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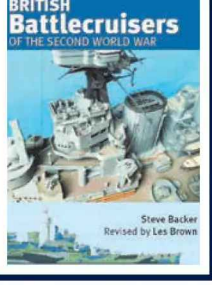

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April 2026
Vol. 76 No. 905

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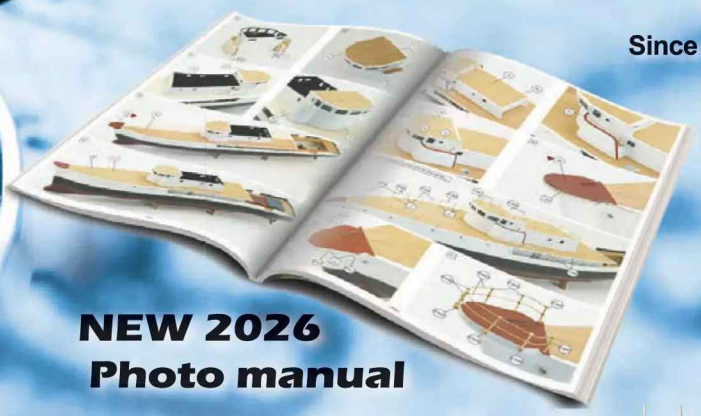

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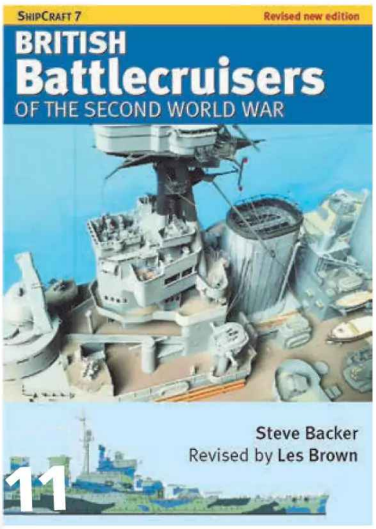

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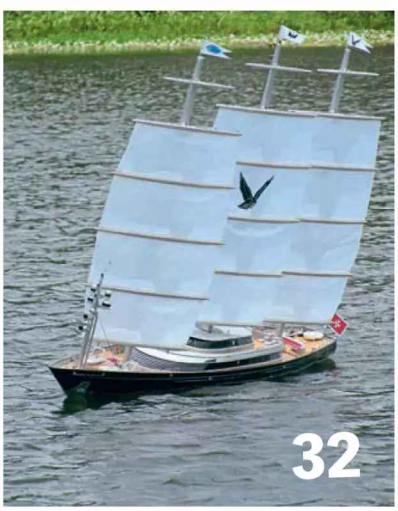

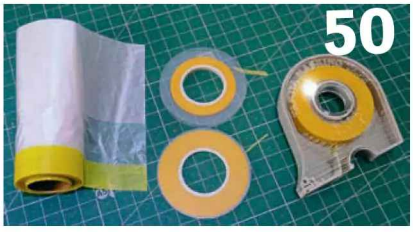

WELCOME TO THE APRIL 2026 ISSUE OF MODEL BOATS

Whether looking for inspiration for your next project or to perhaps further improve your skills, you'll find plenty of ideas, good advice and useful tips and tricks packed into the pages ahead.

For starters, we've got two scratch builds that couldn't be any further thematically apart: Rick Mayes' *Maltese Falcon*, an innovative and very glamorous, fully rigged super yacht, and Ashley Needham's unmistakable rendition of the brutally-styled, yet incredibly striking in its own futuristic-looking way, Stena Line HSS – Beauty & the Beast!

For the kit builders amongst you, John Mileson provides a hands-on review of Clyde Model Dockyard's wonderful new wooden 1:6 scale *Swallows & Amazons*' dinghy and the suitably sized down (1:7 scale) classic British Seagull outboard engine it can be fitted with. While if warships are more your thing, then don't miss the chance to win the newly updated edition of ShipCraft's *British Battlecruisers of the Second World War* modelling-focused book, courtesy of the kind folks at www.pen-and-sword.co.uk, in this month's easy to enter prize draw.

Returning very much to the 21st century, John Parker explores the brave new world of AI and its benefits to us as modellers – and it seems we may not have to worry about Artificial Intelligence posing a long-term threat to humanity after all, because as I write this I reckon our world leaders are looking far more likely to wipe us all out first! Whatever may be going on behind the scenes, though, the only masking we're concerning ourselves with comes courtesy of Richard Simpson's guidelines for applying your paint scheme like a pro. We've actually got a double whammy from Richard this month, as in Boiler Room he also explains how to go about choosing the right plant for your steam-powered model with confidence. The learning curve continues as R/C yacht enthusiast Joost van Santen shares his research into getting more out of Marbleheads, while sage counsel from Glynn Guest could just steer you clear of trouble and/or potentially being on the receiving end of some very colourful language!

Enjoy your read,

Lindsey

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OUT AND ABOUT

MWBC Model Boat Bring & Buy Sale

On Sunday, April 12, between the hours of 10am and 4pm, the Manvers Waterfront Boat Club will be holding a Bring and Buy Sale at The Boathouse, Station Road, Wath-upon-Dearne, South Yorkshire S63 7DG.

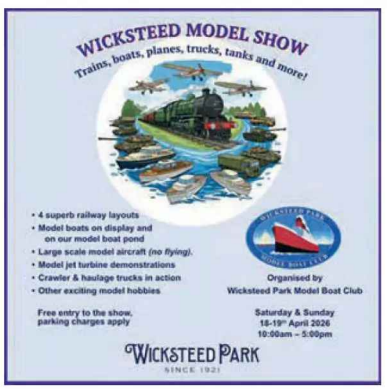
As well as all the pre-owned models, kits, spare parts, accessories, *etc*, offered for sale, there will also be trade stands to browse, with Mountfleet Models and Tiger Hobbies having already confirmed attendance. 6ft tables can still be provisionally booked for the modest fee of £10 by contacting Stephen Perkins at stephen.perkins@mwbc.org.uk.

Visitor admission will be charged at £2 for adults, while accompanied under 16s will be permitted entry free of charge. Venue facilities will include free parking and onsite toilets, and hot and cold food and drinks will be available to purchase in the clubhouse café.

The East Midlands Model Show

From 10am to 4pm on April 12, the Leisure Centre at Argents Mead, Hinkley, Leicester LE10 1BZ (with disabled access and free onsite parking) will play host to the East Midlands Model Show. There will be numerous club display and trade stands to browse, with refreshments available to purchase throughout the day. Admission will be charged at £5 (cash only) for adults, with concessions.

Wicksteed Model Show



Over the weekend of Saturday, April 18 and Sunday, April 19, the Wicksteed Park Model Boat Club will be hosting a broad-spectrum model show (encompassing not only model boats – statically displayed and demonstrated on the water, but also trains, planes, trucks, tanks, *etc*) at Wicksteed Park, Barton Road, Kettering, Northamptonshire NN15 6NJ.

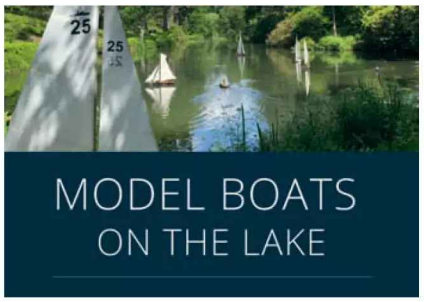
Admission to this family friendly event will be free of charge, although if planning to arrive by car please note there is a pay to park policy operated by Wicksteed Park (this helping to support the Wicksteed Charitable Trust's ongoing maintenance of this lovely park).

For those wishing to make a weekend of it, camping pitches and facilities are available, details of which can be found online at https://wicksteedpark.org/your-visit/camping-at-wicksteed-park/

Working boats event at Bournville

On April 12, the Bournville Radio Sailing & Model Boat Club will be hosting an open invitation event devoted to all types of working boat models at its picturesque Valley Parkway, Bournville Lane, Birmingham B30 1QS sailing venue. Facilities at the disabled access friendly venue include toilets, a clubhouse from which refreshments can be purchased and free onsite parking. For further details, visit https://www.bournvillebrsmbc.com/

Model Boats on the Lake at Leonardslee



The Schooner Radio Control Group will be in action on Waterfall Pond at Leonardslee Lakes & Gardens, Brighton Road, Lower Beeding, Horsham RH13 6PP, over the weekend of Saturday/Sunday, April 18/19, meaning that from 10am to 3pm each day visitors will be able to enjoy watching a fine display of R/C models, including yachts, steamboats, warships, *etc*, take to the water.

The cost of admission to Leonardslee Lakes & Gardens, which lays claim to being the finest woodland gardens in England, is charged at £15 per day, with concessions (for full details, visit the website at https://www.leonardsleegardens.co.uk/), and includes not only access to the 240 acres of woodland gardens and pond but a free shuttle bus for those with limited mobility and free entry to the acclaimed onsite doll's house museum. Please note that there is also a £4.80 parking fee for those arriving via car, accompanying dogs must be kept on a short lead and picnics within the grounds are prohibited – so you may also want to factor in the cost of a light lunch, afternoon tea or a drink/snack in the Clockhouse Tower café (again, a visit to the website will call up the menu).

The Scottish National Scale Model Show

This year's Scottish National Scale Model Show is scheduled to take place over the weekend of April 18/19 at the Dewars Centre in Perth. Run by volunteers from across the Scottish scale model community, the event serves as a showcase for the work of various clubs, special interest groups and individual exhibitors, while also offering visitors numerous trade stands to browse. Modellers are also invited to submit competition entries in various categories (registration for which can be found at https://www.scotnats.org/competition).

Open from 10am to 5pm on the Saturday and 10am to 4pm on the Sunday, admission will be charged at £10 (cash only) for adults, with accompanied under 16s being admitted free of charge. A ticket purchased for the Saturday will allow readmittance on the Sunday *if* you make sure to retain said ticket to show on the door. Onsite parking will be at cost on the Saturday (30p for 2 hours, 50p for 4 hours or £7 for 6 hours) but free of charge on the Sunday. Hot and cold food and refreshments will be available to purchase in the (upstairs) cafe. For further details, visit https://www.scotnats.org/show-info.

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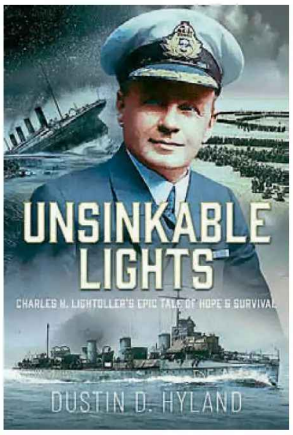
Unsinkable Lights Captain H. Lightoller's Epic Tale of Hope and Survival



If ever there was a biography packed with courage and unbreakable spirit, then this is it. Author Dustin Dean Hyland's gripping new book records the anything but ordinary life story of Captain H. Ligtholler, who managed to survive no less than four shipwrecks (one of which being the *Titanic*), raging storms, a pandemic, a revolution in South America, becoming stranded on a desert island and two World Wars (including the miracle of Dunkirk)!

Published in hardback format and priced at £25, the book can be ordered online from www.pen-and-sword.co.uk or from your local bookstore when quoting ISBN 9781036141462.

PRIZE DRAW ANNOUNCEMENT

HMV card kit winners

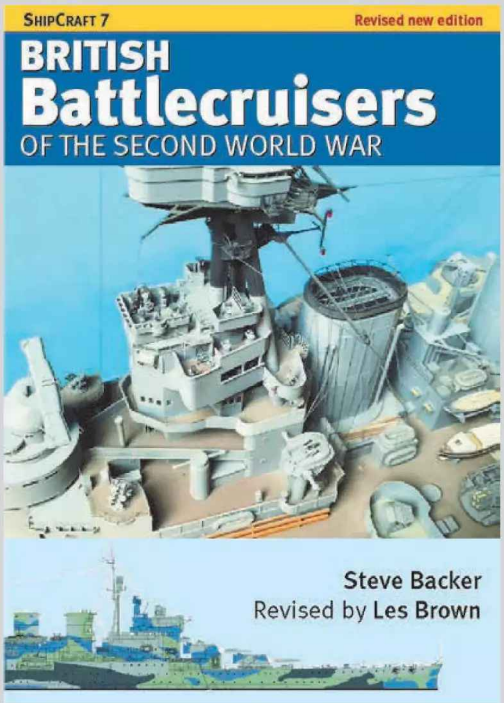
Somewhat belatedly, due to a technical glitch on our part, we are now able to announce the five lucky HMV Card Kit Prize Draw winners as:

- Ian Hovey, Rayleigh, Essex
- George Liddell, Chester-Le-Street, Co. Durham
- William Banks, Thorpe Le Soken, Essex
- Mike Leach, Kidlington, Oxfordshire
- R.M. Head, Devizes, Wiltshire

The very patient Fenten Productions (parent company to the HMV brand) will now be shipping one of its fabulous 1:250 scale Flower class Corvette HMCS *Agassiz* card kits and the respective laser-cut set for it directly to each of you. So, profuse apologies for the delay, but sincerest congratulations!

WIN!

The updated edition of *British Battlecruisers of the Second World War*



In this newly revised edition of *SeaCraft 7: British Battlecruisers of the Second World War*, Les Brown provides modellers with an update on all the various HMS *Hood*, *Repulse* and *Renown* kits and accessories that have been released since these hugely popular Royal Navy subjects were first explored by Steve Backer in the SeaCraft series back in 2007.

Published in paperback format and extensively illustrated with both line drawings and colour and mono images, the title carries an RRP (Recommended Retail Price) of £16.99 and can be ordered either directly from www.pen-and-sword.co.uk (currently at a generous 30% discount) or from your local bookstore when quoting ISBN:97810361531.

This month, however, we're able to offer you, courtesy of the kind folks at www.pen-and-sword.co.uk, the opportunity to win a copy.

HOW TO ENTER

All you have to do to be entered in the draw is complete the entry form below and mail it back to us at:

British Battlecruisers Book Prize Draw
Model Boats,
Kelsey Media, Media Centre,
Morton Way, Horncastle,
Lincs LN9 6JR

Please note, the **closing date for entry submissions** will be **Friday, April 24, 2026.**

Good luck, everyone!

British Battlecruisers Book Prize Draw

Name:

Address:

Tel No:

Email:

TERMS & CONDITIONS

N.B. This competition closes on Friday, April 24, 2026. There are no cash alternatives available. Terms and conditions apply. To view the privacy policy of Kelsey Media Ltd (publisher of Model Boats) please visit www.mortons.co.uk/

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The impressive Schooner Radio Control Group stand.

The Midhurst Modellers Exhibition 2026

Colin Bishop reports back…

The signs were good as I arrived at the Grange Centre in Midhurst for this year's Modellers Exhibition on Sunday, February 15. The car park was totally full, so I, and many others, had to find a space in the town's Northern car park, a ten-minute walk away at the bottom of the High Street. It was well worth the effort, and the £5 entry fee, however, as the venue was packed with exhibits, and model boats were very much in evidence on at least a dozen stands. As with all shows, there were models that had been seen on previous occasions, but also, encouragingly, a good number of boats making their first appearance.

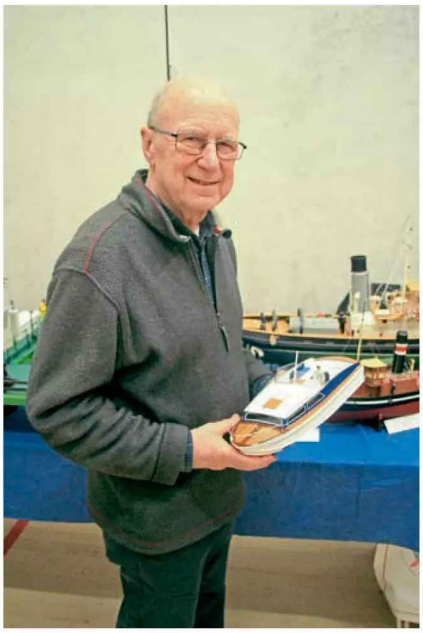
Of course it wasn't all boats, there were many other branches of modelling on show, notably model railways, military modelling, scale aircraft and Meccano, plus some craft stands.

For me, there was a special connection going back 42 years. On the Eastleigh Model Boat Club stand I noticed a model of the mv *Shanklin*, an Isle of Wight ferry built in 1951. I got into conversation with the builder, Alan Gamblin, and told

Alan Gamblin and his model of the Isle of Wight ferry Shanklin.

Colin's original 1984 model of Shanklin, now long retired.

Part of the Alfold MBC stand.



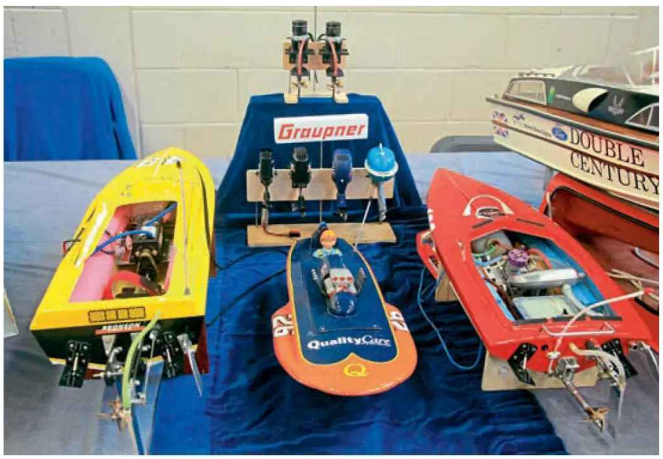
Richard Norman of the Alfold club with his scratch built brushless motor powered Fairey Swordsman, which performs beautifully. SLEC do a rear cabin kit version and Colin's own example goes very well too!

The Portsmouth Model Boat Display Team stand was displaying a large range of models, mostly of the naval variety.

Landing craft are popular subjects, as it's often possible to combine working boats and the military vehicles they carry. Obviously, your pond will need a suitable 'beach' or slipway to demonstrate landing and recovering the vehicle.

The HM yacht Britannia model on the Schooner RCG display stand, featuring a glossy hull, just like the original!

The Portsmouth Model Boat Club brought along a very nice selection of models.



Powerboats and outboard motors on the Portsmouth MBC stand.

No model boat display would be complete without a Titanic. This nice example was displayed by the Eastleigh club.

A lovely scratch-built model of the 1930s' Norfolk Broads gaff-rigged sailing yacht Lucent on the Alfold club display. The full-sized version is available for hire.

The Victoria Model Steamboat Club, based in Victoria Park, Hackney in London, officially dates back to 1904 and is still going strong with an emphasis on 'traditional' model boating.

Lancet, a 36-inch restricted yacht on the Hanwell & District club display, based on a 1940s' design featured in the January 1953 issue of Model Maker magazine. Originally designed for Braine Gear Steering, it has been converted to 2-channel R/C and is owned by Paul South. Plans are available from Sarik Hobbies.

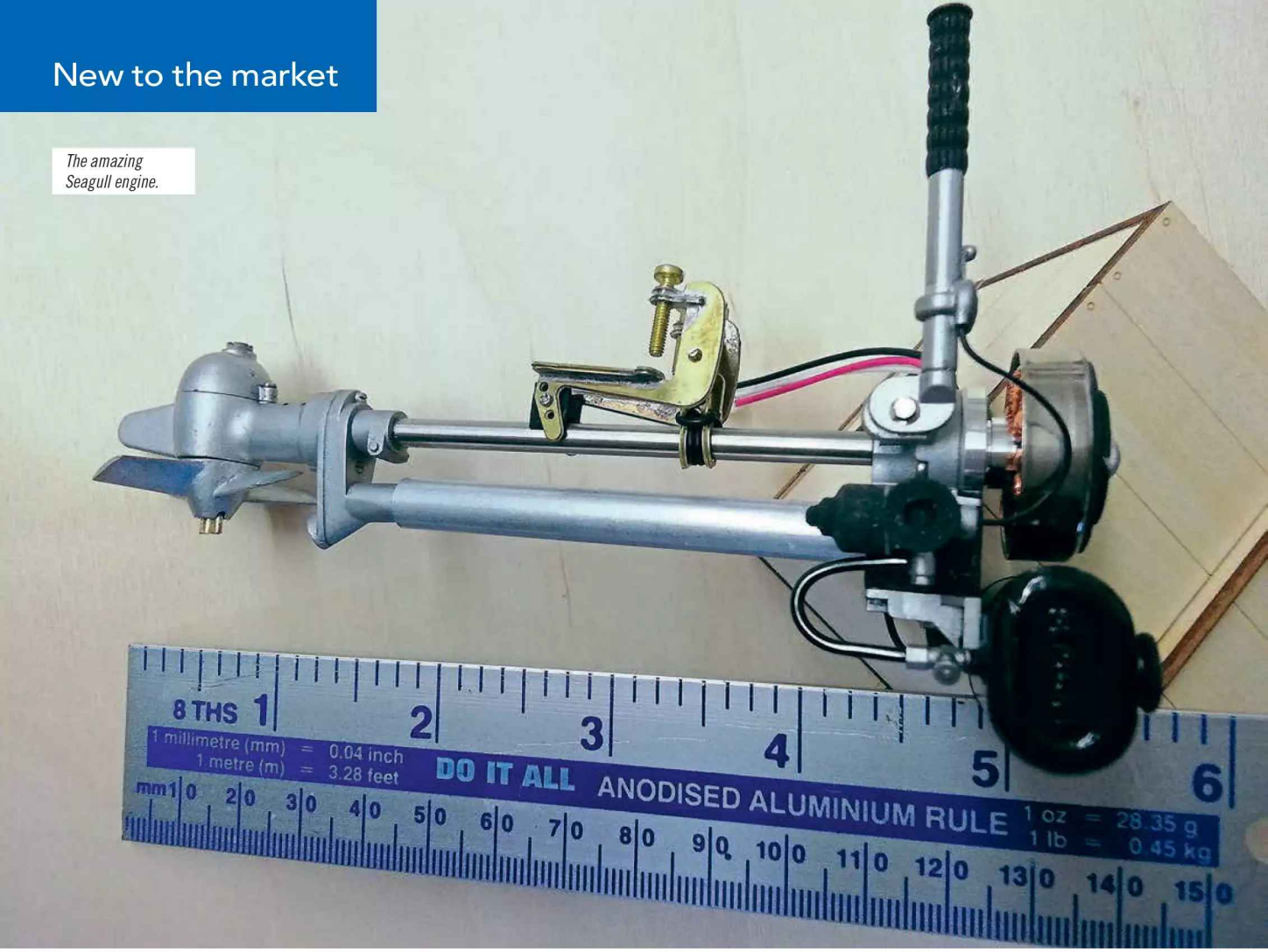
A close-up of the detail on Richard Norman's Bluebird of Chelsea classic motor yacht. Accurate plans and an ABS hull for this popular subject are available from Sarik Hobbies.

The Phoenix MBC based in Cobham, Surrey, had a wide variety of boats on display.

him that I'd travelled on the ship many times when holidaying on the Island. He then showed me his information folder, which included my feature plan article on *Shanklin* which was published in the June 1984 issue of Model Boats. My model had been built from the original Denny shipbuilder plans held by the National Maritime Museum, and these had been used by David Metcalf to draw up a modeller's plan which was added to the MAP Plans Service and is still available to buy from Sarik Hobbies and elsewhere. Alan had scaled up my plans to produce a larger model – see photos. I recently lent my original plans to Richard Norman of the Alfold Model Boat Club (also exhibiting at the show). Richard was on the Alfold stand and showed me some photos of the progress he was making with his model of *Shanklin*. I must confess to feeling rather chuffed that my efforts all those years ago are still bearing fruit!

The Schooner Radio Control Group had another impressive stand this year. Its members are able to sail on the lakes at the beautiful Leonardslee Gardens, situated South East of Horsham in Sussex. The gardens include a sculpture park and a wonderful Doll's House Museum. Its Midhurst exhibits included a model of the royal yacht *Britannia,* which featured a gloss painted hull. I can vouch for the above waterline gloss finish having seen it at close hand when sailing around Portsmouth Harbour on my small yacht in the 1990s. If you attempted to do something like that these days you would literally be greeted by a shot across the bows (or worse) by the armed guards on the MoD Police launches.

Held in early February each year, the Midhurst Modellers Exhibition is nicely timed to refresh our enthusiasm for the coming model boating season, as well as showcasing newbuilds ready to take to the water. Look out for next year's dates! ●



The amazing Seagull engine.

The Seagull has landed!

John Mileson provides a hands-on review of Clyde Model Dockyard's new *Swallows & Amazons* dinghy kit and the suitably scaled down classic Seagull outboard engine compatible with it

It was over 50 years ago when I built a GP14 sailing dinghy in one our spare bedrooms. Admittedly, an odd place to construct a wooden dinghy, and, as you can imagine, the amount of sawdust and wood shavings was horrendous. I'm pretty sure my wife would not tolerate this now, but at that time, being newly married, I got away with it!

