollow out the foam behind them. The side walls were then duly reinforced with more epoxy resin and side pockets were hacked from inside the side walls (see **Photo 3**).



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I don't have any pictures of Trevor's hull, but I can tell you it was made from blocks and 1/2-inch balsa sheet, so it is basically hollow, and oddly enough after a bit of shaping, it started to look like mine, or the plan, I should say.

The internals

As the original was a kit, the propeller shaft had to be fixed in position as per the drawing. Because I'd be using a u/j coupling between the motor and shaft, however, I needed a slightly shorter shaft than that shown. My 'flywheel' (brushless motor, a 28mm outrunner) would sit as illustrated on the plan; so, once I'd sorted out its position and allowed for a coupling, I ordered an 8-inch shaft. My dummy motor would sit in front of the brushless, essentially on a dummy hollow wooden mount, and this is where the rudder servo would fit, hidden underneath but still allowing room for the battery to be slid into place in the bow. Slots in the foam were cut to accommodate the plastic snake tubes that the rudder operating wires would go through (again, see **Photo 3**).

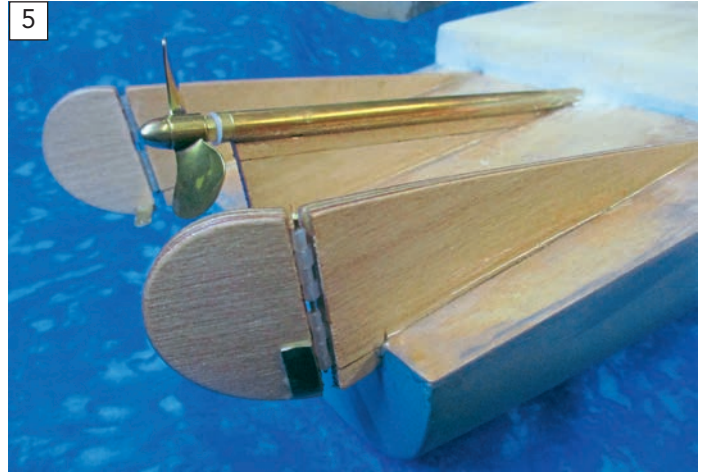
Trevor had it easy here as he was leaving his hull top hollow, and he could attach motor mounts and so on very easily to a base before gluing both parts together (see **Photo 4**).

Rudders

Our rudders followed the same shape as the original's (don't forget, these were fixed skegs on the original, presumably to assist in straight running) but had to protrude a bit further from the stern to accommodate the throw of the servo operating arms. Actual rudder construction consisted of two long triangles in 1.5mm ply glued together, with nylon pin hinges sandwiched in at the end, and then semi-circular rudder tabs made similarly.

I used thin 1mm brass wire for the hinge pivots, inserted at all stages to ensure the hinges worked properly (see **Photo 5**).

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Once the epoxy was fully set, brass rudder arms were made and epoxied in place on the outside of the rudders.

Trevor opted to use Mylar film for his rudder hinges and incorporated the brass arms into the sandwich. As the Mylar was much thinner than my plastic tabs, he had some space for the brass within the ply sandwich.

Once all this had been done, I could offer the base up to the hull, hold the rudders in place and finally mark the servo wire exit holes, which could then be drilled into the foam. Following this, slots were carved into the foam so the plastic tubes could be held in place, guiding the 0.8mm stainless steel welding wire actuating rods, and at the same time voids were cut to house the ESC and receiver. I still didn't know where my battery was going to go, but there were basically only two choices, front or back! So, a space was carved out behind the rear well wall (but not piercing it), and power wire runs front to back were channelled in to suit, just in case.

Trevor had no trouble finding room for his snake runs, the plastic snake tubes being held in place by small wood pillars, and he used the proper

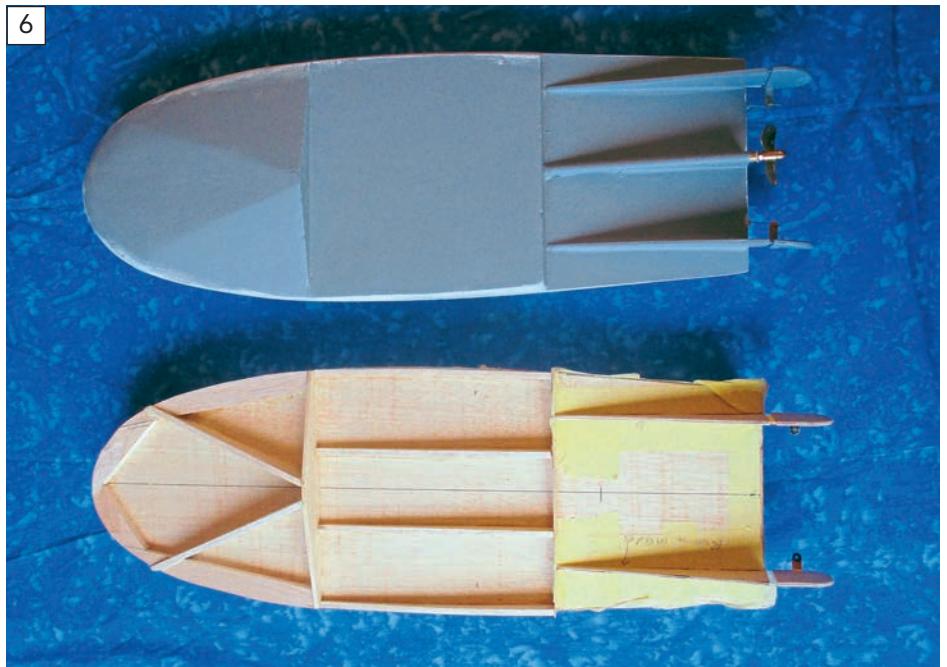
nylon cable inner with ball joints at the ends (again, see **Photo 4**).

Next, my base was glued in place with foaming Gorilla glue and was then sanded to blend into the hull sides. The whole top was smeared with P38 car body filler to even out all the (small) lumps and dips left in the hull and then furiously sanded smooth with wet'n'dry paper. Liquid filler in the form of Rustins' grey undercoat was used several times to fill pin holes and so on, both underneath and on top. Finally, the whole thing was painted in Rustins' white undercoat pending the final colour.

One step beyond

There are two planing steps underneath my model. At the bow, the larger wedge was shaped by sanding the sides to match the hull edge into a 'V' profile, while the rear was sanded uniformly flat. This was all undertaken slowly and cautiously due to the softness of the foam. Sheets of 1-inch thick for the front one and 1/2-inch for the rear were cut on the bandsaw and then trimmed to size before, very carefully, being sanded to the appropriate wedge profile. A 5mm

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thickness of Styrofoam was added underneath and the planing steps were glued into place on top of this, whereupon the whole lot was sanded to the hull profile. Finally, I marked the position of the side chamfers (front step only) and carefully sanded to suit. More epoxy resin was used to cover the wedges and stiffen them, but, to be honest, it looks a bit of a mess. I've found you need to harden the builders' foam with Eze-Kote before painting with resin, as otherwise the gloopiness of the epoxy resin will pick up dust and form crumbs or even tear the thinner bits of foam. But as all this would be out of sight on the underside, I knew that once painted it would look OK. On top, the much thicker glass/epoxy layers allowed for more aggressive sanding and filling, which produced a smooth but not quite perfect finish.

Once again, Trevor got away more lightly with his top. Balsa is far harder than foam and so easier to shape (without recourse to too much filling) and, also, internally his top was essentially hollow, so there was no carving work required. Trevor's bottom, not yet skinned, can be seen in **Photo 6**. He used a different control line run so didn't need the sort of internal support I had to give my plastic tubes. Underneath, his planing wedges are hollow and skinned with 1.5mm ply, making them nice and crisp and very strong. I did consider using a 0.8mm ply skin but though blending in the edges with the foam would most likely prove difficult.

My rudder wedges and propshaft skeg were glued into place with epoxy.

Inside jobs

My 8-inch propshaft was then fixed into position, also with epoxy glue, on its external skeg, with a few blobs of glue securing the shaft inside to the ply base. I cut a wedge of beech wood and, having fixed the coupling in place, offered the motor, a 28mm diameter brushless outrunner of 1400Kv, up

"Would it steer, I wondered, bearing in mind the original was a straight runner..."

to it, adjusting the wedge until the motor lined up nicely. Following this, everything was marked up and cut to size. The coupling was formed using a pair of brass ends joined by thick grey silicone tubing, so doesn't look too out of place period wise.

A mount for the steering servo was fabricated and stuck in place, ensuring the arm lined up OK with the rudder wires, as adjustment could prove tricky later on. An absolutely fabulous Raboesh skewed two-blade prop (see **Photo 7**) of 45mm diameter was specially purchased, and it looks the business! Time will tell how well it performs.

On the water

It was then off to the pond with my unfinished boat (still only sporting primer and with no dummy engine) to see what was what. Some lead was added to simulate the engine before I plopped the boat in the water for a quick run. Would it steer, I wondered, bearing in mind the original was a straight runner...

Well, right from the off, the nose buried itself in the water. I took the 70gm of dummy engine ballast out and tried again. This time the nose just about rose above the water, but the boat suffered from rampant cavitation and, although it motored along OK slowly, as soon as any meaningful throttle was applied it bubbled horribly. Various sizes of two-blade prop were tried, to no avail. 100gm of lead was tried at the stern, also to no avail.

Steering was another issue, as the turning circle was very large. In this instance, though, a nice period fix was available, as the plan said you could make a rudder extension and bolt it to the rudder (only one mentioned



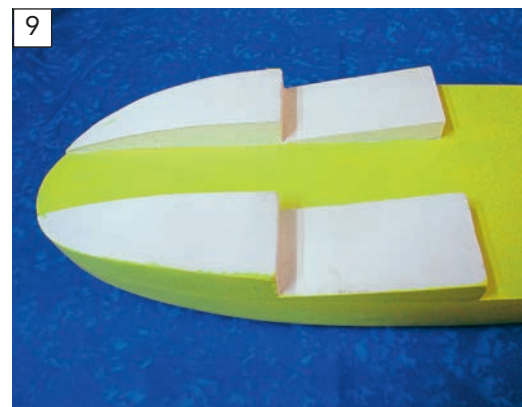
with an 8ba nut and bolt. Likely this was to help cure any tendency to veer off to one side due to the prop torque effect, once again bearing in mind it's a straight runner. So, I cut two rudder extensions in thin aluminium alloy sheet and bolted them to the rudders with 2mm nuts and bolts, extending the rudder length by about 70% (see **Photo 8**), and on subsequent tests these have worked very well, halving the original wide turning circle.

What to do?

Loads of fixes were tried – different underwater shapes, ballast, etc and I sort of came to the conclusion that our boats weren't going to work as per the drawing. Obviously, the original did work, but having scaled the design up and altered the weight to volume figure, now it wouldn't. So, what to do, bearing in mind we needed to keep our builds looking something like the boat seen in Veron's original box art?

Eventually, I re-engined mine with a 2200Kv outrunner for more power to offset the continuing cavitation and bought a shorter propshaft to move the prop under the stern, and I finally settled on a sort of 'tunnel' hull shape underneath (see **Photo 9**).

Trevor, who'd opted for a faster 2200Kv motor to begin with, similarly moved his prop forward but retained his boat's original underwater shape.



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Moving on...

Now that the testing on my boat was complete, Trevor could get on with his one. As his top is a separate unit, he worked on the plain 1.5mm ply floor, glueing in the propshaft and engine mounts and sorting out the servo position before sticking the ready-shaped top in place. Trevor found (as you do!) a Thunder Tiger 20 glow engine in his shed, which, when propped up in the cabin, looked really good and of about the right size for our larger boats. Once gutted of crank and piston, and relieved of the lower half of the crank case, it was remarkably light at about 100gm. This sits on top of his 2200Kv 28mm brushless motor (again, see **Photo 4**). He also fitted an exhaust muffler, as he had three (why?!) in the shed and liked the look of it.

The fake engines in both boats are readily detachable. Trevor's is on plug in dowels while mine screws onto two motor mounts as per the original plan – these being trapezoidal shapes, the top slope mirroring the propshaft. A cover fits over my servo, hiding it from view, and my fake fuel tank, a bit of wood covered in aluminium foil tape, attaches to this with a magnet. When removed, it provides access to slot the 2s 2200mAh LiPo in its hidey-hole. Trevor has side access all round, so his battery slides in rearwards.

Finishing off

I like to think that most of the originals built in the '50s, and I always wonder how many were built, would have been finished using some household paint (Valspar, perhaps) from the garage. I wanted my model to tie in with Veron's box art. As there were only three colours used for the printing, black, yellow and blue (on white cardboard), Veron illustrated the boat in yellow. So, a tin of Rustins' acrylic quick-drying Buttercup Yellow was purchased for the body, with

a navy-blue top flash applied (see **Photo 10**). Trevor went with the blue and black (see **Photo 11**).

Faking it

It was now time to design and make my fake diesel engine, the highlight of the build! The drawing illustrates two sizes, one of 0.46cc and another of 1cc. The larger was chosen as a guide, this having a cooling fin diameter of about 34mm.

Plastic tube and fibre washers served well for this, with a couple of flanges to screw it to the mount (see **Photo 12**). My fake flywheel brushless motor lined up beautifully with the end of the engine and looks pretty good (see **Photo 13**).

No such shenanigans for Trevor; his motor looks very realistic and is similarly screwed to demountable wooden mounts.

Windscreen

Having been deliberately left until last, it was time to tackle the windscreen. Following the template provided, I cut this out from 3mm Perspex and coaxed it into shape with a hot air gun and a 4-inch cardboard tube. "Nice job", I thought, but when offered up to the boat it became obvious the template gave the wrong shape; it needed to be more of a cone with a round front, as the sides didn't evenly on the bow. So, 'an amount' of

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"Model aircraft engines of the type proposed for the Skid-Boat were not fitted with silencers and would have made quite a racket.

So, having made reasonable replicas of the Skid-Boat, we realised that the one thing missing was the noise of the exhaust. I, however, had a cunning plan!"

trimming ensued before it sat properly on the nose.

Trevor elected for a solid colour windscreen in a hard plastic.

In the margins of the original plan, a note specified that the windscreen needed to be cut from acetate sheet. But quite how, in an era before quick-drying superglue type products, you were supposed to bend it to shape, hold it in place and then glue it on remains a mystery to me.

That raw roar!

Model aircraft engines of the type proposed for the Skid-Boat were not fitted with silencers and would have made quite a racket. Having made reasonable replicas of the Skid-Boat, we realised that the one thing missing was the noise of the exhaust. I, however, had a cunning plan! This involved a 'clacker'; basically, an Allen headed set screw has been

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Ashley and Trevor's scaled up Skid-Boats out on the water.

‘Obviously, Veron’s boat worked as advertised. Simply scaling it up clearly doesn’t’

substituted for one of the propshaft coupler grub screws and a finger of thin brass sheet has been secured to a block of wood in the boat, the end of which just touches the head of the screw (see the bottom right-hand corner of **Photo 13**). OK, doesn’t produce quite the right noise, but it’s a noise nonetheless, and it makes us all larf big time when we see the boat whizzing round with its ‘glow’ engine working hard.

Period hydroplane or Frankenboat?

I shudder to think that the originals were fired up, their props whirring

away at 12,000 rpm, and then chucked into the pond to zoom all the way across at high speed to either be caught by someone or smash into the far bank and disintegrate.

The deviation from plan in both boats amounts to the repositioned prop, while the improvement to mine is the tunnel hull. The 230gm of lead ballast has corrected the very light

weight of these larger size boats. Is it possible that a cruder style of propeller would work in the original ‘sticking out the back’ position? We will never know!

So how does it go, mister?

As built, both boats are fast, handle very well over rougher water and are manoeuvrable enough with the rudder extensions, especially considering they were designed as straight runners. It has to be said that although (for reasons we cannot fathom) Trevor’s boat works with approximately the plan underwater shape, it doesn’t go as well as the tunnel shape on mine. His prop continually gurgles with cavitation, leaving a large aeriated wake on the centreline, and limits his top speed.

On my boat there were some issues with water sliding up the hull, especially on a turn, so a long spray rail, as seen in some of the photos, was fitted, along with screen side extensions.

Both boats suffer from the horribly blunt bow and starting requires a sudden burst of throttle to lift it smartly.

Obviously, Veron’s boat worked as advertised. Simply scaling it up clearly doesn’t. The mass/size/geometry and different power/weight ratios mess too much with the original design. However, I think we both made a fair stab at it! ●

Will it fit in your duffel-bag?

Dimensions (Trevor’s in brackets where there is a difference)

- Overall length including rudders (but not rudder extensions): 23 inches
- Width: 7½ inches
- Weight overall, no battery: 1128gm (1200 gm)
- Running gear: Cheap 28mm outrunner, 2200Kv rated at about 160 Watts 30A ESC
2s LiPo 2200mAh (1800mAh)



Brass *Eskimo*

Nick Brown tells the story of a very cool restoration...

Like many clubs, at Wicksteed Park MBC we are often approached by members of the public seeking help to rebuild a cherished model boat. The story behind this particular model is much the same, but with one important difference. The gentleman who brought the wrecked model to a club meeting was known to the then chairman, my dad, from their days together in the Royal Air Force, where they had both trained as airframe apprentices. My dad kindly offered to take on the project himself, and during the long two years of the Covid pandemic he devoted his time to restoring the once-magnificent brass-plated destroyer, HMS *Eskimo*.

HMS *Eskimo* was one of the Royal

Navy's famous Tribal-class destroyers, built in the years leading up to World War II. To many children of the post-war era, the Tribal class represented the classic destroyer silhouette. With their balanced arrangement of four turrets, two funnels and two masts, these ships came to define the image of a Royal Navy fleet destroyer. The Tribal class was both renowned and significant. Of the 16 ships originally built, 12 were lost in action – a poignant reminder of the vital and dangerous role they played during the war.

The model was originally built by the owner's father while serving aboard a later vessel that also bore the name HMS *Eskimo*. It was constructed from brass sheet,

cut into individual plates carefully shaped to match the contours of the hull. Forensic examination strongly suggests that the model was originally steam-powered. The turrets, torpedo launcher and anti-aircraft platform were all movable, reflecting the remarkable level of detail in its design.

The owner asked for the model to be rebuilt as a sympathetic restoration – one that would return it to practical use while preserving its history and character. The principal modification, aside from replacing the steam propulsion system, was changing the drive arrangement from a single shaft to twin shafts. This made the model easier to handle on the water and provided a useful degree of redundancy.



“To describe the remains of the Eskimo as a wreck would be an understatement. The deck had collapsed, and the superstructure was twisted badly out of shape”

The restoration begins

To describe the remains of the Eskimo as a wreck would be an understatement. The deck had collapsed, and the superstructure was twisted badly out of shape. Traces of the original paint still clung to the corroded brass plating, but Dad decided that the best course of action was to strip the old paint from the hull and superstructure, then carefully remove the sharp edges left by the collapse. He bought paint stripper and applied it to the model, a process that took a couple of weeks before the clean brass was finally exposed and ready for reconstruction.

Dad removed the old single shaft before turning to the battered hull. Drawing on the skills he had learned during his RAF days, repairing metal skin on English Electric Lightning jet fighters, he began carefully reshaping the damaged structure. Using a hide-faced hammer and a reaction block positioned behind each dent and buckle, he gradually restored the destroyer's elegant hull lines. The hull also revealed the exceptional quality of the original

modeller's work. In addition to the plated construction, it was covered with handcrafted portholes – a striking example of the care and skill that had gone into the model. The original workmanship could only be admired.

Although the brass hull was now stable and back in shape, it still needed additional support to protect it from damage during transport and sailing. Dad fitted ¼-inch hardwood along the full length of the keel and used it to create deck supports, producing a rigid internal structure strong enough to withstand regular handling and use. With the model structurally sound, Dad could fit the two propeller shafts and seal them in the hull.

With the two new propeller shafts fitted and a new rudder post in place, the model needed a new means of propulsion. The original steam plant had long since disappeared, so a simpler and more practical system was chosen for the owner to use. Our preferred solution for large models is to use car heater motors, so two suitably sized units were selected and mounted in line with the shafts. To retain full redundancy, each motor was paired with its own electronic speed controller and connected to the receiver, allowing the model to be operated in a tank-steering configuration from the transmitter.

With no original deck left to work from, Dad chose 1/16-inch birch-faced plywood for the replacement. To



Paint-stripping gel was applied to the hull over several weeks so Nick's dad could assess the overall damage and judge the model's condition more clearly. NB Always work in a well-ventilated area and use appropriate protective equipment when handling this type of solvent.



Once the old paint and the accumulated years of damage had been stripped away, the hull was brushed with wire wool to remove the remaining corrosion and debris. Nick's dad then began reinforcing the hull with wood strip.



New deck beams were fitted to help retain the brass-plated hull sides, improving the model's durability both on the lake and during transport. As you can see here, the interior was painted white to help seal the structure and make any future issues easier to spot.



In much the same way as the hull, the superstructure was treated with paint remover and carefully reshaped to restore its original form and profile. At this stage, the new deck had been fitted and covered with lithoplate to recreate the appearance of metal plating.



First sea trials. Initial primer had been applied to the hull, but she was still leaking through numerous tiny gaps in the plating. The superstructure was temporarily fitted with some of the detail parts to assess how she sat and behaved on the water.



Further water trials. It took four successive visits to Wicksteed Park Model Boat Lake over the course of a month to finally overcome the leaks.



The forward funnel and several of the turrets are shown here being painted in Light Admiralty Grey (Halfords Polar Grey). Note the bolt projecting from the funnel base, which would later provide a permanent fixing to the deck.



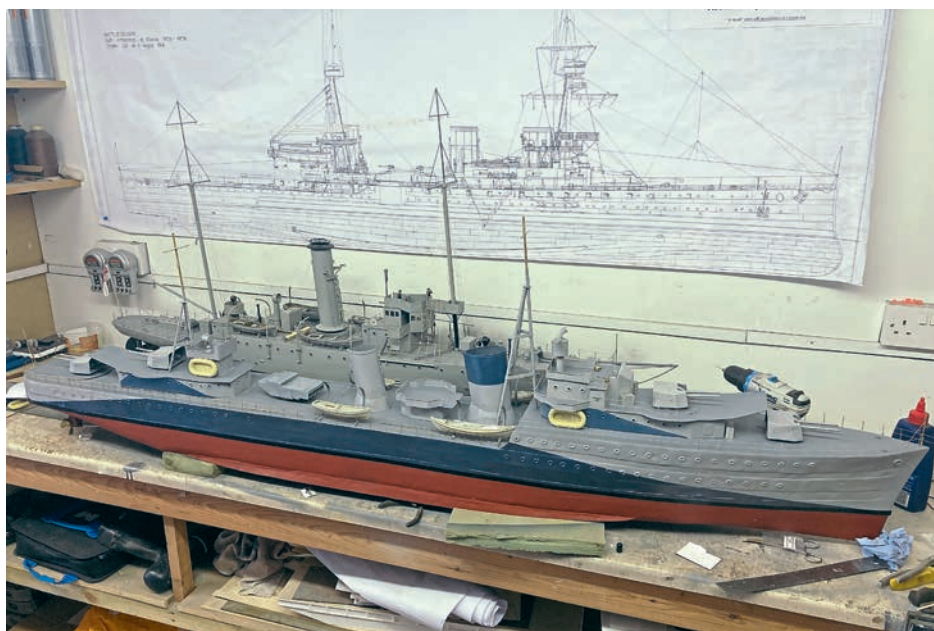
The new twin propellers and rudder are shown here in place. The original single shaft was removed to provide better redundancy in the event of a breakdown, and the propellers are beautifully cast items from Prop Shop.



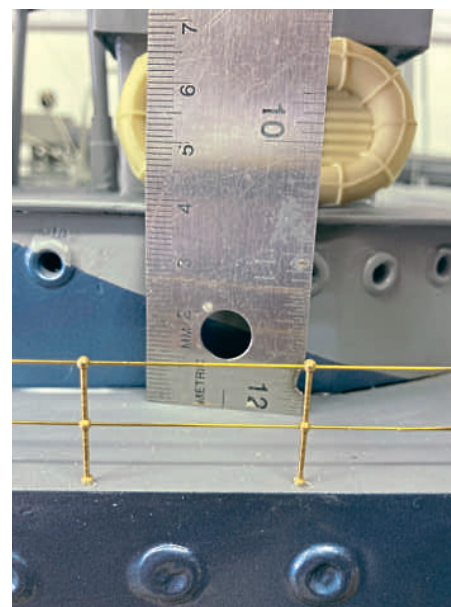
The final colour scheme being applied to the model, once again using paints from the Halfords car paint range. This scheme was carried by the original HMS Eskimo during World War II and, while not 100 per cent accurate, gives a good impression of the full-size ship.