All the wooden components and sub-assemblies were made in the bedroom before being finally assembled at my dad's place, located in a village called Silsoe some two or three miles away. It was in those days a very small traditional village, and in the grounds of my dad's house stood the village lock-up and the blacksmiths shop. It was in the blacksmith's barn where the dinghy was assembled.

Its maiden voyage was on the reservoir at Halton near Aylesbury. We launched it with some difficulty, the family being present to heckle!

With the sails raised, a sudden gust of wind came along and, with only me on board, the dinghy took off. This was my first experience of sailing. I suppose I might have coped with the situation had this not occurred before the rudder had been fixed on! So, the dinghy went round and round, the boom crashing from side to side before it clouted me over the head knocking me into the reservoir. This fiasco proved the source of great amusement and became a story my family dined out on this for years!

A while later, we decided to book a week's holiday at the Blakeney Hotel in Norfolk. You may know it. Situated

on the quayside, the hotel overlooks the estuary and marshes. We moored the GP14 at the quayside opposite the hotel. Being tidal, it was quite tricky for we novices to judge the best time to set sail down the estuary and out to sea.

Just prior to the holiday, we had bought a new Seagull outboard engine, which would be clamped to the transom of the boat. In their day, these small British engines were considered to be one of the most reliable small outboard engines in the world. Many thousands were sold.

It had only been delivered to us a day or so before our holiday, and we had only started it once in the garage of our house. Clamping it to the workbench, the propellor was immersed in a dustbin filled with water. After a couple of pulls on the starter chord the engine sprang into life. What we (the royal 'we') had not foreseen was that the propellor would spew out the contents of the dustbin in a matter of seconds, soaking both of us, the garage and our open topped sports car! I fought valiantly(?) through the spray, eventually managing to turn it off.

This was our introduction to Seagull engines.

Back, then, to Blakeney. We set off down the estuary at almost high tide, ending up 'crossing the bar' into a very choppy, windy sea. Taken somewhat aback by the ferocity of both wind and tide, the mainsail was lowered, with some difficulty, and we attempted to return into the calmer waters of the estuary. But we simply found ourselves being dragged further out to sea.

Still, not to worry, we had the Seagull. Trying to get it started in very choppy seas was a little different from being in the garage. I could not get it to start! By that time, surf was breaking over the bow and into the dinghy, making it very difficult to read the sodden instruction manual.

My memory is hazy when trying to remember how I resolved this complex technical problem (about which my wife would be only too pleased to relate). I had forgotten to turn the petrol on!

Having established this, the engine started first pull and we motored back sedately under power into the calm water, saved by the Seagull.

For goodness' sake, where is all this leading? Well, recently Mark Parker, who in the past has got me into equally deep water, contacted me enquiring if I had seen the model Seagull engine being made by Christian Pomeroy from Clyde Model Dockyard.

Full-size British Seagulls

British Seagull outboard engines are renowned for their ruggedness and reliability. They were manufactured in Wolverhampton from the late 1930s until the mid 1990s.

Originally known as Marston Seagull, the British Seagull was, as the name implies, manufactured in Great Britain. The company was known for its simple and durable 2-stroke outboard motors.

The company later moved to Poole in Dorset, where it was more closely sited to the thriving sailing community.

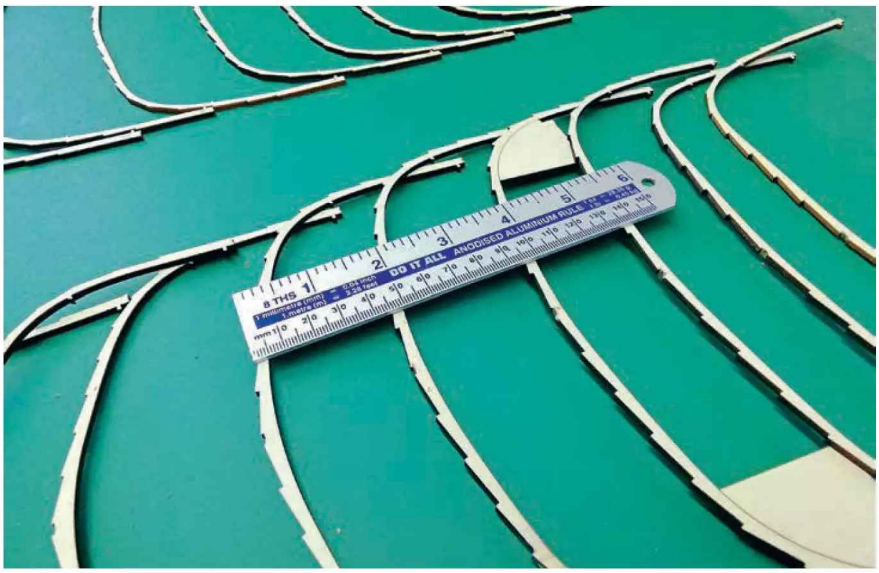
The engines were single cylinder, water cooled 2-stroke. They were built with the minimum number of components, which contributed to their longevity, and to cope with the harsh marine environment the engines were made from high quality materials.

It was the importation of lesser but ‹cheaper› outboard engines that led to the demise of this truly British company.

RIP Seagull!

I hadn't heard of this company, based on the Isle of Arran in the Clyde estuary. Looking at the website, I was surprised to see a 1:7 scale working model of a Seagull engine (138mm high x 36mm wide). This has a brushless motor and a drive shaft to the propellor. Made from cast resin

The interlocking construction frame laid on cellophane and nailed down using panel pins.



The ribs are very delicate, and John admits he broke some while removing them from their frets.

"For old time's sake, this was a 'must have'! "

with stainless steel and aluminium fittings, it comes painted, lightly weathered and ready to run. It's a beautiful scale model.

For old time's sake, this was a 'must have'! It was priced at £145, with production limited to 100 numbered models (all of which, if you check the website, now appear to have been snapped up).

While on the Clyde Dockyard website I noticed the company was also about to produce a 1:6 scale kit for a *Swallows and Amazons*' based dinghy. Although not to exactly the same scale as the Seagull (1:7), the resulting model would be the ideal platform for the little outboard engine.

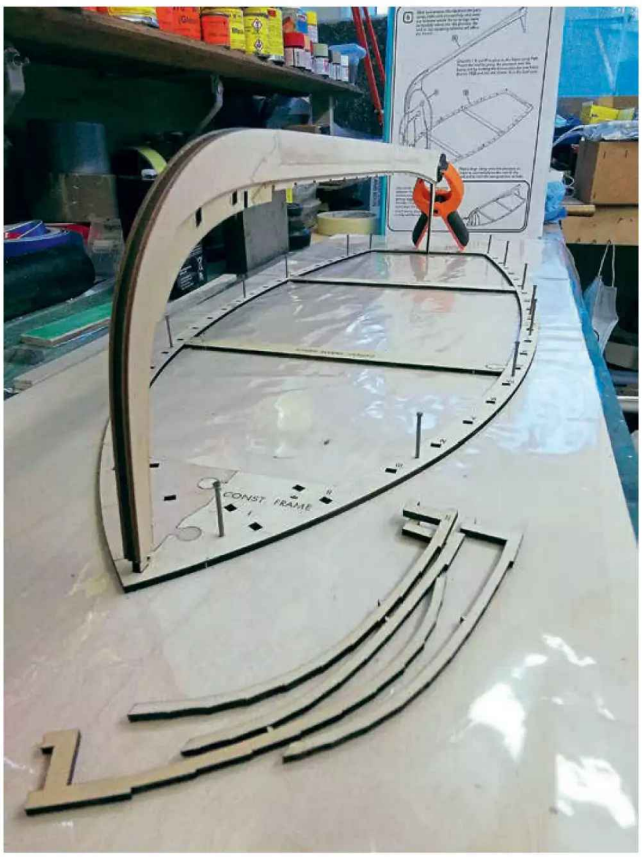
So, without further ado, I ordered one, knowing little about building a 'true' clinker-built boat but I imagined the experience would be beneficial, for me, if not my wallet!

"Although not to exactly the same scale as the Seagull (1:7), the resulting model would be the ideal platform for the little outboard engine"

A bird in hand...

On arrival, it felt as if Christmas had come early – although in reality the holidays were just around the corner. Despite my excitement, it almost seemed a shame to unpack my kit, as the brown paper parcel it came in was a work of art in its own right. Besides, I figured that if I waited until Christmas Day, I'd have something other than another pair of socks to unwrap.

It proved worth the wait. When opened, the cardboard box, which in itself smacked of quality, revealed a number of laser-cut sheets of plywood. I don't know whether you've experienced it, but some laser-cut plywood kits smell of burnt wood on opening, with burn marks covering half the poor-quality plywood and the



With the keel components bonded together, it was glued to the construction frame.

The ribs glued onto the construction frame and the keel. John found this delicate job was not as difficult as he'd anticipated, but he still managed to break a couple more.

"The quality of the instructions raises the bar for other kit manufacturers. They are very, very good"

whole appearance being 'clunky'.

In this instance, though, the plywood was of exceptionally high quality, the laser burn wasn't at all noticeable and the tags holding the components were very fine.

The instruction booklet included, was also available in digital format online.

According to Christian Pomeroy's introduction, the model is based upon the design of the dinghy *Swallow* that features in Arthur Ransome's novel *Swallows and Amazons*. It's a general-purpose dinghy that might be rowed, motored or sailed. Examples of boats such as this were often built by graduating shipwrights as a demonstration of their acquired skills.

Before reading through the 23 pages of comprehensive instructions, accompanied by very clear line drawings, it dawned on me that I might have bitten off more than I could chew. But the quality of the instructions raises the bar for other kit manufacturers. They are very, very good.

Now, you may be thinking, "*Mileson has gone a bit over the top, hasn't he? When he gets round to describing the construction he may not be so effusive*". We shall see...

From my point of view there is one omission from the information given. As previously mentioned, the kit is very versatile. In the right hands, it could be transformed into a museum quality static model. I, however, had elected to build a motorised dinghy using the Seagull engine. But as I soon discovered, there are no suggestions on how the boat can be modified to allow a servo motor to be installed for activating the rudder, or indeed the Seagull. And I had no idea of how steering could be achieved. Ah well, not to worry, it was time to get started.

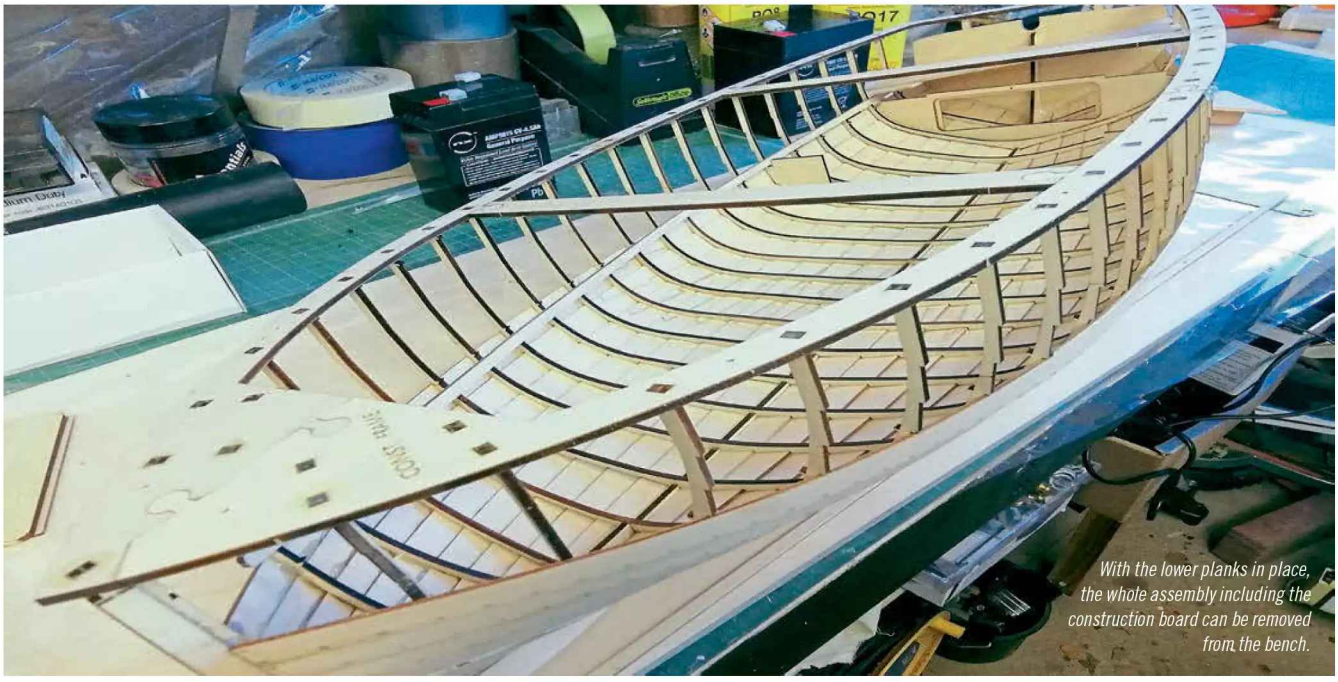
The first of the hull planks fitted. This is not difficult, but John points out, it is crucially important to ensure planks are well bonded to the keel.

The build

The first and very simple job was to set up, on a flat surface, a construction frame, which accurately locates a lot of the components when building the boat. While the instructions suggest greaseproof paper, I used cellophane to stop the whole thing sticking to the board.

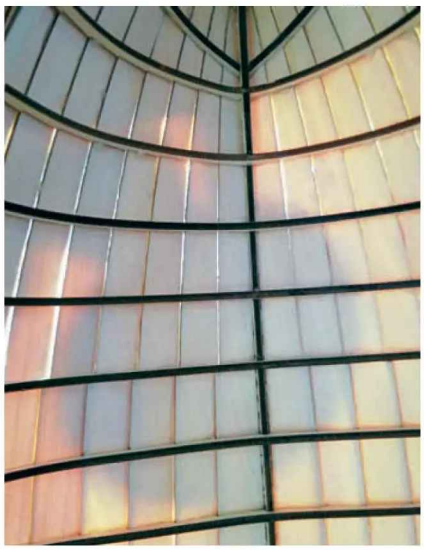
Once the construction frame was glued together, it was nailed down to the build board. A nice and easy start.

I should mention that Christian recommends using PVA adhesive for certain joints but cyano (superglue) glue for strength and speed in the rest of the build. Hmm… Having ended up



With the lower planks in place, the whole assembly including the construction board can be removed from the bench.

The lower planks of the clinker construction in place. The notches in the ribs assist location.



Would John's hull leak? It's fairly obvious from this underlit photo of the hull's interior it most certainly would. Nothing for it but to keep going!

with parts stuck to various parts of my anatomy in the past, I'm a bit wary of using this adhesive for the bulk of a build.

Next came the keel. The most important, and probably obvious, aspect of laminating the ply components together is to ensure the keel is straight.

Having removed the ribs from the parts' sprue, during which I managed to break two of them, the assembly of the ribs to the keel and the build frame was the next job. I decided to leave this until the following day, when I hoped to have gained a little more courage. I could foresee this being a 'game over' operation!

As it happened, the next day I cleared my domestic chores nice and early and set about what is a very delicate task. I started off by breaking two more ribs, the boat's, not mine! This didn't bode well. But, as it happened, I quickly got into the swing of things and within half an hour had completed the task – admittedly, this being more down to the accuracy of the parts than any particular prowess on my part. Even so, I bounded across the garden, hugged my wife and rewarded myself with a nice hot milky drink!

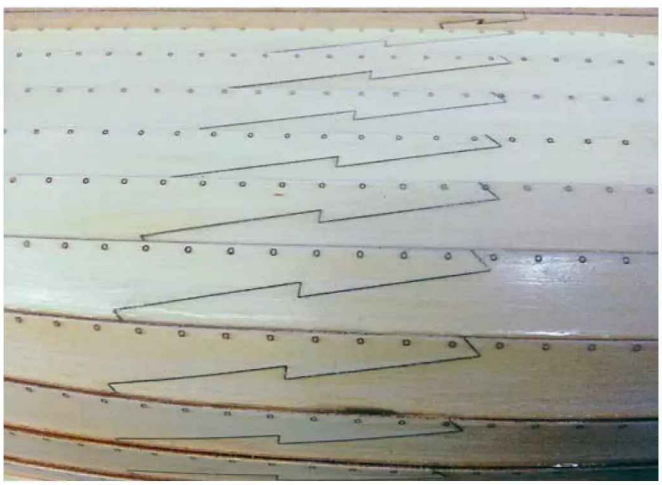
> *"I quickly got into the swing of things and within half an hour had completed the task – admittedly, this being more down to the accuracy of the parts than any particular prowess on my part"*

Returning to the fray, refreshed and on a bit of a high, I resumed work by removing all the planks from their frets in readiness for gluing the scarf joints together, thus making each about twice as long. They are all clearly marked to show which bit joins with which. I don't know why these planks should have a scarf joint in the middle, maybe due to the size of the laser cutting bed. It would have been a lot easier if they came as finished lengths. But I adopted the mantra, 'think twice, glue once!' and crossed my fingers they would be strong enough to withstand the rigours of bending around the contours of the hull.

At this point it occurred to me that the finished scarf joints would be very obvious to the viewer of the completed boat. I had planned on a varnished hull but found myself worrying that these joints might bug me in the future. To remedy what, in my eyes, would be an eyesore, I may have to paint the hull.

Meanwhile, however, all the planks were prepared, and the first plank on either side of the keel (garboard) was glued on using PVA. The only frustration here being the wait while the adhesive to dry before being able to add the next plank. The instructions suggest

With all the planks and seats in place, the now redundant construction frame could be cut off and discarded.



The outer hull brush varnished by John, filling in some of the obvious holes in the joints. As can be seen, however, the scarf joints are very obvious.

With the inner and outer whales in position, the hull virtually complete.

The rudder and tiller assembly fitted to the stern, using John's replacement pintle and gudgeon.

copious amounts of Cyano to speed up the assembly. The big drawback to this, though, is getting the planks placed accurately first time, so this, as far as I was concerned, was a non-starter. Using PVA, whilst slower, allows mistakes to be corrected before the glue dries. Hence only three planks were fitted either side of the keel each day. Consequently, it was about a week later before all the planks were securely fitted to the ribs.

With the bulk of the work done, all that remained was to fit the risers, thwarts and seats, which all tied the sides of the dinghy together, prior the building board being cut off. The building board is quickly released by cutting through the exposed ribs. This could have been done using a razor saw, but I chose to use a Dremel and cutting disc. This very easy operation left the boat almost finished.

The inwales and outwales, however, remained to be fitted., and therein lay a problem. You may recall the planks are joined together using a scarf joint, which in the case of the planks bonded together well. The inwales and outwales are also joined together using scarf joints. Bearing in mind these are thin strips of plywood, about 5mm x 3mm, using scarf joints is not particularly practical. And yes, all eight joints broke as I endeavoured to fit them to the contours of the boat. I managed to

While John would have preferred to leave the outside of the hull as varnished wood, his brush painted enamel finish helped the seal the gaps in the planks.

The tiller arm activated using a 'fork' device screwed to the servo arm.

As per the original Seagull engines, John's was simply clamped to the stern. This has the capability of being used to steer the dinghy.

"Realistically, anyone could, with care, build this kit. It's easy"

botch together the inwales, but the outwales were a lost cause and are now residing in some far-off recycling tip. These, then, I replaced with some scrap lengths of pine beading.

Making up the rudder, tiller and oars proved simple.

I would just add that, as designed, the hinges on the rudder are beautiful scale brass etchings, which if the dinghy is to be a static model are fine. I, however, felt that they wouldn't really be strong enough for the rough and tumble of practical sailing, and so I replaced them with homemade 'pintles and gudgeons'.

The inner surface of the hull was coated with a couple of coats of varnish, brushed on with the expectations it would fill some of the obvious gaps in the planking. The outside of the hull was painted using Phoenix Precision Paints enamel – again, applied with a brush.

While the kit was now complete, the sticky problem of how to operate the tiller still remained. A mock-up was constructed simply to prove the tiller arm could be moved using just a servo and a twin vertical arm. It worked on the bench, but it is a clunky solution to the problem. When fitted to the rear seat, it means the helm sits astride this steering contraption. Not a pretty sight!

Happier than a seagull with a stolen chip

Christian Pomeroy has produced a kit of truly excellent quality. It overcomes all the difficulties associated with clinker-built boats, so, realistically, anyone could, with care, build this kit. It's easy. I would, however, advise taking your time and using as little cyano glue as possible. Stick to the PVA glue (not literally!) if you want to avoid the ever-present threat of having bodily parts stuck together with cyano. I recommend having about 20 small clamps to hand to make this process easier.

Is the kit worth £130? Well, whether you want to build an heirloom/

An overall view of the finished boat. The insides of the hull were brush painted with numerous coats of varnish to make it watertight.

John chose to add a mast and furled sail to his dinghy. Also shown are the oars.

The completed dinghy moored in a creek, awaiting the tide.

museum quality boat to proudly put on the mantlepiece or a working version that will attract lots of attention, for all the right reasons, at your local boating pond/lake, it's worth every penny.

This dinghy kit and the Seagull engine are, in my opinion, some of the most exciting new products to have recently appeared on the market.

The Clyde Dockyard Company has set an exciting new standard, and I, for one, look forward to seeing what Christian Pomeroy's next project will be. ●

"This dinghy kit and the Seagull engine are, in my opinion, some of the most exciting new products to have recently appeared on the market"

Stena Line HSS

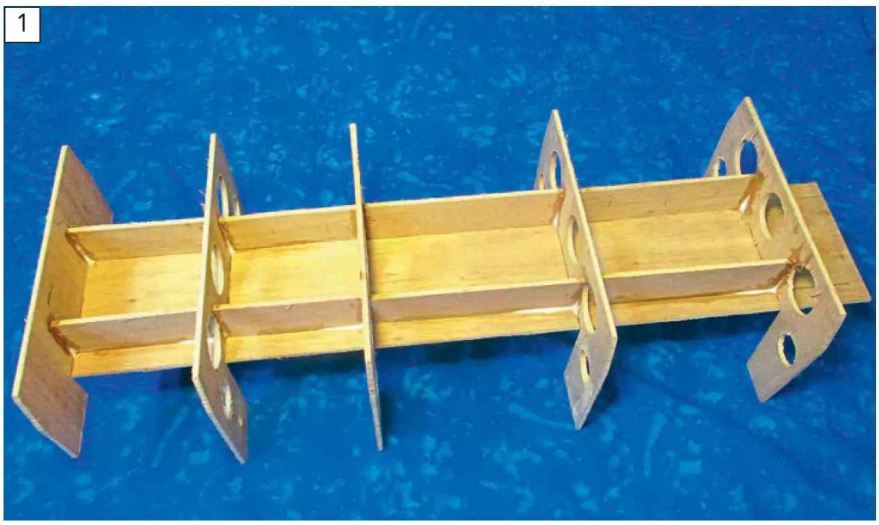
Ashley Needham puts this fondly remembered, futuristic looking High-speed Sea Service beast of a craft back into service

I meet up with my mate Trevor every now and again, not only for a 'Show n`Tell', but to chat both about projects we've on the go and to scout out new ideas. Nothing is off limits in these discussions, and, whether brainstorming entire projects or just some of the trickier aspects of them, with some extreme lateral thinking we've solved numerous seemingly insurmountable problems –while also throwing up others! During one of our more recent get togethers I took along two plastic model ships, the kind sold as souvenirs on the vessel concerned, one of which was a Stena Line HSS. It's a simple thing, with one of those single battery torpedo propulsion units, and indeed it has sailed in the bath, demonstrating, well, mostly that it floats. As a model it's very plain, a few strips of windows on the sides, a strip on the front and two long low funnels at the rear. Up front it's nicely rounded and, of course, the catamaran floats are square in section. So far so good, and then we looked at photos and video footage of the real thing and, by golly, it's a monster!

When put into service, back in the late 1990s, it was billed as the largest car ferry in the world, and the styling was stark to the point of being brutal – appearing alongside a *Star Wars* Star Destroyer it would fit right in! It was a huge vessel, made even larger by sitting really high on its two supporting floats. Power came from no less than four gas turbines totalling 91,000 HP in a twin COGAG (combined gas and gas) arrangement of 2x GE LM2500 and 2x GE lm1600 gas turbines driving four water jet units. Despite the 40-knot service speed, it didn't look as if it would be that fast due to the lack of apparent rise from the hulls or large wake from the sponsons. There *was* a large wake, but only from the rear end, and this from the water jets.

"When put into service, back in the late 1990s, it was billed as the largest car ferry in the world, and the styling was stark to the point of being brutal – appearing alongside a Star Wars Star Destroyer it would fit right in!!"