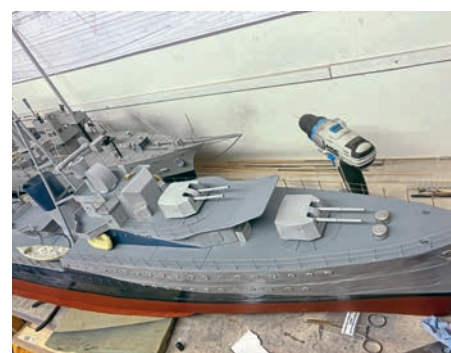
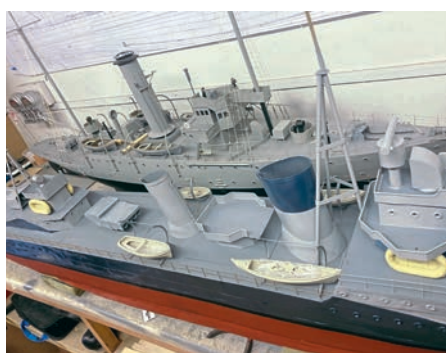
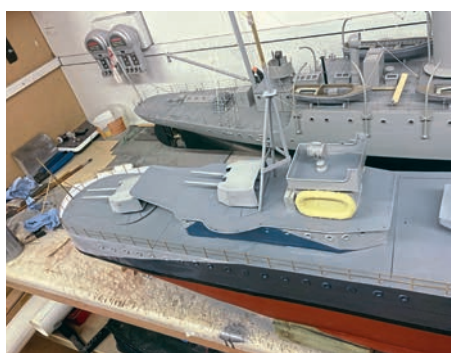
Another sea trial – just in case. Fortunately, the previous tests had already identified the main areas of concern.



Fitting out continues with the finer details – adding Carley floats and other nautical elements to bring the model to life without cluttering or overwhelming it.



At this larger scale the model looked noticeably empty without railings, so Nick's dad installed 2 ball stanchions and ran thin brass wire through them to form handrails.



Further outfitting work included the installation of ships' boats, ammunition lockers, searchlights, and additional operational fittings characteristic of warship service. The mast assemblies are shown fully constructed and finished with the same paint to match the hull scheme.

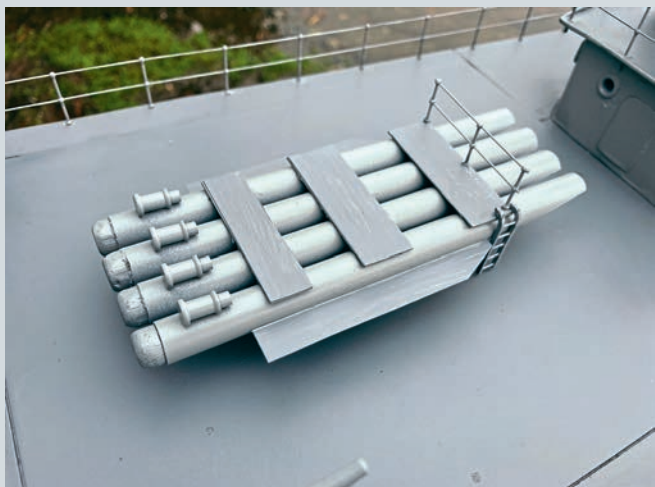


“Anyone familiar with metal-bulld models and overlapping plates will know how prone they can be to leaks, and unfortunately Eskimo was no exception”

preserve the character of the original construction, he then covered the plywood deck with lithoplate sheet, retaining the model's distinctive style. Each plate was lightly sanded to roughen the bonding surface, then permanently fixed in place using cyanoacrylate adhesive.

Rebuilding the superstructure

The superstructure sections were also made from brass sheet and had suffered years of neglect after the collapse of the deck. The two main sections – the forward bridge area and the aft gun platform – had twisted lengthwise. Using heavy weights and



The torpedo tubes, four-barrelled pom pom mount and director tower all required either complete scratch building or substantial reconstruction. The brass section in your model shop will be your best friend for projects like this.



“While there was no evidence that the model originally had handrails, she looked incomplete without them at this large scale”

tapping out the worst deformation in much the same way as he had with the hull, Dad gradually straightened them. Once he was satisfied that everything was square and true, he turned to rebuilding the bridge area. Using brass, lithoplate sheet and brass tube, he repaired and detailed the structure in the sympathetic manner requested.

The four twin 4.7-inch gun turrets were stripped of paint, cleaned, and tidied in preparation for refinishing. As with the funnels, a bolt was passed through each turret mount so that the turrets would remain securely

fitted while retaining their ability to be positioned.

Gleam on the grey hull

As both Dad and I are also classic car restorers, he used car body filler to blend rough edges and close any gaps that could not be soldered neatly. Eventually, the hull and superstructure were ready for paint, but they first needed to be primed. We generally prefer the Halfords range for our models, and for this restoration he chose an etch grey primer to protect the brass work and provide better paint adhesion.

At this stage of the restoration, we needed to see how shipshape the *Eskimo* would be before the final paintwork was applied, so a trip to our club water was in order. With batteries installed and sheets of lead added for ballast, she was towed to the lakeside

for flotation trials. Anyone familiar with metal-hulled models and overlapping plates will know how prone they can be to leaks, and unfortunately *Eskimo* was no exception. It took four visits over the course of a month to seal the hull properly and stop the steady ingress of water through the plating.

Once the hull was sealed and ready for its final paint scheme, Dad settled on an overall light Admiralty grey finish, accented with dark blue splinter camouflage across the hull and selected areas of the superstructure. He used an acrylic-based automotive spray paint with strong pigmentation and an attractive glossy finish, making the model easy to wipe down after use on the lake. The antifouling underside was sprayed in Halfords primer red, while the waterline was picked out with the same company's black primer. Finally, all the paintwork was sealed with a protective coat of lacquer.

Fitting out

Although the four twin gun turrets had survived in relatively good condition, the same could not be said for the four-barrelled pom-pom gun, torpedo tubes, and director towers. Many of these components had to be rebuilt from scratch or replaced entirely, as so little of the original material remained usable. For a time, the brass section of the local model shop became Dad's best friend, as he drew on much of its stock to recreate the torpedo tubes and pom-pom gun. The bridge director tower, like much of the model, was twisted and distorted. With patience, care, bodywork hammers, and sandbags to help preserve its circular shape, it too was restored to something close to its former glory.

The masts, at least, were comparatively simple, much like those of the original vessels. Formed from interlocking lengths of brass tube,



“On the water, the model looked superb, moving with the speed and elegance one would expect of a destroyer of that era”

they were straightforward for Dad to construct and helped recreate the elegant rake that characterised the early fleet destroyers. Their reinforcing strips, which held the tripod mast together, were also made from brass strip. Once painted, the completed masts could be fixed permanently to the deck.

Other distinctive Tribal-class features included the 0.5-inch quad machine guns mounted on the bridge wings. Dad recreated these by making four matching barrels and breeches for each mounting, then staggering them to reflect photographs of the real weapon. Although they were not a perfect scale reproduction, they suited the style of the model well, and a coat of black paint completed the effect.

The ship's boats proved much more straightforward to complete, as Dad chose to use ready-made models from

Quaycraft's 1:48 scale range of Royal Navy auxiliary craft. A 32ft cutter, a 27ft whaler, a 16ft dinghy and a 25ft motorboat were selected, and simple brass davits were made to suit each one. Although the motorboat was not quite correct for the period, Dad modified it with a simple plywood cabin to bring it closer to the appearance of the real vessel.

While there was no evidence that the model originally had handrails, she looked incomplete without them at this large scale. Dad therefore bought brass two-ball stanchions from an online supplier and fitted them at appropriate points along the hull and superstructure. The rails themselves were made from brass rod, which made it easier to bend them to follow the hull lines – though not, perhaps, any easier to paint.

Some final details came from our spares drawer in the shed. The Carley floats and signal lamps were a mixture of resin and brass items gathered from various suppliers over the years, and by the time the model was rebuilt we could no longer trace their original source.

The flag, of course, was the Royal Navy's White Ensign, bought from our favourite flag-maker, Mike Allsop.

Battle ready

It was time for *Eskimo's* maiden voyage as a fully restored model. Having already tested her during the ballast trials, we knew she was stable and performed well on her new motors and propellers. The owner was invited to the lakeside for the official handover and was delighted with her performance. As we had expected, the model was quick for her scale and manoeuvred well even with all her upperworks fitted. Given the model's weight, the lack of any noticeable list was a particularly welcome result.

On the water, the model looked superb, moving with the speed and elegance one would expect of a destroyer of that era. Reversing and coming alongside required careful planning, as the model's weight and momentum meant that, once moving, she would continue to drive forward with impressive determination.

Although we would have loved to keep the model for ourselves – it had been such an enjoyable restoration – we were pleased to hand it back to its owner, who proudly took it home to Stamford.

A few weeks later, still feeling the pull of another metal-hulled project, I found an aluminium-hulled 1:72 scale Battle-class destroyer for sale. Naturally, it found its way home with us and will no doubt become our next restoration in the near future. ●



The model was taken to Wicksteed Park for the handover, where its owner finally sailed it for the first time. As it moved across the water, he felt the same joy his father would have experienced when he first launched it decades earlier.

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Lindsey Amrani

Editor

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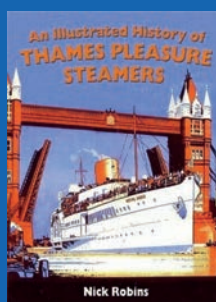
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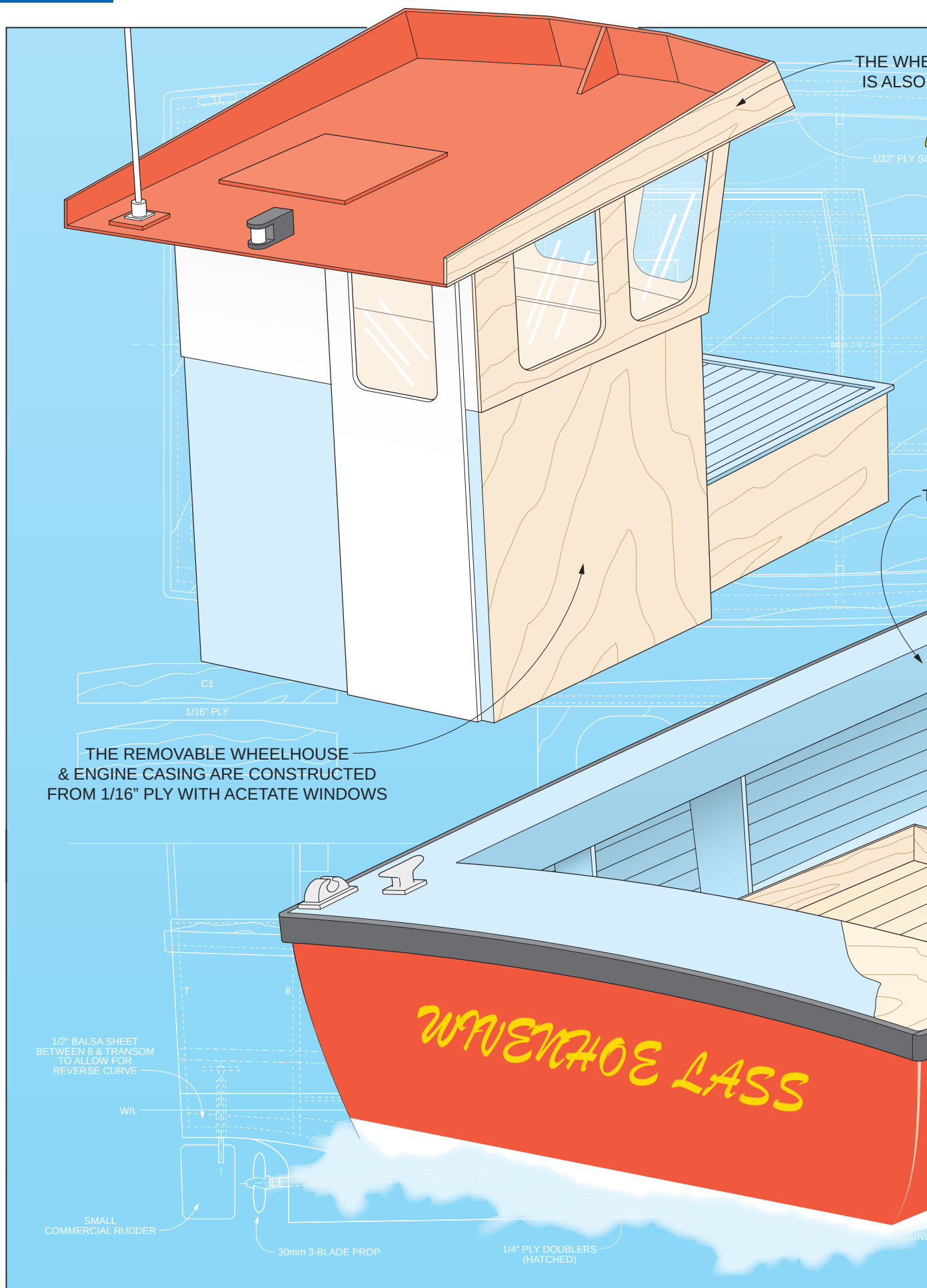


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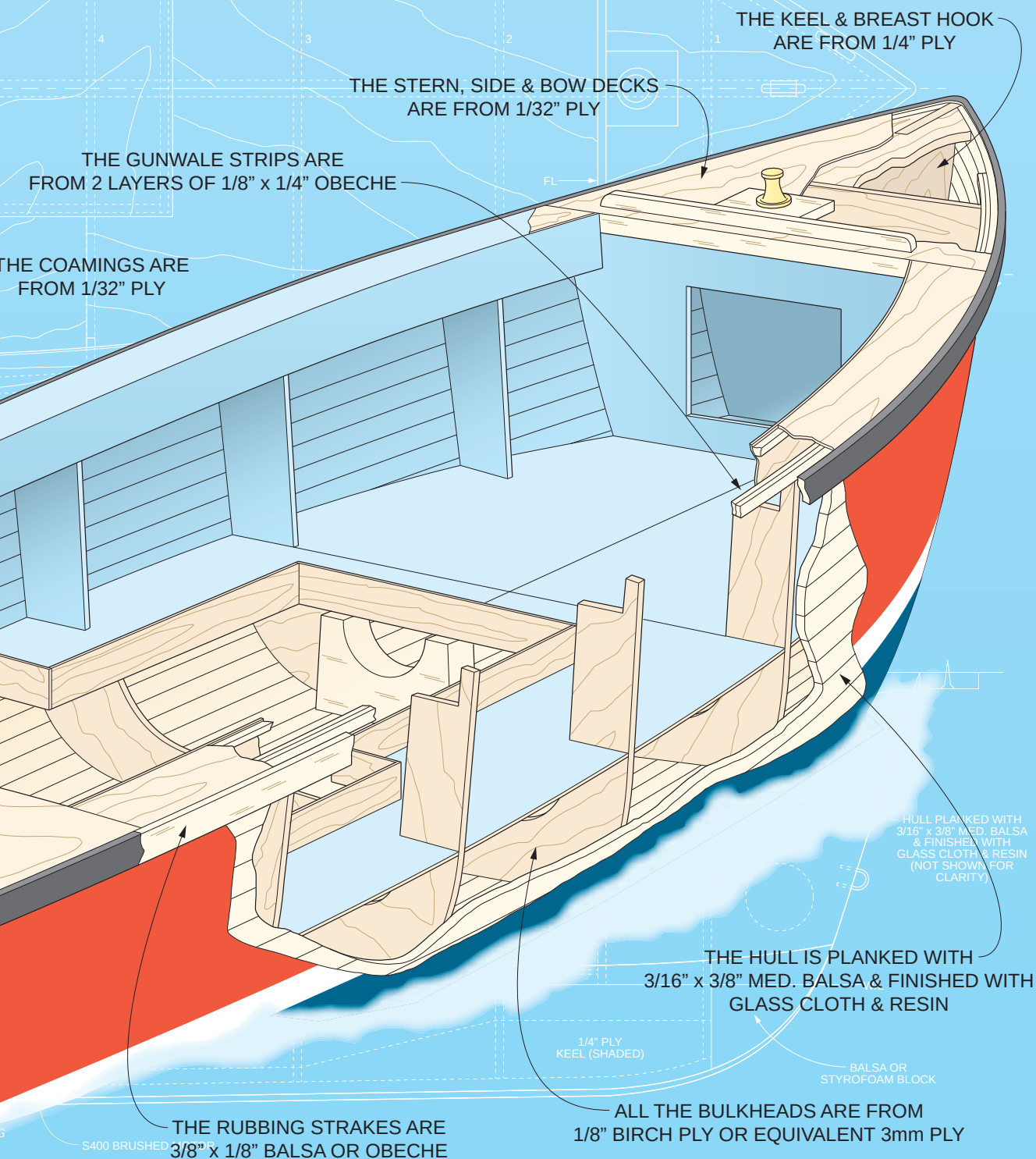
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HEELHOUSE ROOF
FROM 1/16" PLY

WAVEHOUSE CLASS

A SEMI-SCALE FISHING BOAT DESIGNED BY RAY WOOD





Wivenhoe Lass

Ray Wood provides some useful notes and visual guidance for those of you building your very own charming little fishing boat from this month's free pull-out plan

My first ever fishing boat design for *Model Boats* magazine is based on a craft I saw moored on the River Colne at Wivenhoe, Essex. The riverbank there has become one of my friend, Bernice, and I's favourite walks (usually culminating in a pub lunch!).

The design is not for a 100% scale accurate model, as my only references were some pictures I took on my phone. This, however, is not the first time I have worked from photographs. My recent Thames workboat *Invicta*

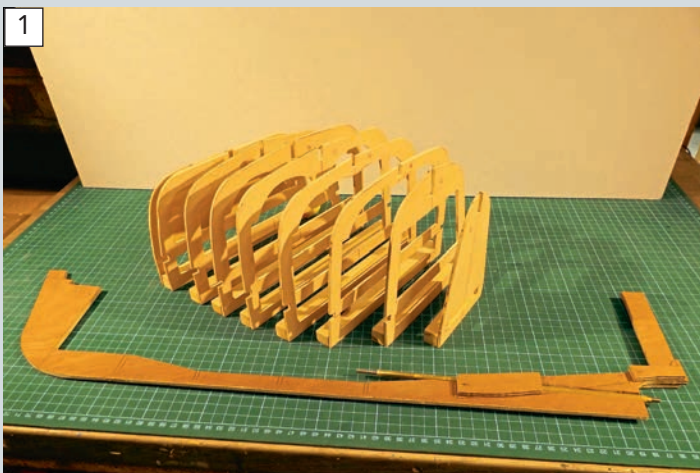
(see the May 2026 edition of *Model Boats*), and, indeed, my *MS Oldenburg* (see the January 2025 edition of *Model Boats*) were both designed in this way; the latter now exhibited at the Lundy Island Museum (owned by the Landmark Trust).

This latest design is typical of many of the small inshore craft used for line fishing and catching lobsters that can be spotted in harbours round the United Kingdom. Based on a boat with an (estimated) length of 25 feet and a beam of 10 feet, the resulting

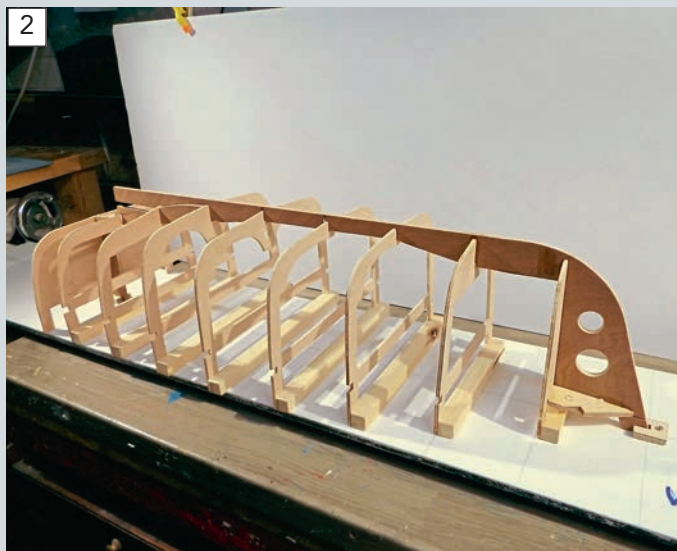
model scales to approximately 1:12. It features an engine amidships, a small wheelhouse to protect the helmsman from the elements, and an electric powered drum winch on the foredeck.

You should find it a relatively straight forward plank-on-frame build, with its plywood keel and bulkheads, balsa wood planking and lightweight glass cloth and resin coating (this protecting it from rough and tumble).

So, what follows are my notes on the various stages of construction, along with photographs for visual guidance...



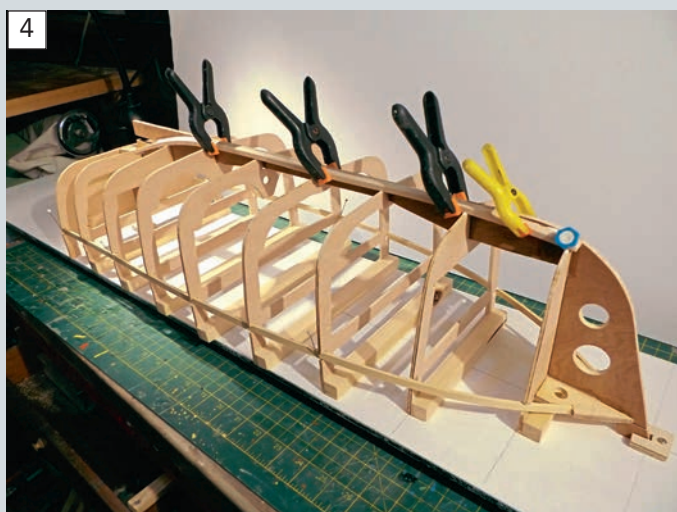
The keel needs to be traced out and cut to shape from $\frac{1}{4}$ -inch plywood with extensions to the building board. I use a length of MDF window board as a solid base. So, too, do the bulkheads; these, however, must be cut from $\frac{1}{8}$ inch ply, and then glued to $\frac{1}{2}$ -inch x $\frac{1}{2}$ -inch softwood cross beams. The cross beams must be mounted on the building board centre line and can be screwed to the board, although I find a PVA wood glue works just fine. The keel and rudder positions require $\frac{1}{4}$ -inch ply doublers, and fitting the stern tube at this stage is advisable.



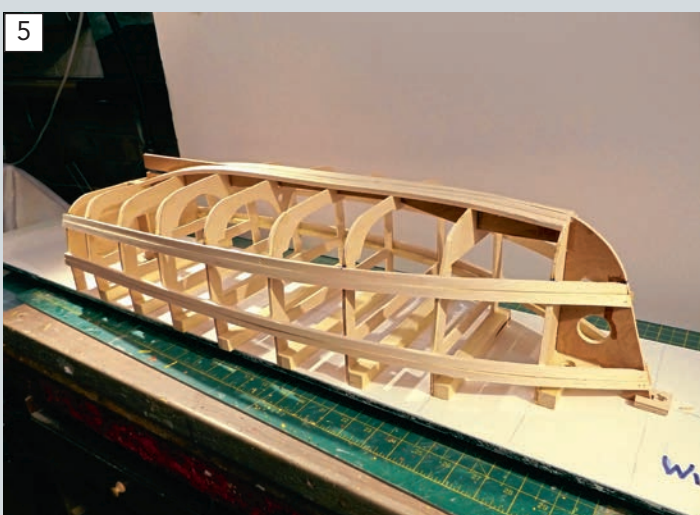
This shot shows the keel and bulkhead assembly viewed from the bow. The lightening holes cut in the plywood are a hangover from my aeromodelling activities and are not strictly required on a boat.



The same assembly viewed from the stern. At this point, you will need to chamfer the bulkheads to receive the planking and check the notches you've made in the bulkheads for the gun whale stringers are in the right positions; should any slight adjustments be required you can do so with a length of $\frac{1}{4}$ -inch x $\frac{1}{8}$ -inch obeche strip wood.



The first of two gunwhale strips are shown here in place, glued to the breast hook (marked BH on the drawing). The $\frac{3}{16}$ -inch planking starts at the keel; note that the planks only go from Bulkheads 1 to 8. Clamps and pins can be used to hold them in position for now.



Planking the topsides and the turn of the bilge allows more work faces to be fitted in parallel. I cut the $\frac{3}{16}$ -inch planks $\frac{3}{8}$ -inch wide, with a good straight edge, on an A1 cutting mat. Any pin holes will be filled at a later stage. So that they will bend more easily, you may need to dampen your $\frac{3}{16}$ -inch planks.



The planking continues from the stem to the transom. My choice of adhesive here was Gorilla woodworking PVA. A razor plane is very useful at this stage for the chamfering the joints in the planks, although a good sanding block will suffice. The small sections at the bow and stern would be impossible to plank, so soft balsa block infills will be used.

7



Once the planking is nearing completion it's a good time to fair in the topsides using a rough, and then smooth, sanding block; the thickness of the 3/16-inch planking is ideally suited to this. Any dinks or cracks will require some lightweight filler and some final sanding. My Permablit block is one of the most useful tools in my workshop, and these blocks last for years.

9



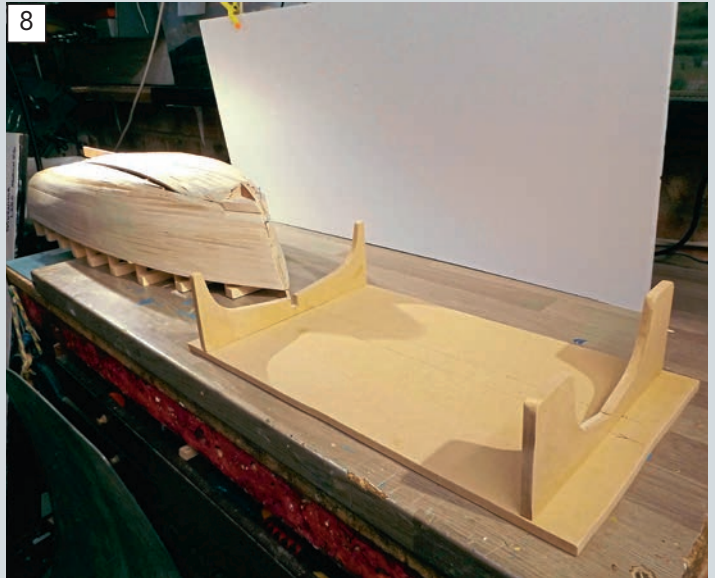
As mentioned earlier, the foot of the stem needs to be blocked with balsa, carved and sanded to shape.

11



The hull complete sitting in her cradle. At this stage, the top part of the bulkheads need to be carefully cut out to create the open boat.

8



As the hull nears completion it's a good idea to make a simple MDF stand from the shapes of bulkheads Nos. 2 and 7, allowing for the added thickness of the planks.

10



The hull complete, including a balsa section of 1/2-inch sheet between Bulkhead 8 and the transom; this needs to be incorporated because the planking will not accommodate a reverse curve to produce a scalloped effect by the propellor, something which is not a problem when moulding a fibre glass hull, which is, of course, how the 1:1 boat would have been constructed. The hull is now ready for lightweight glass cloth and resin – water-based or epoxy, it's your choice – to be applied.

12



The power and steering department installed. The three-bladed brass 30mm propellor and the small commercial rudder you see here were found in my spare parts box (you will, however, be able to order or pick these parts up from one of the advertisers in this magazine). The balsa sheet section from Bulkhead 8 to the transom sanded to a concave shape. Filler will be required to fair the transition to your planking.

13



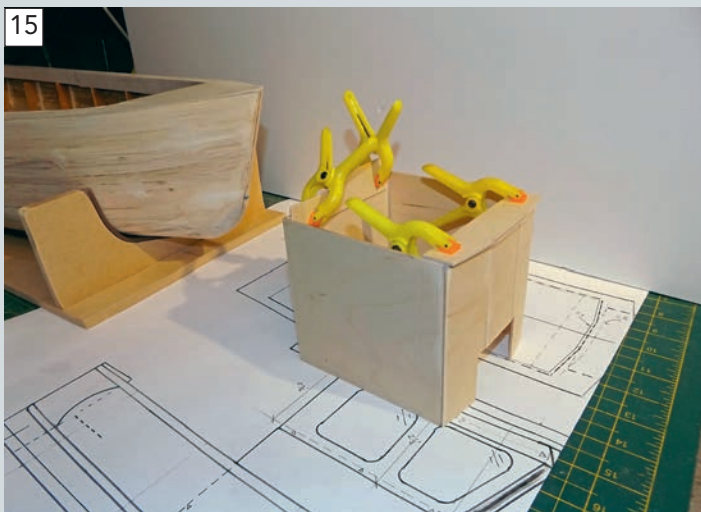
The curve of the rear deck beam matches the shape of the top of the transom. A standard servo is mounted sideways with a 16g brass wire pushrod; Zed bend pliers for bending this wire into shape will prove very useful.

14



The main feature of an open workboat is the cockpit floor, which for this model is made from 1/16-inch ply. I highly recommend templating each floor panel with card before cutting your actual panels; I wouldn't suggest working from the drawing as every boat ends up a slightly different shape. The flooring must also be kept removable for the installation of ballast later.

15



The lower wheelhouse is a simple 1/16-inch ply box structure with a three-section front. Refer to C1 on the plans to achieve the step to the upper section windows, which cantilever out slightly.

16



The upper wheelhouse needs to be built from 1/16-inch ply and with patient drilling, cutting and sanding all the windows openings can be formed.

17



The wheelhouse roof and barge boards fitted, and the engine box formed, this having been kept removable for access purposes. At this stage I recommend coating all the ply with sanding sealer, as this will lay the grain ready for painting.

18



A 400-size brushed motor will provide ample power for a realistic cruising speed; this needs to sit in a simple balsa cradle, with dowels and elastic bands used to secure it. The engine cover hatch needs to be kept removable for access to your battery and on/off switch.

19



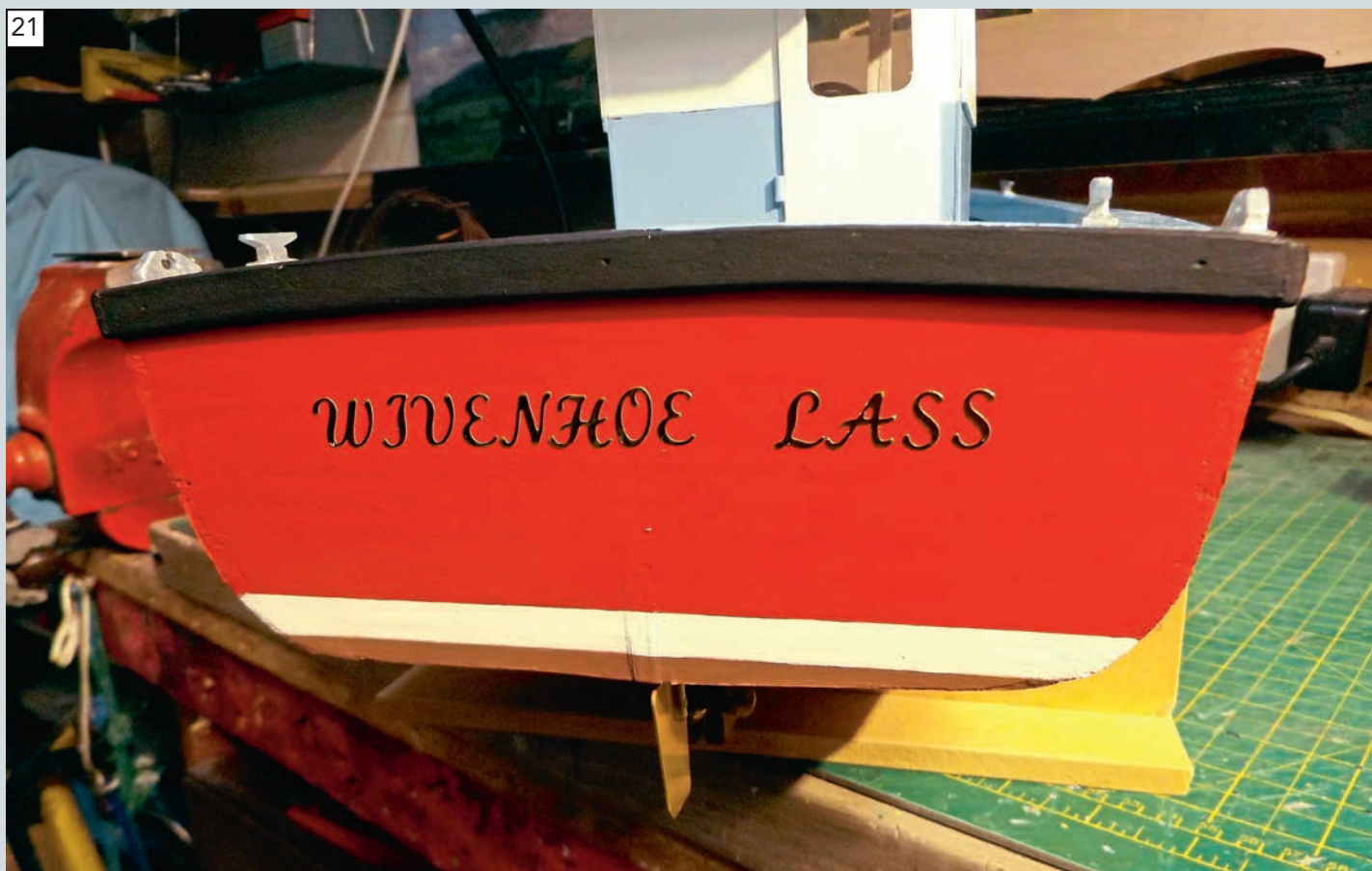
*The motor secured in place. In my model, the Huco type coupling rattles so much that some people think I have a sound unit fitted!
The side decks and cockpit side coamings are created from 1/32-inch ply.
As you can see, the internals in my model were given two coats of Humbrol light blue enamel.*

20



The 7.2-volt Nicad pack sits on a simple obeche framework over the motor inside the engine box. The ECU and receiver can be mounted with Velcro patches on blocks to keep them high and dry, just in case there is any seepage of water into the bilge.

21



Your hull can now be painted (I opted to use Humbrol enamel). When masking for the boot topping, you will need a steady hand. I recommend a long-haired brush (the type used by sign writers) for applying your boat's name in fancy lettering on the transom (I ordered one of these brushes from the Hobby Store for just £1).

22



You can now have fun accessorising. As you will see, my boat has navigation lights, a radio aerial, cleats, fairleads, fenders, a crew member (commandeered from my collection of Dr Who figures) and a lobster pot for good luck.





Ray's finished boat on the water.



Building your own bonnie lass

This was a fun three-month build for me. Yes, it presented a few challenges, but nothing I hadn't come across before, and hopefully my notes and photos will help make your build a little easier.

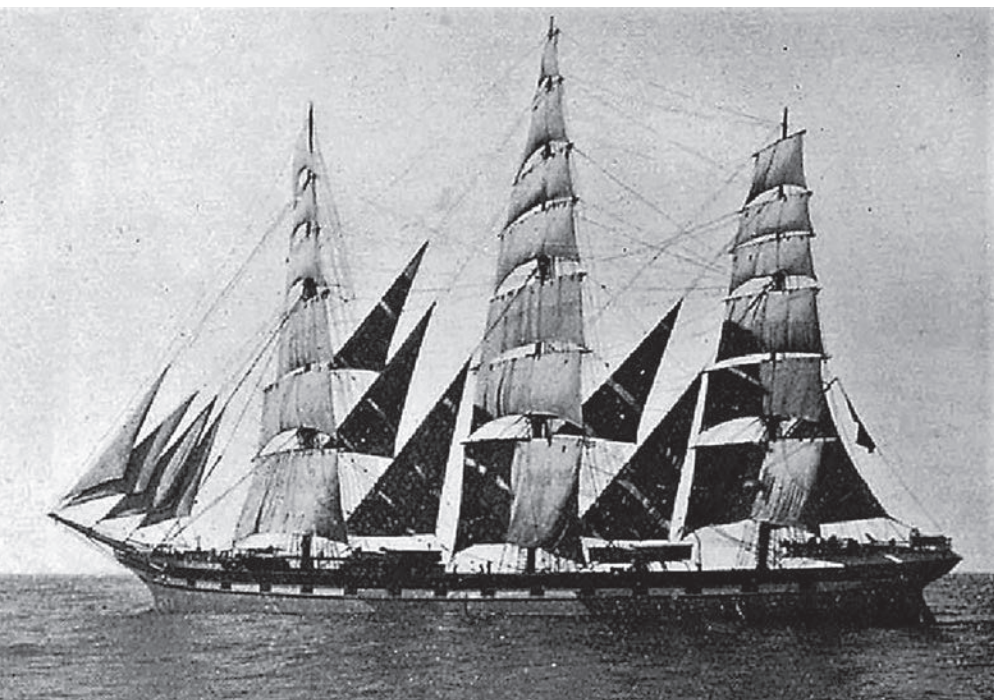
The finished model handles very well on the water, so I hope you'll be just as happy with your own *Wivenhoe Lass*, or whatever you decide to call her, as I am! ●

Plan ahead

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Modelling *Mount Stewart*

Nev Wades captures the end of an era



Mount Stewart in her pomp, setting a skysail on the main mast (the seventh sail up, usually there were only six). At the stern you should just be able to make out the shape of her 'turtleback' poop.



Later in life now, and she has lost her main skysail. She is taking the wind from the port side in a light breeze. Note there are no billowing sails, so beloved of fanciful artists. The 'turtleback' poop is the white, raised area at the stern, below the handrail.

The sister ships *Cromdale* and *Mount Stewart*, launched in 1891, were the last sailing ships ever built specifically for the fast carriage of wool from Australia. They were built of iron, by Barclay Curle & Co., in Glasgow and were 290ft long. They had good lines and a large sail plan, carrying a 'skysail' on the main mast. *Cromdale* ran aground in fog at Bass Point, near the Lizard, in 1913, and broke up, but *Mount Stewart* continued in service until 1924, when she was scrapped at Nantes. They were good looking vessels, featuring 'painted ports', a black on a broad white stripe over a dove grey band, and a red underside. They also featured a 'turtleback' poop, full of curved plates.

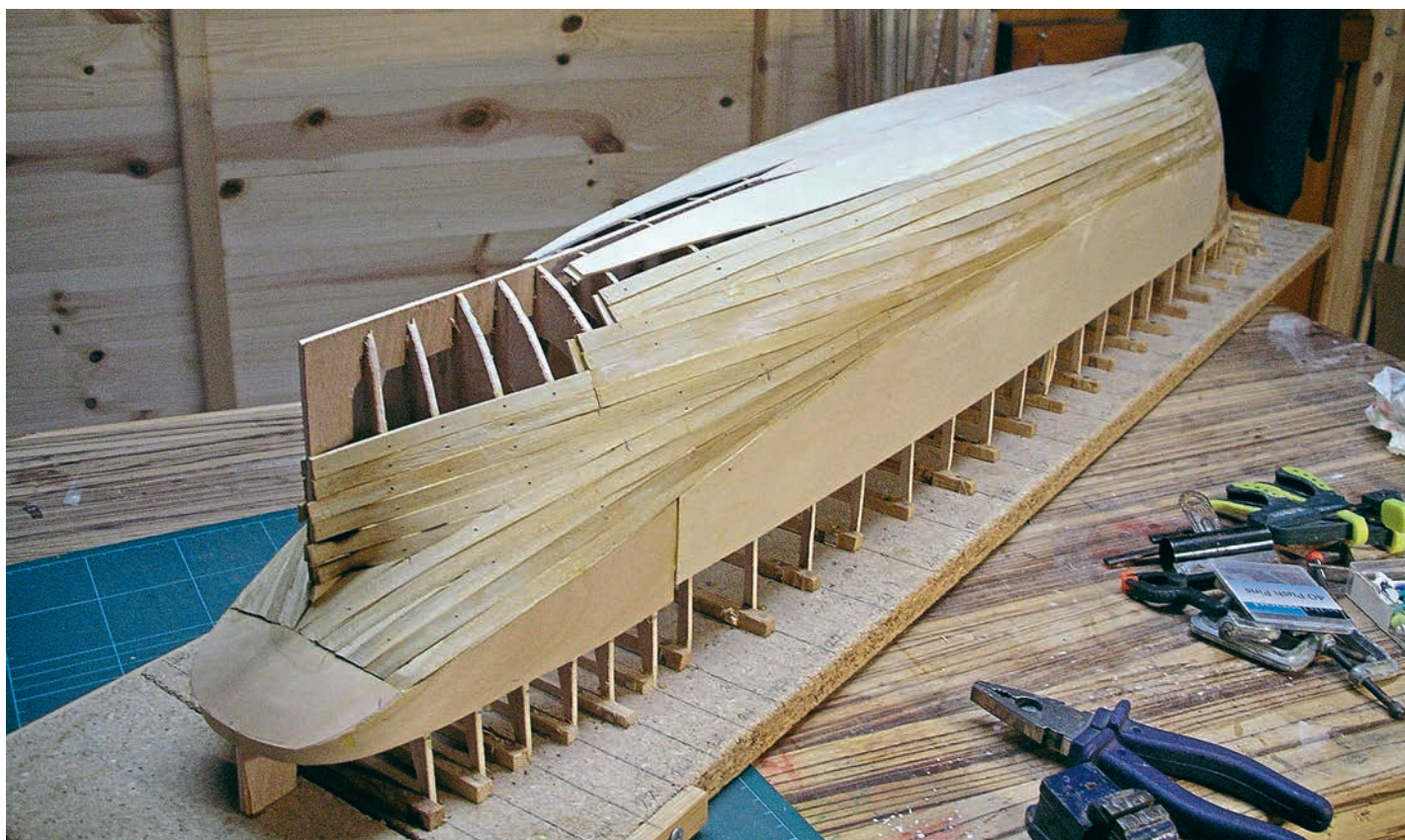
Modelling considerations

I opted to model the *Mount Stewart*. As I wanted all three of her masts to be controlled separately, the hull would need sufficient space for two sail arms between the after two masts, the main and the mizzen.

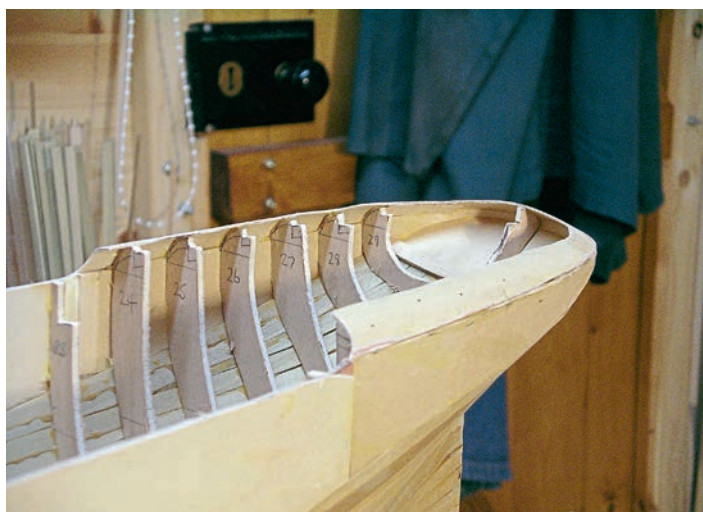
Eventually, I settled on building the model measuring 1220mm in length, from stern rail to the top of the bow – this equating to a scale of 1:73 against the real vessel.

After having the drawings copied to that size, my first task was to try out some paper templates of the sail arms against the side elevation to make sure they'd actually fit between the masts and under the deck. Having confirmed they would, I could then proceed with the construction of my plank-on-frame hull.

"As I wanted all three of her masts of her masts to be controlled separately, the hull would need sufficient space for two sail arms between the after two masts, the main and the mizzen"



The model's plank-on-frame hull nearing the time for its removal from the building board.



The complex, bent plates of the original's 'turtleback' poop, shown here being modelled by Nev, required highly skilled manufacturing techniques which, even back in the Mount Stewart's day were already on their way out.

The hull

You'll be relieved to know that I'm not going to take you through the planking and framing; suffice to say the hull was built, painted and fibre-glassed inside.

The only part I will refer to is the creation of the 'turtleback' poop, i.e., the incorporation of plates with complex curves around the poop. Surprisingly, this potentially awkward building challenge didn't actually prove that difficult; I simply cut into the top of the appropriate frames the shape of the 'half-round' for the poop at

those positions. Then, after the rest of the hull was planked, I warmed some thin plywood over a candle until it was pliable enough to use for creating the 'half-round' down each side, as far aft as I could. That done, and glued on, I followed the same process to add the rest of the 'half-round', in sections, around the stern. It was then a simple job to fill and rub down to make the whole smooth, and to fibreglass the inside, before painting.

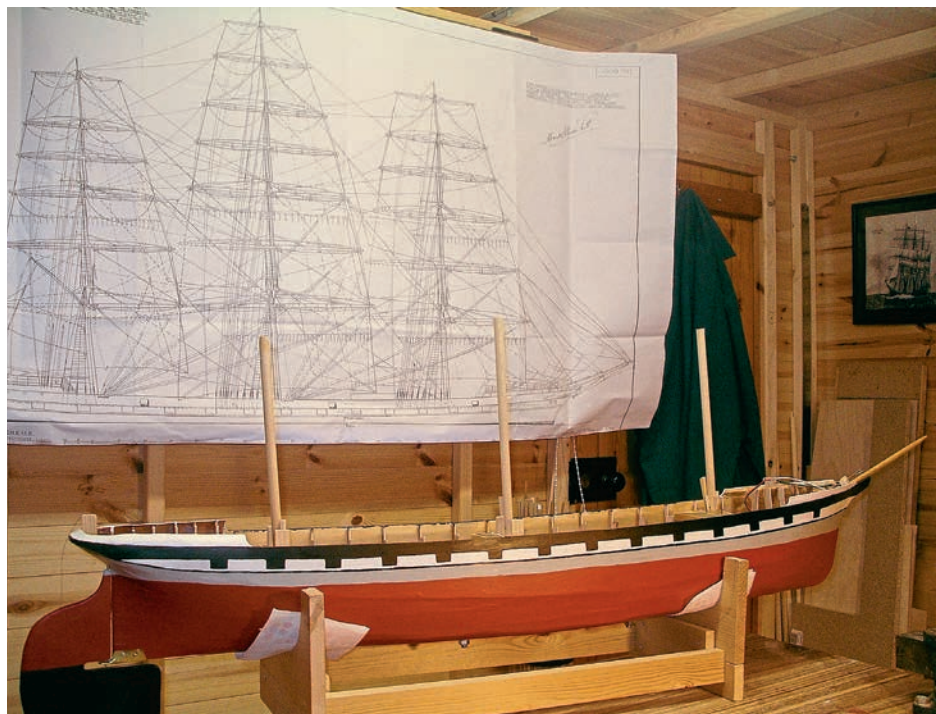
It was at this stage that the hull, with all the electrics placed in the interior,



The 'turtleback' again, after decking. It can now be seen how much of the deck space is reduced by this piece of elegance. Note the fairleads, sticking well up above the deck at either side of the mizzen mast. The lines through them will form the braces for the main mast yards.

was put it into water so I could try out a couple of the keels already in my possession. Of the two most suitable 'candidates' (one being 7.0 kg and the other 8.2 kg), I decided the 7.0 kg one would be the best match.

I control my yards using sail arm servos, with centrally pivoted arms. Taking the control of the foremast as an example, the set-up is as follows... The sail arm for it is positioned between the fore and main masts. The foremast braces are attached to hull frames below deck, either side of the main mast – port side



Set against Underhill's drawing pinned to a board in Nev's shed, the model is now starting to look like the real thing. Note the oversized rudder, at least ten times the scale size of the original.

braces on the port side, starboard on the other. There are two braces per side, one for the course yard (the lowest on the foremast, the foresail), and one for the lower topgallant yard (the fourth one up).