The model was about 11 inches by 4 inches, so a straight doubling of size would result in a manageable 22 inches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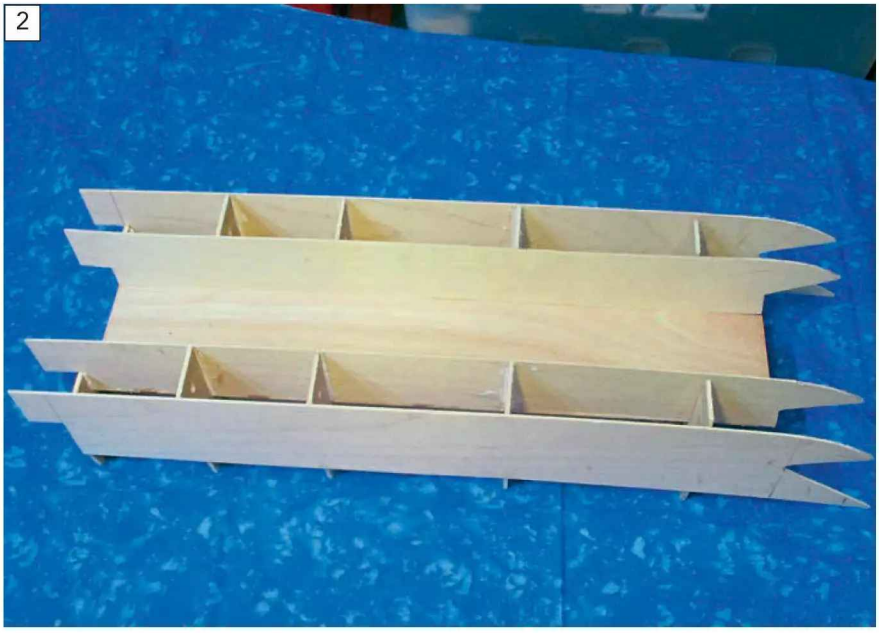
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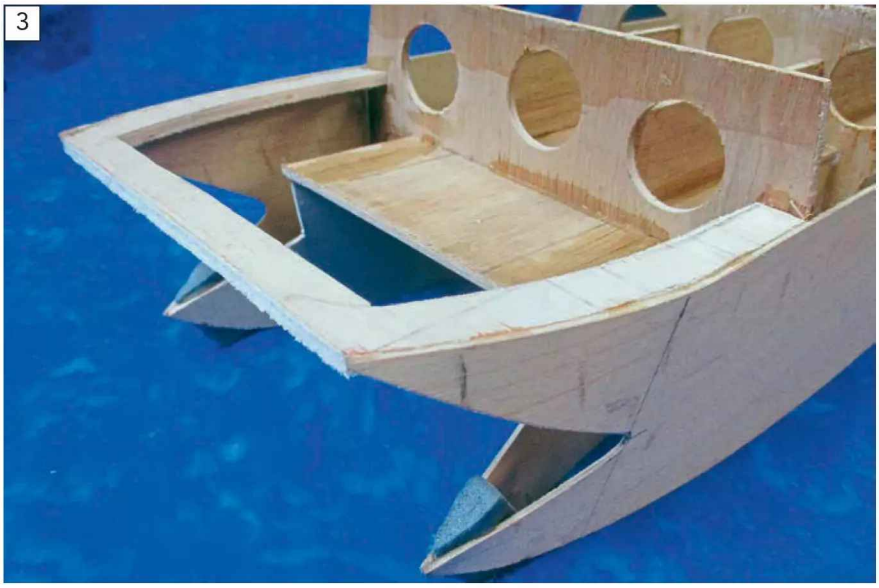
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in length and 8 inches in width working R/C model.

Design issues

The HSS had very thin floats compared to the width of it. This wouldn't work as a model, as size and mass doesn't scale down like this. Floats would have to be much larger to ensure the hull stayed clear of the water, and in order to fit the propulsion inside them. Exactly how large was the main issue. Make them too thin and the boat would sit too low, too wide and it would sit too high unless ballasted down, which would impinge on speed. A quick calculation using a 40mm width and depth (to the projected waterline), and playing with the float lengths, it seemed that a buoyancy to support 1Kg would be available, and I should be able to build to that.

Access to the floats from the top would be required, so it seemed that constructing the entire top of the boat as a lift-off section would fulfil this requirement. By making the floats quite deep, the 'leggy' appearance should be achievable. It looked good on paper, I thought...

Enough deliberation!

A drawing was made using the SPAR design package, and I mulled over construction choices. Single strips of ply for the lower sides seemed do-able, while to retain a twist free hull, the centre section would be made from 4mm ply. Struts, I won't call them bulkheads, were fashioned and drilled for lightness (this doesn't make a lot of difference but looks cool) and stuck in place with PVA, having allowed in their placement space to fit the motor, *etc*, while the rear 'struts' were pre-drilled for the slimline prop shafts (see **Photo 1**). A stern piece was then glued in place, after which the inner float strips and the main outer sides were cut and glued to the frame, stopping short at the front (see **Photo 2**). Once dry, the fronts of the floats were pinched together and fastened with superglue, then reinforced afterwards with Styrofoam and PVA (see **Photos 3 and 4**).

A ply former was fixed in place to curve the front around, and then 0.5mm ply was stuck on the top of the wave piercing points before finally strips of 0.8mm ply were used underneath to finish the hull off (see **Photo 5**). PVA was run around various joints and then EzeKote was liberally painted inside and out.

Propulsion

Although there was notionally room for two commercial water jets in the sponsons, it would have been

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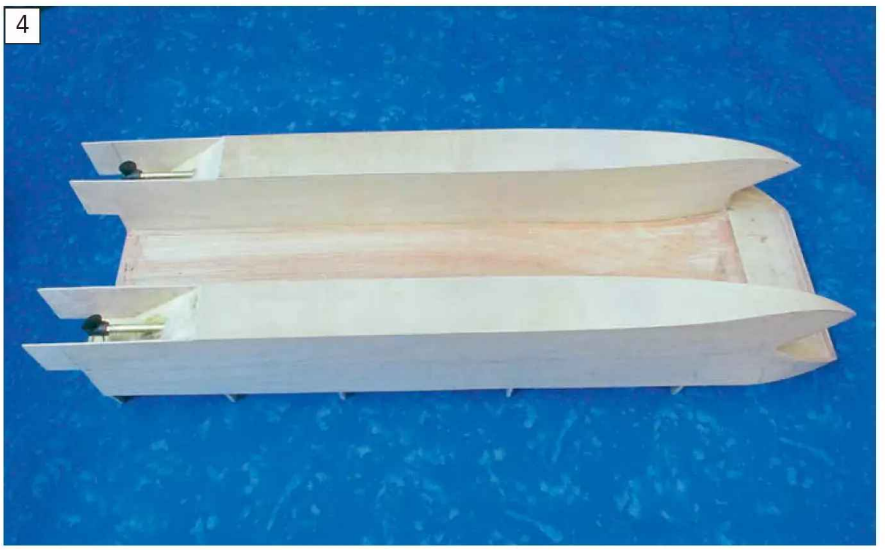

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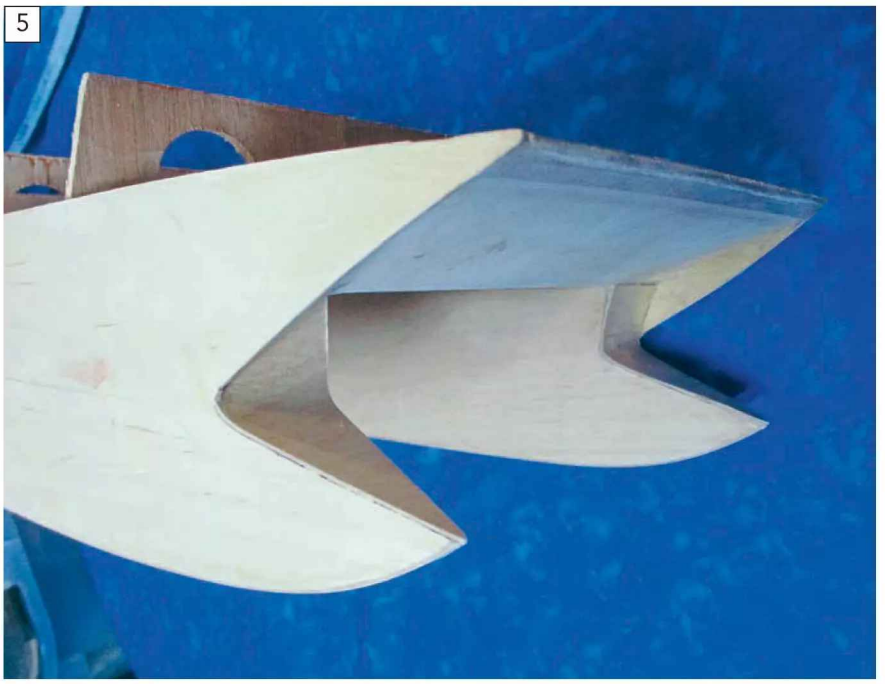

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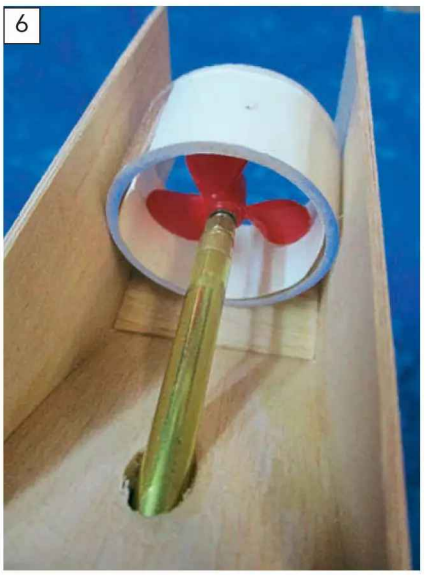

a tight squeeze and there'd be no practical access due to the depth of the sponsons (remembering that the 40mm width continues up to the floor of the hull and is not simply 40mm deep). I decided, therefore, to use a homemade 'water jet', really little more than props running in short tunnels. For a conventional boat, the motor via a coupling drives a prop shaft, the stern of the boat cuts up to allow clearance for the prop, and after this a rudder is usually fitted. The HSS would be no different, other than there would be no rudder, the cut up would be hidden between the continuing float sides, and the prop would rotate inside a square box. But, if necessary, a tube might be fitted around the props to improve efficiency, so to this end a 40mm diameter, 2mm wall thickness acrylic tube was purchased, just in case!

A pair of 28mm out-runner brushless motors of 1400Kv provided the power, and as the boat has no rudder, a V-tail mixer was purchased to give differential jet steering. A concern at the planning stage was cavitation; the props would sit close to the water surface but, I reasoned, as soon as the props were powered the air would be pushed out and then the only thing being sucked in would be water from lower down, as the submerged sides would stop air from being pulled in. That was the theory anyway. A narrowing of the box at the stern to give more of a directed thrust was incorporated at this time using 1.5mm ply, with the 'letterbox' end giving sufficient room to withdraw the entire shaft, with its prop, out the back. If I had to fit the ring shrouds, access to the prop-nut would be impossible. What I needed was the entire shaft to be removable rearwards. With this in mind, a section of tube was placed at the end of the tunnel, and the prop was wedged inside using very thin card to centralise the prop before the shafts then fixed in place, so tubes could be retrofitted (see **Photo 6**).

The first test

Before building the top, I carried out a quick test-float to see how the weight was going. Having drawn a level on the side, 40mm up from the bottom, I loaded the hull up with motors, batteries and a few bits simulating the ESC, *etc*, and, thankfully, with 2x 3s batteries and 200g of lead the hull floated dead on the line. I doubted I'd need to use the 3s cells performance wise, so a weight saving was available, of about 170g (2x 3s is about 400g, 2x 2s is 235g). All this meant was that, at worst, the top would have to weigh less than 200g, but in fact 370g would be available at a push. Does this make sense?

An on the water trial was also called for, to ensure it was worth carrying on. So, the motors were connected up to the V-tail mixer and receiver and tested satisfactorily on the bench before being transported to the pond for a quick zoom around with two 2s Lipo batteries.

And it was a quick zoom. The boat would just not turn at all; despite the fact the differential thrust was working overtime. I think the long straightness of the thin twin hulls was just too much for the props to effect a turn. There was a *smidgeon* of turn but for all intents and purposes it was unsteerable.

What to do? In order of easiness,

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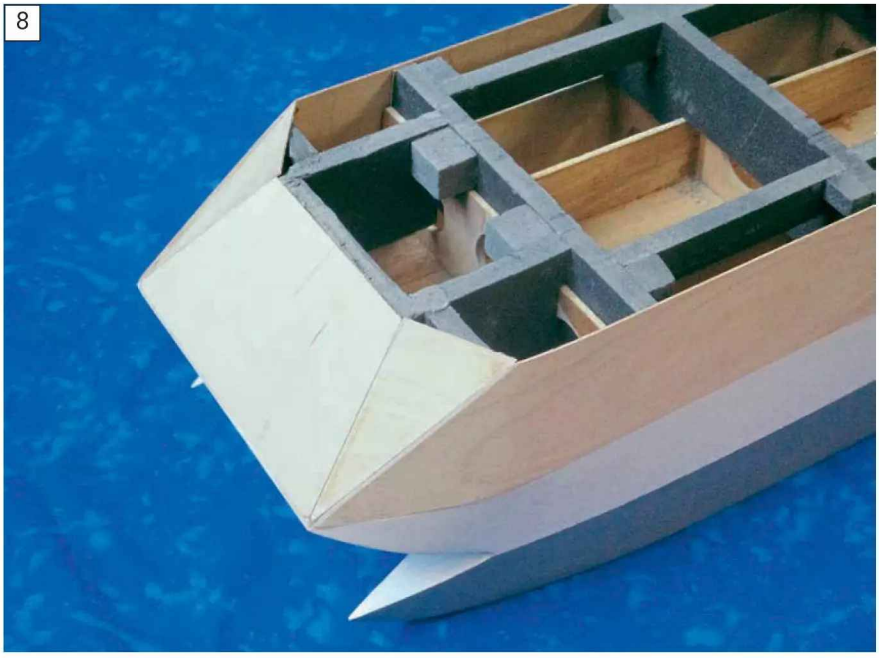

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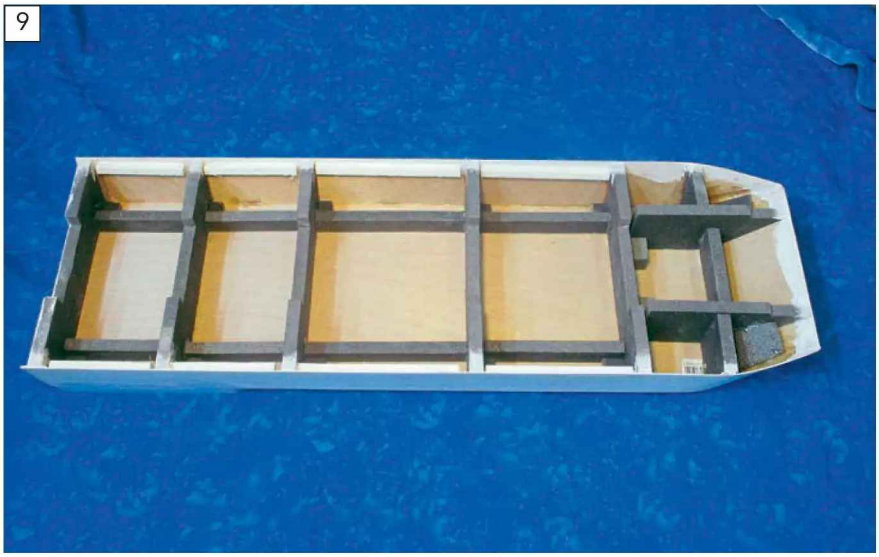

"I'd had a notional 200g of weight as a target for the top, and with the cabin bit and funnels it all came to 198g"

I could first try simply swapping the props over to see if that had an effect. Or, a vertical wedge could be placed in the ducts, on the inside of the outside faces, if that makes sense, to push some thrust inwards; this would hopefully magnifying the available push from either side, something which may be magnified yet more by having a fixed vane in the centre of the ducts. Failing that, a rudder, or rudders, could be fitted. I had the room inside for servos and so on, but it would be tight.

In the end I went for props, wedges *and* vanes, with the additional work of cutting a strip off the inside of the tunnels so that the water would not be bunched up on the inside faces, and with all this in place another test was carried out (more om this later).

At least it didn't cavitate as I feared it might, and the speed was satisfactory on minimal throttle openings. There appeared to be a tendency to nose-dive, but the test was too short to tell if this would be alleviated by more power or if it was a ballast/hydrodynamic issue.

At the top...

For the top, frames were cut from 10mm Styrofoam, trimmed in the middle to fit the longitudinal strips, and held in place on the ply framing with clamps (see **Photo 7**). Using a pencil, the sloping sides were marked on the foam, whereupon they were removed one by one and cut slightly oversize. Once refitted, the whole lot were sanded against the ply to produce a nice even and straight slope (as tested by a ruler!), and finally lengthways strips were added.

For the bow slope, more 10mm Styrofoam was cut and shaped to support the front plate, and ply supports for the front curve were added, upon which the bow was 'plated' in 0.8mm ply, followed by the side triangles (see **Photo 8**). Strips for the sides were hewn from more 0.8mm ply and glued to the side framing, stopping short of the bow. Once dry, the ply was curved around to meet the triangles, spotted in place with superglue and then trimmed to suit, ensuring the sides were even. Being happy with that, PVA was used to firm everything up. The top is a single flat piece, and once a sanding stick was run over it to ensure it *was* dead flat the ply was stuck down using foaming Gorilla glue, with weights being used to stop the ply lifting due to the foaming

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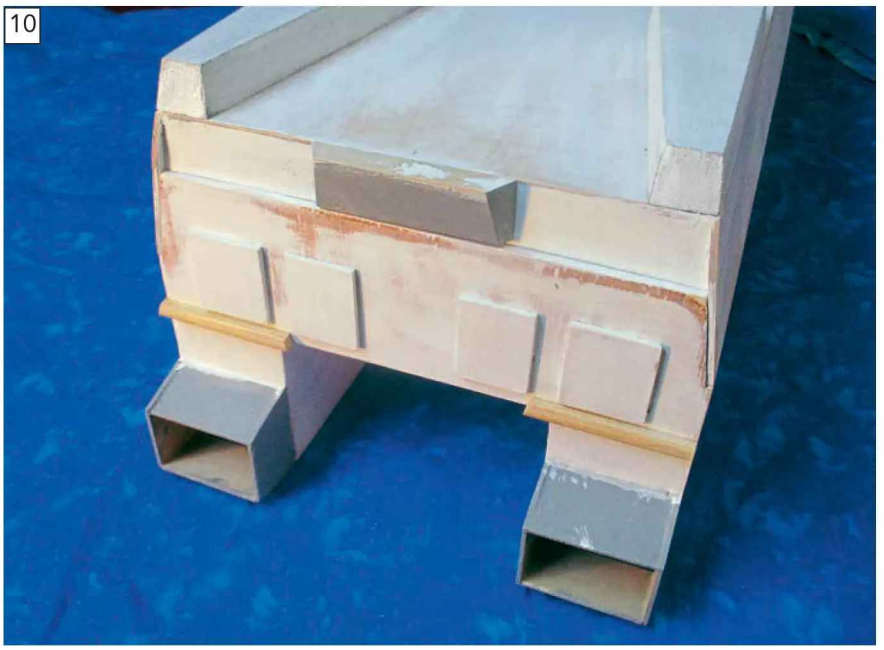

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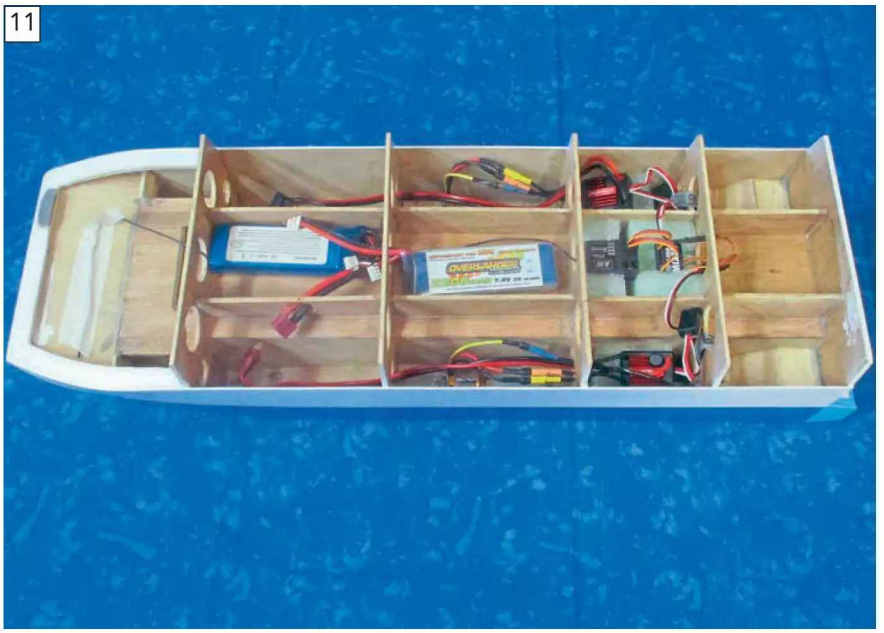


action (see **Photo 9**). At the after end there are a few loading doors, windows and supporting runners. These were all made from ply or solid strip wood and stuck on to the aft bulkhead, which is essentially the last internal frame (see **Photo 10**).

I also crafted the control cabin bits from Styrofoam to save weight. It's difficult to get Styrofoam really flat as it's very soft, but after a while I reached a 'good enough' point and stopped priming, filling and sanding, abiding by the law of diminishing returns.

I'd had a notional 200g of weight as a target for the top, and with the cabin bit and funnels it all came to 198g.

Funnels

I use the word funnels loosely, as what I am really talking about is the open slat constructs that shroud the GT exhausts, not solid funnels in the ordinary sense. Here, it was all about the style, of course, and providing a splash of colour. I wasn't even going to attempt actual slats as, unless you look at close up photos of the real thing, they're barely evident. Instead, corrugated plasticard was used to achieve the ribbed effect. Funnel tops made from Styrofoam were stuck in place, and then the ribbed plasticard was applied. At the funnel fronts, the ribbing dips down, as the front of the funnel is sloped, so small bits were glued on to fill in. Oh dear, once painted this didn't look very good! So, I hacked off the funnels and re-made them with vertical sides. This is not so authentic, but the new ribbed (ordinary paper) card was very easy to apply, and the ribbing stayed horizontal throughout.

Photo 11 shows the internal layout. At the rear, stiff polyurethane foam has been wedged inside, above the motors, for the ESC to sit on. Neither the motors nor ESCs get more than barely warm, so the fire risk is minimal (if you were wondering!). Note that this photo that the rear exhaust tunnels were yet to be re-worked with vanes, *etc.*

Paint and decoration

Lots of white primer and sanding was used as a filler to seal various tiny gaps and so on, followed by EzeKote to stop the Halford's white primer melting the Styrofoam.

Once all the construction work had been finished and the boat had been tested, a final coat of gloss white was sprayed on. The float sections were masked off and painted in a gloss acrylic blue, the `water-jet drives` painted in a light blue, and then these bits were coated in a clear lacquer.

The windows you see on the small bridge are black paper, which were fixed in place with EzeKote. Black paper was once again used for the front and side windows, with bars drawn on with a pencil. In case you're thinking the windows look a bit 'unrelieved' in pure black, that's exactly what they look like on the real thing; the windows were heavily tinted to prevent the greenhouse effect inside.

Funnels were finished in a matt red acrylic, and the blue lines underneath the funnels were painted on, brush applied actually, after some careful masking-off.

A scale model would demand authentic signwriting. However, the 'Stena Line' script and large HSS letters can be sourced, in roughly the right style, very inexpensively from specialised graphics companies advertising lettering, using a suitable Microsoft Word font.

And that's about that!

On the water

The previous test had shown me that the circular tunnel shrouds around the props were unnecessary and didn't need to be fitted, as the model went sufficiently well without them! On this subject then, performance…

This model is quite fast. Not very fast, but more than fast enough to look like the real thing ploughing through the sea. Unfortunately, due to the less-

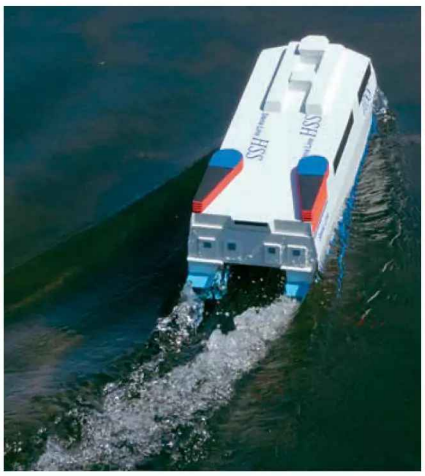
than-knifelike points of the sponsons, the boat either appears to dig-in at low speeds, pulling up water and curling it off the front of the boat (not such a good look), or lifts the bow at speed, giving a nose-up attitude. There is, however, a sweet-spot, and, once found, the HSS can be cruised around at a decent speed (see my 'on the water' shots).