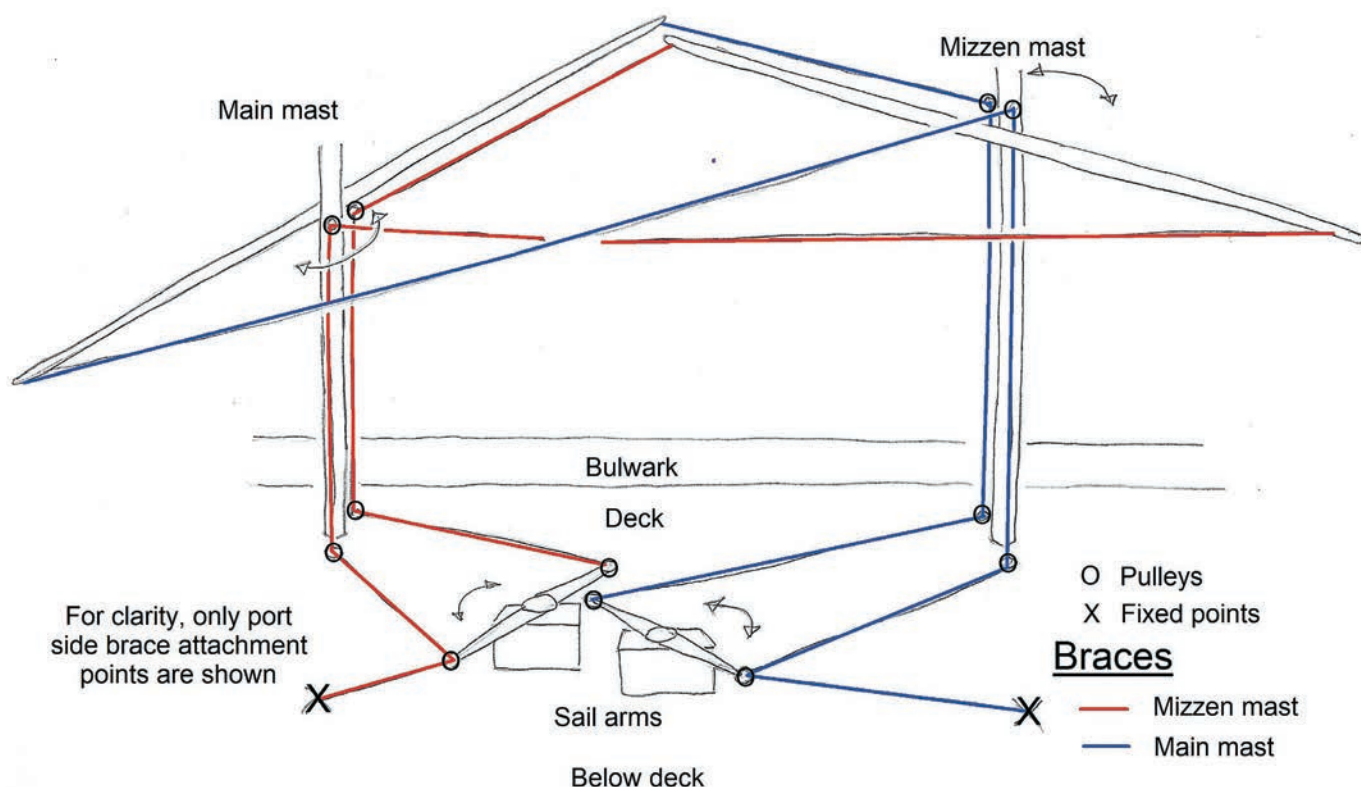
The reason for two per side is to spread the bracing effort up the mast. The braces are led forward to the sail arm, where they go round pulleys at the ends of the servo arms. From there they go back aft

"Surprisingly, this potentially awkward building challenge didn't actually prove that difficult"

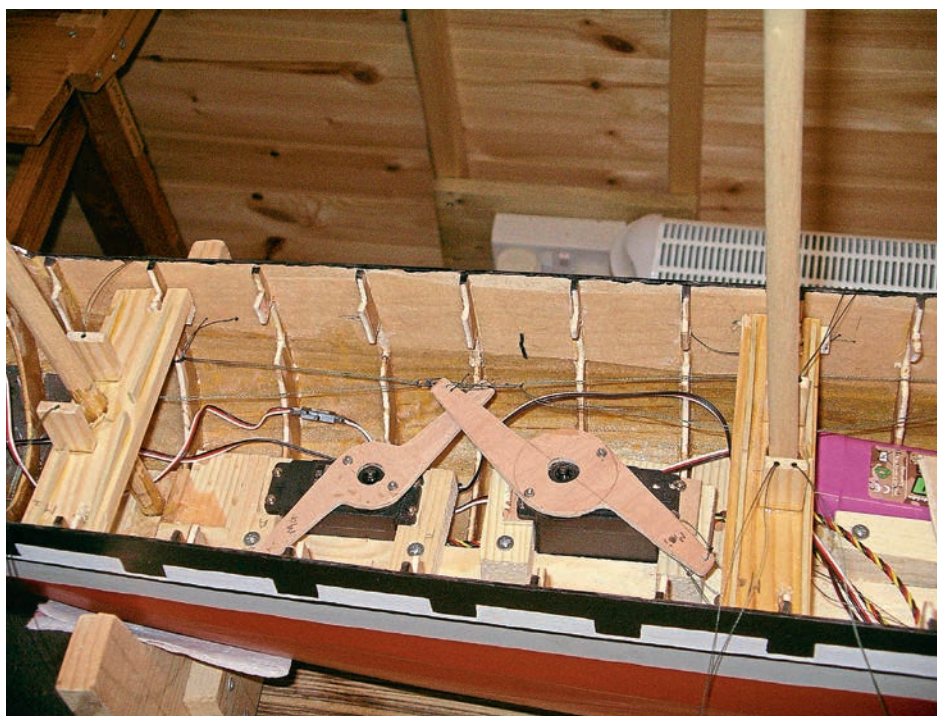
to fairleads either side of the main mast, by means of which they go through the deck, and on, up either side of the main mast. At the level of the course yard, the course braces go through pulleys and across to the course yard on the foremast via bowsies. Similarly, at the level of the lower topgallant they go around pulleys and are sent across to the fore lower topgallant yard. At the yard arms, the braces go around pulleys again and are sent halfway back across to the main mast where they are attached to the bowsies, this giving you the ability to adjust the length of each brace. The pulleys at the sail arm and the yard arms are fishermen's 'swivels', a kind of small snap link, which makes the braces easy to disconnect at either end. The pulleys on the mast are simple screw eyes. The reason for the pulleys on the servo arms is to give a degree of multiplication to the movement of the braces, to get as much movement of the yards as possible for a given servo movement. The braces on the other two masts operate in exactly the same way, except for one important difference in the case of the mizzen mast...

Full riggers are sailing ships which

"Overlapping" Sail Arms



The closely spaced, overlapping sail arm servos, which allow independent control of the main, and mizzen, masts. The coloured lines show their operation, with only the starboard side brace attachment points omitted. The braces for the course (lowest) yards are shown. There's another set on each mast for the lower topgallant yards (see text).



The overlapping servos in the hull. Note the braces going round their pulleys at the ends of the sail arms, and then up through their fairleads by the masts.



In this view, looking aft, the sail arm for the foremast is to the fore of the picture, with the ones for the overlapping masts beyond. The 'thwarts' which support the deck can also be seen locating the masts and fairleads.



A trim trial at the pond in Tynemouth. Here, the oversized rudder and large, removable sailing keel can be seen. Only the lower masts and topmasts are in at this stage, the topgallant masts will be fitted next.

carry square-rig on all their masts. They have three or more masts (though there was one five-masted full rigger). On a full rigger's masts, the braces run aft from their yards to the adjacent mast, except on the aftermost mast, where they have to run forward, because there is no mast astern. Thus, on *Mount Stewart* the mizzen mast braces ran forward from the yard arms to the main mast. So it is with this model: the mizzen braces run forward from the yard arms to the main mast. There, they are led down through fairleads in the deck and then

aft to their sail arm, not forward as with the foremast. At the same time, the braces for the main mast are led, from the yard arms aft to the mizzen, where they are led down through the deck and forward to their sail arm. It will be apparent that we have two sail arms between the main and the mizzen masts, one to operate each. Even at the size I chose for this model, there isn't much room for two sail arms, which brings me to the next modelling challenge on this build.

If you look at the pictures, you'll see a sketch of the layout of the braces to these



The attachment of a yard to a mast. You can see the yard is about 15 mm ahead of the mast, vital to its ability to rotate 'around' the mast and reach within 30 degrees of the hull's centreline.

yards. You'll also see that I 'superimposed' them, one over the other, in order to get them into the available space yet still far enough from their 'adjacent' masts to allow effective movement of the braces. It was simple enough, one sail arm was mounted about 15mm lower than the other, but the reason this 'overlapping' of the arms works is that the braces are always pulled tight enough during operation for little 'slack' line to get caught on the other sail arm. If the system were like a yacht's sheets, where 'slack' can always be a feature, it wouldn't be possible to work like this.

So, the sail arms, the battery, receiver, etc, were all fitted in the hull after the bolts which carry the sailing keel were fitted. Also fitted were the blocks in which the heels of the masts are glued. As I was using an existing sailing keel I had to determine the position, fore and aft, at which I had to fit it to get the model's trim right. Having done that in the water, I drilled the appropriate holes



This is what makes worthwhile all the time spent building. Romping along in good wind, sailing 'hands off'.



Here, with seven sails removed, the model is sailing at its limit in about a 20 mph wind.

in the keel's mounting plate flange to position it correctly, fore and aft, on the hull's keel.

Power, radio and operation

Before moving on to the deck, and the critical subject of waterproofing, now's a good time to describe my 'electrics'. The model is powered by a 7.2V 4500mAh battery, to which the 7-channel 2.4 GHz receiver is connected via a UBEC (Ultimate Battery Eliminator Circuit). I use a Futaba transmitter and receiver and, because they are primarily built for R/C aeroplanes, the receiver has a 'failsafe' mode, which puts Channel 3 into a kind of 'reset' mode if it becomes short of power. A UBEC is a kind of

voltage regulator, made to ensure that the receiver and the servos get an adequate power supply, in my case 5V and 8A. That, in turn, ensures that the receiver doesn't go into 'failsafe' mode. Anyone with any real electronic knowledge will be aware by now that I don't really know what it is that I'm talking about, but I do know it works and works well!

My servos are HiTec 765HS sail arms for the yards, three of them, for fore, main and mizzen masts, and two Futaba S3003 servos for the rudder and to pull in and let out the spanker (the small fore and aft sail on the after side of the mizzen mast). I aim never to go below on my boats. I therefore use a switch harness with built-in

charging leads. Here I soldered the charging leads to two pieces of sturdy brass wire, which I fitted into the deck so that a charger can be attached to them via crocodile clips. The switch I fitted into an inner hatch cover so that I can turn the boat on and off, as well as charge it, without going below.

The decks

I made 'false decks' using thin ply, into which I cut hatch openings to suit the electrics below. The hatches were reinforced by the addition of coamings, and then all the gaps around the decks were filled with decorators' caulk. I planked the deck, as with the hull, using 8 x 2 mm limewood strip. With that completed, I used resin around the edges of the deck, and around each coaming, to fully seal and waterproof the deck. The job was completed by varnishing the decks to ensure that they are completely watertight, a property tested by rolling the bulwarks under water to make sure there was no ingress. Only after passing this test did I carry on with the last deck job, 'inner' hatch covers to fit within the coamings, and 'outer' hatch covers, which are visible in use, either as imitation hatch covers or deck houses. Before sailing, the 'inner' hatch covers are taped round with duct tape as one last watertightness precaution, the 'outer' hatch covers fitting tightly over the tape. The fairleads are set in wooden blocks, which are long enough to come up well above deck level so that the actual fairlead holes are kept above any water that swirls over the deck during heavy weather sailing.

Above decks

My masts are simple dowel, of diameters suitable to their position. The lower masts are set into blocks on the keel, and then mounted through 'thwarts', which locate them and help to support the deck.

Sailing ships had their masts built in sections, with topmasts fastened to lower masts, and topgallant masts fastened to topmasts, all fixed using 'doublings', where one part overlaps its neighbour as they rise above the deck. It's the same with this model; the doublings being made from ply cut and shaped as realistically as I could.

Likewise, all my spars (the yards, and the spanker gaff and boom) were made from dowel. They were connected to the masts using pivots made from brass wire, tube and strip. A piece of brass wire, bent into a right angle was attached to the middle of each yard. A 'mast band', of brass strip, with a piece of brass tube retained within it was fastened to the mast at the correct

place for each yard. The bent brass wire was then placed into these tubes to provide mountings, allowing the yards to rotate in the horizontal plane. This arrangement allows each yard to be pivoted about 15 mm in front of its mast, which allows the yard to pivot round the mast, easily to within 30 degrees of the hull's centreline (see later). The gaff and boom had their bent brass wire set into their forward ends so that they could be attached to the mizzen mast via similar mast bands and tubes.

As usual, my wife was kind enough to make the sails, out of 'Ripstop Nylon', a material from which tents, kites and cheap cagoules are made. These

were simply 'laced' to their spars, and the topmost ones on each mast (two on the foremast and mizzen mast, and three on the main mast) are all removable, so that sail can be reduced in heavy weather.

It will be apparent that all the square sails are carried by a yard above, and all but three are also attached, at their bottom corners, to the yard below. They can, therefore, deal with the wind from any direction, including from in front. The exceptions are the 'courses' – the bottom sail on each mast, the foresail, mainsail and the 'cro'jack'. As these have no yard beneath them, another method of control was required. For the wind from astern,

"Anyone with any real electronic knowledge will be aware by now that I don't really know what it is that I'm talking about, but I do know it works and works well!"

the solution was straightforward. An 'endless' sheet was attached to one bottom corner of the sail, and run aft, to and through, pairs of screw eyes set into the deck ahead and at either side of the next mast astern, or, for the cro'jack, at the after end of the poop. The sheet was then led forward to the other bottom corner of the sail. Thus, the sails are held back into the wind from astern and continue to be even while they are being braced round from one tack to the other. To cope with the wind from ahead a single piece of 2.5 mm diameter brass wire was sewn into each course, down each side, and across the bottom, so that when the sails take the wind from ahead, as in tacking (see later), they don't wrap themselves around their masts and contribute to the effort required to move the model. This solution also holds the windward side of the sail very far forward during 'beating' to minimise the chance of a stiff breeze getting round onto the fore part of the sails.

The masts are supported by standing rigging, aping the original, with the bottom ends of the shrouds and backstays attached to the deck very robustly using home-made eye bolts made from galvanised wire set into the decks by the appropriate bulwarks. This is very important as, sometimes, I have to lift my boats from the water, just by pulling on the masts!

Having bent the sails, and installed the standing rigging, I attached the braces to their yardarms and then set up their adjustment using the bowsies and the 'end point adjustment' mode on the transmitter. This is a relatively simple operation, involving having the yards all squared, i.e., at 90 degrees to the centreline of the hull, with the sticks all central in their movements.

Control

In order to make progress to windward with a square-rigger, it's necessary to get the yards to brace round (rotate) to within 30 degrees of the centreline of the hull. It's to that end that there is the multiplying pulley system at the servo arms below deck, and that the braces are attached in from the ends of the course yards. Both these features increase the movement of the yards for a given servo arm movement. All the yards on the model move easily



Beating on the starboard tack.



The wind is from astern here and the model is striding along.



This is tacking. The boat has been on the starboard tack, taking the wind from the starboard side. The rudder has been turned hard to starboard, into the wind, and the bows have gone around across it. The main and mizzen yards have been braced round on to the port tack, and the foremast sails, still on the starboard tack, are pushing round the bows to complete the manoeuvre.



Beating, on the starboard tack.

through the required angles, this being especially important for the individual control of each mast.

I set up my transmitters to give a control 'regime' that is as intuitive as possible. I therefore used the radio channels as follows... Channel 1 (left/right, right-hand stick), with return spring in use, controls the rudder in the normal way. All the other channels have their return springs removed, so that the sticks simply stay put, wherever they are left. Channel 2 (up/down, right-hand stick) controls the yards on the mizzen mast. Channel 3 (up/down, left-hand stick) controls the yards on the main mast, and Channel 4 (left/right, left-hand stick) controls the yards on the foremast.

Channel 6 (a toggle switch) controls the spanker (the fore and aft sail on the mizzen mast), simply 'in' or 'out'.

The intuitive bit is the way in which stick movement controls motion. I assume that I'm aboard the vessel, so that left on the left-hand stick is port. Based on that I have the yards on the foremast on the port tack (port yard arms forward), with the stick in the left-hand position. Logically, I then have the yards on the main mast on the port tack, with the stick in the 'up' position, so that, on the port tack, the left-hand stick is in the top left-hand corner of its travel. I then have the yards on the mizzen mast on the port tack with the right-hand stick in the 'up' position,

to agree with the left-hand stick. The yards can be left in any position in their arcs of travel by placing their stick in the appropriate position, as there are no return springs fitted. So, if the sticks are used like computer joysticks, the yards can be placed anywhere, and left there, without reliance on a hand keeping them in position.

The most difficult, and complicated, manoeuvre for a sailing ship is going about by tacking, i.e., going about into the wind. In order to do this, the vessel must have enough momentum to turn into the wind and go across its eye, without losing forward progress. As the vessel makes its turn, with the yards on the backstays on one tack, the yards on all the masts except the fore are moved onto the new tack as the ship's head goes across the wind. At that point, the yards on the new tack will hold the vessel from making sternway (going backwards), while the yards on the foremast, caught aback on the old tack, will push round the bows. As soon as success is assured, the foremast yards are put onto the new tack and forward progress can resume.

The situation is just the same with a model, and the same actions are required, so that where I tried hardest to make the stick controls most intuitive. Their movements, during tacking, are as simple as I could make them. On one tack or the other, the left-hand stick is in one 'corner' or the other, either top left on port tack or bottom right on starboard, and, similarly, the right-hand stick is either up or down in its travel. As the model is turned into the wind, the yards on the main and mizzen masts are put on to the new tack by moving the left-hand stick from either bottom to top or vice versa (depending which tack the vessel was on to start with), and similarly with right-hand stick. Then, as the manoeuvre proceeds, getting the foremast yards round involves moving the left-hand stick either from left to right or vice versa (again, depending which tack the vessel was on to start with). So, if we assume that we start on the port tack, with the left-hand stick in the top left-hand corner of its travel and the right-hand stick at the top of its, the sequence of control movements is as follows... As the model crosses the eye of the wind, both sticks are moved from top to bottom, moving the main and mizzen yards onto the new tack. Then, as success is assured, the left-hand stick is moved from bottom left to bottom right, ending up with all the yards on the starboard tack. Making progress against the wind involves sailing 'up' the pond, first on one tack, then on the other, so the time



Some of the crew working on the fo'c's'le head.

inevitably comes when you have to tack again, to get back onto the port tack. The sequence is, both sticks to top, then left-hand stick to top left. If you think about it, the process is simply up/down on the right-hand stick, and anticlockwise, 'round the corners', on the left-hand stick. Now this has become automatic, I can concentrate solely on what's happening on the water and simply sailing my ship.

Most of the other sailing actions are much more obvious, as they take place with the wind coming from astern. The yards are simply braced round to take the wind at right angles to the square

sails and gain obvious forward impetus.

There are various 'trick shots' that square-riggers can do – for instance, 'backing' the yards to take the wind from in front of the sails will virtually stop them dead, which is guaranteed to astound even model yachtsmen, if they notice it, and they can even be sailed backwards!

Sailing the model

As befits a model of a ship that was built with speed, as well as capacity, in mind, the model sails well. A square-rigger will only come to about 65 degrees to the wind, so lots of

tacking is required to make progress to windward, but she will tack with assurance, carrying her way well as she cuts through the wind. I've built her to an almost fully loaded waterline, so she has more agility than if fully loaded. Hence, she will pick up speed quickly and is responsive to the (oversized) rudder. With her main skysail, the Mount Stewart was a very tall ship and so the model, in stronger winds, will heel well over. Consequently, after early sails, the skysail was made individually removable to take out some of the extra leverage. She can do all the square-rigger tricks, sailing astern and the like, and, with individual control of the yards on each mast, can even be partially hove to.

With her unequal height masts, she looks just what the original was, an oversized clipper ship, while the distinctive paint scheme she carries evokes the last period of sailing ship building on the Clyde, back in the days when style was just as important as substance. Altogether a very worthwhile exercise, and lots of fun to sail! ●

Model specifications

Length (stern rail to bowsprit end):	1360 mms.
Beam:	170 mms.
Height (keel to main mast truck):	860 mms.
Keel weight:	7.0 kgs.
Boat weight:	5.0 kgs approx.
Scale:	1:73



The after part of the main deck and the poop.



The Peral underwater (curated AI image).

El Submarino Peral

John Parker explores the options for modellers when it comes to this historic first

In 1889, the Spanish Navy had on test a military submarine that was far in advance of other nations. It had the potential to restore the pride of the Spanish Navy and might even have changed history if it had been available in the Spanish-American war of 1898. Yet by 1890, despite successful trials, red tape and rival jealousies led to the Spanish Naval Board rejecting the submarine. Abandoned and put into storage, its demolition was later ordered, but fortunately not carried out. Today it is preserved at the Cartagena Naval Museum, a stillborn reminder of what might have been.

Isaac Peral

Isaac Peral was a Spanish naval officer who was born at Cartagena, a city on the coast of Spain, in 1851.

He showed a particular aptitude for science and mathematics from an early age, graduating from the Naval Academy in 1870 and becoming an authority on recent developments such as the Whitehead torpedo, electric propulsion and, in particular, the lead-acid storage battery, which

had been invented by the Frenchman Gaston Planté in 1859. It was perhaps inevitable that his thoughts should turn from the application of these innovations to the design of a submarine, which didn't exist at that time in any practical form. As a defensive weapon of war, it would be a



The model of Peral in the Naval Museum Madrid (Image courtesy of Nicolás Pérez/Wikipedia.)

Peral Submarine

Launched: 8th September 1888

Fate: Decommissioned in 1890, preserved at Cartagena

Displacement: 77 tons surfaced, 85 submerged

Length overall: 22.00 m

Beam: 2.76 m

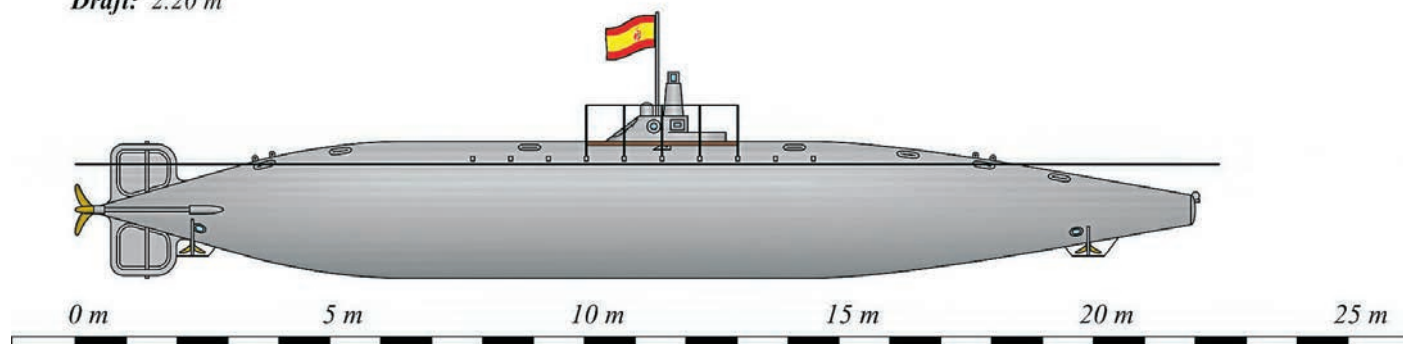
Draft: 2.20 m

Diving depth: 30 m

Propulsion: 613 batteries, 2 x 30kW electric motors

Maximum speed: 7.7 knots surfaced, 3.5 submerged

Armament: 1 x torpedo tube, 3 x 346mm Schwartzkopff torpedoes



Profile of the Peral (Image courtesy of Erlenmeyer/Wikipedia, translated and adapted).

“The breakthrough came in April 1887, when the navy finally became convinced of the submarine’s merit and appropriated sufficient funds for it to be constructed under Peral’s supervision”

great asset to the Spanish Navy, so he submitted his design proposal to build such a submarine in a letter.

It was at this point that Peral began to run foul of the bureaucracy and political manoeuvring that would dog him throughout his career. In 1885 he was ordered to report further on his ideas, but when a key supporter left the Ministry of Naval Affairs, his proposals were left languishing in its files. A technical committee did see some merit in them however, and in 1886 provided limited funding for him to further his ideas. This enabled him to perfect a depth control device and design a suitable battery charger for the large array of lead-acid batteries needed to propel a submarine. The breakthrough came in April 1887, when the navy finally became convinced of the submarine’s merit and appropriated sufficient funds for it to be constructed under Peral’s supervision.

At last able to make a start, Peral went on a shopping trip to Germany, England, Belgium and France to gather the necessary materials and equipment, little of which existed in his native Spain. After his plans had been



Peral’s submarine in the port of Cartagena in 2007 (Image courtesy of Marcin Floryan/ Wikipedia Commons).