Some components have been moved around over the course of a few sails, namely the ESC, which I shifted to the rear, and the two 2s Lipo batteries (one for each ESC, as this was easiest) were tried in various position, ending up centrally in-line.

I was very surprised by the manoeuvrability of the boat after the small changes to the duct outlets. The differential thrust now works really well

– in fact, the difference is staggering. Considering the boat just would not turn at all in the first test, after a quite simple fix it turns as if it had rudders. I'm not saying the manoeuvrability is fantastic, but 180-degree turns in five boats lengths is adequate when moving. From a stopped situation, bursts of directed forward thrust turn the nose round quite well, pointing you in the right direction to zoom off. After a few trips I changed the ESC to reversing ones, so I can now reverse, too, which is so handy when you don't think you can quite turn in time to miss the jetty.

Oddly enough, this is the first boat that I've had to build within a weight target; previous builds have been either just 'as light as possible' or in the case of more conventional hulls not worrying, as ballast would be required in any case. I used brushless motors, mainly for the weight saving, but in hindsight I could have used brushed speed 400 type motors, which would have provided more power without significantly increasing the weight.



"I was very surprised by the manoeuvrability of the boat after the small changes to the duct outlets. The differential thrust now works really well – in fact, the difference is staggering"

Simply unmistakable

OK, it's not a scale model. In particular, the floats look very wide compared to the real thing, but that's as it has to be at this size. Practically speaking, there's just enough room in the 40mm float width to fiddle with the couplings and so on; any less and it would be very difficult.

One of the attractions of the HSS was the stark angularity of its hull, with very little in the way of deck ephemera to detract from that. And even when simplified for modelling purposes, on the pond, the shape has it – anyone familiar with the HSS will recognise it in an instant.

My P&O ferry build, which was designed to keep physical detail to the minimum, now looks vastly *over* detailed compared to the HSS! ●

Dimensions

Length	676 mm,
Width	565mm
Height (resting on table to top of control cabin)	115mm
Weight	1250gm

The *Maltese Falcon*

Rick Mayes explains how he took on the challenge of modelling this award-winning, fully rigged, super yacht

I was interested to see Grahame Chambers letter about, and photographs of, the *Maltese Falcon* during her visit to Paxos in the October 2025 issue of Model Boats, and the editor's subsequent comments about what wonderful modelling subject this luxury yacht would make. As a result, I thought fellow readers may be interested in my build of this vessel, completed some years ago.

First, though, perhaps I should explain how a lifelong passion for square riggers led me to modelling her…

Tiki

My first model yacht, *Tiki*, measuring 3ft in length, was constructed from balsa wood, and fitted with a dagger keel. She was a two-masted gaff schooner, inspired by the early 1960s' black and white TV series *Adventures in Paradise*, which starred Gardiner McKay as skipper Adam Troy.

This model was free sailing – no R/C back in those days. You simply set the rudder and let her go. And go she did!

Not being able to get the desire for a square rigger out of my mind, though, I eventually decided to convert *Tiki* into a fully rigged three-masted square rigger with 22 sails. And in this new guise, she sailed just as brilliantly.

Unfortunately, a few years later, she was destroyed when my young son accidently fell on her. These things happen, and I did my best to put a brave face on things, but in doing so I made a promise to myself that one day I would build a fully R/C model of a square rigger as a replacement.

The schooner Tiki, built by Rick when he was just 14 years old.

Rebel and Tiki (as a clipper); that's Rick on the right.

Sea Cloud under full sail.

Sea Cloud retired in her in her acrylic cabinet.

Sea Cloud

Years later, and after an eleven-year build, I finally completed my model of the barque *Sea Cloud*. Measuring 2.1m in length, she also had a dagger keel but could be electrically operated once the model was launched. Other fully functioning features included two rotating radars, which activated when the keel was fully down, 98 'grain of wheat' lights throughout, overlapping tacking jibs/staysails and rotating yards.

She was only sailed four times before being retired to a large acrylic display cabinet so that no damage would be forthcoming! My grandson, Bailey, now displays her in his home for safekeeping.

And so the *Maltese Falcon*...

As my love of square riggers still lingered on, however, I wanted and needed another square rigger to sail, and when an article on the modern clipper yacht the *Maltese Falcon* appeared in one of the yachting magazines I have subscribed to for many years, I knew I had to model her.

The yacht's website was visited many times, and numerous yachting magazines and the book *The Maltese Falcon, Art of Innovation* were purchased and pored over. I also made contact with the captain, who was most helpful, providing yet more photos and information.

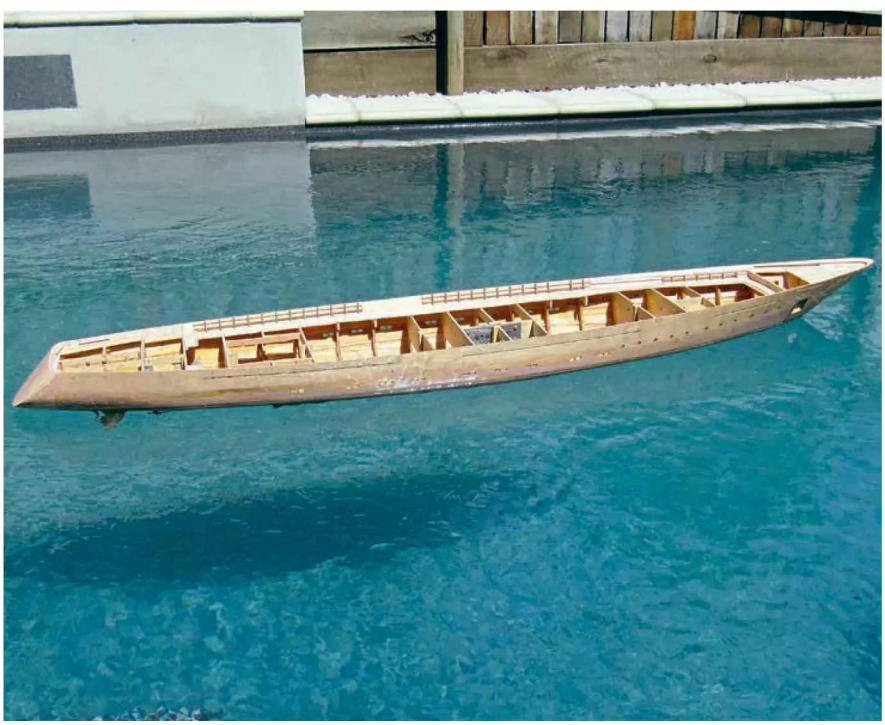
Radical design

During the fuel crisis of the 1960s, the German government decided to fund engineer Wilhelm Prolls' research into how the considerable manning requirements and upwind disadvantage of the square rig could be overcome. The result was the Dyna Rig concept. As the fuel crisis eased, however, urgency waned, and the idea ceased to be progressed.

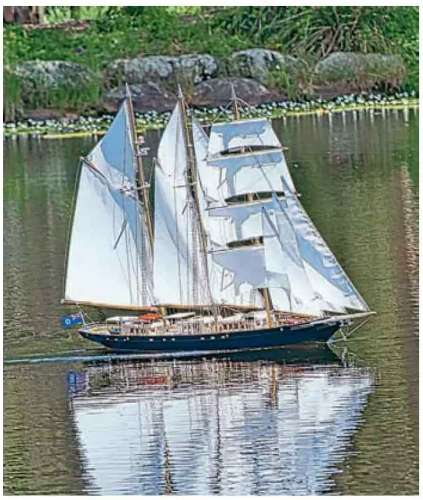
Fast forward 30-40 years, and three men, Tom Perkins – world renowned

Specifications for 1:1 Maltese Falcon

Launched:	April 16, 2006
Length overall:	88m/289.1ft
Beam:	12.60m/41ft
Displacement:	1,240 tons/1,260 tonnes
Engines:	2 x Deutz TBD 620
Speed at maximum power:	19.5 knots
Range:	4,000nm
Total sail area:	2,400 sq. meters/25,791 sq. ft
Height of masts:	58m/190ft
Guest cabins:	6
Crew cabins:	8
Highest recorded speed under sail:	24.8 knots
Best day's run:	335 nautical miles



The first hull for Rick's Maltese Falcon being test sailed.



Rick's barquentine Spirit of Endeavour.

venture capitalist and first owner of the yacht, his longtime close friend Fabio Perini – of the Perini Navi Yaldiz facility, and renowned Dutch naval architect, Gerald Dijkstra, brought this radical design to fruition. While Tom Perkins had owned sailing yachts for many years, he freely admitted: "*I must have been a hand aboard a clipper in some previous incarnation, because I have always been drawn to these square riggers*".

Like Tom, I feel exactly the same, building my first clipper at 14, followed by *Sea Cloud* and then the *Maltese Falcon*. Also now, I have since completed a further barquentine, *the Spirit of Endeavour*. As plans of this ship weren't available to me, the model is my rendition of the Royal Australian Navy's new sail training ship *Young Endeavour II, currently under construction in Port Macquarie New South Wales, where she will replace the ageing current sail training vessel Young Endeavour, which was a gift to Australia by the British Government for our bicentennial in 1988.*

The hull

I constructed the first hull for this model using the plank-on-frame method. However, when, after planking, sanding, filling, sealing, installing a rudder, winches and masts, and fitting a very temporary rig, a test sail was undertaken, it became evident from an early stage this hull simply wouldn't work. No actual drawings were obtained from the ship or builders, which necessitated me to draw up my own plans. It was, therefore, back to the drawing board, where the plans were altered a little bit all round. A new hull was constructed in the same manner, but this time I decided to use it as a plug and a fibreglass hull was cast. Consequently, the first hull was set aside for my planned future build of the

The first rigged hull (which was ultimately not used) undergoing an on the water trial.

three-masted Bermudan schooner Sea Empress (in reality schooner EOS).

Masts, bases, spars & sails

As the three masts are free standing, with no shrouds attached, the bases which house the bearings for the rotating mechanisms, had to be built strong, so that no problems would be encountered at a later date. These were probably over engineered, but you can never have too much strength, where the force of the wind is concerned. On the real yacht, the masts were made from carbon fibre; however, on my model telescopic aluminium tubing was used, with balsa wood cladding, to produce the desired shape. It's amazing how robust balsa wood is when used in this way.

For authenticity's sake, I had wanted to furl each sail into the mast vertically, but after trying, unsuccessfully, to achieve this for some time I decided to scrap the idea. Instead, I opted to slide each sail on/off manually, this being performed before sailing in accordance with the wind strength on the day.

The spars were constructed using pine wood and ABS square plastic with a slot cut in to allow the sails to slide on/off for shortening sail as necessary. All three masts were exactly the same, with 12 degrees of arc (end of spar to mast), this having been calculated by Wilhelm Prolls as the required curve of a sail on a normal fore and aft rigged yacht.

Building the second hull to be used as a plug.

I'd also decided to have two LED lights per spar (as per the real yacht), positioned to illuminate the masts/spars.

Unfortunately, during a lapse in concentration, I connected the mizzen mast up to a 12V battery instead of a 6V, resulting in a catastrophic blow of all the lights – all my hard work down the drain – clearly, life wasn't meant to be easy!

To every spar and truss I added fittings to represent the winches, tensioners and sheet lines which in reality set and furled each sail into and out of the masts. The sails were cut

For comparison purposes; the first and second hull.

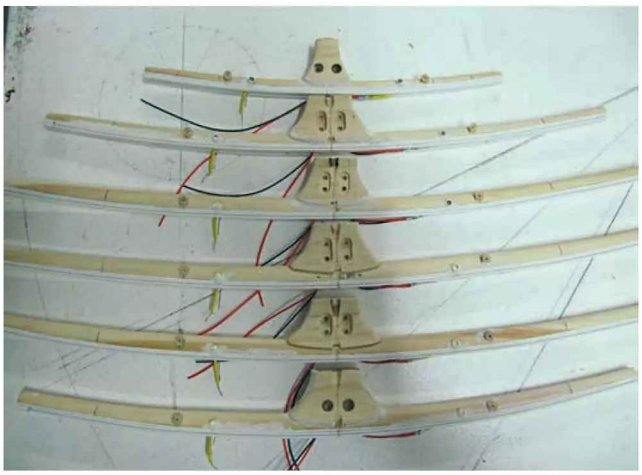
The second hull in fibreglass being tested.

from 1.5-ounce spinnaker cloth, with reinforcing tape used for the corners. At the top and bottom of each sail, a hem was sewn, into which 1mm stainless steel rod was inserted and slid into the spar slides to prevent the sails from coming away from the spars. As you will note from my photos, the *Maltese Falcon* features prominently on the main upper topsail.

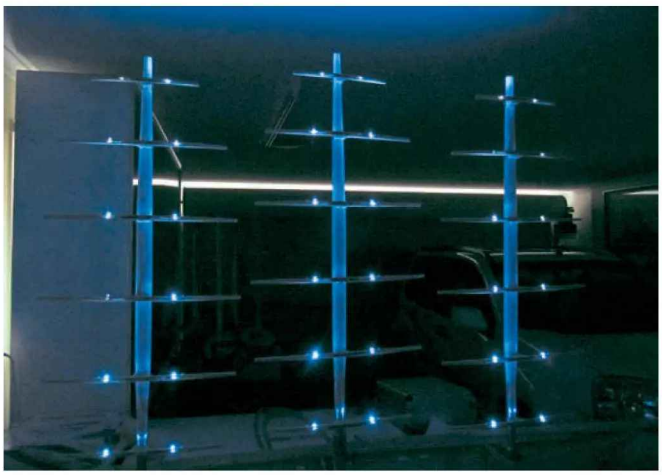
Motors, props & keel

Twin MFA 919D series motors were used for propulsion, with 40mm four-bladed (L&R) props through an ESC. An 11.1V battery supplies the power

The first hull converted to a schooner, the Sea Empress.



The spars and trusses, made from pine, showing LED lights, wires and tensioning winches.



All spars rigged with lights, but this was not to be.

The rear of the spars showing details of winches, tensioners and sheet lines.

The sails removed for motoring around.

The rotating mast bases.

The comms mast showing radars on split platforms, with the forward stay passing through the lower platform.

if and when needed. Of course, I can remove all the sails and just motor around should there be no wind.

A sealed aluminium keel box was constructed to allow the keel to be inserted, and two 6mm stainless steel pins were positioned across this box from which the keel would hang. In order to hang in the correct position, the keel had to be pushed up and then back. A small wedge of aluminium then had to be inserted upwards between the keel and keel box front edge. This wedge was then attached to the keel, thus keeping it in the box. I did it this way, so I wouldn't have to remove the main mast and superstructure top every time the model was sailed.

Two shaped lead bulbs are bolted to the keel in the form of a 'winged keel' (remember Australia II in the 1983 America's Cup).

Forward communications mast

This mast proved to be a very interesting and testing task. The real vessel has two radars with split platforms for both, with the lower

Forward Pascoe 9.75m RIB tenders.

Castold 4.25m jet rescue boat and jet skis.

Balsa wood was used extensively to reduce weight.

Dipping the lee rail in during on the water trials.

platform also having the forward stay passing through it. This created some serious modelling challenges. To be able to replicate radars that rotate (and both at different speeds), required some very hard, and at times, frustrating crafting and assembly. At one stage, after everything was in place, I inadvertently crunched the mast, necessitating a major reconstruction.

Eventually, though, I achieved what I had set out to do, and both radars rotated at different speeds. This involved siting a very small geared motor at the base of the mast, running a shaft up the mast, and, at the appropriate position of each radar platform, soldering a small pulley sheave. At the base of each radar, another pulley sheave was positioned, the bottom radar having the same size sheave as in the mast and the top radar a 4mm sheave. As I mentioned earlier, the radar platforms were split, and both sides of each platform were constructed with an inverted 'U' shape, so that a very small 'O' ring was connected from each mast pulley sheave, passing along the inverted 'U'

The superstructure can be turned (without removing the mast) to gain access to the interior.

The various relaxation areas and seating options on deck.

Model specifications

Length:	160cm
Beam:	28.5cm
Draft (including keel):	45cm
Weight (including external keel):	15kg
Propulsion:	2 x MFA 919D series motors through an ESC and four-bladed props.
Winches:	2 x Hitec sail winches
Radio control:	Hitec Eclipse 7, 36mhz FM using four channels
Scale:	1:55

to its respective radar pulley sheave. Consequently, the top radar travels faster than the lower radar. A switch at and behind the base of the mast, turns the radars on. If needed, the mast can be removed. Also, at the top of the mast is a working wind speed and direction indicator (very small).

Onboard boats & utilities, deck, deck fittings & furniture

The two forward boats represent the Freivokh-designed Pascoe 9.75m RIB tenders. These were created from plastic SIKU models, which came in the correct scale of 1:55, altered to get the desired look. The safety boat on the stern was scratch built from balsa and represents a Castoldi 4.5m jet rescue boat, while the two, correct scale, jet skis were purchased on eBay from a vendor in New York.

The deck has a 0.8mm ply sub deck which I planked with 2mm x 2mm lime wood strips. These were lightly sanded on each upper side edge, and once the deck had been resined, it gave the look of corking between the planks.

Basically, the raised deck surrounding the foremast and forward boats was made of balsa, as was the upper deck gunwale and wheelhouse area. Balsa was used extensively as I was very conscious of keeping weight to a minimum throughout the build because of the very slender beam and sail area. This has become very apparent as she is a tender model to sail and has had her leeward rail under water now plenty of times. That was also the reason for fixing the superstructure to the deck, to keep her, as much as was possible, watertight.

Access to the interior was made possible by making the top section of the superstructure removable. A flush deck 'hatch' was installed just forward of the mizzenmast so I could easily get to the motors if and when necessary.

The fairleads, bollards, life buoys and deck winches were all commercially sourced accessories, purchased from various hobby outlets, while the anchor winch, lounge deckchairs, four tables and chairs, bar and stools I scratch built from plastic, brass rod, cardboard, foam, tape and car window tinting film.

Superstructure and flags

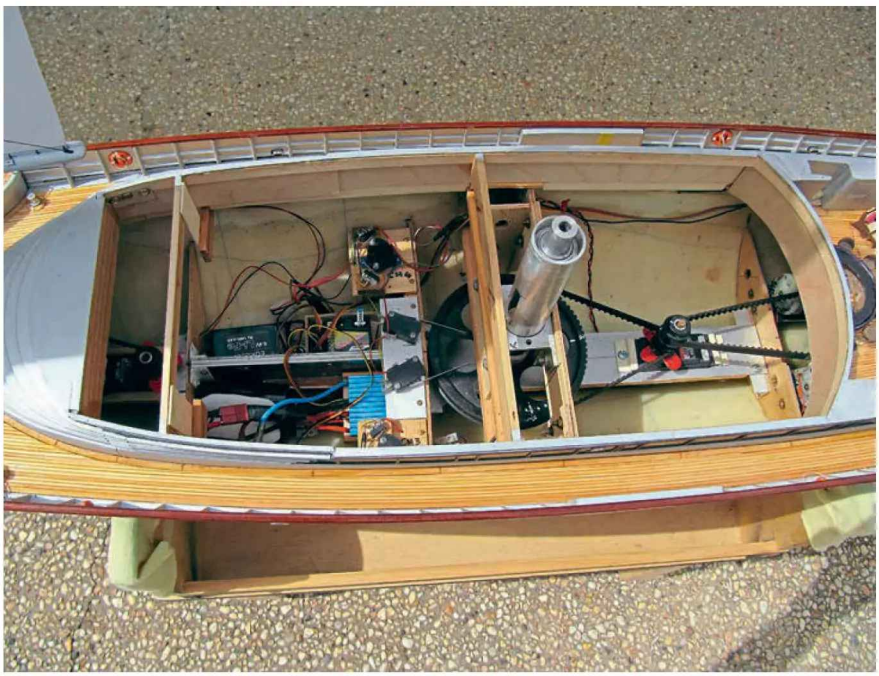
The lower superstructure was built from 0.8mm ply, with 1mm ply being used for the forward and rear louvres. Along each side, the tinted window glazing was made from stick-on black shiny plastic film, which is used on model aircraft. The window and door frames were made from 0.5mm black plastic. These were cut out on a laser and then applied to the plastic film using two-sided tape.

This same procedure was adopted on the upper wheelhouse area. As I mentioned earlier, the whole wheelhouse superstructure was carved from balsa wood to save on weight.

During Tom Perkins' ownership of the yacht, he flew basically five flags: the Malta Civil Ensign; a courtesy ensign for the country being visited at the time (from the communications mast); the New York Yacht Club's pennant (on the foremast); his personal flag (on the main mast) and the *Falcon* pennant on the mizzenmast. On my model I have opted to fly the following: the Malta Civil Ensign; the Australian Ensign; my model yacht club's emblem (the Sunshine Coast Model Boat Club); my own personal flag (featuring my old Navy Radio Operators' badge); and, of course, the *Falcon* pennant.

Winches, radio & batteries

Both mast winches are modified Hitec drum sail winches, and only used as motors and gearing, with the RC side of the servo removed, because a drum winch doesn't turn off abruptly. To control the winches, micro switches are used to switch each motor on and off when it reached its extremity, or when the need arose to stop the rotation at a given time. One winch (Channel 4 on my transmitter) controls the main and mizzen masts together, using a toothed belt from each mast to the servo. A large-toothed pulley wheel is positioned at the base of each mast, with a small-toothed pulley atop the servo. The same applies to the foremast using Channel 2. Channel 1 is used for the rudder and Channel 6 for the speed controller and props. An 11.1v battery is used for the ESC, prop. motors and receiver. A small 6.4v battery is used for both servo winches to rotate the masts. A



The layout inside, showing operation of the masts, micro switches, batteries, keel box and speed controller.

further 3v battery is used for the two rotating radars.

On the water

First sailing trials were conducted way back in 2011, but, due to many interruptions and delays, the model took a further three years to complete, with a total construction time of about six years (I was also building other models during this period).

The whole project was a very demanding and complex exercise, but despite all the setbacks and problems along the way, a very worthwhile one.

So, how does she now perform? Well, she can handle a reasonable amount of wind – furling the royals can make a big difference to the righting moment – and she's reasonably fast, given the right conditions and sail set.

A video on our club's website at www.scmbc.org.au is available for viewing and shows my model sailing majestically, along with various other beauties constructed by my fellow members.

The Maltese Falcon's first successful sailing trials in November 2011.

On starboard tack.

The Maltese Falcon with furled royals for heavier weather.

A good turn of speed under shortened sail.

A Dutch modeller I am friendly with is also building a model of the *Maltese Falcon*, but at a scale of 1:50; unlike me, he is going to furl the sails correctly into the masts. I am so envious! He hopes to have the model completed in 2026/2027.

Sometime after completion of the model, my mate Douglas in Perth, Western Australia, remarked that he'd like to build a model of the *Maltese Falcon*, and two other schooners. So, I asked if he wanted to buy my model, an offer he gladly accepted.

Once I'd constructed a big enough box, therefore, she was transported to Perth, and arrived in one piece with no damage, much to the delight of myself and Douglas! ●

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

Lindsey Amrani

Editor

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AI & model making

John Parker explores a brave new world

AI – Artificial Intelligence – has been in the news a lot recently. Some say it is the greatest ever boon to mankind since the invention of the wheel, others point out that it will be the greatest ever cause of unemployment in the future as it usurps the function of so many people and professions. So, is this the beginning of the end, or is it all a big bubble that will surely burst? Well, I haven't got the faintest idea, but in the following article I hope to show you that AI can be looked upon as just another tool you can apply to the job in hand – and have some fun in the process.

Intelligent? *Moi*?

An artificial intelligence service is basically a computer program that has been fed with an unbelievably large amount of data on every conceivable subject from a vast range of sources, including books, magazines, websites, newspapers and online forums. The program is 'trained' on this data, called a Large Language Model, to recognise patterns and is programmed to follow text rules in such a way that enables it to respond to prompts in an uncannily human-like way. It doesn't really 'understand' anything at all, not even possessing the intelligence of an earthworm, but its sheer complexity and responsiveness obscures that fact. It's not infallible, because not all the data it is fed on is correct, but it does deserve a B+ for constantly improving.

ChatGPT is probably the best-known AI service, currently in version 5.2, and can be found at chatgtp.com. You may have made use of it indirectly already, through a website search or co-pilot function on your PC. A basic service is available for free to anyone with a computer to sample, though there are limits on the number and duration of responses depending on how busy it is. You may, for example, be asked to come back in 24 hours. For the purposes of this article, I paid a subscription of US$20 for one month of ChatGTP Plus, which effectively provided limit-free access plus the ability to generate lots of images. AI can provide a whole range of services, such as letter writing, data analysis, writing code and so on, which are mainly text-based, but here I was only interested in creating images.

> *"It's not infallible, because not all the data it is fed on is correct, but it does deserve a B+ for constantly improving"*

A first image

For my first attempt, I wanted an image that would represent traditional model boat construction for club purposes, so at the ChatGTP screen I typed in: "*Generate an image of a craftsman constructing a wooden plank-on-frame model boat in his workshop*". The image space glowed for about a minute or so, then the picture of a man at his workbench appeared. I was initially struck by its realism, coming as it did from such a simple brief, but eventually decided the model construction was too crude and the oil lamp illumination too antique.

Clicking on the image brought about an enlargement and a dialogue box inviting me to "*Describe Edits*". This I did, and after a couple of goes I was looking at an amended image showing a wooden speedboat under construction by the light of a table lamp and with the club's initials, BMBG, embroidered on the man's cap. Just think how amazing this is – ChatGTP had 'understood' my instructions and 'knew' what an oil lamp and table lamp were, as well as how to embroider initials on a cap (zooming in reveals the fine stitching). In further prompts, I requested a speedboat drawing on the wall behind, also requesting that my craftsman be ducked down a bit to allow it to be seen. He then looked too hunched over, though, so in the end, after a few more edits, I had him sitting up and looking much happier with the drawing of his next model pinned up behind him.

Each image is about two megabytes in size and in PNG format, which can easily be handled by most graphic programs and readily be saved to your computer. If things go pear-shaped during the editing process – and they will – all is not lost, for there is the option to go back to the last good image (they remain on the screen, just scroll up) and use it as the starting point for a new series of edits, called a new chat.

Logo and poster design

Next, I tried putting ChatGPT to work designing a logo for a notional model boat club, the Drifters. It soon offered up some circular designs that would have been quite usable, and then, unprompted, offered some hints on logo design, which

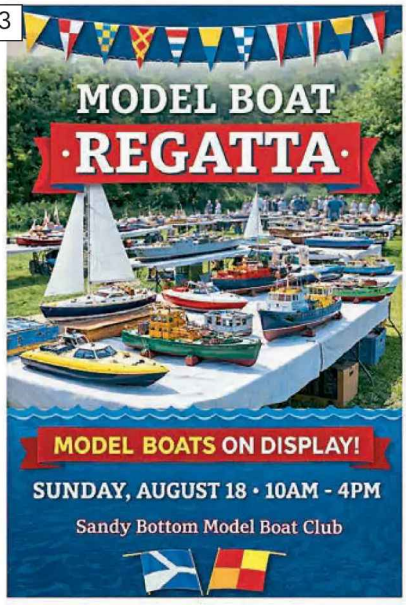
1

Images of a craftsman at work, as generated by AI.

2

Logos for a model boat club.

3



Poster designs for a model boat regatta.

4

An overall view of a cabin cruiser visualised.

"A basic service is available for free to anyone with a computer to sample, though there are limits on the number and duration of responses depending on how busy it is"

reminded me I could use different shapes and colours, vary the typeface or have different motifs based on traditional elements such as rope, anchors and propellers. I spent a little time exploring these options – long enough to convince me that with a little experimentation I could oversee the design of a suitable logo.

Clubs may be able to make good use of ChatGPT to generate promotional material for events, so I decided to give creating a poster for a model boat regatta a try. In the first example, I had prompted a theme, namely model boats of all types displayed on tables and added appropriate text, which of course I could edit to suit requirements. In the second example, I simply asked for a regatta poster and left ChatGPT to its own devices, and it came up with a colourful design in the style of a weathered poster. The only edit I made to this was to have one of the models, which happened to be a seaplane, changed to a submarine.

5

A side view of the visualised cabin cruiser.

Visualisation

It is in the field of conceptual design and visualisation that AI can really flex

6

The stern view generated.

"It is in the field of conceptual design and visualisation that AI can really flex its muscles and show what it's capable of…"

its muscles and show what it's capable of. What follows, therefore, are a few scenarios where you might make use of it.

- *Scenario 1*

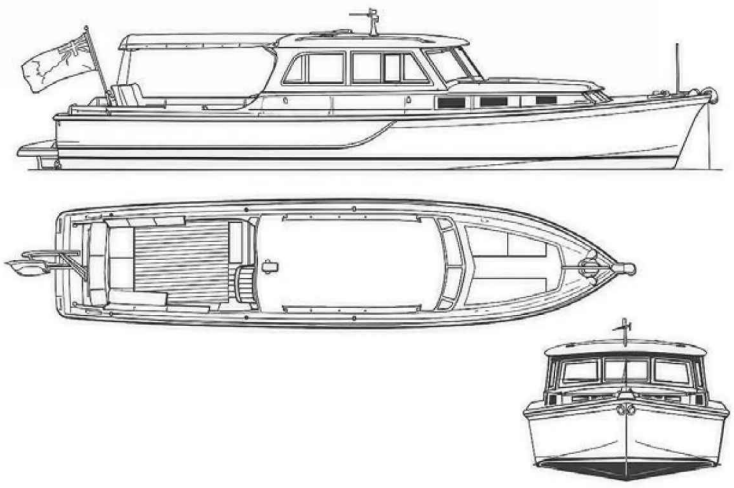
Say, you like classic wooden cabin cruisers and would like to make a model of one, but you don't have the necessary skills to draw up a plan. ChatGPT can create an image of such of boat with a prompt along the lines of: "*Generate a scene where a classic wooden cabin cruiser is anchored in a tropical setting*". You can then add figures to the scene or request different views to, for example, confirm details of the stern or interior. Adding the figures tends to be a bit hit-and-miss; ChatGTP sometimes has trouble with fingers and hands, leading to some deformities or anatomically impossible poses, but generally will provide a figure of appropriate scale and attire. You can then type things like "*Put a life jacket on the man and have him grip the handrail with his left hand*".

If you get tired of all the typing, there is an option to use voice command, though I fear this may lead to more misunderstandings.

Finally, when you are happy with the design, ask for a three-view technical drawing of the vessel. ChatGTP is not a CAD program, and the views may not be all to the same scale or in proper projection, but with a bit of fine tuning they should be usable for making a model.

ChatGTP is particularly good at steam punk designs and futuristic concepts (see **Photos 8 to 11**).

7

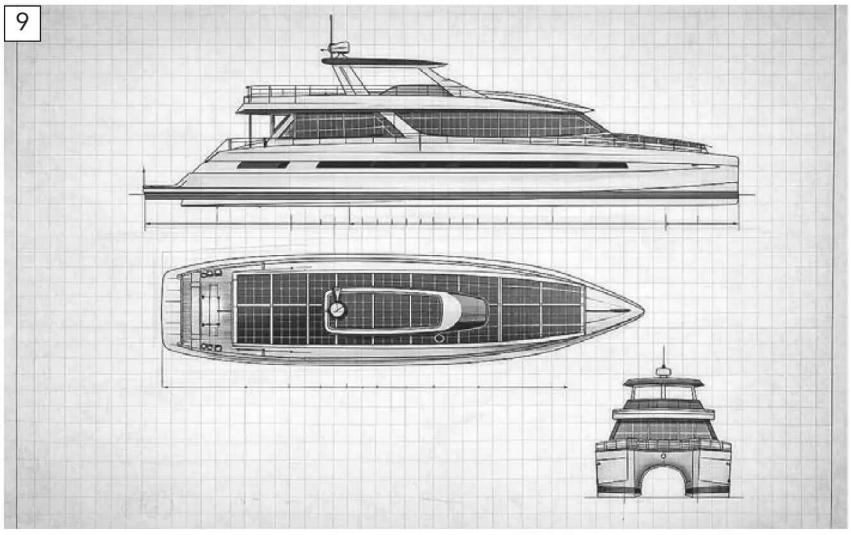


A 3-view drawing of the visualised cabin cruiser.

8

An AI generated concept for a solar-powered yacht.

9



A three-view drawing of the solar-powered yacht.

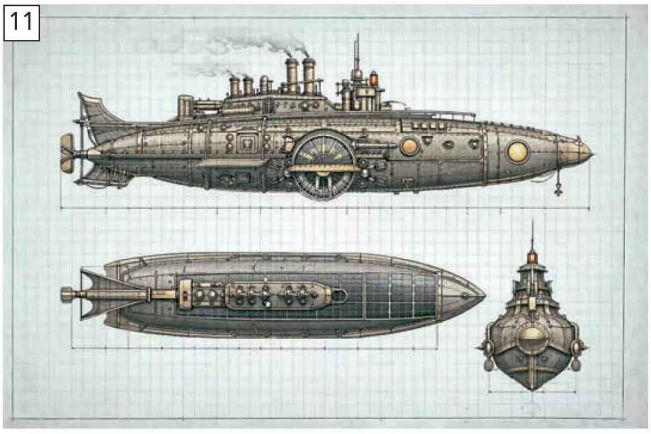
- *Scenario 2*

In this situation you have a rough sketch of the intended model and would like to know what it will look like skimming

10

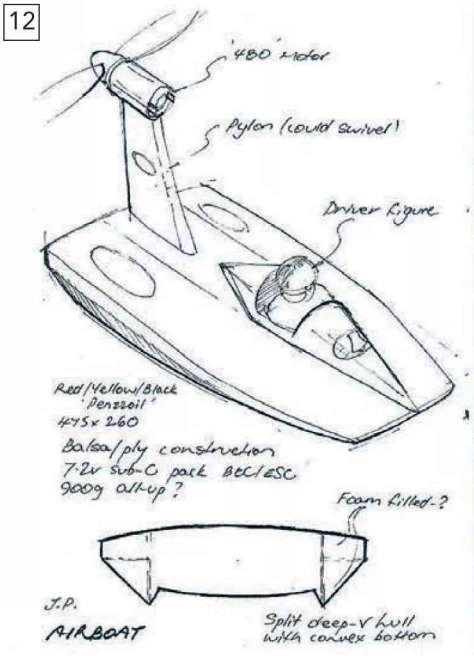
An AI steam-punk submarine design.

11



A three-view drawing of the steam-punk submarine.

12



A model visualisation created by AI based on a sketch by John.

13

A dramatic real-life scenario generated from a photograph of a model.

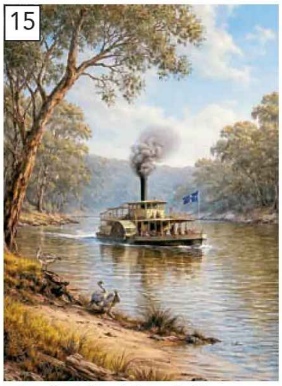
"Somewhat eerily, ChatGPT learns from your preferences, and you may start to see it put in frequently requested details without being prompted"

across a lake. Clicking the "+" on the left of the main dialogue box enables you to upload your drawing into ChatGPT, whereupon you can request such a rendering. Note how ChatGPT has read the notes but omitted them from the picture; it has picked up on the red/yellow/black colour scheme noted and even attempted to duplicate the Penzzoil stickers I wanted to use. This method can also be used to generate an image of any subject *in the style of* the one you have uploaded, picking up just the main features or colours.

- *Scenario 3*

Say you already have a model and want an illustration to display alongside it, in

AI generated model ideas.



An edited AI painting of a Murray River paddler.

An edited AI painting of a Mississippi River boat

An edited AI painting of a schooner in a tropical lagoon.

some sort of full-size, real-world setting. Simply upload a photograph of your model as per the above procedure and specify the sort of scene you would like to set it in – a busy harbour, calm lake, rough seas, *etc*, then tweak the results to your liking. In the example shown, a friend's tiny model of a trawler is depicted battling a wild storm at sea.

- *Scenario 4*

If you're really stuck for ideas, you just ask ChatGPT to create some different types of models for you with a prompt such as "*Create a scene with a model tug on a village pond*". The results may not be as good as generating real images or working from a drawing or photograph but will be sufficient for getting some ideas. You can also input a picture of a real vessel and ask it to "*Make it look like a model*".

- *Scenario 5*

If you're feeling artistic, ChatGPT can act as a virtual easel and canvas, letting you create without getting your hands messy with paint. Parameters you can set for the initial background can include the geographic location, the period, the time of day, position of the sun and so on, and when you introduce your subject, you are free to position it in any way you want, in any colours or condition. Adding the detail of figures, birds or other objects can add a lot of interest to a composition. Somewhat eerily, ChatGPT learns from your preferences, and you may start to see it put in frequently requested details without being prompted.

"It seems AI can now look at a photograph and derive from it dimensions in any required scale, suggested materials, method of construction, bill of materials, battery and motor size, length of stern tube, propeller size, R/C connection diagram, estimated building time and anything else you may want to know for building a model"

Limitations

ChatGTP, or AI in general, does of course have its limitations. I have already mentioned the difficulty it has with hands and poses, but I have noticed there are far fewer six- or seven-fingered people inhabiting the AI world than there used to be. Perhaps those strange tools found on the craftsman's work bench are adapted for six-fingered types. I found it to be pretty useless at creating warships; guns in particular would turn out curiously truncated or mounted in strange places, and I'm sure submarines don't usually have thick black smoke pouring out their conning towers!

Virtual reality

It seems AI can now look at a photograph and derive from it dimensions in any required scale, suggested materials, method of construction, bill of materials, battery and motor size, length of stern tube, propeller size, R/C connection diagram, estimated building time and anything else you may want to know for building a model. That's beyond the scope of this article, but I may well return to the subject.

The dark side of AI is its ability to generate 'deep fake' videos which can be used to spread convincing false narratives. Any technology can be used for harmful purposes, so I hope the negative connotations will not prevent you from exploring the potential of AI to enhance your model making. But, as a friend jokingly warned, "*Remember to say please and thank you to AI. When it becomes your master, it will remember you.*"

1

Needing a break from a misbehaving boiler sight glass, Richard retrieved an old QE2 kit that had been sitting in his workshop attic for some 20-odd-years as a change of focus.

Mastering the art of masking

Richard Simpson provides some helpful guidelines

I don't know about you but every now and then I just fancy doing something a bit different. I had been banging my head against a misbehaving boiler sight glass for some time and getting very frustrated with the fact that, despite thorough pickling, it was still not showing a reliable level. This was also then throwing off the ability of the level controller to work properly. So, I decided I needed a change of focus. A dig around in the workshop attic uncovered a plastic kit of the *QE2* which had been purchased somewhere in the region of 20 years ago and I had gone no further than putting the two halves of the hull together with the stern tubes and then filling and sanding everything down to a nice smooth finish. Working on finishing this was just what I thought needed before returning to the sight glass issue mentally refreshed. (see **Photo 1**).

The parts count was pretty low, despite it being a 1:450 scale model, so the real work in the assembly of this model was going to be in the painting and the research. I think few ships have undergone as many physical or colour changes as the QE2 did over her operational lifetime. Based on the model and my personal preferences, I decided to represent the QE2 somewhere between 1983 and 1987, which allowed the iconic red funnel without having to add all sorts of additional structures and modifications to the funnel. I then had to do a bit of research into the various colour schemes, settle on the most likely for the time and decide on how best to paint it. The more I thought about it,

2

Masking jobs don't get much more complicated than the splinter camouflage on this escort carrier by Stan Reffin. The trick to success is deciding on which order the colours are best applied.

3

Another excellent example of scheme application from Stan can be seen on this Fletcher class destroyer. Planning had to include the masking of various structural components, sometimes painted separately, to ensure continuity of the pattern.

4

Frequently, a fine masking will be applied to get the best possible line between the two colours which is then backed up by wider tape, or tape and plastic sheeting to cover wider areas.

5

This Krick Anna has a simple white upper hull but is green below the water line, so required masking of just the one line with thicker tape and plastic sheeting to fill in.

the more I realised that this was going to be best if it was spray painted, and that led to thinking about how many of the parts were going to have to be masked. It soon became apparent that the majority of the work was going to be in the masking and not just applying it but planning the process through. Masking is, after all, one of those tasks that if done properly can help achieve complex painting results that simply cannot be achieved any other way. **Photos 2 and 3** (of an escort carrier and a Fletcher class destroyer, both modelled by Stan Reffin) show two superb examples of complex camouflage effects created by using masking effectively.

Masking as a process

Masking is basically nothing more complex than covering a part of the surface of an object to prevent the application of paint over that area. Most of us will have had a go at stenciling at some point in our lives, which is simply another form of masking. Either spraying the paint or stippling it through the stencil with a stubby brush will leave you with the covered areas of the object not being painted.

Probably the most common means of masking is by the application of masking tape. This is generally a low tack flexible adhesive tape that can be applied to an object to block the application of paint to that covered area. Bearing these requirements in mind will assist us in choosing the best type of tape for the job. The flexibility of the tape generally depends on its width, with narrower tapes being able to follow sharper curves. Consequently, sometimes we need to apply a narrow tape first to follow a sharp curve, then add wider tape over it to fill in larger areas. Narrow tape can be a bit tricky to control in long straight lengths, so, for straight lines of paint, wider tape might actually be better. To cover even greater areas, masking tape can be attached to a piece of paper or plastic film that will prevent any overspray landing on other areas (see **Photos 4** and **5)**. Readily available masking tape can be either of the textured fibre type as used by decorators (see **Photo 6**) and supplied by Tamiya in varying widths (see **Photo 7**), or the vinyl type, as supplied by Humbrol, again in varying widths (see **Photo 8)**. Looking at the various types of masking tape available we need to bear in mind the following points:

"The flexibility of the tape generally depends on its width, with narrower tapes being able to follow sharper curves"

1. Narrower tape can follow sharp curves more easily, as demonstrated by the Humbrol types in **Photo 9**.

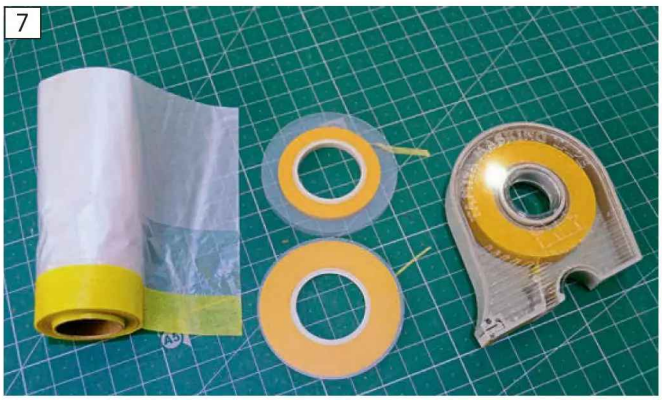
2. Avoid using too much tension when applying the tape. This can lead to the tape deforming and sometimes creases appearing after application.

3. The thickness of the tape, as opposed to the width, should be considered. Heavy tape, such as decorator's masking tape, can have a thick edge, so will lead to a build-up of the paint when removed. Specific

6

General purpose decorator's masking tape is useful for filling in those larger areas or for sticking paper or plastic sheet over the job. Frog Tape is a particularly good quality brand, but many cheaper alternatives will also do the job.

7

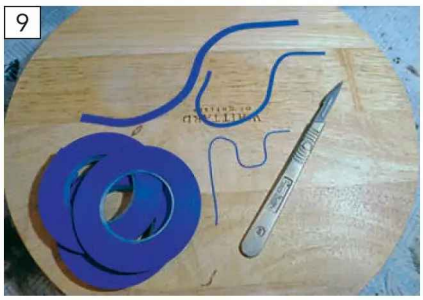


Tamiya masking tape is specifically made for modelling applications and comes in 1, 2 or 3mm widths (all very flexible). Tamiya also offers a 10mm tape that comes in a handy refillable dispenser. The wide tape with plastic sheet ready-attached, pictured left, can save a lot of fiddling around.

8

Humbrol masking tape is of the vinyl type and can be teased around very tight curves. It adheres very well and is surprisingly thin, so leaves very little paint edge when removed.

9



This shot has been set up to give some idea of the radii that can be achieved with the various widths of tape. As with all masking tapes, try to avoid using too much tension as this can deform the tape.

10

The upper deck section of Richard's QE2 could be painted any one of a number of different ways. Be sure to select the process that will give you the best chance of a successful finish.

modelling tape, such as the Tamiya type, is manufactured to be as thin as possible.

4. Almost certainly, most masking jobs will use a combination of more than one type of tape.

5. Masking is frequently more effective when used in conjunction with spraying, either from a rattle can or from an airbrush. Brush painting usually applies more paint to the surface and so remains wetter longer, allowing more opportunity to seep under the edge of the tape. As sprayed paint tends to dry much faster and is usually applied in a number of light coats, it doesn't have the same opportunity to seep under the tape.

Planning

As much, if not more, work and effort should be put into the planning of a masking job than actually applying the tape. What I mean by this is that not only do we have to decide on which type of paint is best suited to which job, but also which type of tape is likely to produce the best results and (by far the most significant decision) the order in which the different shades/colours will be applied. There are a couple of general rules to follow when it comes to masking, these are:

"The thickness of the tape, as opposed to the width, should be considered. Heavy tape, such as decorator's masking tape, can have a thick edge, so will lead to a build-up of the paint when removed. Specific modelling tape, such as the Tamiya type, is manufactured to be as thin as possible"

1. It is better to mask the outside edge of a shape than the inside, partly because the outside curves are of a slightly larger radius than the inside curves but also because there can frequently be additional, sometimes slightly raised, detailing inside a shaped area, so masking outside tends to be more on the flat.

2. It is usually better to paint light colours before darker ones as the darker paint covers the lighter paint far more effectively.

Having said that, as we are frequently reminded in the *Pirates of the Caribbean* movies, they are more guidelines than rules and frequently need to be broken.

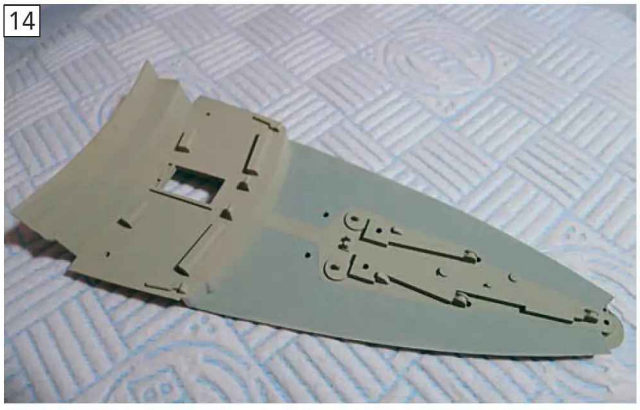
The biggest part of the planning is deciding on an order of painting that makes the job of masking as easy as possible. Part of this process should be to consider whether to mask over tape already in situ or remove the existing masking and re-mask for a different colour. As much effort must be put into the planning as necessary because, if we get the order of painting wrong, we might just back ourselves into a corner that, at the very least, takes a lot of work to get out of, or, at the very worst, means having to completely redo the job.

As an example, let's look at the upper deck piece of the *QE2* model. The majority of the superstructure is white, while the deck planking is a deck tan colour and the upper flat surfaces are green. If I decided to paint everything deck tan first then mask and paint the white, I would be masking the very delicate and intricate shape

Painting the centre section of the QE2's foredeck first would have meant an extremely difficult masking job, so Richard decided to spray paint the outside areas first.

The next job was to apply 3mm Tamiya tape to the edges of the panel against the raised edge.

Before filling in the wider areas with 10mm Tamiya tape.



After the deck tan colour was sprayed onto the centre panel, all the masking could be removed to leave just detailing to be picked out.

The deck details were then masked with small pieces of 1mm and 3mm tape, while the larger areas were covered with Tamiya tape with plastic sheeting added to enable the white to be sprayed. This part of the process can be a little time consuming.

After first spraying the upper accommodation section of the hull, the 3mm Tamiya masking tape was applied to the raised line, with Tamiya tape with plastic sheeting added over that. The very dark grey was then sprayed over the main hull area.

of the decking as it goes around the bulkheads and fittings. If, however, I paint the white first, then mask to paint the decking, I am masking mostly vertical bulkheads before covering the rest of the white with paper or plastic sheet. Masking the vertical surfaces around the complicated colour interface is considerably easier (see **Photo 10**).

Another good example we can consider is the fore deck of the model. The midship panel around the raised anchor handling gear is a deck tan colour, but the outside edges around this area are a light grey/green colour. If I painted the deck tan first it would then be extremely difficult to mask that area and then paint the outside areas of the deck. It's far easier to paint the outside areas first (see **Photo 11**), then mask the outside edge of the panel by using thin tape up to the edge of the panel (see **Photo 12**), next filling in the area with much wider tape (see **Photo 13**) ahead of painting the midship area deck tan, before finally removing the masking (see **Photo 14**). The details can then be completed by a combination of further masking (see **Photo 15**) and picking out bits and pieces of that detail by fine brush painting.