Launching of Peral’s submarine in the port of Cadiz on September 8, 1888 (Image courtesy of Benjmin Nnez Gonzlez/Wikimedia Commons).



The interior of the Peral (Image courtesy of MdeVicente/ Wikipedia).

closely scrutinised and approved by the naval authorities, the keel of the submarine was laid at the La Carraca naval yard on New Year’s Day, 1888.

A submarine takes shape

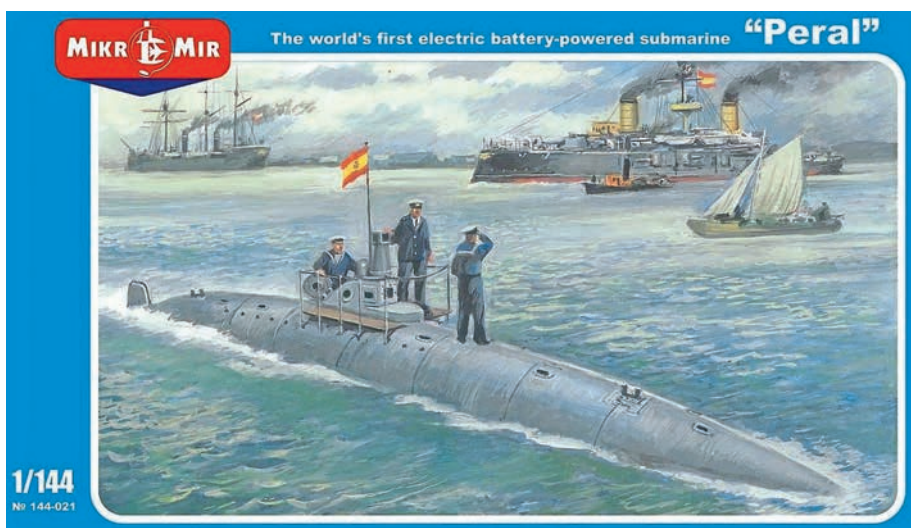
Observers at the La Carraca dry dock witnessed a 22-metre-long cigar shape taking form, made of riveted steel and with a rudder above and



Turret detail (Image courtesy of MdeVicente/Wikipedia).



A paper kit by Heinkel Models.



Mikr-Mir's kit to 1:144 scale.

below the tail. Atop its flanks was a small turret; a large propeller was fitted each side of the tail, and there were two smaller ones under the tail and at the bow. Slim hydroplanes filled the spaces between the propeller shafts and the hull.

Within the hull were positioned ballast tanks that could hold eight tons of water, but the craft would not be solely dependent on these to dive; instead, the small propellers on the underside, powered by their own electric motors, would exert a downward thrust to push the craft under once the ballast tanks were filled. No less than 613 lead-acid batteries filled most of the remaining hull space to power the two drive motors of 30kW each. Peral is thus credited with creating the first

"Peral is credited with creating the first electrically propelled submarine, though it only beat the French Gymnote submarine by a matter of weeks"

electrically propelled submarine, though it only beat the French Gymnote submarine by a matter of weeks. There was no engine-driven dynamo to recharge the batteries, which was the only major shortcoming. Recharging the batteries needed the services of a shore-based facility or suitably equipped tender, but the maximum range was estimated at a creditable 400 nautical miles (740 kilometres) at 3 knots.

Other features demonstrate the forward-thinking nature of Peral's

design. It was equipped with a torpedo tube in the bow and armed with three 346mm diameter torpedoes. A searchlight on the underside could illuminate the sea bottom. There was an automatic depth-control mechanism, its details kept secret but believed to be based on Whitehead's torpedo design, and a course-keeping mechanism; together with a compensated compass they made underwater navigation possible for the first time, while an air purification plant extracted carbon dioxide to make the air breathable in the submarine for hours at a time. From the top of the turret an early form of periscope protruded, setting the standard for submarines ever since.

Named *Peral* after its inventor, the submarine was commissioned into the navy in March 1889, to soon face testing by the trials board. There had been much publicity following its launch the previous September, and Peral had achieved great fame, being feted by the general public as the saviour of the Spanish Navy. But this fame only served to rekindle rival jealousies within the navy. A strong anti-Peral faction within the navy sought to discredit him in any way they could, exaggerating any small deficiencies the craft suffered, introducing delays and obstacles in his path and fabricating charges of selling its secrets to foreign navies.

Looked at dispassionately, the *Peral* could only be said to have passed all its tests with flying colours. It demonstrated its ability to submerge and re-emerge at will, it could navigate underwater for over an hour at a time, it was the first craft ever to fire a torpedo underwater, and it proved safe. These were all remarkable achievements at the time, but, as many inventors have found, technical problems are sometimes the least of the challenges.

Encouraged by his fame, Peral was persuaded to offer himself as a candidate for an important political posting, in direct opposition to the Minister of Marine, who wanted his son for the position. This was not a wise move, for when the official report of the trials board was tabled in July 1890, it included the scarcely credible statement that: "(the submarine's) deficiencies were of such consideration that the ship as constructed served no useful purpose". Thus, Spain's early lead in submarines was sacrificed on the altar of infighting and political rivalries. Peral resigned from the navy and died a few years later in 1895. For many years his submarine was on display on the waterfront at his home port of Cartagena, until in 2013 it was belatedly restored and installed in the Cartagena Naval Museum.



Dual scale Dom Bumagi card kit.

Modelling the Peral

The Ukrainian firm of Mikr-Mir is well known for its kits of early submarine designs and it offers a mixed-media kit of the *Peral*, number 144-021, to 1:144

“For a larger or working R/C model of this unusual subject, scratch-builders can find usable drawings on the Internet”

scale. A 1:48 scale card kit of the *Peral* is made by the Polish company Heinkel Models; at about 46cm long it is product number 5-2011. Another card kit comes from the Ukrainian company Dom Bumagi as number 20-2021; this can be built to either 1:50 or 1:100 scale and is available from Fentens Papermodels.

For those seeking 3D printing files, these can be found for example at TurboSquid: <https://www.turbosquid.com/3d-models/isaac-peral-submarine-3d-2203789>.

For a larger or working R/C model of this unusual subject, scratch-builders can find useable drawings on the Internet. Suitable scales range from about 1:24 (917mm long) to 1:16 (1375mm long). You can be fairly confident that a model of the *Peral* should behave itself in the water, for the shape is quite hydrodynamic and there are few of the quirky features

of many pioneering submarine designs. Only a small ballast tank capacity is required, enough to take the model down to decks awash and allow the depth-control propellers to take over. This makes it a fail-safe design, as the small residual buoyancy should ensure it always returns to the surface, but fine independent control of the speed of these propellers in conjunction with the tail hydroplanes will be needed to effect a realistic dive.

The constant circular hull section lends itself to the making of a fibreglass plug on a lathe or simplifies the task of designing 3D printing files. A dry hull with tail bayonet fitting is probably best, as the depth-keeping propellers complicate the usual wet hull, watertight cylinder approach.

Finally, there isn't much detail to incorporate, and the twin-shaft layout will cancel any torque if the propellers are made counter-rotating. Those unique swept-back propellers might lead to a bout of head scratching, but normal propellers with the blades carefully bent back, or fitted with replacement blades of appropriate shape, might prove workable. ●



The *Peral* submarine in 2015 in the new Naval Museum of Cartagena (Image courtesy of MdeVicente/Wikipedia).

BOILER ROOM

Pay attention! **Richard Simpson** is about to share a hard learnt lesson

I've always been a great believer in one or two general practices when it comes to dealing with engineering-based issues and during my career at sea always enthusiastically promoted these guidelines to my engineering teams. They are also well worth taking note of when dealing with our model boats, in particular steam-powered ones, as they can assist us in achieving safe, reliable operation on the water. One guideline I am a particularly strong advocate of is to pay attention to what you're looking at. By that I mean don't just casually observe something and then ignore it, think through what you are seeing and react to something that doesn't seem quite right. An engineer, or indeed a steam-powered model boat operator, should always be questioning what he or she is looking at, listening to, or even smelling, and be ready to investigate further/take immediate action. But we're probably all guilty of occasionally taking our eye off the ball, so this month I am going to share with you one of the occasions

when I did just that, in the hope that revealing the consequences may perhaps save others from making the same mistake...

The boiler sight glass

We looked at boiler sight glasses back in the March 2014 instalment of Boiler Room, so I won't go into too much detail again. Suffice to say that I consider that the sight glass is a pretty important safety feature and is continuously giving us vital information about what's happening in our boilers as our models sail around the pond. Very simply, the sight glass is a connection between the steam space and the water space of the boiler, which is then located remotely and consists of a glass tube in which the level of water in the boiler can easily be observed. Sometimes the sight glass

is connected to the circumference of the boiler, whether it be vertical, (see **Photo 1**) or horizontal, (see **Photo 2**), sometimes it's connected to the end plate of the boiler (see **Photo 3**), and occasionally it can even be connected to a combination of them both (see **Photo 4**). But whether we're talking about a vertical or a horizontal boiler, the sight glass is always there to give

"An engineer, or indeed a steam-powered model boat operator, should always be questioning what he or she is looking at, listening to, or even smelling, and be ready to investigate further/ take immediate action"



Sight glasses can be mounted on the side plating of a vertical boiler, such as is the case with this Pendle 3-inch boiler.



You can also find sight glasses mounted on the side plating of a horizontal boiler, such as the Hemmens boiler pictured here. This gives a relatively long sight glass, which is good for determining water level but can also be a bit vulnerable.



A more common arrangement with horizontal boilers is to have the sight glass mounted entirely on the end plate of the boiler, as is the case with this Stuart Turner boiler.



As with most things in life, there will always be arrangements that doesn't conform to normal practice, as shown by this boiler from Monahan Models, sadly no longer in production. The sight glass here uses a combination of side plate mounting and end plate mounting.

5



Richard's favourite workhorse, the Borkum. He has fitted different boilers and even completely different plant for review articles but has always gone back to the original Cheddar Puffin plant for its rugged reliability and ease of operation.

6



The twin oscillating engine is simple to operate and maintain, and the model can be turned around on the bank almost as quickly as some electrically powered models. Richard has a good feel for its operation as it has served him well for many years.

7



A useful addition to save steam, and therefore gas, was the Forest Classics attenuator valve, which while unusually mounted directly on the boiler shell has proven to be effective and reliable for many years.

you a clear visual indication of how much water there is in the boiler. Not surprisingly, this is a crucial piece of information for the operator, as it tells us when we need to put more water in the boiler. If we have a feed system, either automatic or manual, the sight glass is still confirmation that either things are working as they should be, or that the water needs to be topped up. In the case of a boiler that doesn't

8



The beauty of an open-hulled model is the fact that you can run it past where you are standing on the bank and quickly check both steam pressure and water level as frequently as you feel necessary.

have a feed system, then the sight glass is critical to feeding us readings that will determine how we operate the plant and when we need to bring the model into the bank for a refill. It was when operating such a model that I was taught a serious lesson.

The model

The model in question was my well tried and tested Borkum (see **Photo 5**), fitted with a reliable Cheddar Puffin plant (see **Photo 6**), that had served me well for a

good number of years. I had also fitted a Forest Classics attenuator valve to the boiler (see **Photo 7**). Frequent use of the model had seen me establish a well tried and tested operational procedure, whereby the model would normally be out on the water for somewhere in the region of 20 minutes. When put on the water, the model's sight glass would read around 90% full, with full boiler pressure; a fresh tank of gas would have been fitted, the engine lubricator would be full, and the separator would have

9



When using disposable gas tanks, it's worth coming up with some sort of enclosure to hide the tank. Richard decided to go for a bunker arrangement, which incorporates a water tank, coal bunker and wood store.

been just emptied. I knew that after 20 minutes the sight glass should be showing around 10 to 20%, and that by this time the separator would need emptying and the lubricator refilling. I'd operated the model in this way and

for this length of time many times over the years and had never encountered any problems with performance or reliability. I would send it out on the pond for a couple of circuits then simply sail it past where I was standing on the

bank so that I could check the water level and the pressure (see **Photo 8**).

The preparation

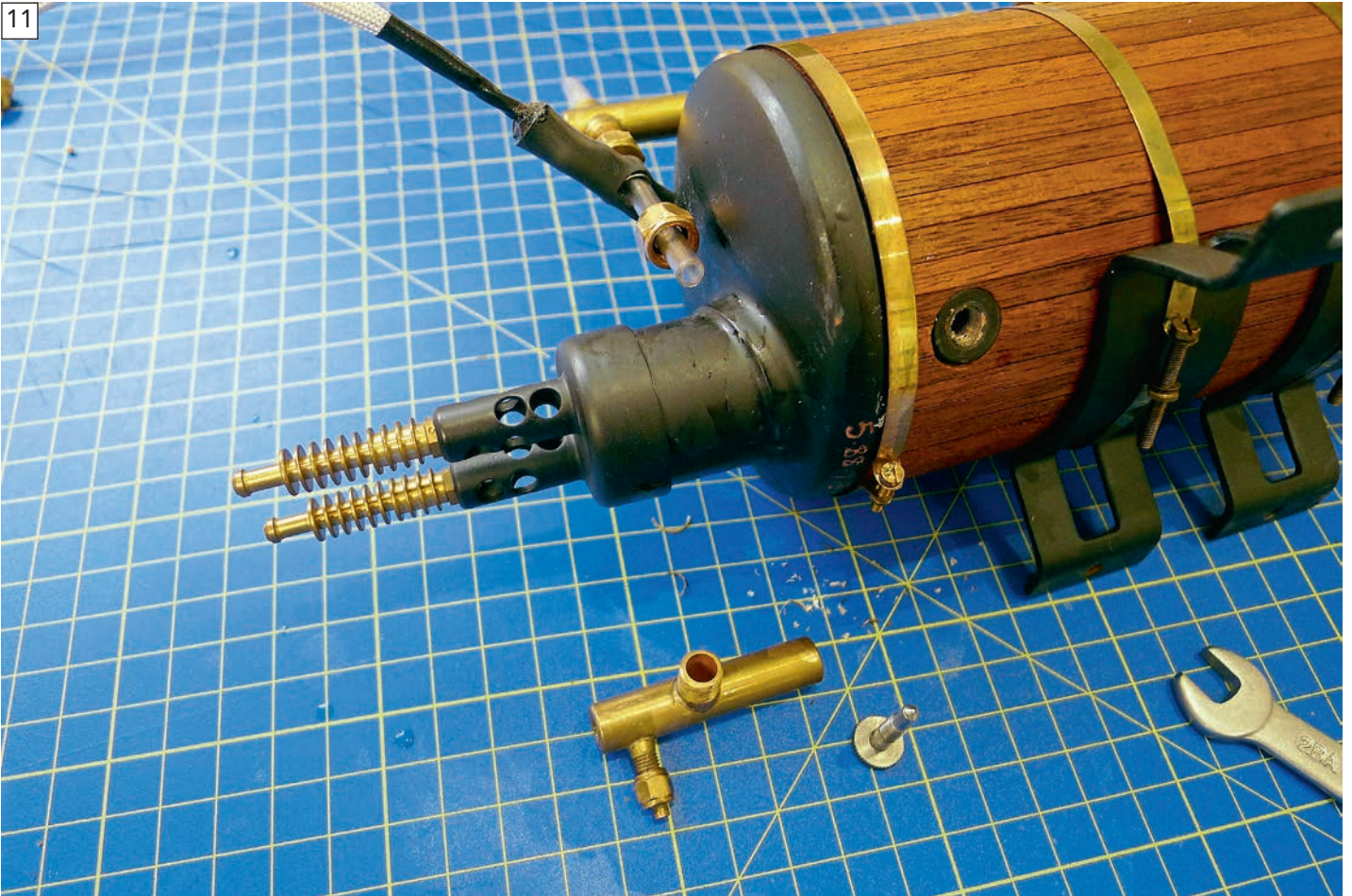
On the day in question everything seemed to be going perfectly smoothly. I filled the boiler up to almost a full glass, because I knew that when the boiler was up to pressure this would drop to the required 90% full level. I emptied the separator, filled the lubricator, oiled the engine externally and raised steam pressure with one of the gas bottles. When the boiler was up to pressure I changed the gas tank for a fresh warm one (I always carried a couple of spare gas tanks in my toolbox, wrapped up in a microwavable hand warmer so that they'd be above ambient temperature when required), put the tank cover in place (see **Photo 9**), performed a quick radio check to verify the engine and rudder responded, and dropped the model into the water. As it always had, the model performed well, creating a nice bow wave at full speed and responding well to rudder movement (see **Photo 10**). The rudder on the *Borkum* is a bit of a barn door affair, so, while it's very maneuverable when

10



Despite being a relatively small engine, the Puffin certainly pushes the Borkum at a brisk pace. Not surprisingly, this uses steam a great deal faster, so the frequent water level checks are necessary to make sure there is enough left.

11



Using water that has not been distilled will always lead to a build-up of sludge and scale. Once the lower sight glass fitting becomes blocked, the glass will show that there is water in the boiler when, in fact, the boiler could be completely empty.

12



The only remaining indication of Richard's faux pas is a slight burn mark on the inside of the port side bulwark. He decided not to remove this, as it now serves as a reminder of what can happen if warnings are ignored. Imagine what could have happened if the flames had reached the gas tank.

required, it does almost stop the model when put hard over. That said, *Borkum* is a very stable model, and one that would serve as an ideal steam platform for beginners.

The mistake

Having had *Borkum* on the water for close to 20 minutes, I brought the model around again and sailed her past where I was on the bank. I noticed

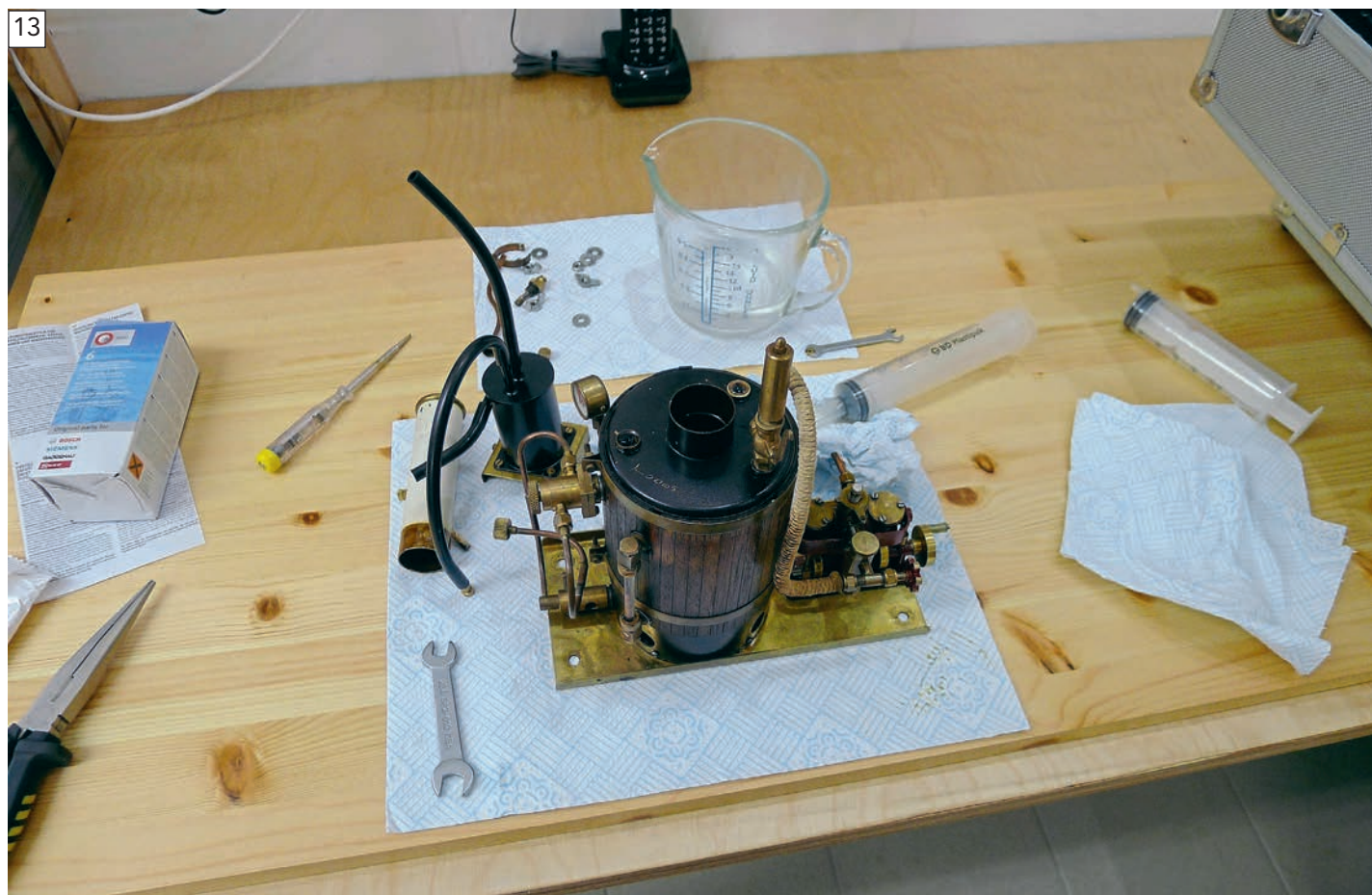
"Is that smoke rising from your boat?"

the steam pressure was fine and that there was a still good half a sight glass of water. Now, my first instinct when seeing this was *"That's fine, plenty of water left for a few more minutes running"*. What did niggle a bit at the back of my mind though was *"That's odd, there's usually less than that by now"*. And the big mistake was? I ignored that niggle.

The model ran fine for a few more minutes and I was pleasantly oblivious to anything that might have been going wrong, until *Borkum* suddenly stopped right in the middle of the pond. No response from the throttle at all, not even a slight movement. The boat just sat there, out of reach. The only options were to either wait for the model to slowly drift back to the bank, get some other kind chaps to send out their boats to try to push it in, or go all the way to the steel container and get out the rescue dinghy, which could take anything up to around 10 to 15 minutes.

So, I asked the couple of guys with models out on the water if they could give me a shove towards the

13



A good pickling with coffee machine descaling tablets was administered to thoroughly clean out the inside surfaces of the boiler. Richard also cleaned out the sight glass fittings themselves to ensure that everything was clear of scale build up.

bank, which was around about the time someone asked, "Is that smoke rising from your boat?". Yes, I could discern just a whisp of smoke coming off the *Borkum*. Suddenly the relaxed chatter along the pondside went quiet. All eyes turned to the stricken model as we watched as the smoke become more visible. A couple of boats headed in the direction of the *Borkum* and began trying to push her back towards the bank. And then, horror of horrors, flames began flickering around the boiler as the smoke increased. At this point it might be expected that the attenuator valve would shut the flame down to the pilot setting; however, this did not appear to be happening as the boiler was most definitely now on fire.

As luck would have it, my brave colleagues managed to push the *Borkum* back to the bank, where another slightly over enthusiastic friend only just avoided sinking her with a liberal application of pond water. At the end of the day, though, I had got off very lightly. The flames were only from the burning wooden boiler lagging, nothing else had been affected. So, everything was quickly shut down and the model taken home for a post-mortem.

"The sight glass had clearly not been telling the truth. Buy why?"

The post-mortem

For the entire journey home there were all sorts of thoughts about what had gone wrong running through my head, and none of them made a great deal of sense.

Once I had the model on my workbench, the first thing I noticed was that the sight glass was still showing around half a glass. Despite that, however, once I'd extracted the boiler from the plant and removed the filling cap, turning it upside down proved beyond doubt that the boiler was empty. The sight glass had clearly not been telling the truth. But why?

I soon discovered when I dismantled it that the lower fitting was blocked up with limescale, so the sight glass had water in it, but the boiler had run dry. This has happened to me before, more than once, with boilers that had been used with less than prefect feed water. Sludge in the bottom of a boiler and a blocked lower fitting is not uncommon (see **Photo 11**).

So, why did the model catch fire? Well, if you refer to last month's instalment of *Boiler Room*, where we looked at exactly how attenuator

valves work, the reason becomes apparent. The valve requires a high steam pressure to close it down to the pilot flame setting. If there is no water in the boiler, then the boiler cannot raise pressure - consequently, the attenuator valve will remain fully open, despite the fact that the boiler has no water in it. The burner, therefore, remains on full flame, hence the boiler overheating.

The aftermath

I was actually incredibly lucky to have got the boat back to the bank before serious damage occurred. Apart from a slight singeing of some adjacent woodwork on the inside of the bulwark (see **Photo 12**), the only real damage was the wooden lagging around the boiler.

The burned and charred lagging all had to be removed, and the boiler given a very thorough pickling with hot water and some kettle descaling tablets (see **Photo 13**). New lagging was fitted and given a coat of varnish, and all the fittings were replaced. The sight glass fittings were also descaled and thoroughly cleaned out before being refitted to the boiler. Considering I could have been facing complete loss, re-lagging the boiler seemed a relatively small price to pay ●

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Displayable fuel cans

Dave Wiggins explores these colourful collectables



A brace of colourful and collectable KeilKraft diesel fuel cans.

This month we're going to be taking a look at a very colourful area of vintage collecting, one that has become much televised over the last few years: vintage oil cans. For the purposes of this article, though, we will be concentrating on the ones pertinent to our hobby.

Model diesel fuels

Let's start off with the popular products of good old Keil-Kraft Ltd, and specifically the huge selling line of fuels produced miniature diesel engines. The cans illustrated came in two sizes, these being of ½ and 1 pint capacity. Small diesels, mostly being of 5cc capacity or less (often much less), were quite sparing in their use of fuel, hence very large cans of diesel neither being needed or available. From memory, I can say that one could get a

full afternoon's boating from less than a pint when using, say, a 3.5cc diesel, which back then was a very popular engine size. While for a novice using a smaller engine (say, of 0.5cc to 1.5cc capacity), a half pint tin would be more than adequate.

There were, of course, other providers of diesel fuel, including popular engine maker E.D. Ltd with its Economic (illustrated alongside an example of the popular ED BEE 1cc diesel, much seen in small beginners' motorboats when water-cooled) and Super-Zip fuel lines, Frog, Veron, Mills and Davies Charlton, among many others. I was quite surprised to see online earlier this year a can of ED **glow** fuel in the exact same red can as my tin of diesel. As far as I am aware, E.D. Ltd never manufactured glow-plug engines, hence my surprise, but obviously it saw a chance to expand

KEILKRAFT FUELS
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★ Stunt Expert BRIAN HORROCKS — who used K.K. RECORD METHANEX in his Glo-Chief 40-powered stunt model to win the GOLD TROPHY at the 1959 BRITISH NATIONALS, says: "I find it gives the flexibility necessary to cope with all sorts of manoeuvres without any special tank arrangements. That is the reason for my choice of METHANEX."

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KEILKRAFT RECORD METHANEX GLOW FUEL	1 pint 5/6
KEILKRAFT RECORD NITREX 15 GLOW FUEL	½ pint 4/-
KEILKRAFT RECORD SUPER NITREX GLOW FUEL	½ pint 6/6

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Get some from your model shop and try it out at your next flying session!

KEILKRAFT RECORD FUELS ARE IDEAL FOR ALL MAKES OF ENGINES

An atmospheric advert for KK glow and diesel fuels c.1950s.

"Old Keilcraft cans are, I find, easily the most available nowadays"

its fuel offerings once glow engines became commonplace. You learn something new every day!

Essentially, every manufacturer of miniature diesels offered its own fuel. The constituents of all such fuels were equal parts ether, paraffin, and castor oil, plus, in some fuels, additives like benzene or amyl nitrate, the latter being marketed as 'Nitrated' fuels. Being a resident of south-east Essex, KeilKraft products could be purchased in almost every model shop, the firm being located at nearby Wickford. Old Keilcraft cans are, I find, easily the most available nowadays, so it's a fair guess that Keils might have been the biggest manufacturer.



A can of diesel fuel from popular engine maker E.D. Ltd, alongside one of its 1cc BEE engines.



A pair of KeilKraft glow fuel cans.



More glow-plug colour from Keils of Wickford.

Glow power

Two stroke glow-plug engines came to marine use bit by bit. At first, they were mostly seen in the high-speed world of the tethered racing model hydroplane, in capacities of 5 or 10cc (the two smaller MPBA competition classes). In such use the cylinders remained air-cooled of course, run times being so brief.

Glow engines, powered by a mixture of methanol and oil, were more thirsty than little diesels, and long-term use (in a radio-controlled aircraft or a multi-race boat, for example) needed large capacity gallon or half-gallon sized fuel containers, mostly made of plastic. There was, however, still a steady demand for small cans of glow fuel for both aero and marine applications using smaller glow engines. A hydro', as just one example, only ran for very short periods of time and many R/C boaters (other than R/C multi-race or offshore racing enthusiasts) were quite satisfied with pint tins if they were only operating a free running, R/C scale or steering boat, hence there was still lots of glow fuel sold to boaters in small cans.

Keilkraft Ltd offered such fuels under its Nitrix 15 (the 15 referring to the 15% nitro-methane content of this particular KK fuel) and Methanex brands. This quite high (for the era) nitro content fuel line was mostly targeted at the hugely popular but tiny glow-plug engines of the '049' size, the leading manufacturer of which was COX of the USA, but these were little used by model boaters. Standard (i.e., non-nitro) glow fuel is usually referred to as 'Straight Fuel', this implying a simple 80%/20% mix of methanol and castor oil.

I'm able to include a picture of what, at first sight, appears to be a



A very early can of fuel for the model glow ignition engine type, produced by Shell for Frog Ltd.

"Whether Shell manufactured this product exclusively for Frog, I've no idea, but it does look that way"

very early Shell glow fuel product. Its trademark title of 'Red Glow' suggests it was intended for Frog's famous 500 (5cc) 'Red-Glow' engine, something confirmed by the International Model Aircraft (the company behind the Frog brand) trademark, as well as Shell's well-known logo, appearing on the can. Shell Ltd refers to the product as having been designed for 'hot coil engines', this being the earliest use of the term for the Glow-Plug ignition method on the post-war model engine scene, making, I feel, this can predate all other glow cans shown in this article. As to whether Shell manufactured this product



An attractive oil can from BP, with a baby size can of cycle oil from Castrol alongside.

exclusively for Frog, I've no idea, but it does look that way.

Petrol power

The biggest end of the IC model marine engine world was ruled the large petrol engine, in both 2- and 4-stroke forms, and of course all such engines required lubricating oil to be mixed with the petrol for a 2-stroke. I include two examples here, one each for Castrol and BP oils.

By the time one reaches this sort of can as a collectable, item prices are starting to rise I'm afraid, as one is then competing directly with the motorcycle and vintage car enthusiast, so it's an area best avoided in my opinion. The sort of engines I have in mind here are all lovely things to own in their own right; however, and if you can afford a 15cc GANnet OHV or a 10cc

"It's important to note that substances like ether, methanol, nitro-methane, amyl-nitrate and benzene are all hazardous to health and that home mixing of model engine fuels is strongly discouraged"

Channel Island 4-stroke (a bit unlikely nowadays, I'm sorry to say) I, or maybe a water-cooled Frog-500, cans like these display particularly nicely alongside a treasured engine.

Finally, if lubricating any of these engines or their drive shafts at the pond-side, one needed a suitably small oil can, and the very best of these was always the little 'Valve-Spout' oiler illustrated. Later on, Valve-Spout made equally useful oilers in plastic, and I have a number of these still invaluable items in daily workshop use.

Additives – a word of caution

All types of model internal combustion engine fuel from the better brands utilised additives. Diesel fuels most often offered amyl-nitrate, while glow fuel used nitro-methane in various percentages, as noted earlier. In both cases, these additives were performance enhancers, while the additive used by the model petrol engine operator – a substance known as 'Redex' – simply offered improved top-end lubrication rather than extra power. Engine manufacturer GANnet advised its purchasers to "Add a shot of Redex to your petrol", as Redex was said to keep piston rings clean and bright and thus reduce the need for top-end servicing.

It's important to note that substances like ether, methanol, nitro-methane, amyl-nitrate and benzene are all hazardous to health and that home mixing of model engine fuels is strongly discouraged.

And finally...

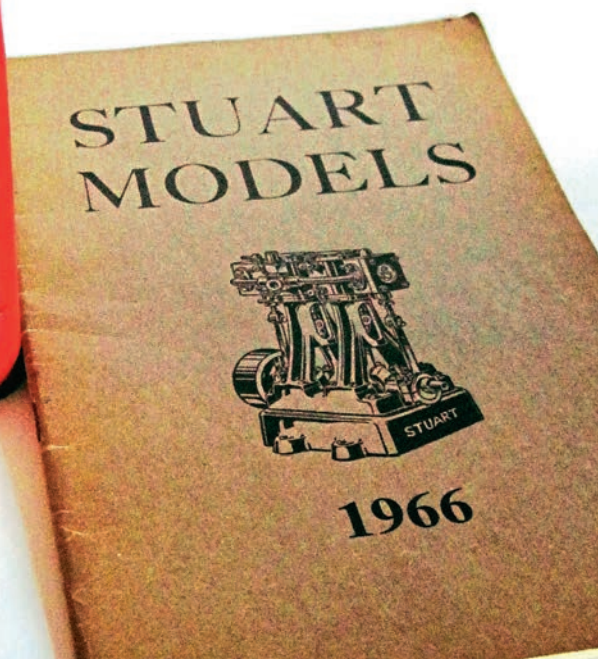
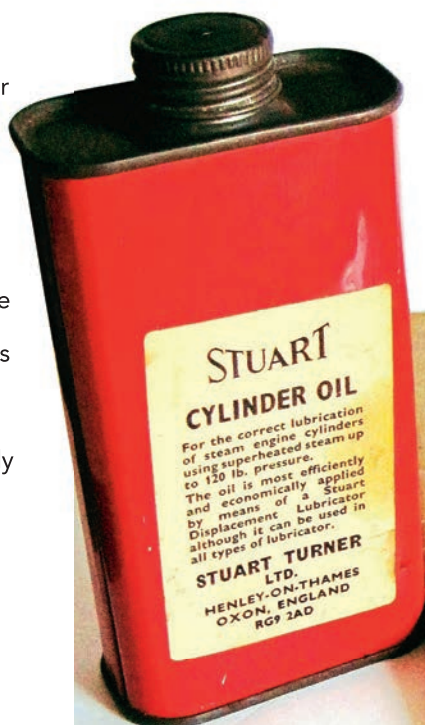
When I first started to consider an article on this topic last year, I certainly hadn't anticipated the inclusion of steam lubrication. While browsing the internet over the Christmas holidays, however, I stumbled across a final product for inclusion – an unopened can of steam oil from Stuart Turner Ltd of Henley on Thames, c.1960s, and was delighted to be able to purchase it very cheaply. With the exception of the Shell glow fuel tin shown earlier, I think this just might be the oldest can illustrated here. ●



A collectable oil can from Castrol.



A pretty little oiler from Valve-Spout.



Steam oil from Stuart-Turner Ltd, along with a copy of the company's 1966 catalogue.

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Your Letters

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

Letters can be forwarded via email to editor@modelboats.co.uk or via post to **Model Boats, Kelsey Media, Media Centre, Morton Way, Horncastle, Lincs LN9 6JR**

Foam fix

Many, many thanks for the free plan in the July edition of Model Boats.

The choice of Glynn Guest's *HoverFly* suited me perfectly as I have always wanted to be able to skim a boat over the Tarn at Rawdon Model Boat Club when the water freezes in winter. And now I can as I have already completed my *HoverFly*!

Preparing for winter in a heatwave also appealed to me!

Just one tip that may be worth passing on to readers. This concerns the foam lagging used for the 'skirt'. Glynn explained "What to stick it with was my first dilemma". He chose Stixall, noting that he needed to wait overnight to ensure the foam was securely bonded.

Where I come from 'everyone' uses UHU POR. It is as well-known as 'Sellotape' and is the obvious choice for sticking foam. No dilemma at all. And the reason why it is so good is that it's a contact adhesive and so responds to pressure, not time. Let the UHU POR dry on both surfaces before pressing them together firmly for a few seconds and the bond is permanent. No over-night wait needed.

**MARTIN TANNER
LEEDS**

Great tip! Thanks so much, Martin. I'm really looking forward to seeing some photos of your Hoverfly in action this winter. Ed.



Sea Falcon

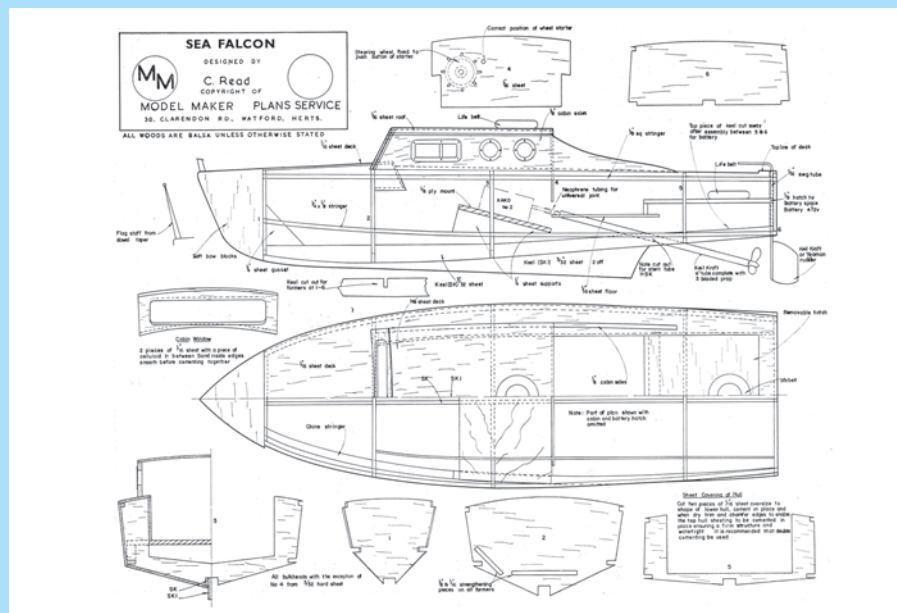
I have found a copy of an old model boat plan for the *Sea Falcon*, a cabin cruiser designed by C. Read, published by the Model Maker Plan Service. There is no information on the installation of radio-control equipment on the plan, so I am guessing it is from the early 1960s,

and I believe the resulting model would be about 24 inches long.

Frustratingly, though, this plan doesn't appear in the copy of the Model Boats Plan Book I have from 1983 and I can't find any information about building from it on the internet.

So, I am wondering if anyone reading

remembers this plan and would be able to advise the cover date (month and year) of the issue in which it appeared? Better still, if anyone still has a copy that, hopefully, features an accompanying build guide, they could scan and email to me, that would be fantastic.



Having found an old copy of the *Sea Falcon* cabin cruiser plan designed by C. Read, John Bowker is hoping that someone reading may have a copy of the February 1961 edition of *Model Maker* in which it was published, as he is hoping there may have also been an accompanying build guide.

JOHN BOWKETT EMAIL

OK, so having done a little research, I can tell you this plan was published in the February 1961 issue of *Model Maker* – although, curiously, the front cover (see photo) doesn't make any

mention of the *Sea Falcon* or the free plan. I was able to download a copy of the plan itself from the website https://aerofred.com/details.php?image_id=97676#plan, and specifications reveal the resulting hull, at 34.3 inches (87 cm) in length, to be a little larger than you've anticipated. Unfortunately,

however, there was no accompanying build guide to download. Whether or not one was actually published, I have no idea, but hopefully someone reading may have a copy stashed away somewhere and be able to advise and perhaps even scan the relevant pages for you. Fingers crossed! Ed.

Windermere MBC Regatta

Windermere Model Boat Club held its annual regatta over the weekend of June 27/28, the event coinciding with the Windermere Jetty 'Festival of the Lake' event.

We had a fine weekend, thankfully not too hot, with a gentle breeze over Lake Windermere to keep everyone cool and keep those with model yachts happy.

There were scores of model boats on display, with judging taking place in several categories, these including steam, kit built and scratch-built models in various scales.

Thanks go to the organisers, who provided refreshments throughout the weekend.

PETER KOCH-OSBORNE WINDERMERE MBC

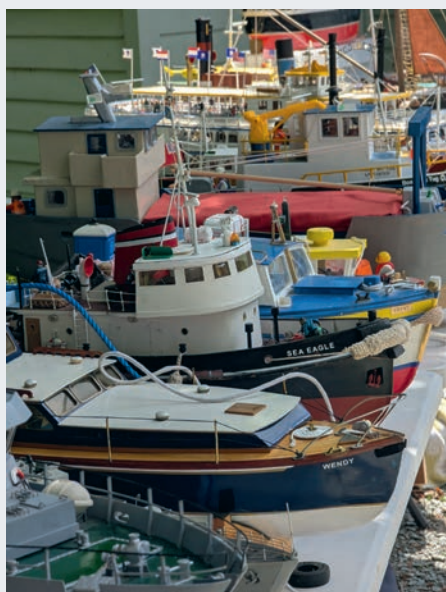
Thanks for these lovely photos of what looks to have been an absolutely

idyllic day out in the beautiful Lake District. Please do keep us posted on next year's regatta, and indeed on any other events fellow readers may be interested in attending. Ed.



Alvis Stalwart success

A quick thanks to everyone who responded to the appeal from Chris Lloyd included in the Your Letters section of the June 2026 mag. We have now forwarded all your kind offers to either send him hard copies of the July and August 2011 issues featuring the Alvis Stalwart articles he was looking for, or to scan the relevant pages for him. Yet more evidence of just how friendly and helpful this community always is! Ed.



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

Swallow

Being of the generation that was brought up on the stories written by Arthur Ransom, when a kit became available from Clyde Model Dockyard to build a model of *Swallow* – which one could claim to be 'The World's Most Famous Dinghy' – the temptation could not be ignored! This motivation was heightened as I also sail a full-size boat on Coniston Water, which features many of the locations found in the original book.

The kit is well designed, and the construction is quite straightforward. The only challenging aspect is to ensure the planks fit neatly into the

bow. However, for my model to be a true representation of the original it would need to sail and working out how achieve this was the real challenge.

Although the original *Swallow* was a 'long keeler' and never sailed as well to windward as its competitor *Amazon*, it was clear that an additional keel was going to be needed. The kit instructions suggest the wooden keel could be replaced, and I used a piece of ½-inch by ¼-inch brass. This did add some weight low down in the boat but more importantly gave a secure fixing for a removable fin keel. Another option would be to make an internal

centreboard case, but this would distract from the original design.

My removable keel was made from two 3mm diameter brass rods and a piece of ¼-inch square brass, which I sandwiched between two pieces of 1.5 mm plywood. Its size was estimated but as it was designed to be removable another could be made if required; also, its fore/aft position could be adjusted if necessary. The final size is 115mm long and 65mm wide. The fin was secured to the keel by two 3mm machine screws with the plywood sides forming a tight fit over the boat's keel. A test float indicated

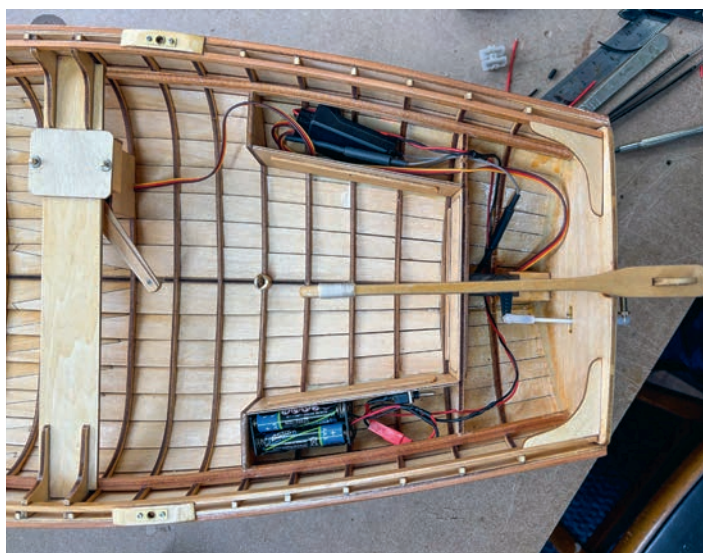


The keel fin under construction.



The keel fin shown complete, and as fitted to the boat.

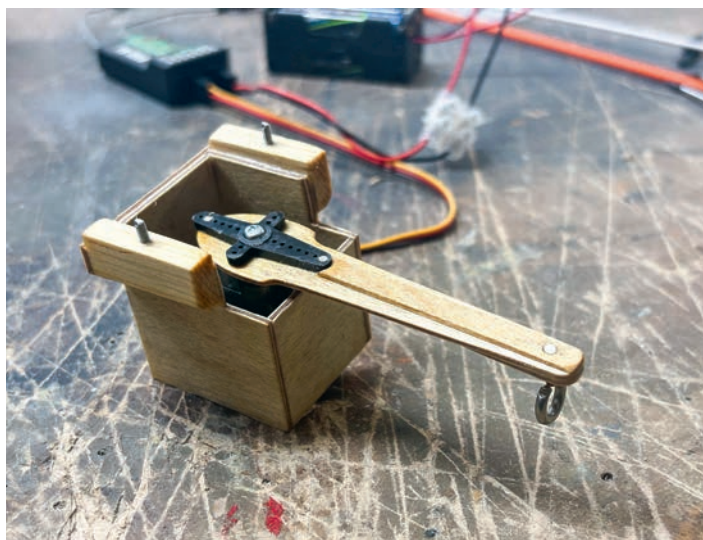




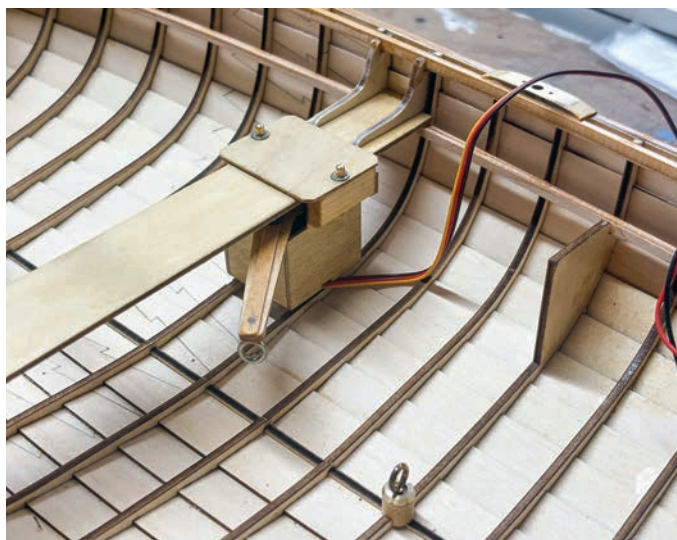
A view from above showing the R/C installation.



The seat at the rear of the boat houses the servo for the rudder, while the receiver and batteries are neatly tucked away beneath the boxed-in benches.



The servo used to control the sail, as built, and as fitted.



The completed model ready to be sailed.

that 1kg could be added to the fin to bring the boat to its water line. This was cast in lead and then bolted to the fin. But, of course, boat can also be statically displayed without its removable keel so that it looks as realistic as possible.

The servo for the rudder was housed under the rear seat, and the side benches were boxed in to securely house the receiver on one side and batteries on the other. A second servo, which I housed in a removable wooden box mounted under the centre thwart, was needed to adjust the sail. The sail itself was made from an off cut of lightweight sail cloth. It is quick and easy to rig, as there are no shrouds or other complex rigging.

Although I did a test float in the bath, after the first sail I realised that the lead ballast needed to be moved, which was quite straightforward to achieve by re-drilling the mounting holes. The second outing saw the boat sail very well. I did wonder if the kit supplied rudder

All hands on deck!



Swallow out on the water at Fleetwood.

would be large enough, but it seems to cope reasonably well. The model's performance to windward is not great but then neither was the original's. Some footage I shot of her on the water can be viewed on YouTube: <https://www.youtube.com/watch?v=a9ih-9NedEE>
She is clearly intended for use in

light winds, especially as she is an open boat and if swamped would sink, so I'm currently considering adding some removable buoyancy made from balsa wood.

Swallow now just needs a crew. Don't suppose anyone knows where I can obtain miniature models of the

Walker family?

ANDY BIGGS
FLEETWOOD MODEL BOAT CLUB

She's absolutely beautifully, Andy! Thanks so much for the lovely photos and the detailed explanation of how you got her operational. Ed

Easy Livin'

Several years ago, at least 15, while I was still working (electrical maintenance technician), a friend and fellow workmate asked if I would like a model boat found at the back of the loft of his son's new house. Of course, the reply was a definite yes. Not knowing what I was getting, it was a big surprise to be presented with a 48-inch fibreglass Aerokits Sea Queen complete with an IC engine, but due to long working hours, / family commitments, etc, the boat stayed on the workshop shelf for a few more years.

Eventually, a bit at time, she was

stripped and checked for any faults, some cracks were repaired, and a new propshaft was fibreglassed in, along with the motor mount. I fitted an mfa 800 motor and two 12v sla batteries, mtronik viper 40 A speed controller and receiver enclosed in waterproof box.