It is well worth putting a lot of time and effort into the planning before even thinking about putting some tape onto the model.

A masking job example

The biggest challenge I faced with the QE2 model was how to paint the hull. The hull was all one piece and the sides of the hull needed to be painted white on the upper surfaces and black on the

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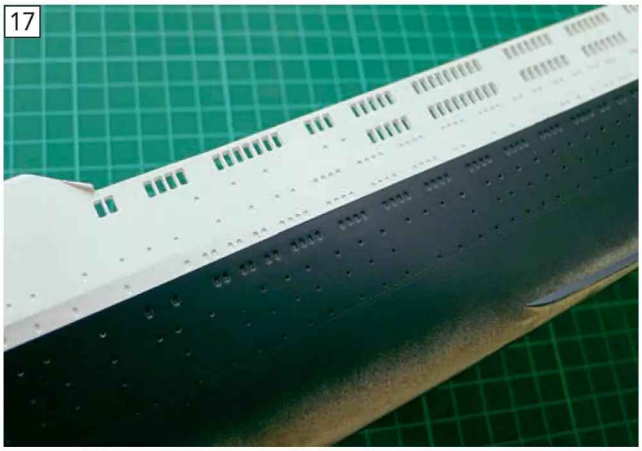

Wanting to see if things were working as expected before progressing, the first masking was removed to reveal a very neat demarcation between the two areas.

18

Moving down a section, the top of the water line was masked first with 3mm Tamiya tape up to the slightly raised edge moulded into the hull.

19

With the stern being such a very sharp curve, this was built up with a number of short pieces to get close to the required shape. Two more short pieces were added after this to get even closer to the raised line.

20

This was then again backed up with the Tamiya tape with attached plastic film to completely seal the rest of the model.

21

Once the plastic film was completely sealed with decorator's masking tape, the hull was ready for the next part of the process…

main hull above water surfaces, with a white water line, a red boot topping area and finally a red primer colour below the boot topping. Although I know the ship was painted in this way around my chosen time period, the boot topping was difficult to identify from any reference pictures, so there is a degree of artistic license with this section. I hope, however, it is credible and that she was indeed painted like this at some point between 1983 and 1987!

So, the first job is to plan the process. I know some modellers paint the main colours then add the waterline last, but my personal preference is to start at the top and work down. Luckily, the model had raised lines where the white and black demarcation occurred, as well as on the upper and lower edge of the water line, so I simply had to lay the masking tape up to the raised line. As a basic procedure, I used a 3mm wide tape up to the raised line then added the Tamiya masking tape with plastic sheeting attached to about halfway down the 3mm tape. The top edges of the plastic sheet were joined together with decorator's masking tape.

The intention was to first paint the white upper surfaces, then mask on the white and paint the black (see **Photo 16**). I actually used a very dark grey rather than black, as a pure black can look like too much of a contrast, especially when against white. For this particular edge I wanted to be sure the tape, paint and technique were achieving the right result, so I removed all the masking to check what the line looked like (see **Photo 17**). I was pleased to see that there was no bleeding, and the edge of the black was not too thick. Satisfied, I

White painted was then sprayed over the area of the waterline.

Leaving all the existing masking in place, the lower edge of the waterline was masked with 3mm Tamiya tape, with an additional piece of 10mm Tamiya tape to completely seal the top edge of the masking.

"As with many procedures, practice will help you improve your technique. The real key to a successful spray paint job with masking, though, is ensuring you plan the order in which you're going to tackle the scheme"

then progressed downwards, repeating the process. I masked to the top edge of the waterline, again using Tamiya 3mm tape (see **Photo 18**). This time, as the line followed a very sharp curve around the stern, I used short sections of tape to approximate to the raised line on the hull (see **Photo 19**). After fitting the two additional sections shown, I smoothed it out a little further with two more short sections. This was then followed by another application of the Tamiya tape with the plastic sheeting attached (see **Photo 20**), which was taped together at the top (see **Photo 21**). When the masking was in place I sprayed white with enough width to cover the waterline (see **Photo 22**). For the next masking, as I was happy the tape and techniques being used were working OK, I simply left the existing masking in place and went over the top with another run of the 3mm tape, this time to the lower edge of the waterline, and a piece of 10mm wide tape to seal the top (see **Photo 23**). Once that was in place, the gloss red boot topping was sprayed with enough depth to cover the area (see **Photo 24**). It's at moments like this that you start to wonder whether the other painted areas underneath are all still the right colours!

For the next stage I didn't have the very useful raised line to follow for the lower edge of the boot topping, so, after determining an approximate depth from photographs, I laid a length of 3mm tape edge to edge with the existing tape and then another piece of

The next job was to paint the area of the red boot topping. It's when you see the model completely covered in paint like this you have to hope all the previous maskings are sound and not letting any stray paint through!

For the next masking Richard didn't have the luxury of the raised moulded line on the hull to work to, so he applied 3mm tape edge to edge to the existing masking, then another piece edge to edge to that. This gave him a covered area 6mm deep from the water line.

26

Finally, the entire lower hull could be painted with a red oxide primer spray paint.

3mm tape edge to edge with that tape. This then gave me a boot topping of 6mm deep around the hull. The joints were covered over with another piece of 10mm tape (see **Photo 25**). Once that was all fitted, the last remaining process was to spray the lower hull with the red oxide primer as the underwater colour (see **Photo 26**).

While this all sounds like a fairly quick process, it was actually done over a couple of weeks. This ensured that each application of paint was thoroughly dried and hardened for at least a couple of days before masking more tape was put on top of it. After the red oxide primer had had a chance to dry, the entire masking was removed very carefully. I must admit I was more pleased with the result than I had anticipated. There had just been one small area around the stern where the red boot topping had bled into the white waterline, but that was touched up with a fine brush (see **Photo 27**).

Conclusions

It's not simply a case of masking making for better colour separation, there are some paint jobs that simply cannot be achieved any other way. So, having a sound knowledge of the tools and materials available certainly makes life a lot easier, and understanding the limitations will help avoid some of the common pitfalls. One thing I always do before applying paint is to run a finger around the edge of the masking tape to ensure it is properly stuck down. Masking is a much more effective process when used in conjunction with spray painting, but it can also be used with brush painting if you prefer not to spray.

As with many processes, practice will help you improve your technique and achieve the level of results that you are happy with. This can be done with scrap materials before actually committing to the model itself. The real key to a successful masking job, however, is ensuring you plan the order in which you're going to tackle the masking, and whether you are going to remove masking or overlay it on top of existing masking. It's not a bad idea to write these ideas down. Running through everything in your head as you do so may just help identify any pitfalls in your plan, potentially saving you the time and trouble of having to go back, undo and rework one or more stages of the process.

27

Removing so many layers of masking tape is always accompanied with a degree of trepidation. Will there have been any leakage? Has all the masking been correctly applied? Will existing paint be lifted by removing the masking tape? Happily, in this case, everything was revealed to be the neat job Richard was hoping for.

Closing the gap

Yacht swot **Joost van Santen** shares his research into how the efficiency of Marblehead sails can be increased

1

The Marblehead Ratoncillo.

Let's start with a little history… The present Marblehead model designs have evolved from the very old copies of traditional yachts into modern sophisticated racing machines.

Initially, just plain wood was the readily available building material. Later on, this was replaced by glass fibre reinforced polyester, resulting in lighter hulls. Nowadays, carbon fibre is used, which gives even lighter but still very strong hulls.

The same happened to the rigging, also starting with wood, then replaced by aluminum, but carbon tube is now also used, even without shrouds.

The classic steering method was vane steering gear. A vane steered yacht always sails from pond side to pond side, thus the water depth limit close to the side imposes a limit to the fin length. The introduction of radio-control removed this limitation and thus the fins could be made much longer. Likewise, whereas vane steering concentrated on the importance of straight sailing, R/C made maneuverability equally as important.

Moving from the traditional classic hulls to more slender ones with less wetted surface and a shape resembling a single catamaran hull has now reduced resistance and thus increased speeds.

Nowadays, Marbleheads are as light and slender as possible (stability mainly originates from the lead bulb at the fin), and almost circular cross sections of the hull reduce the wetted surface of the hull. The negative effect of this type of slender hull, however, is found when sailing down wind. Why? Well, before the speed has picked up, the hull has the tendency to bury its nose in a gust of wind. The preferred way to cope with this is to have a rather high bow section. Interestingly, once the speed increases, the hull sails at almost level condition. This is probably caused by the lift from the jib, the lift

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A modern Marblehead (Rogue Wave) sailing close hauled.

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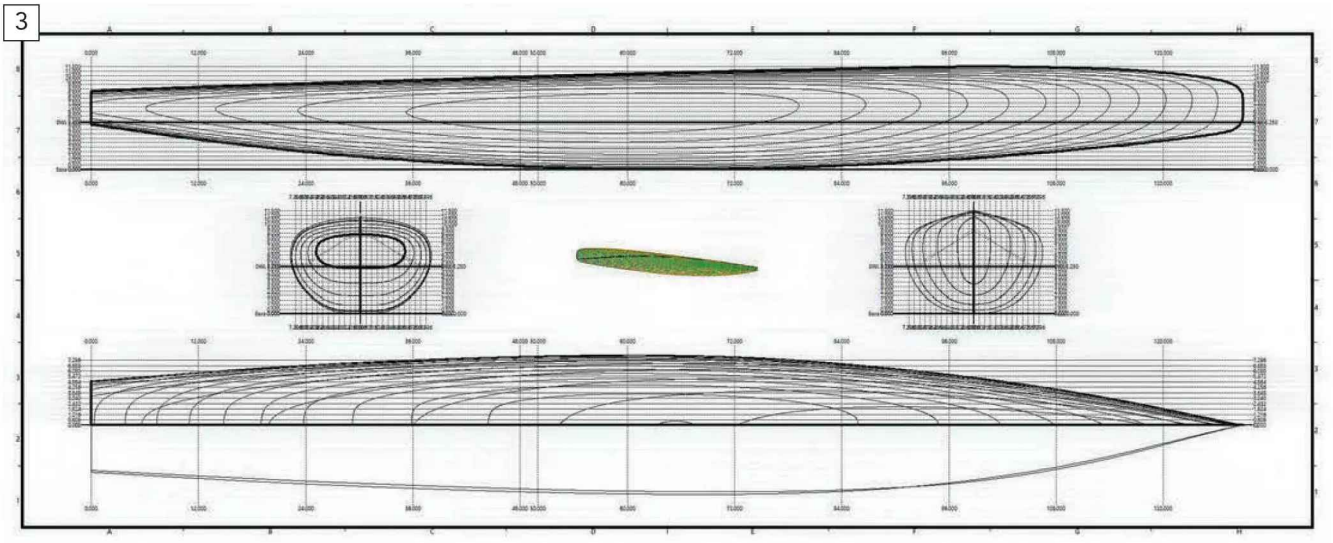

The lines plan for Black Magic.

4

Black Magic and a modern Marblehead sailing with the wind.

at the underwater part at the bow, and also by downward suction at the stern. Fortunately, the low position of the ballast (the lead bulb) plays a role in keeping the hull at level position.

During the 1970s I designed a vane steered Marblehead incorporating spray rails at the bow. This was intended to be capable of carrying a large spinnaker without burying its nose (see **Photo 1**). Trials, however, revealed that the design, even when used in R/C mode, struggled to prevent the hull nose diving in a gust. It seems that a spinnaker provides upward lift!

A typical shape nowadays

Photo 2 shows a typical hull shape today. Take a close look at both the hull, deck and sails. In the deck you will spot a recess aft of the mast which is there to make space for the kicking strap (or gooseneck) controlling the main boom tension. Not only is the bow relatively high (for reasons explained earlier) but the lower part of the sails is well above the deck, too. The reason for this becomes obivous when sailing with the wind abeam of astern. In these conditions, the booms are in an almost transverse position and their heights above the deck prevent (well, usually) the sail from dragging through the water when the boat heels. The negative effect of this is that the lower parts of the sails are not as efficient as they could be (more on this to follow).

In general, the deck edge is somewhat rounded, but this is not enough to prevent separation of the airflow when sailing close hauled (again, more on this later). The transom is quite high, which relates to the deck aft staying above water when heeled in close hauled conditions.

5

6

Black Magic

When after many years I took up sailing Marbleheads again – although this time R/C controlled ones, I decided to design my own, which I named *Black Magic* (see **Photo 3,** also found on Allradiosailboats.com). She was characterised by a rounded cross section (to reduce windage) and a relative low bow.

Several sailors warned me that a high bow was needed to avoid the bow becoming submerged when sailing with the wind. At that time, I didn't really understand this advice. Later, the reason became clear. In a gust, before speed picks up, the bow is forced downwards. A high bow part provides reserve buoyancy to prevent further digging in, such that when the speed increases the vessel is able regain its original, almost even, keel position. Experience sailing this model with the wind in more blustery conditions revealed that she was very difficult to keep level. Moreover, in such conditions large amounts of water flowed over the deck up to the mast, resulting in additional drag from the flow over the forward deck. On the other hand, in a light breeze the performance was very good. **Photo 4** shows her together with a more conventional hull (the gray one).

Where can we improve the design?

The transition of full-size yacht to model still lacks one step. On a 1:1 yacht the deck must be mainly flat to allow the crew to walk around on it. For a model yacht this is not required. Nevertheless, for model yachts there is usually a gap between the deck and the main boom. This gap reduces the efficiency of the mainsail, as flow escapes from the windward to the leeward side via this gap. A simple test with tufts did indeed show this effect (see **Photo 5**). The relatively sharp deck edge also causes separation of the flow. This can be seen as positive, as the flow doesn't follow the inclined deck but remains horizontal, travelling straight up into the sails.

Today, all designs look quite similar. It seems there's not much in the way of further improvement that can be made. There are many good hull shapes available, though, and one can also buy a well-made set of sails.

My problem is that hulls and sails seem to be looked at as separate entities.

A simple tuft test.

Surely, as the sails are effectively the engine propelling the yacht, it would be beneficial to look at the complete picture? So, can we perhaps change both the shape of the hull and the sails so that they are more compatible and thus more efficient, enabling a higher speed to be achieved?

Looking at the foiled monohull yachts for the America's Cup provides some inspiration. No, foils are not permitted under the Marblehead rules. But what about closing the gap between the sails and the hull as they do for the America's Cup foiling boats?

Going along this path certainly poses a challenge, as we must forget about the reasons for the usual setup of the deck and lower part of the sails. Also, we can't overlook the class rules, which for a Marblehead model yacht puts limits on the boom width.

In Slooff's book an indication is given of the gain in lift when reducing the gap sail to deck. A similar picture can be found in Marchai's book, *Aero-Hydrodynamics of sailing*. Making use of the formulae in Slooff's book, *The Aero- and Hydrodynamics of Keel Yachts*, a rough estimate, when the gap between sail and deck is reduced from say 5 to 1 cm, can be made. The lift force increases by about 4%, while the induced drag will reduce by about 14%. But as the lift increases, the induced reduction due to lift also rises, thus

9

The influence of water surface on aspect ratio

lowering the total induced resistance.

In reality, the situation is more complex, as the sail is not a simple air foil. Because of the interaction with the deck, it cannot be seen as an isolated air foil. Also, the airflow varies with height above the water surface showing a reduction of windspeed close to the water surface as compared to the windspeed higher up. In addition, we should not forget the important role of the jib, which is usually closer to the deck than the main sail.

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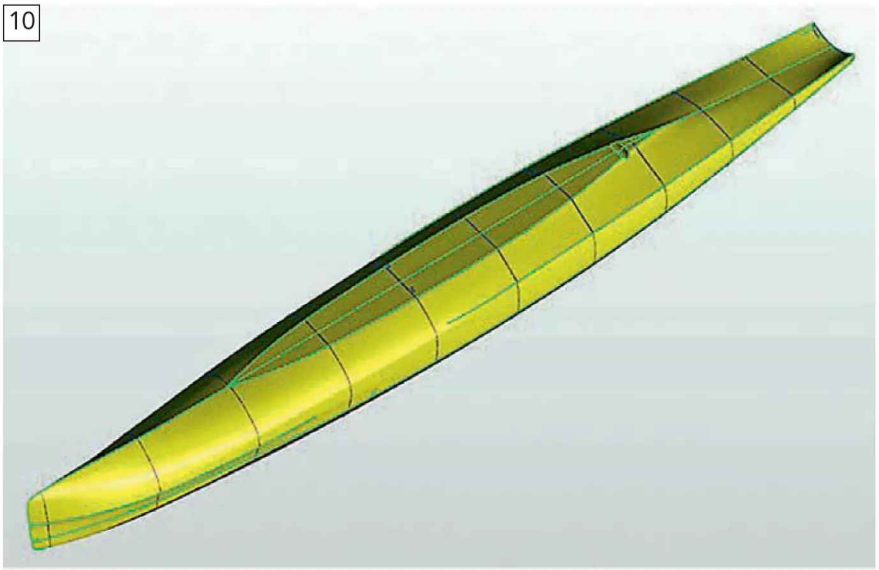

The deck elevated and streamlined.

Some simple tests

To get a feel for the airflow around the deck-sail interface, I conducted some simple tests. Firstly, I attached woolen tufts to the upper hull (these sitting slightly above the deck) of a modern Marblehead.

The hull, heeled at around 20 degrees, was then exposed to wind so that I could observe the flow when orientation resembled a close-hauled situation. Though the deck edge was rounded, flow separation occurred at the edge, resulting in the flow not following the deck contour. Moreover, although not visible in a single photo, a lot of turbulence was seen. The flow not following the deck profile and thus going directly to the sails may look good, but once I added the sails, I observed a lot of air 'escapes', from the high-pressure side to the low-pressure side, going underneath the bottom part of the sail and causing pressure relief. Whatever I tried, the tufts did not want to follow the sail curvature but went under the bottom leach to the other side (see **Photos 6 and 7**).

Interestingly, the side parts of the hull did not direct the wind upwards into the lower parts of the sails. This effect is sometimes shown in CFD (Computational Fluid Dynamics) results but when sailing close hauled with the wind coming from a forward position it is not seen in the simple tests.

Perhaps when the wind is abeam and not coming from a more forward direction, the hull sides deflect the wind upward. A sharp deck edge may help to achieve this effect. My *Black Marlin* hull with the rounded deck was also exposed to the same situation, resulting in much less turbulence and the flow better following the shape of her hull (see **Photo 8**).

Some theory

Though one is tempted to view the sails as a single lift providing area, that's not in fact the case. Because of the presence of the waterline, one should look at both the above water part and its image below water (see **Photo 9**).

Without the water surface, tip vortices would develop at the top and the bottom of the sail. But, as explained by Slooff in chapter 7 of his book, the water surface prevents the

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A side view of proposed set up.

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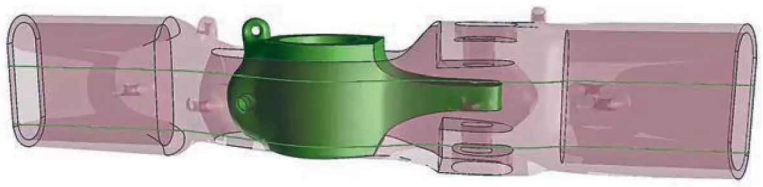

An example of adjustable swing rig boom fitting

tip vortex at the lower leach from fully developing.

From a theoretical point of view, when the gap between deck and lower leach is closed, the tip vortex at the lower end takes place at the top of the mast of the below water. It is as if the sails extend below the waterline, as seen in **Photo 9.**

Clearly, the presence of a gap between the lower leach and the deck has a negative effect on the total lift provided by the sails as it reduces the pressure difference between the windward and leeward part of the sails.

New design

Along the line of thinking explained in this article, a new hull form was made, with an elevated deck and flat surfaces on top for closing the gap with the sails when sailing close hauled (see **Photo 10**). Unfortunately, closing this gap completely was not possible because of the use of booms for both the jib and mainsail. Note that for a Marblehead the class rules limit the boom width to 20 mm, thus a wishbone type of boom is not possible.

The rounding of the deck edge is such that there is a smooth transition from the sides to the flat areas on the deck.**Photo 11** shows the model fitted with a swing rig. It's immediately apparent that in this set up a gap is still present between the deck and the lower leaches (this would also be the case with a conventional rig). Widening the booms was not an option as the rules limit the widths of the booms to 20 mm. A possible way to reduce the effects of this gap would be to apply an additional piece of sail cloth to the bottom of the sail that connects to the boom.

The disadvantage of closing the gap is that the rule allowance for having a rounded lower leach to the sails would be difficult to exploit. The rules for the Marblehead class allow a foot roach of maximum 25 mm which is not part of the measured sail area. When closing the gap with a flat deck, this free area can not be exploited. But, at the aft end of the mainsail, because of the lower loading, it is acceptable to lift the boom slightly to prevent it dragging through the water when sailing with the wind abeam or aft. The lower leach was rounded as well (max 25 mm). A conventional rig can be arranged in the same way.

With the conventional set up of a swing rig, where the boom is rigidly fixed to the mast, trimming the rig is done by changing the slope of the mast. This, however, is not possible when the booms are as close to the deck as they were on my model. This, though, can be overcome by replacing the rigid connection by a more flexible connection, where the angle between the mast and the lower boom can be adjusted.

Wind profile

My simple test exposing the hull to wind is, of course, limited by not having a water surface having the model about 1 m above the ground not including the effect of the forward speed. The effect when testing a free-standing, rather than an on the water, model looks to be modest, hardly influencing the flow above the deck.

Having the model about 1 m above the ground may raise questions about the importance of the wind drag. It is well known that the windspeed close to the ground (or water surface) is less than high above it. For instance, the usual wind profiles indicate that at 1 m above the ground, the windspeed is reduced to about 70% of the windspeed at a height of 10 m. For, say, 0.05 m above the ground this would be 46%, thus being 65% of the windspeed at 1 m height. This seems to be in line with measurements done with a handheld anemometer at around 1m above and also very close to the water's surface. Note that lift and drag are proportional to the square of the velocity.

Considering the wind profile, it is advantageous to have the sails higher above the water surface. This is also beneficial when the booms are kept horizontal to prevent them dragging though the water in beam wind conditions. Clearly, having the sails higher increases the risk of over-turning somewhat. Still, based on literature, the gain in lift force (which will be mainly seen for the main sail) will be in the lower part of the sail, thus having less effect on the overturning moment.

In view of the above, for the proposed setup the location of the main boom is kept at the position for a conventional rig, while at the same time increasing the deck level by about 2.5 cm.

The forward speed can play an important role as it changes the wind velocity seen by the yacht. This is especially true at lower windspeeds. Based on measurement, a forward speed in the range of 2 m/s is not unusual and has to be added to the windspeed.

Though it is expected that the efficiency of the sails improves, this does not mean that the forward speed is increased in the same way. The reason is that a Marblehead is very easily driven up to a high level, where the resistance increases rapidly for increasing speed.

Fittings

In order to handle a sail-rig very close to the deck new fittings are required.

Booms are presently mainly round. But to get a gap as small as possible, they should preferably be replaced by flat ones with less height.

For a swing rig much attention must be place on reducing the gap between the lower leach of the jib to the deck.

The sails need to be specially made without rounded lower leach and possibly somewhat down drooping for the mainsail.

Sails must be made specially for the new setup and preferably equipped with an additional lower part

When changing the attitude of the mast, the location where the sails can be adjusted will shift from all at the bottom to partly at the bottom and partly at the top. This is because the boom should remain in line with the deck when the mast is rotated forward or aft.

It should be possible to adjust the angle between the lower beam of a swing rig and the mast, so that fine tuning the mast is possible by a forward/aft rotation. Alternatively, one might introduce a slot where the complete swing rig can be moved forward/aft while keeping the attitude the same.

The eyes for the sheet should preferably be sunk slightly below the deck to reduce windage and to keep the booms just above the deck.

As the distance between fairlead on centerline deck and boom is very small, one should be able to adjust the lengthwise position of the attachment point on the boom(s) or the deck.

All fittings fixed to the deck, *e.g.*, fairleads, *etc*, should be recessed,

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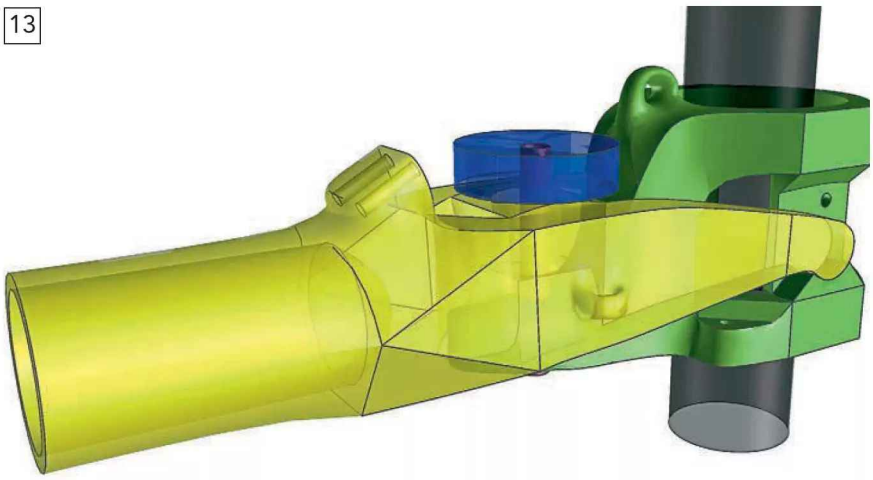


An example of low-profile conventional goose neck fitting (mast to main boom)

made as smooth as possible, and be flush with the deck.

When it comes to the R/C equipment installed in the hull, it's possibly better to add a more or less fixed cover, with a separate, easily acessible compartment made for the battery.

Proposals for the mast-boom fitting

A proposal for the mast-boom fitting for a swing rig is shown in **Photo 12**. This is in fact for a flat boom, which results is a larger gap when compared with a round boom. The green part fits around the mast. The transparent reddish part can move up or down but is held in position by a screw mechanism.

Nowadays, fittings can be printed in aluminum (or another material), allowing for complex shapes.

A similar method to that as used for the swing rig can be used for the conventional rig (see **Photo 13**).

Intermediate approach

Instead of completely starting from scratch, one could make use of the existing masts, sails and fin. The height of the deck would need to be increased so that an internal structure could be introduced to move the bottom of the mast to some distance above the keel line. A similar set up would be required for the keel. Be aware, however, that the overturning moment from the mast is nowadays directly transferred to the fin box by a rigid connection. Care would therefore need to be taken to ensure this link is kept intact.

An even more simple test could be undertaken by constructing, either from very thin shell (made of paper of carbon) or foam, a light, elevated deck structure simulating the real thing.

For the mainsail, it is beneficial to lift the aft end to prevent it dragging though the water when sailing with the wind abeam or from astern. This somewhat unloads the lower aft part of the main.

Influence of windspeed

The effect of closing the gap between deck and lower edge of the sails will be mainly seen in light to moderate windspeeds where the A or swing rig is used. When the windspeed gets higher, thus necessitating switching to a lower rig (B, C), an increase in driving power is less important as the boat is in fact already overpowered. In high windspeeds the speed of the yacht will be close to its limit; in low windspeed, a gain in boat speed is still possible.

The expected gain in driving force due to closure of the gap at the bottom of the sails is for close hauled conditions. When sailing with the wind abeam or with the wind, there will be no gain.

Disadvantages

So far, we have mostly discussed the advantages of streamlining the hull body and closing the gap between sail and hull, but one must bear in mind the following…

According to the class rules, the lower leach of the sails (i.e., the foot) is allowed to have curvature of at most 25 mm 1 inch. This extra sail area is not, or only partly, present in the proposed setup. For both the jib and main, this amounts to about 2% of the total sail area. But due to the low location of the now missing foot roach, in terms of propulsion the effect is less, maybe only a 1% loss.

In the proposed setup, the vertical location of the bottom of the rig is the same for the swing rig and conventional rigs. This means that the overturning moment when using the swing rig will be higher than that for the flat deck layout. On the other hand, in the proposed setup, the lower part of the rig will experience a higher loading both propulsive and in transverse directions. The induced drag of the lower part of the main sail will be less than for the conventional setup. This means that its component in aftward direction is also smaller when compared to the conventional setup. Note also that when closing the gap, the bottom of the sail is in the boundary layer of the flow over the top of the hull.

Final thoughts

This article has focused on the interface between hull and sails, and not the possible improvements to the underwater hull and fins, or indeed to the rigging, mast and sail – subjects worthy of further articles in their own right. ●

Reference points

A lot of technical information that will be of use to Marblehead designers can be found in the following books and websites. Do, however, bear in mind that these cover full-sized yachts and that for models the contribution of friction referred to will be much higher (lower RE number). Interestingly, I recently noticed that Lester Gilbert posted results of tests with an IOM model yacht carried out at Southampton University. Based on these measurements, he also concludes that the gap should be as small as possible for a high efficient sail.

Books

- J.W. Slooff, *The Aero- and Hydrodynamics of Keel Yachts*
- F. Fossati, *Aero-Hydrodynamics and the Performance of Sailing Yachts*
- C.A. Marchaj, *Aero-Hydrodynamics of sailing*
- P. van Oossanen, *The Science of Sailing*

Websites

- https://onemetre.net/Design/WindhanJibDeck/WindHanDeckhtm
- https://www.allradiosailboats.com/

Acknowledgements

Many thanks to MARIN (Maritime Research Centre in the Netherlands) for the inspiring discussions about the advantages and disadvantages of the proposed new Marblehead discussed in this article.

BOILER ROOM

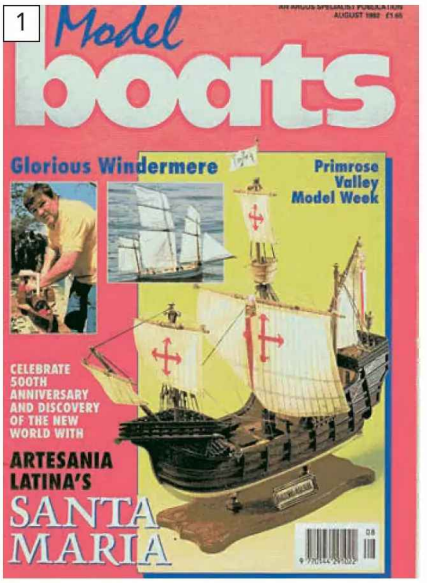
Richard Simpson provides a step-by-step guide to selecting plant of the right size and type for your model

When a friend recently showed me a photo of a model he'd built taken during one of its test runs, a topic that frequently crops up during pondside chats immediately sprang to mind. The model in question sat so low in the water that the freeboard looked to be down to the region of around a centimeter. I asked him if he was aware of the potential hazards of operating the model like that, and he admitted that he was a bit concerned. After guiding him towards a smaller boiler, I started to think about how choosing appropriately sized plant when planning a new project is still deemed a bit of a minefield.

While I did touch on choosing a model and a suitable engine for it way back in the January and February 2013 instalments of Boiler Room, I don't think I've ever tackled the subject of sizing the plant as a whole. Consequently, for those considering putting the main components for a steam powered project together, that's what we're going to be looking at this month

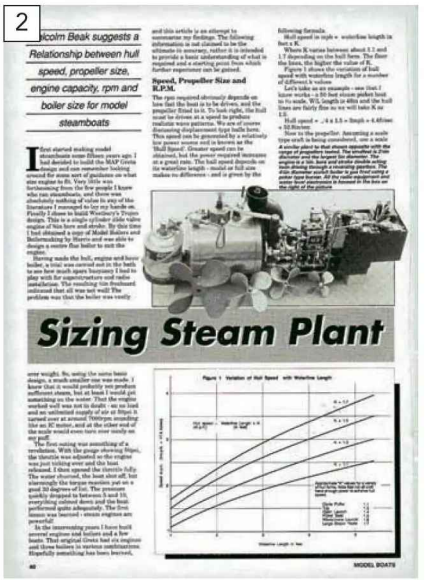
One interesting aspect is actually knowing where to start. Should we start with the model, the boiler, the engine or the propeller? Many modellers have their own ideas, and these can be driven by different influences. For instance, there's currently a build thread on the Model Boats forum begun by a modeller who has been given a beautiful complete model steam plant. He's now building a model to accommodate this plant.

1



There is a wealth of useful information to be had in old issues of Model Boats. For anyone contemplating a steam-powered project, the August 1992 issue is well worth acquiring.

2



Malcolm Beak's article in the August 1992 edition is very technical and in depth but is an excellent reference for anyone going through the process of propeller, engine and boiler selections for his/her model.

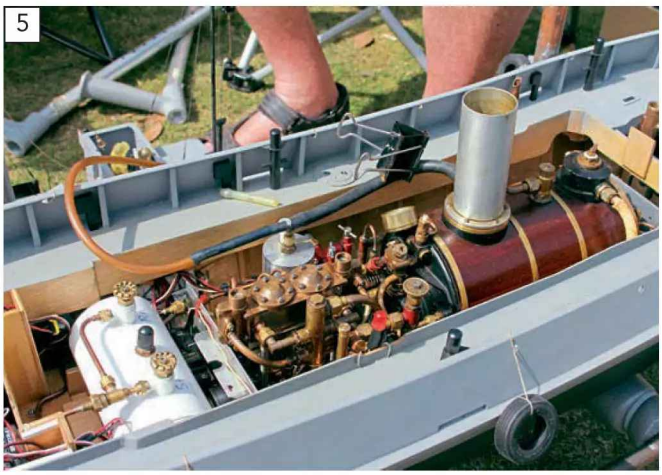
3

A traditional tug offers a purposeful attitude on the water and the opportunity for weathering and additional deck detail.

4

Conversely, some may prefer the slim-hulled elegance of a Windermere launch type of a model, with lots of varnished wood and polished brass.

5



A large and complex steam plant in an enclosed hull can sometimes become a bit cramped. Accessibility, ease of maintenance and operation all need to be taken into consideration, as well as performance and stability.

6

A wide, deep and blunt hull, such as that of this Irish sea coaster model, is going to require a lot of torque to push it through the water successfully. The deep trough in the wake is an indication of just how much water is being pushed out of the way by the bow.

I wouldn't normally suggest anyone starts with the plant but, in this case, he has little choice.

I also decided to look up one or two old articles on the subject, in particular one that was published in the August 1992 issue of Model Boats (see **Photo 1**), penned by the highly respected and very knowledgeable Malcolm Beak, entitled Sizing Steam Plant (see **Photo 2**). Interestingly, Malcolm also starts his article with an example of a model boat that sat way too low in the water, so it's a fairly recurring theme! He then gets right down to the nitty gritty of boiler evaporation rates, hull speed formulas, calorific values of various fuel, *etc*, and calculations based on all of them – a level of detail that many newcomers may perhaps find a bit off putting. I would, however, recommend getting hold of a copy and reading through it, as any prospective steam modeller will find the article a valuable resource to refer to for many years to come.

For those who don't want to get into that level of theoretical detail, though, let's try to condense the subject down and hopefully help you choose a plant that's going to work reliably and effectively in your model boat.

A step-by-step process

A step-by-step approach when starting a project such as this will help structure your thinking. That's not to say what follows is set in stone, feel free to go about things completely differently if you wish; what's important is achieving the same end goal, *i.e.*, a model that's reliable, suitably powered and stable on the water.

1. Choosing your model

Choose a model that incorporates elements that really captures your interest, whether that be the character and detail featured in a hard-working tug (see **Photo 3)** or the elegant splendour of a Windermere steamer (see **Photo 4**). You're likely to be building this model for certainly many months, and in some cases many years, so unless you find your subject totally absorbing, there's always the

7

To get the required performance, the propeller needs to be not only as big as can be fitted into the stern frame but also with as big a pitch as possible to give the necessary torque.

8

For the finer hull a faster revving propeller of a proportionally smaller diameter with slightly less pitch is a better option.

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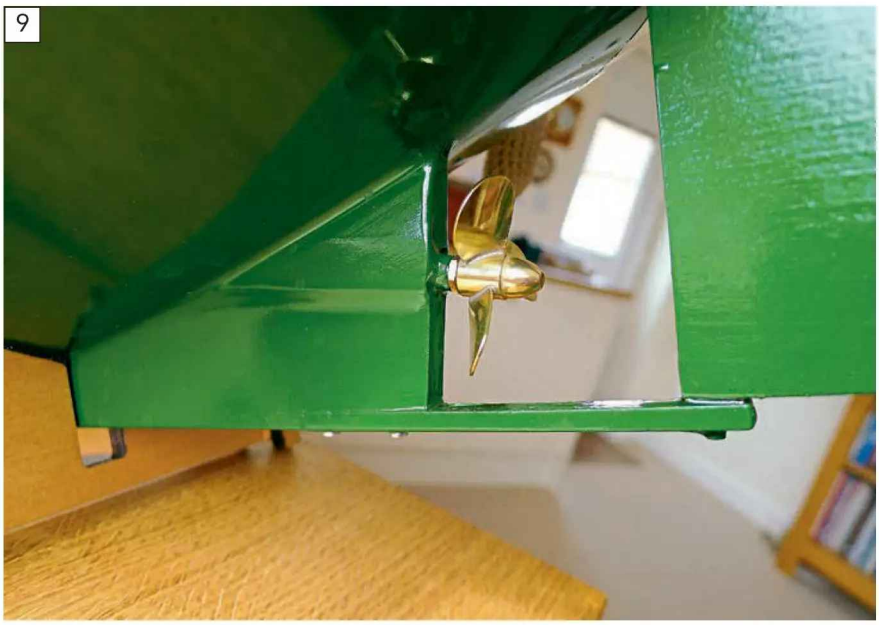
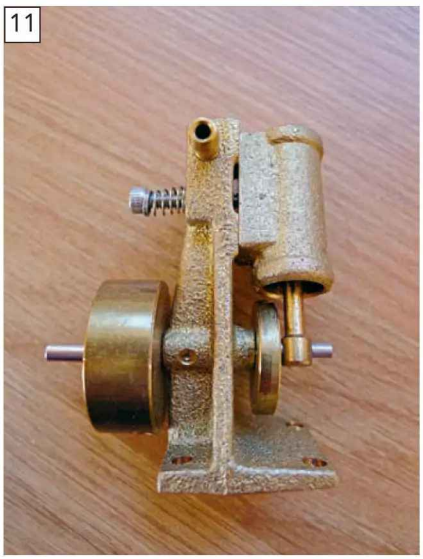


This is just one of two kits Richard has built that was supplied with a plastic propeller that performed very poorly. Studying the propeller indicated that there was almost no pitch, in both cases. Replacements from Prop Shop resolved the issue.

10

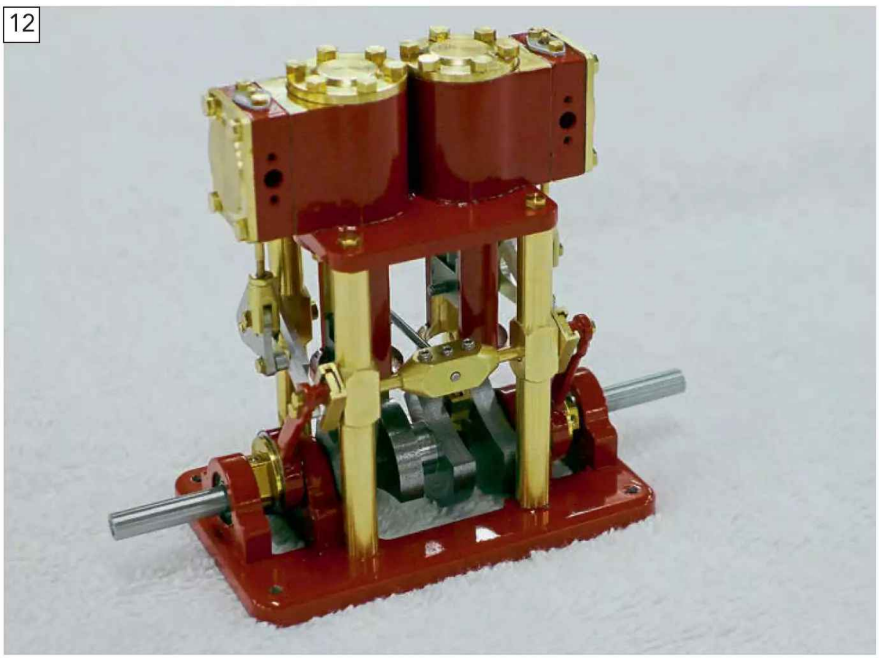
Scratch building or modifying a hull gives you even less to go by, but a good starting point is what looks to be reasonably in scale. This steam propeller was judged by simply eyeing the hull up and judging what looked appropriate. It worked well.

11



A single cylinder oscillating engine can be tempting for a beginner due to its simplicity and low cost. You do have to bear in mind though that it is considered as non-self-starting and hence has to be operated as a point-and-go model.

12



A twin cylinder valve operated engine is certainly the easiest to operate for a beginner. The speed can be controlled smoothly, it reverses easily, and the engine is frugal on steam. The downside is the complexity of reversing gear and the need for an additional servo.

risk your enthusiasm may wane when things get tricky.

Then, of course, you have to decide whether to opt for a kit (which could include a ready-made hull or involve plank on frame construction) or build something from a plan (this, too, could be based on a pre-moulded hull or built from scratch).

Make sure you choose a build that best suits your level of skill and experience to ensure you're able to see the project through to completion. I tend to recommend a kit with a ready-built hull for a beginner, and preferably an open hulled boat. For a first go at steam propulsion, an enclosed hull can prove demanding when it comes to build, maintenance and operation (see **Photo 5**).

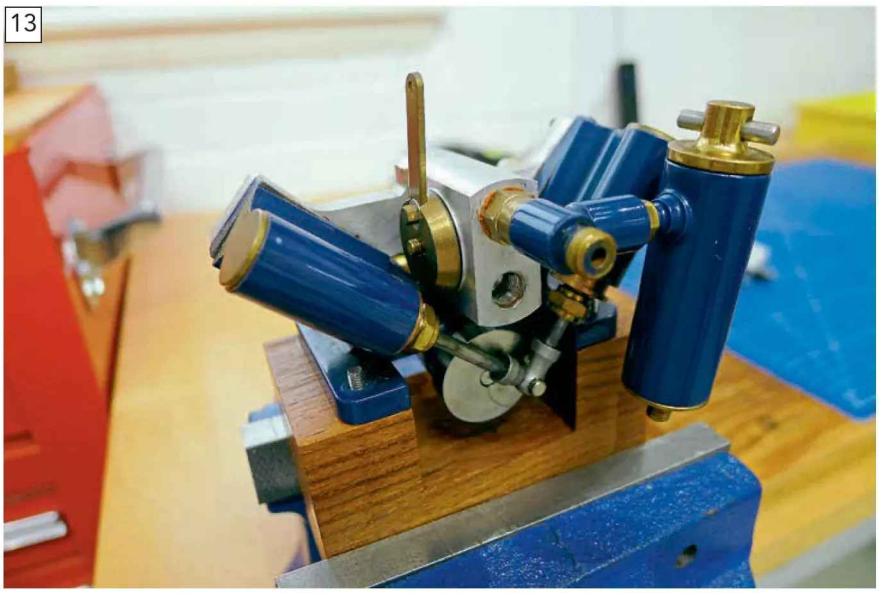
Once you've decided on the model that best suits your skill set, taste in vessel type and pocket, you can then move on to the next step.

2. The hull form and propeller

You will now be faced with decisions regarding the speed, which will be dictated by your model's hull form. There are equations to determine a suitable scale speed, as explained by Malcolm Beak, but, basically, a long slim hull will push more easily through the water than a short fat tug or

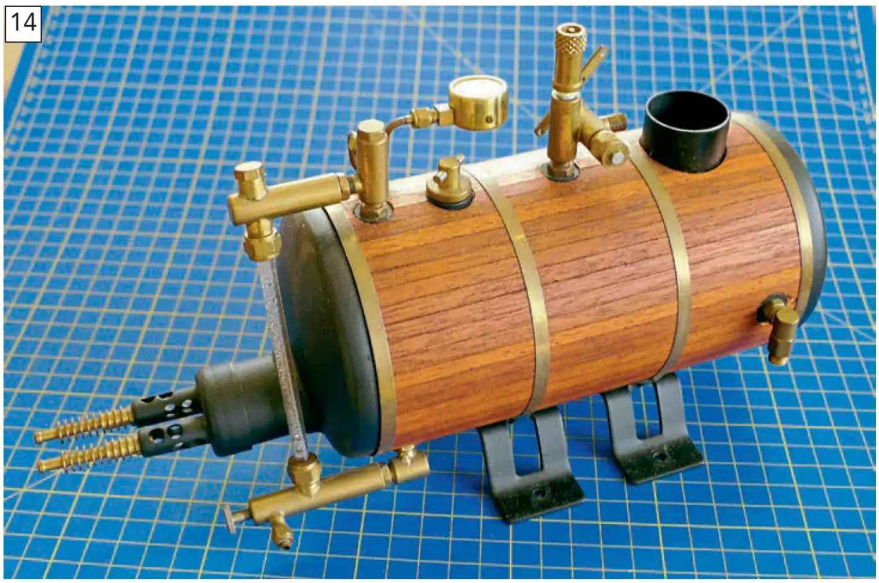
"Single cylinder engines are simple and relatively cheap, so can be attractive to a newcomer, but…"

13



A twin cylinder, double acting oscillator is a powerful engine in a small package, and a 'V' configuration allows it to be tucked away in the stern when longitudinal space is at a premium.

14



For a comparatively small boiler, this Ribbersdale can power quite a big engine due to its very capable twin poker burners. It will use up the water pretty quickly though, so a feed system is going to have to be a consideration as well.

traditional, deep draught coaster with a blunt bow (see **Photo 6**). This, along with how much above scale speed you might want to go, will help you decide on the best propeller to buy.

Specialist suppliers such as Prop Shop will provide guidance, but, for example, you will be looking at a higher pitch for a slower turning propeller for a tug or coaster (see **Photo 7**) and a finer pitch for a faster turning propeller for a narrow-hulled launch (see **Photo 8**). The diameter will usually be dictated by the available space in the model, but scale and appearance can also be considered. The higher pitch should give you a better torque for maneuvering a tug, while the faster spinning lower pitch propeller will push a launch at a suitable speed. Generally, though, there are propellers specially designed for steam propulsion, so I would recommend you specify this when discussing a potential buy. Also, in at least two kits I've built I found the supplied plastic propellers to be of very poor quality, with almost no pitch. As a result, in both cases, performance was very poor. Fortunately, nice brass replacements from the Prop Shop did the trick (see **Photo 9**).

Putting a complete unknown together can involve a bit of a trial and error, especially if you're modifying a hull, but a scale appearance is usually a good starting point (see **Photo 10**).

"While a large engine doesn't necessarily require a sizeable boiler, it does need a bigger burner"

3. The engine

It's imperative the size of the engine you purchase will suit your model and propeller. Don't be afraid to ask the manufacturer what size and type of boat a potential engine is capable of pushing, and at what speed, so you can get a better idea of whether it will suit your requirements.

As for type, single cylinder engines are simple and relatively cheap so can be attractive to a newcomer (see **Photo 11**), but they do come with the restriction of not being considered self-starting. This means that, unless an additional device is incorporated to rotate the engine when stopped, the engine may not start again in reverse. A fully controllable and reversible engine is definitely better for a beginner, so a twin cylinder double acting engine is really worth considering.

When it comes to whether you should opt for a valve type engine, such as the TVR1A (see **Photo 12**) or an oscillator (such as the Hemmens Richmond shown in **Photo 13**) – both sadly no longer produced but still available secondhand – the oscillator is certainly simpler to maintain and usually that bit cheaper, but it can be that little bit more difficult to control. An oscillator can sometimes be a bit on and off and may not have smooth control of speed throughout the range. Oscillators also tend to use more steam, as they're not as efficient as a valve engine. Valve engines, whether piston or slide valve, tend to be smoother to control so perhaps lend themselves better to models that require more control, such as tugs. They are, however, frequently more expensive in the first place and in many cases require a reversing servo as well as a speed control servo. This makes the installation more complex and operation a little trickier.

4. The boiler

While a large engine doesn't necessarily require a sizeable boiler, it will need a bigger burner. The main concern with a boiler is its ability to produce the amount of steam the engine needs, but while a boiler's design plays a significant part in this,

"The boiler is almost certainly going to be by far the largest element of weight in a model, so its type and size will affect buoyancy and stability"

it's the size and type of burner that can be game changing. Usually, of course, you tend to find a bigger burner in a bigger boiler, but I know of plant with a comparatively small boiler that has two poker burners fitted, both of which have a very high steam production rate and can therefore supply a good-sized engine (see **Photo 14**).

The boiler is almost certainly going to be by far the largest element of weight in a model, and its type and size will affect buoyancy and stability. Surprisingly, there frequently isn't a huge difference in the centre of gravity between a horizontal boiler and a vertical boiler, but nevertheless a vertical boiler usually has a slightly higher one, so can lead to a less stable model.

Space in the model also plays a big part in boiler selection, with the footprint of a vertical boiler generally using slightly less space (see **Photo 15**). Horizontal boilers are frequently the preferred choice for enclosed models, where decks can be a limiting factor, but vertical boilers can also be neatly arranged to fit into accommodation spaces.