She was painted with Halford rattle cans and lacquer, although I'm not very happy with the overall finish. It was my first attempt at spray painting and blisters appeared a short time later.

There was no need for additional ballast as the heavy batteries seem enough.

She sails well on the local pond (Millhouses Park) – she's not a speed boat but fast enough for me.

The name I chose comes from a song by my favourite rock band Uriah Heep – I'm an old rocker!

Many thanks for a great magazine. I love all the articles, especially the renovation ones.

**IAN FLINT
SHEFFIELD**

Nice job, Ian! Thank you so much for your lovely feedback. I'm really glad you're enjoying the mag. Ed



Ian Flint's lovely loft find restoration.

Atlanta

These photos are of my new model, built to a scale $\frac{3}{4}$ -inch to 1 foot, giving an overall length of 36 inches. I used 3mm steam bent elm planking on plywood frames. While the hull is to scale, the superstructure was built from memory but is similar to a lot of traditional West Coast of Scotland boats. The radar rotates and all lights are working LEDs. At some point in the future I may add a working deck wash. The build took me a while, as steam bending is very time consuming and some planks had to be bent twice, but overall I am very pleased with the result, and the boat sails well on our Borders Model Boat Club pond at Tweedbank. I have also added an engine sound module to further add to the realism.

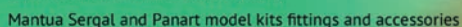
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Billing Boats' Cux 87
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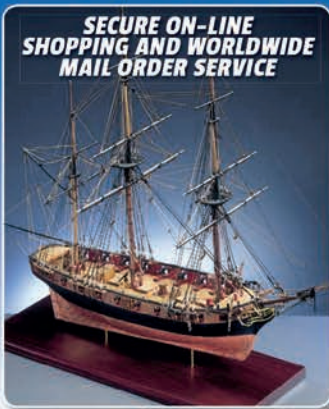
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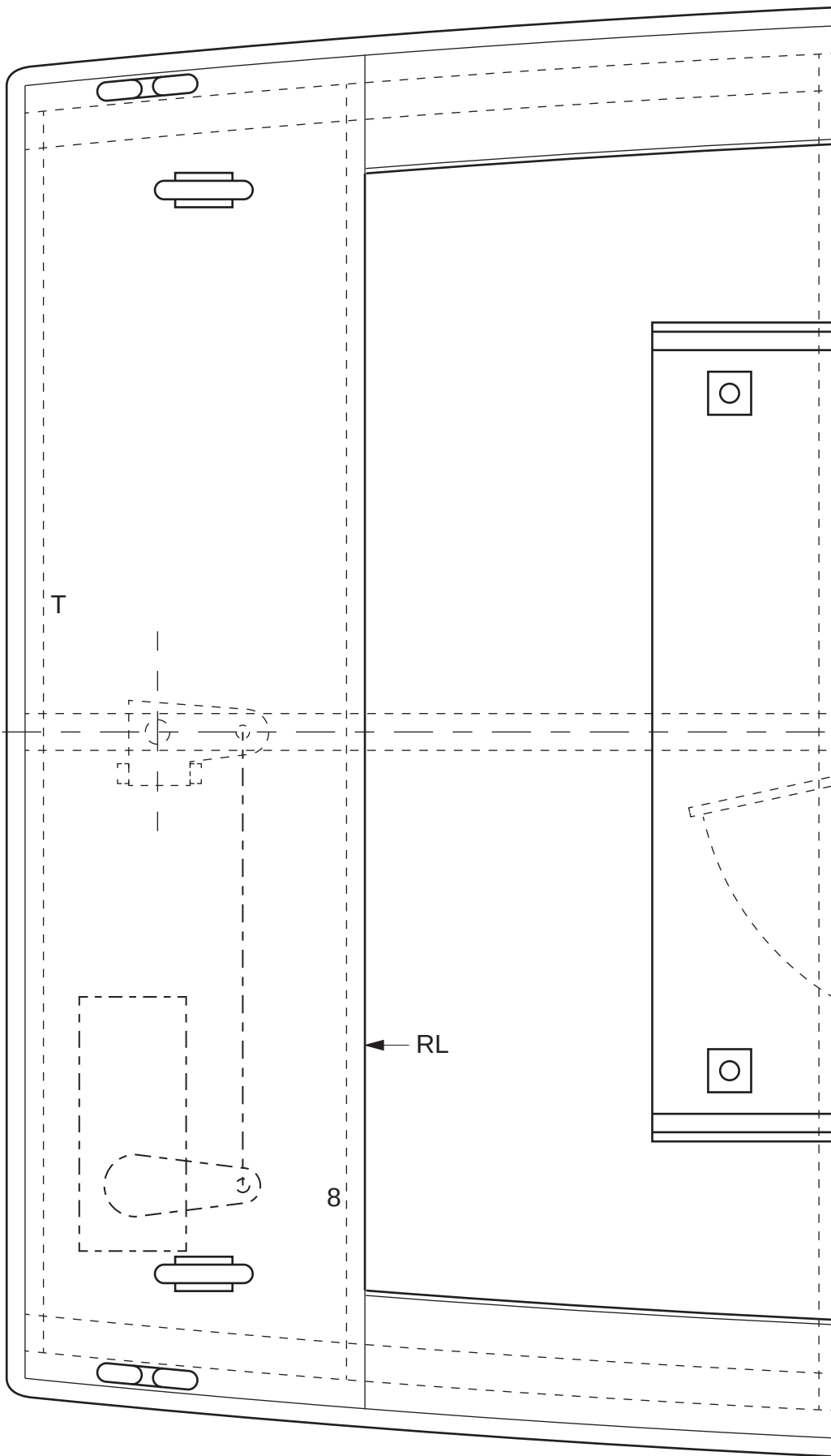
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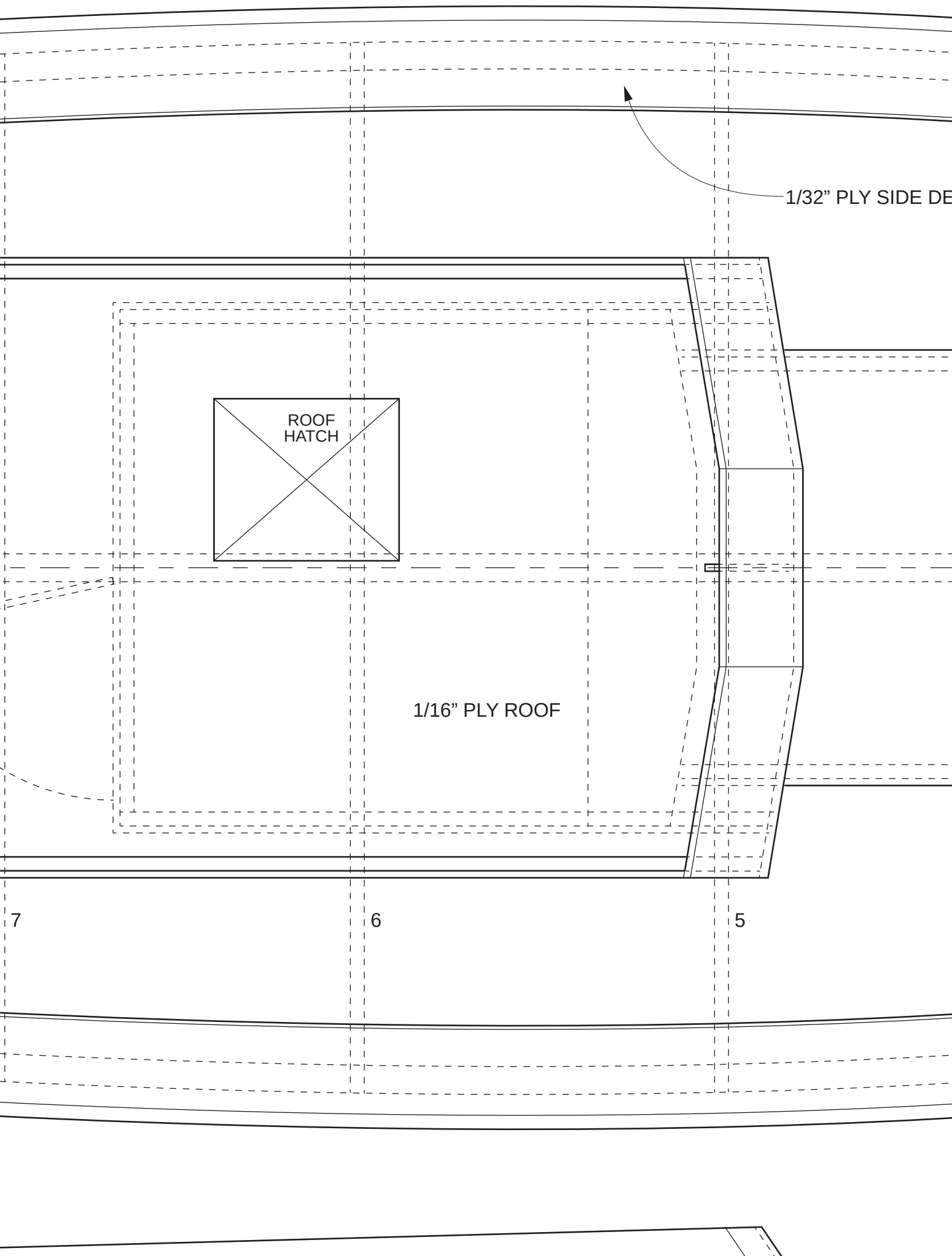
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400

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C1



1/32" PLY SIDE DE

ROOF
HATCH

1/16" PLY ROOF

7

6

5

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4

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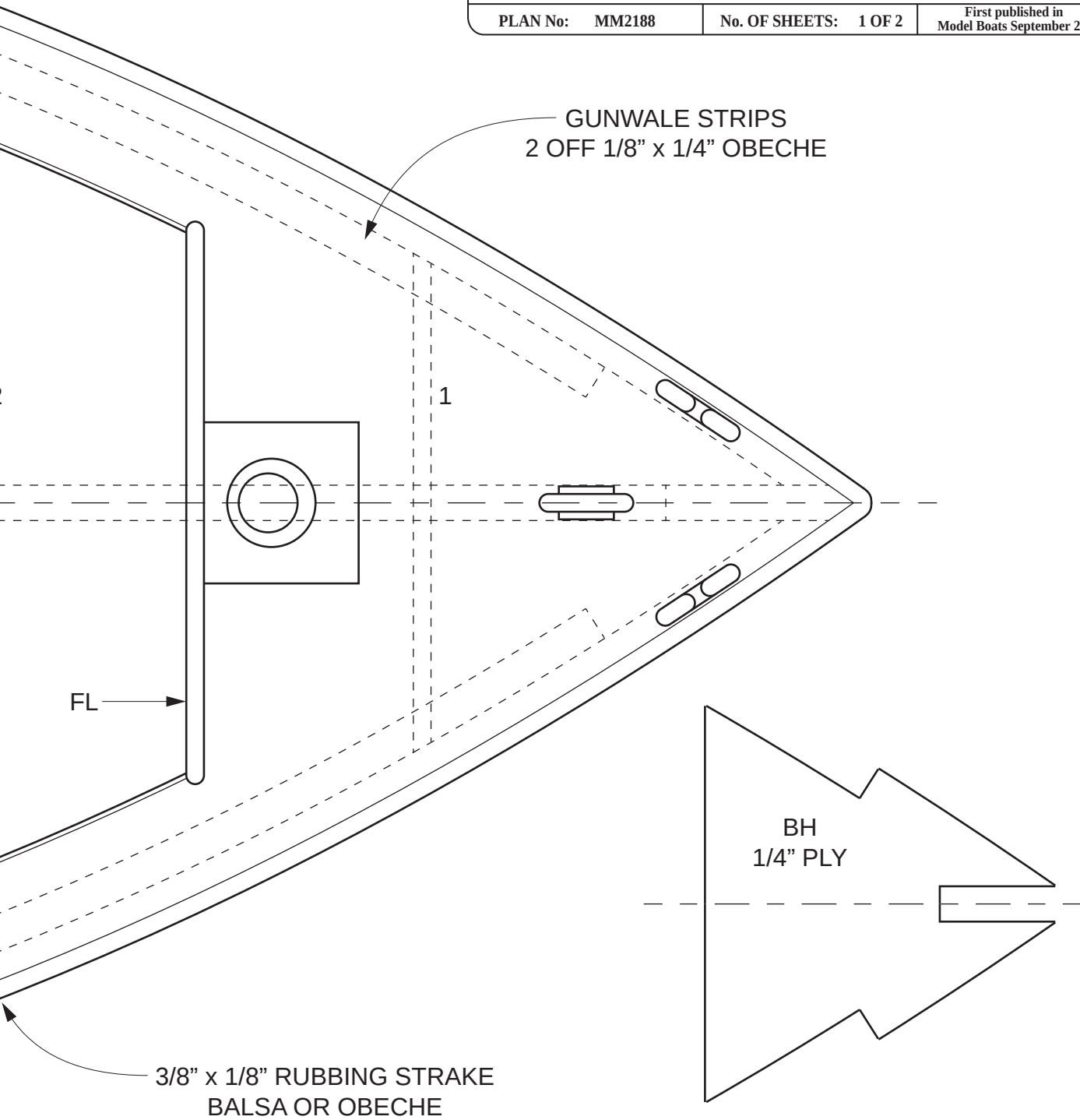
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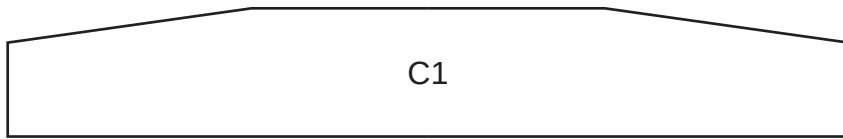
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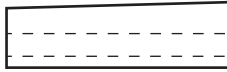
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1/16" PLY



200

100

1/2" BALSA SHEET
BETWEEN 8 & TRANSOM
TO ALLOW FOR
REVERSE CURVE

W/L

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8

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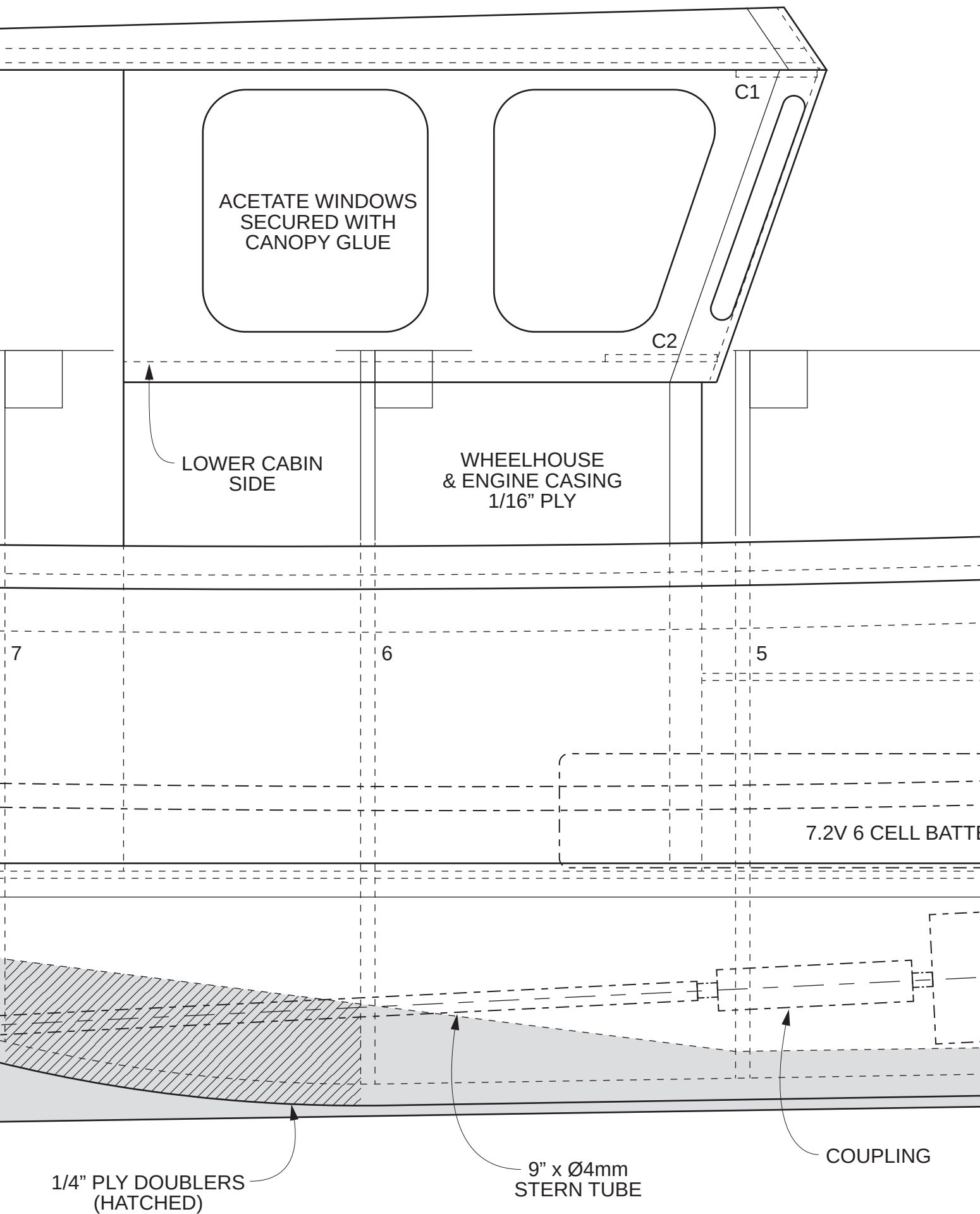
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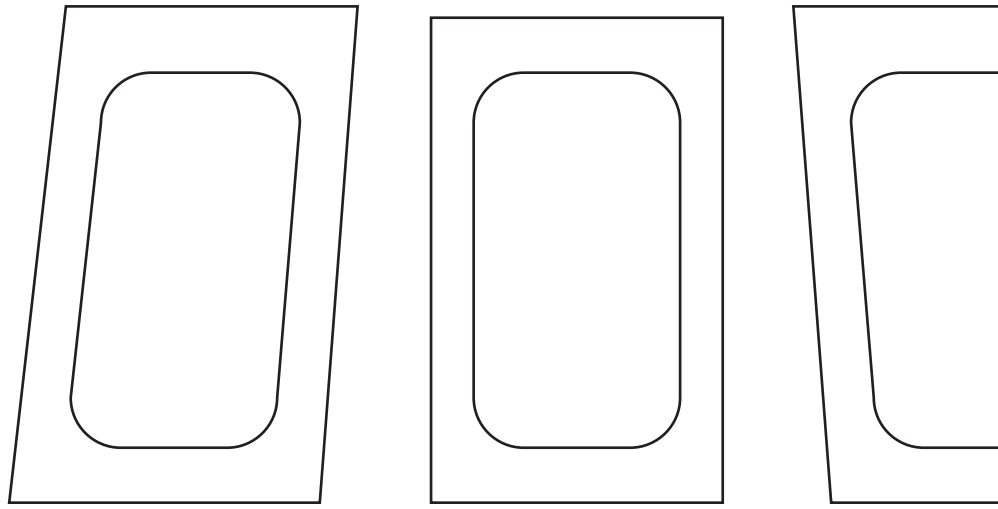
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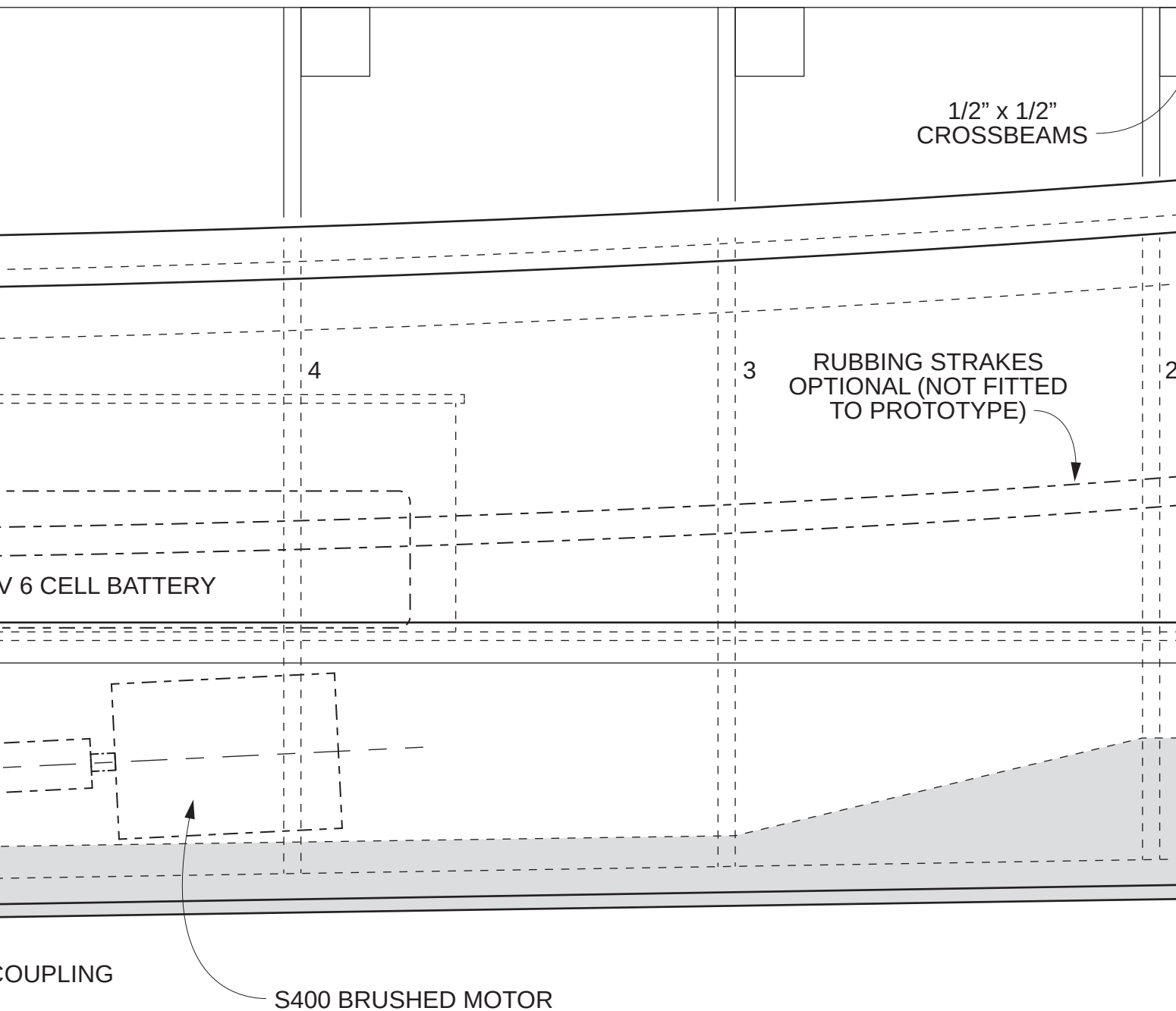
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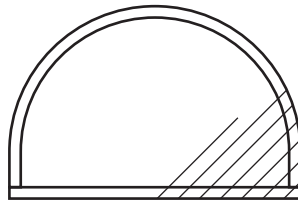
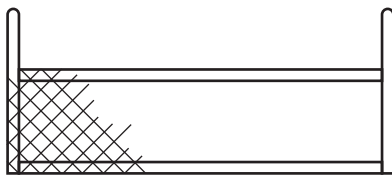
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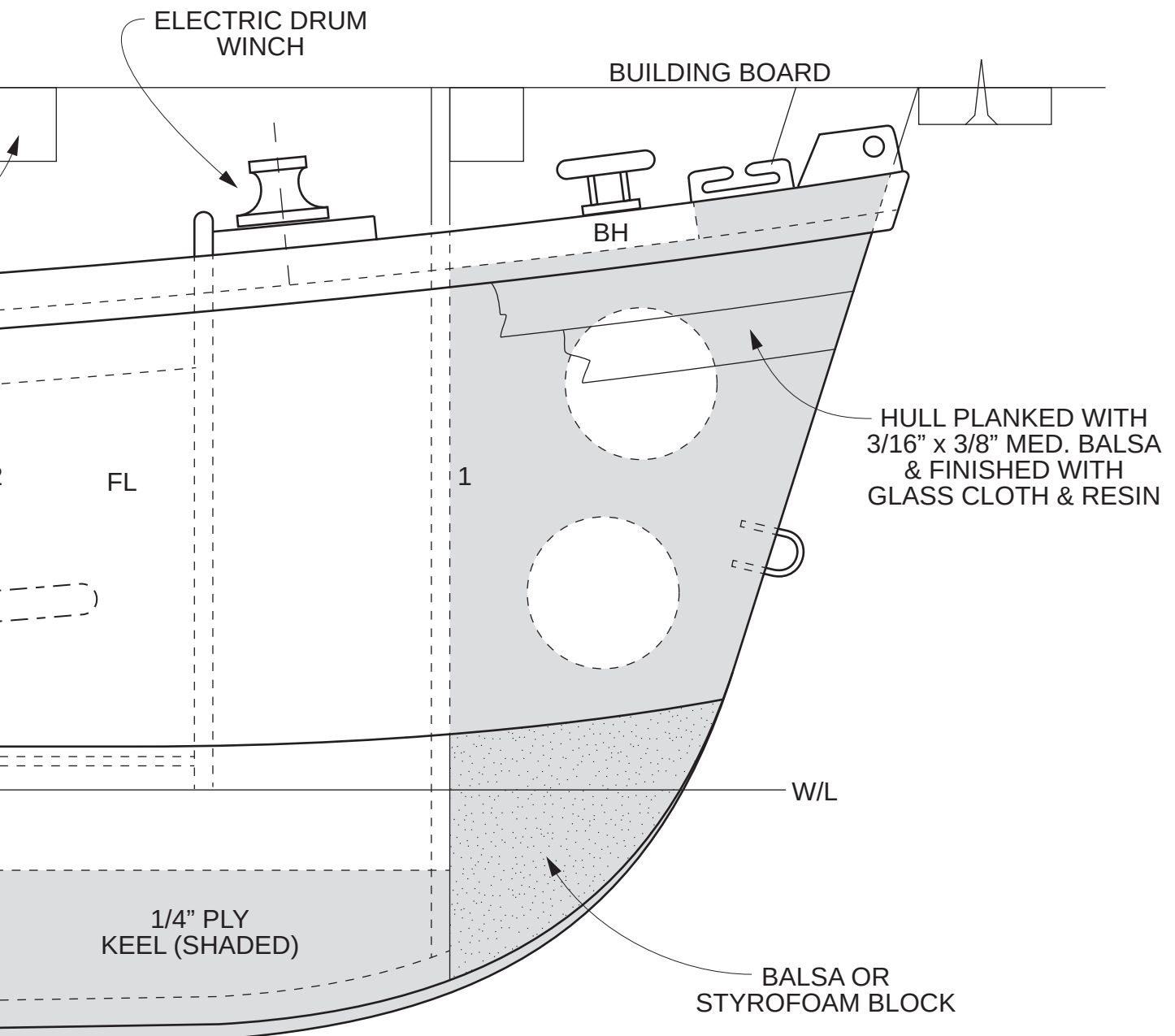


ACTUAL SHAPES





LOBSTER POT
USE MESH THAT ONIONS COME IN!



12

16

20

500

400

300

3/8" x 1/8" BALSA OR
OBECHÉ RUBBING STRAKES

BH

2 OFF 1/8" x 1/4" OBECHÉ
GUNWALE STRIPS

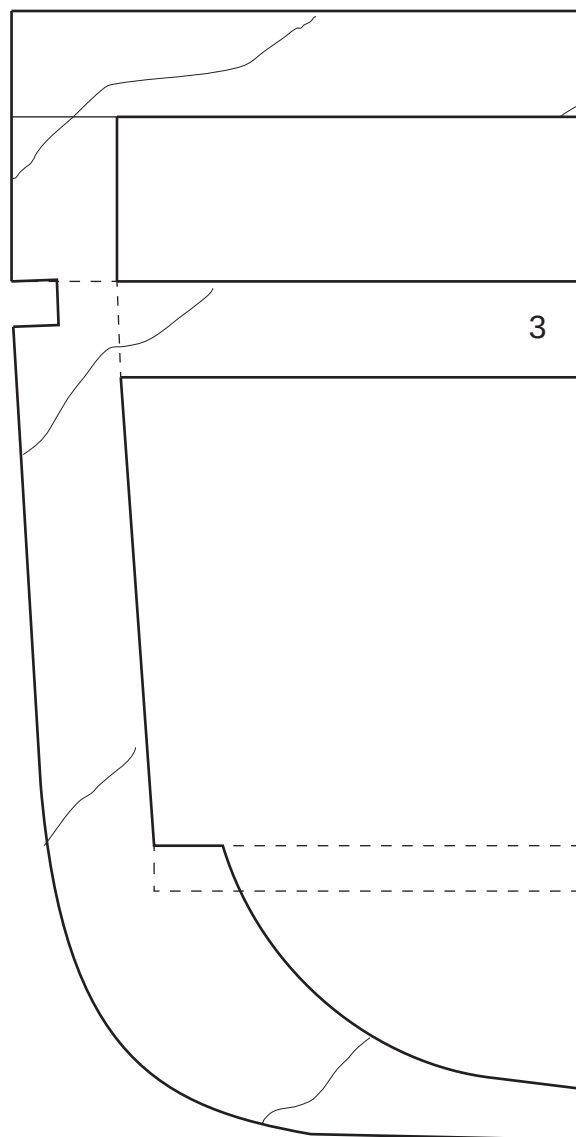
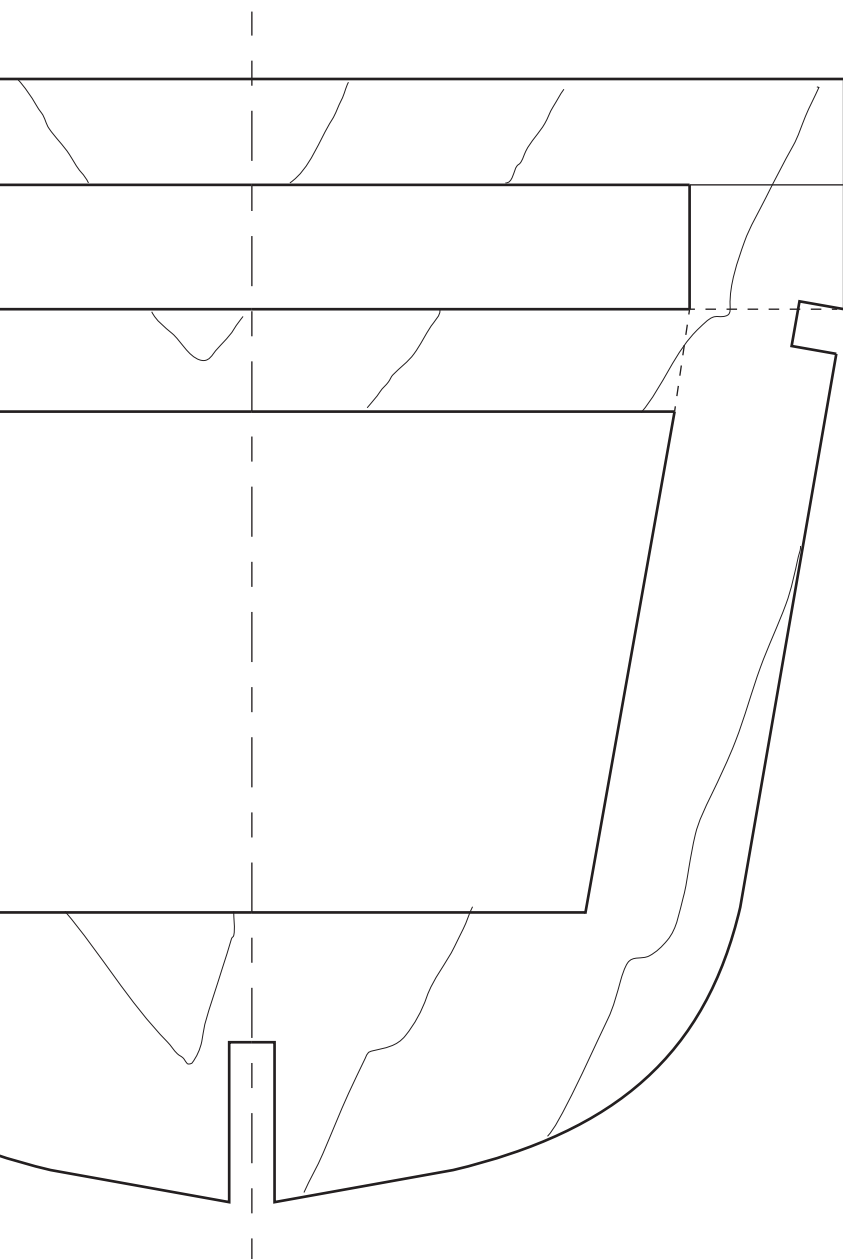
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3/16" x 3/8"
MED. BALSA
PLANKING

BALSA OR
STYROFOAM
BLOCK

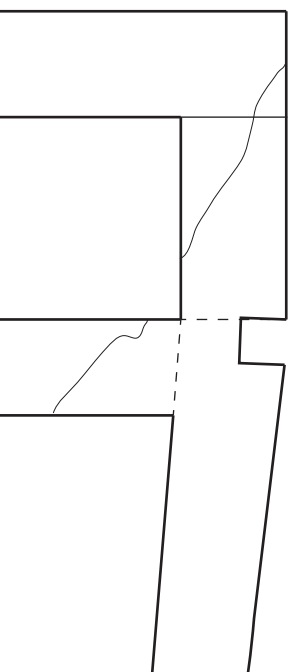
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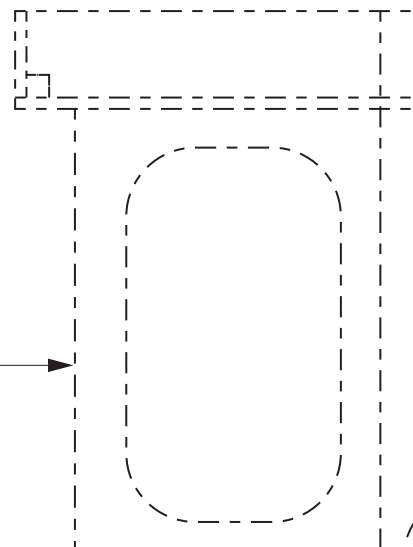


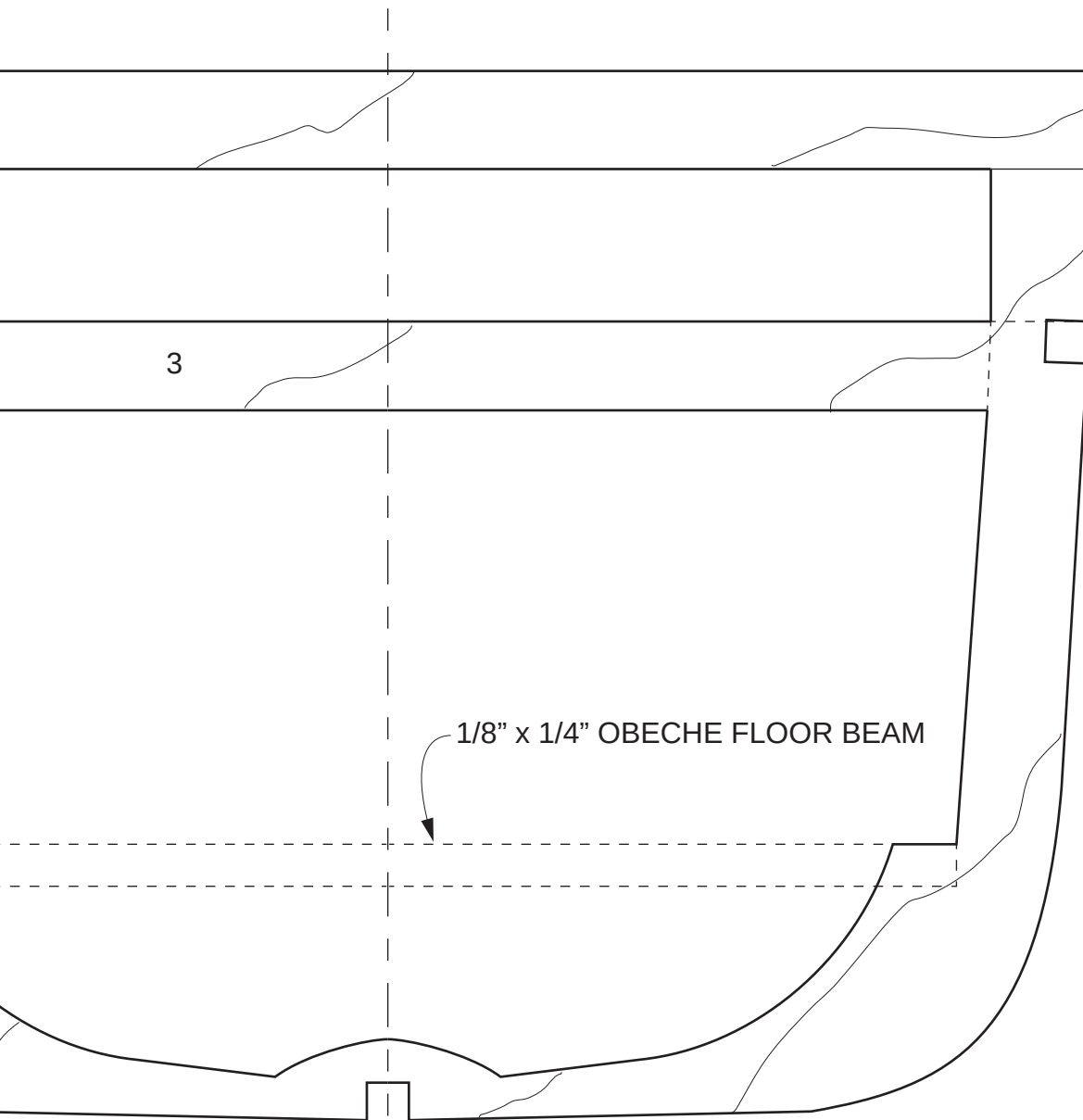
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ALL BULKHEADS FROM 1/8" BIRCH PLY OR EQUIVALENT

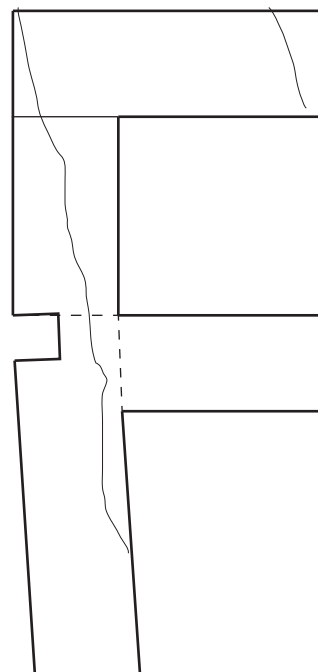
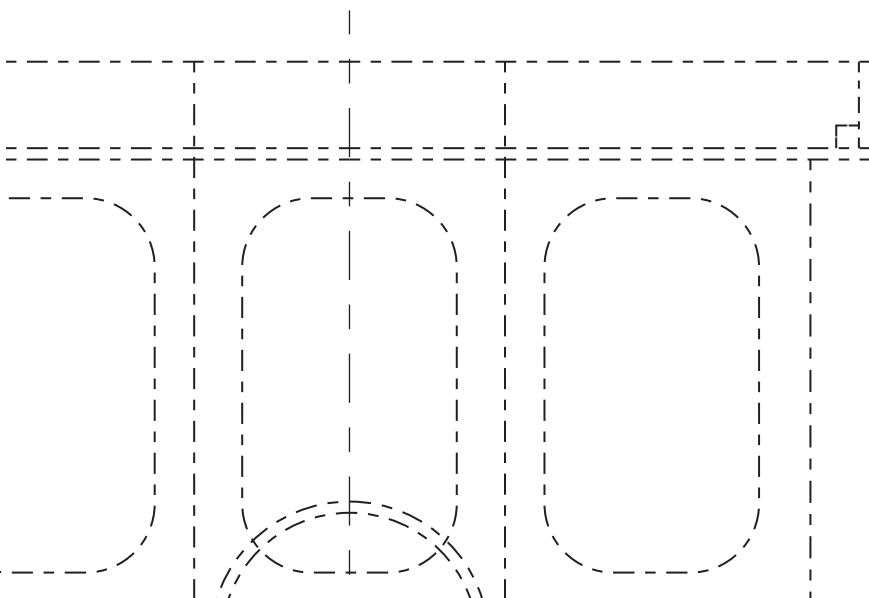


OUTLINE OF WHEELHOUSE →





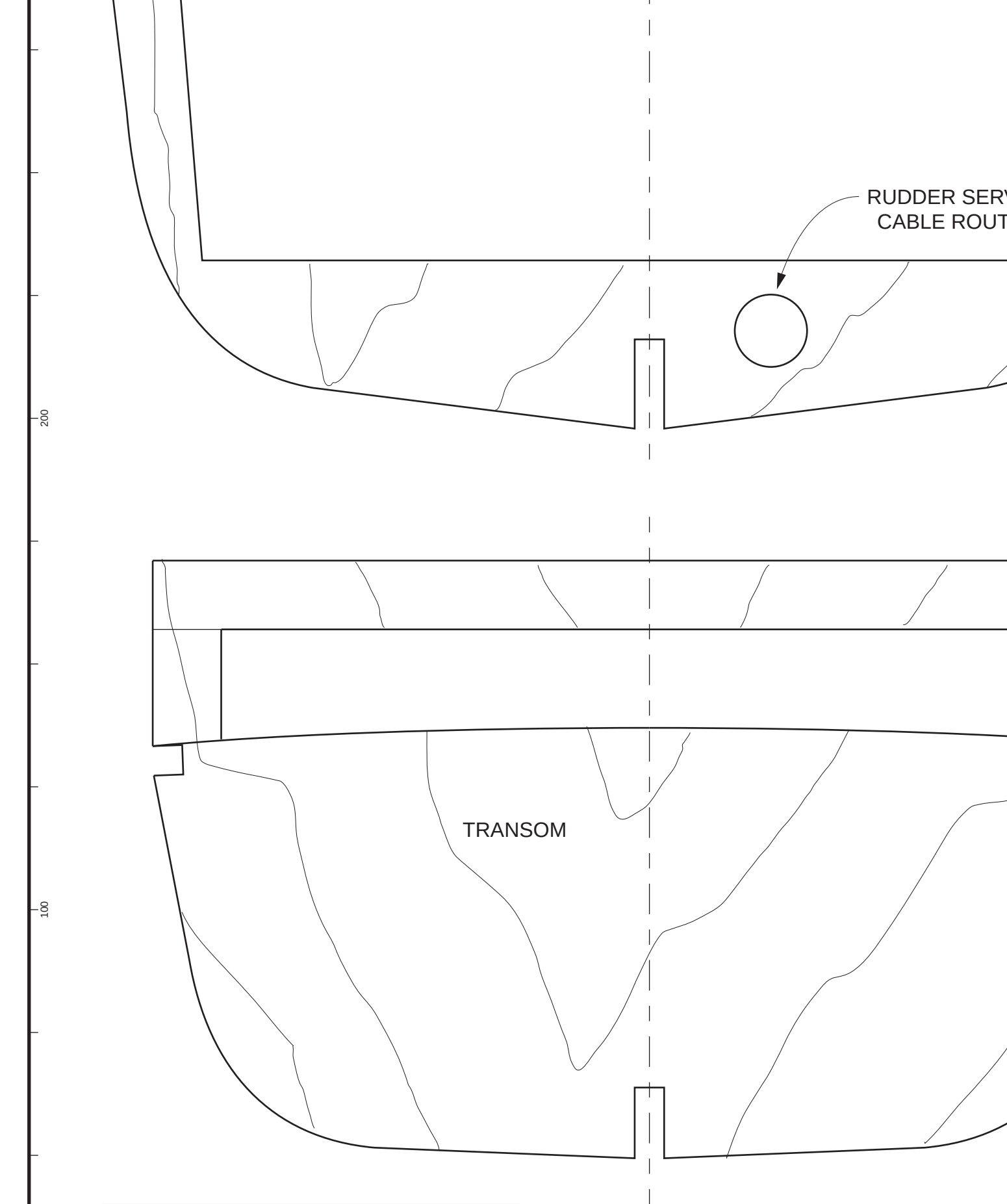
OR EQUIVALENT 3mm PLY



4

S400 BRUSHED MOTOR

5



200

100

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SCALE
MM

100

2

OUTLINE OF WHEELHOUSE →

VO
E

6

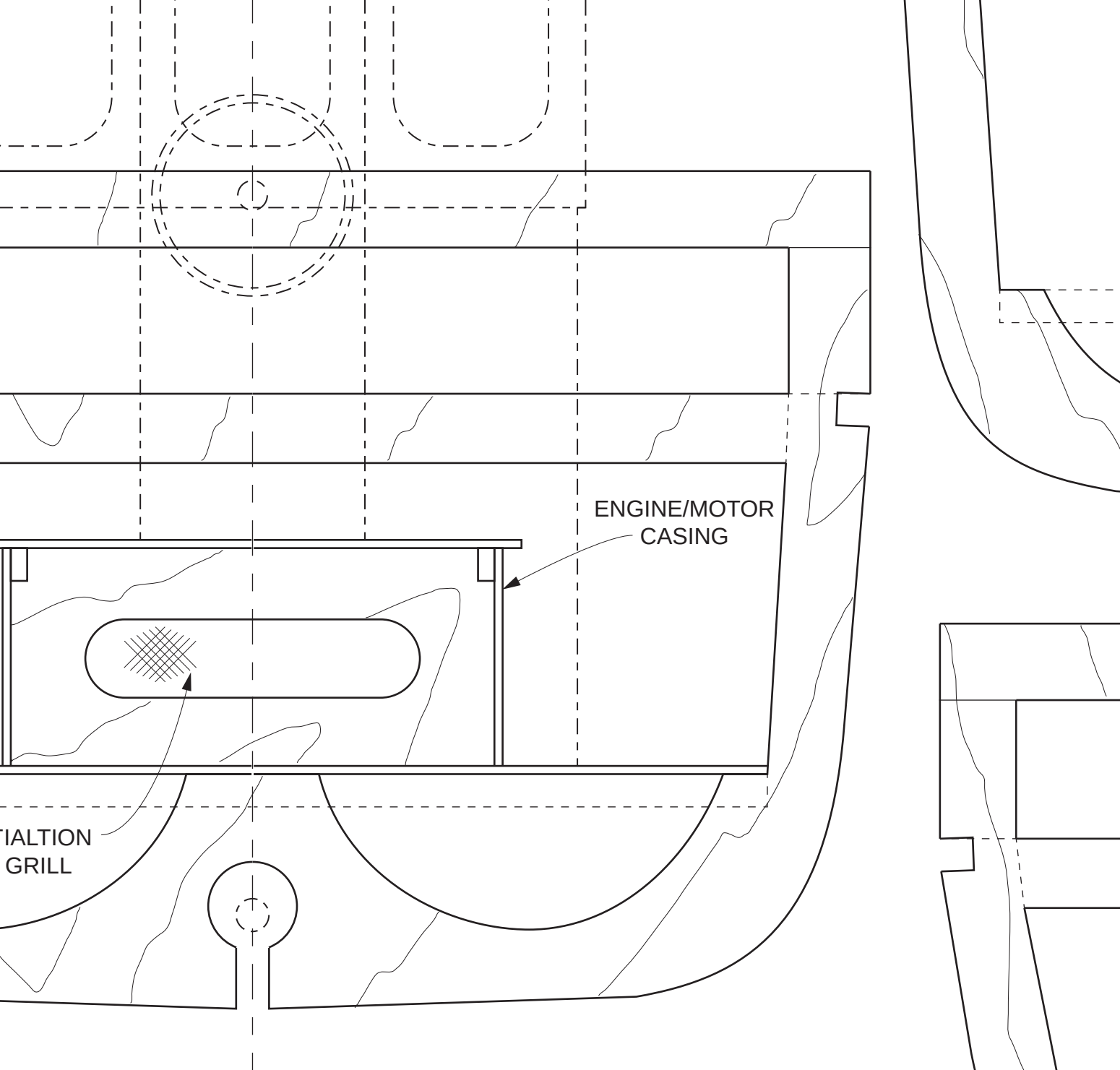
1/16" PLY
FLOOR
PANELS

MOTOR VENTILATION
OPENING & GRILL

CABIN DOOR
1/16" PLY

B
WIV

PLAN No: MM21



Model Boats

WIVENHOE LASS

BY RAY WOOD

PLAN No: MM2188	No. OF SHEETS: 2 OF 2	First published in Model Boats September 2026
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