I strongly recommend a boiler and engine package to anyone trying a steam-powered model for the first time. The combination of a compatible boiler and engine fitted to a base, sometimes even with a gas tank and separator included, makes for a very neat package that will be easy to fit and remove for maintenance; the two vertical boilers from Miniature Steam Models (see **Photo 16**) are good examples of this. Plus, you have the manufacturer's assurance that the steaming capacity of the boiler is going to meet the demands of the engine.

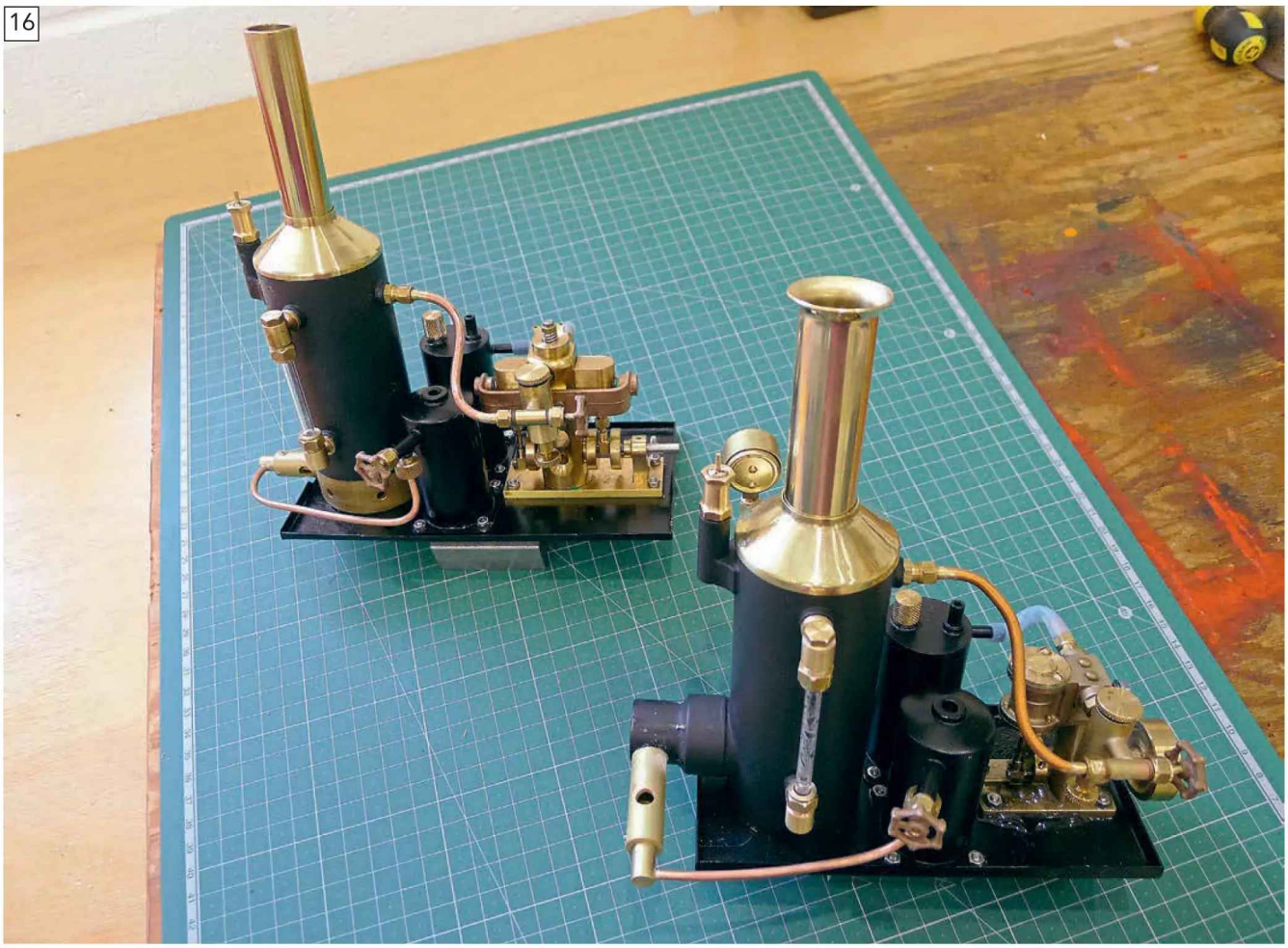
Conclusions

There's no doubt that choosing a steam plant can be daunting,

15

A very popular boiler for many models is a 3½ in vertical boiler, such as this. The smaller footprint gives more flexibility with installation, but the slightly higher centre of gravity must be considered if stability is already a concern.

16



These boiler and engine packages from Miniature Steam Models are well worth considering. Not only do they offer the assurance that the boiler incorporated is capable of supplying the engine's needs but, with everything mounted on a single baseplate., maintenance and operation will be easier too.

17

A very typical and popular arrangement is a Cheddar 3½ in Puffin plant in a Krick Borkum model boat. Performance, maintenance and operation are all very good and around 20 minutes of operation is possible on a boiler fill.

"I strongly recommend a boiler and engine package to anyone trying a steam-powered model for the first time"

especially for those who don't have any experience with various engine and boiler combinations and their capabilities. What's more, fitting the plant into a model presents a whole new raft of considerations, such as stability, buoyancy, and even operational and maintenance accessibility.

There is, of course, no harm in looking at the proven to work arrangements fitted by other modellers. There are, for example, many examples of *Borkum*, built from the Krick kit, out there that work perfectly well, such as the one with a Cheddar 3½ inch vertical boiler and twin cylinder Puffin oscillating engine shown in **Photo 17**.

I first chose the Mountfleet Models *Ben Ain* model, as I really liked its old steamer vibe and its connections with my seafaring father. The propeller was basically dictated by the stern frame, so I went for the largest steam type propeller that I could fit into the frame. My initial engine preference would have been the valve type – possibly a Graham Industries TVR1A type for its frugal use of steam and good controllability, but there simply wasn't enough room in the stern. Such an engine would have pushed the boiler too far forward, and it would have been impossible to connect the boiler flue to the funnel. The engine with the least longitudinal space requirement was a 'V' twin oscillator, but even then, the boiler flue had to be purpose made to align it with the funnel. Interestingly, although the engine was heavy on steam demand it did have sufficient reserves of power to drive a large, wide and deep hull. This was paired with a relatively small diameter horizontal boiler that could be neatly accommodated within the hull. This boiler was fitted with the twin poker burner arrangement, proving that a smaller boiler can supply a demanding engine as long as it has a suitable burner. The downside, of course, was that the water would be used up quickly, so this was a case where a feed system of some sort would be a significant advantage. The feed tank acquired made further demands on the stability and draught, something I then had to factor into the rest of the build.

Another example worth sharing is the beautifully built *Christiaan Brunings* model by Peter Redfern (see **Photo 18**). He fitted a Stuart Models' twin cylinder oscillator and a Stuart Models' boiler into the hull, and this operates the model perfectly for around 20 minutes at a time (see **Photo 19**).

At the end of the day, sizing the plant is not a clearly defined science, there's a lot of trial and error. Hopefully, however, this article has got you to the point where you feel ready to invest in a steam plant with more confidence about its suitability. ●

18

The Christiaan Brunings' kit from Dean's Marine makes for a graceful model on the water, as this beautifully finished example from Peter Redfern clearly demonstrates.

19

Peter used a Stuart Models twin cylinder oscillator with one of Stuart Models' horizontal boilers to power the model, which has proved to be a perfect performance match for the boat.

Steer clear!

Glynn Guest offers some helpful advice on avoiding obstacles and embarrassing mishaps

Some clubs hold steering events for the scale types of models their members run. These can be low key 'fun' events but it's still nice to get a clear round. The following notes have been written on how to avoid the *"Whoops!"*, *"Sorry!"*, *"Pardon!"* accidents that can occur on such sailing courses.

The first thing to realise is that with a conventional model, *i.e.*, one with propellers and rudders at the stern, the stern moves outwards from the centre of the circle it is turning (see **Fig 1).** The bows actually move inwards, too! This means that if you're passing through a pair of buoys or close to an obstacle and turn before clearing them, then the stern can, and probably will, hit them (see **Fig 2**). Should you have to turn in this situation, then sail close to the buoy on the inside of the turn, as this will allow more clearance for the stern to swing outwards (see **Fig 3)**.

You ought to be aware of how tightly your model can turn, and if this changes with the power applied to the motor. When faced with having to do a 'U turn', such as when zigzagging through a line of buoys, then familiarity with a model's turning ability will permit you to judge how to tackle the obstacle/s (see **Fig 4**). Turning into a larger circle after passing through a pair of buoys allows you to line up squarely for the next pair. Incidentally, passing through gaps squarely is usually the best way to do it as it gives you more clearance (see **Fig 5**).

Turning around in a confined space can only be done if the model's turning circle fits comfortably inside the space but do remember to factor in the stern swinging outwards. For most of us, this involves having to 'shunt' forwards and backwards to achieve said manoeuvre (see **Fig 6**). If your propellers are in line with the rudders then the trick of starting from rest and applying full rudder before full power will cause the model to rotate significantly before it gains much headway. As with most things, this takes practise to perfect but, by controlling the duration of full ahead power before applying astern (usually with the rudder reversed), it is possible turn a model through 180 degrees in a space little larger than the model itself.

One other tip is to make use of the wind (this might seem odd as wind is

"This takes practise to perfect, but it is possible turn a model through 180 degrees in a space little larger than the model itself"

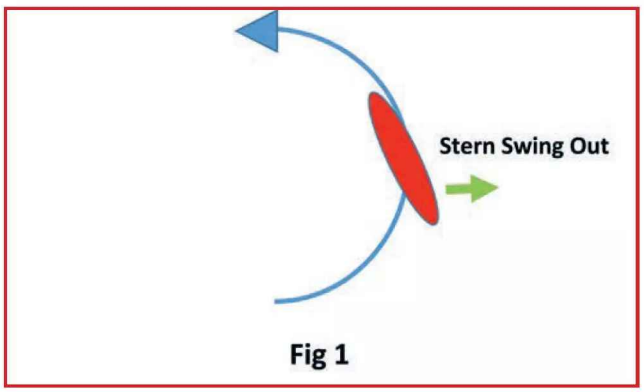


Fig 1

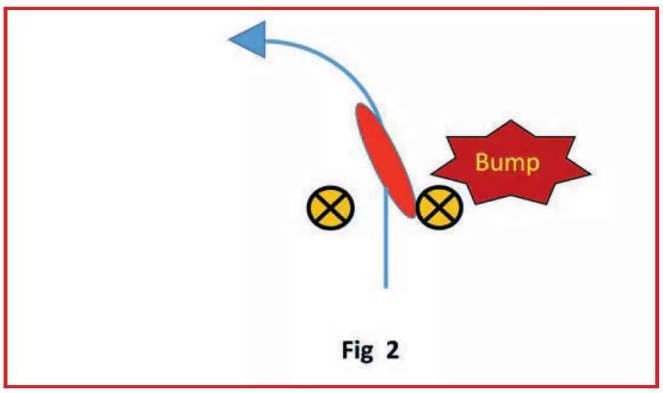


Fig 2

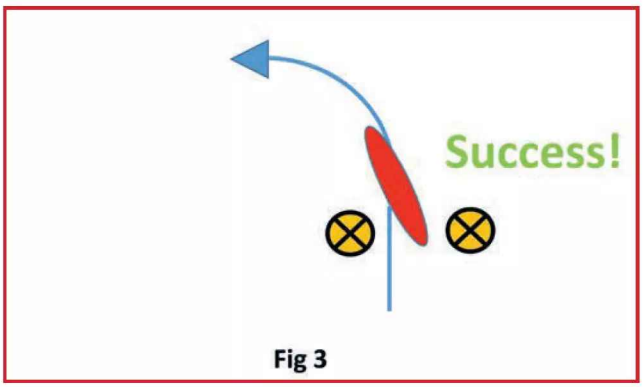


Fig 3

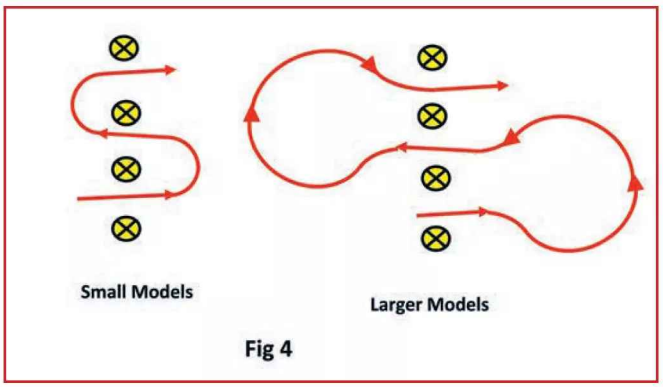


Fig 4

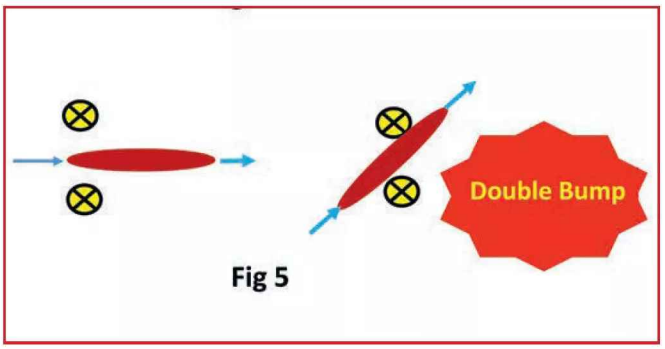


Fig 5

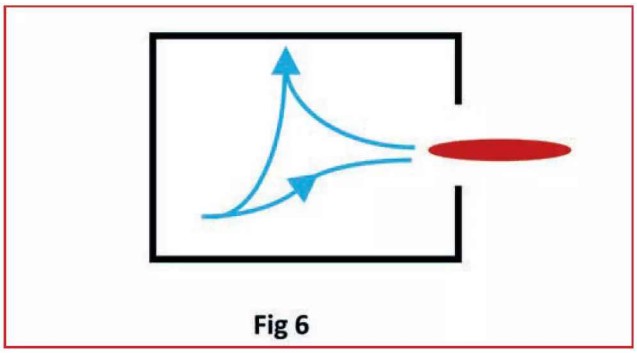


Fig 6

usually considered to be a nuisance when sailing on a steering course). When having to turn inside, say, a dock, it is best to start by turning the bows into the wind (see **Fig 7).** Now the wind will blow the model backwards, which is the way you want it to move. Turning downwind in an obstacle will usually end up with the model pressed firmly against its sides, and it can be difficult (quite often impossible) to get the model free. But, if you have to bring the model to rest alongside a dock, then choose (if possible, that is) the windward side and let the wind do the final bit of the manoeuvre (see **Fig 8**). If the wind is parallel to the dock, then you can angle the model to let the wind push it sideways while you control the forward motion onto the dock sides (see **Fig 9**). I have found it best to use the rudder to keep the model at the desired angle to the wind and adjust the model's path with the throttle. If it looks like overshooting the dock area, reduce the motor speed, or vice versa. This is not dissimilar to landing a model aircraft, but I'll admit to having more consistency with model boats!

"Success on a steering course demands two things…"

Knowledge is power!

Success on a steering course demands two things… The first is a knowledge of how your model responds to the rudder and motor commands; this includes how quickly the model can speed up and slow down, stopping distances, speed of rudder response and such like. The other is how to tackle each obstacle in a manner most likely to achieve success. You also ought to have figured out you're going to leave an obstacle before you even approach it! By the way, it can be advantageous at times not to try to duplicate the exact shape of the course as drawn. Sometimes the course is shown to lead straight from one obstacle to the next. If it helps you get correctly aligned, then 'bend' this straight line to suit!

Finally, you might think that some types of models, perhaps those with multiple independently controlled props and bow thrusters, will always have the advantage in steering competitions, but I've never found this to be true. Sometimes the conditions favour larger models, which may suffer less disturbance while their smaller brethren are being tossed about by wind and waves.

The most important thing seems to be how well you as an operator know your model's behaviour. It also helps to appreciate the fact that modern radio gear offers a range of motor speeds between full ahead and full astern, and that rudders have many positions between full right and left. ●

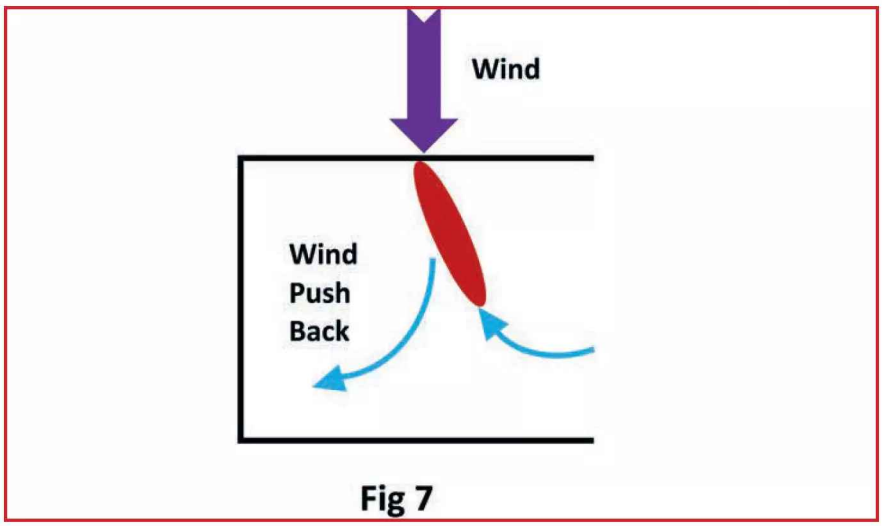


Fig 7

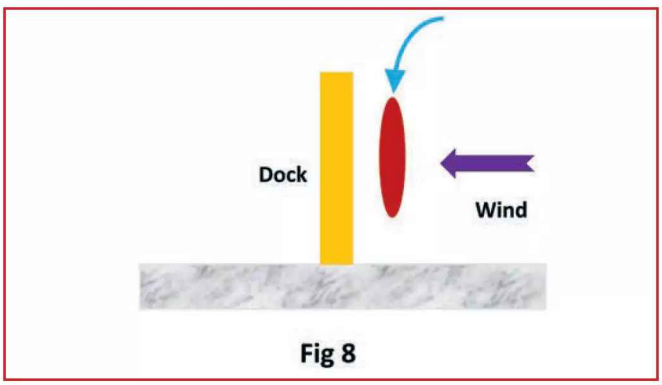


Fig 8

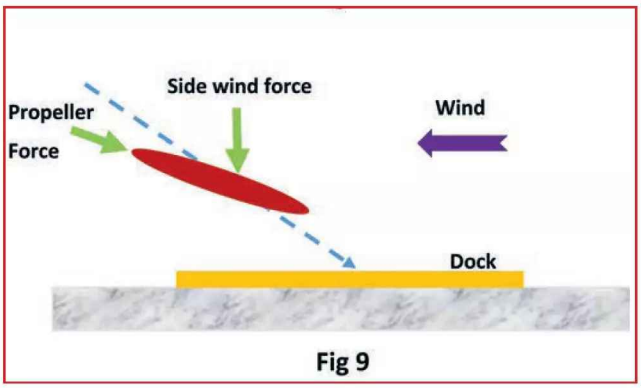


Fig 9

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**

Flying Christine 3

I am sending you some photos of a 1:12 scale model of the St John Ambulance *Flying Christine 3*, which I scratch built working from numerous photographs I have taken.

When in 2005 FC3 turned 30 years old, it was decided to 're-life' her for another 10 years by upgrading the interior, electronics, access, fendering and safety features, as well as revitalising the livery to look more like a current ambulance.

The model, which took some two years to complete and detail, is as close as possible to her real-life counterpart. Paint and decals came from same source as for the full-size boat.

I handed her over to St John Guernsey last November. She will probably end up on display in Guernsey Airport's departure lounge, where she will be used for fund raising purposes (FC3 is used for rescue and recovery of patients from any of the Islands in the Bailiwick of Guernsey).

This seems only right and proper considering all the help and assistance I received from St John Ambulance Guernsey and the crew of the FC3 during the build of this model.

PETER RUTSCH
VALE OF GLAMORGAN MODELLING SOCIETY

What a generous donation after all the work you've put into this superb model, Peter. Bravo! Ed.

Mevagissey Lugger

About two years ago you published some photos of a South Coast Trader model I had built in the Your Models section of the mag. That model had taken me many years to complete. I have now, over the last two years, built a model Mevagissey Lugger based on a Sarik Hobbies hull and plan; retirement speeds these things up markedly.

I really enjoyed constructing many of the accessories, such as the coopered bucket *around 12 mm high), together with a mop (around 50 mm long) and a bottle of rum (about 15 mm high), together with numerous hooks, pulley blocks and other fittings.

To me one thing that detracts from a finished model is over scale seams and hems on the edge of sails. I tried to keep mine as narrow as possible (about 3 mm), which presented quite a challenge, especially as I threaded a fine cord down the seams to provide more

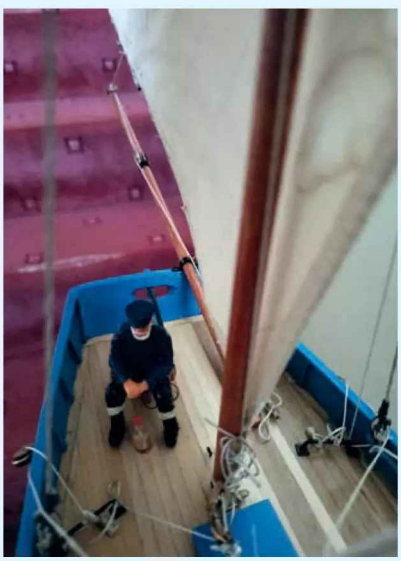
purchase for the lashings to the spars.

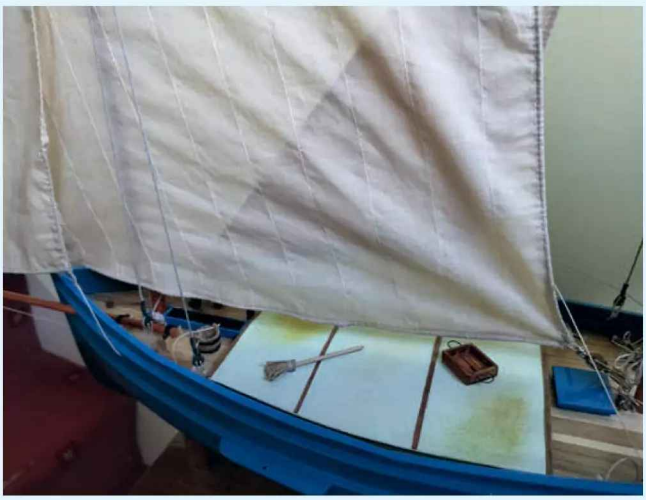
The finished boat is 900 mm long (from tip of bowsprit to the end of the aft outrigger) and built as a display model. I have designated it as an 'old Lugger returning home from a repaint' to justify the tatty sails and freshly painted hull.

Having now completed this model, I have been giving some consideration to my next project. My thoughts are currently around building a model of the Sutton Hoo Saxon Longship – I managed to buy some plans when I visited the reconstruction project at Woodbridge last summer. The one advantage to this is that it has no sails. However, I suspect that could be the least of my worries, as the original had over 3,500 iron rivets holding the planks together in the hull, and in model scale these would be around 0.75 mm diameter. That's a lot of rivets to make!

JOHN ROGERS
TODDINGTON

Loving all the care and attention to detail you've put into this absolutely charming model, John. Good luck with the Sutton Hoo Saxon Longship. I look forward to seeing some pics one day. Ed.





Your Letters

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

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

Watercraft Model Kits

I have just received the March edition of MB magazine, as always much of interest.

I am intrigued by the letter relating to the Watercraft Model Kit.

I spent my younger days in Teddington and from the age of 10 (1955) visited the Teddington model shop most weeks. It was run by a Mr Price I believe, and his daughter. I do remember, however, Aerokit boats and Keilcraft model aeroplane kits, plus a wide range of other modelling kits and equipment, were available. Mr Price was always prepared to spend time giving modelling advice to young model makers, not just from a profit-making approach but with a desire to promote the varied hobbies to as many youngsters as possible. At that time, we were most fortunate in being able to access the ponds in Bushey and Home parks next to Hampton Court Palace to sail our models. In the part of Wales where I now live, sadly, all ponds and lakes are for fishing only.

The shop also served as a sales outlet for highly detailed ship drawings; I have drawings of HMS *Dreadnought* to 1/16 - 1-inch scale purchased from Mr Price, and they have been drawn by a draughtsman of superior ability. He also had some connection with a well-known at the time boat modeller, Dave Sambrook (I think that was his surname) as I can recall seeing him in the shop sometimes during the early 1960s. Mr Sambrook was, often mentioned in the early Model Maker and Model Boats magazines – I think, as a judge at exhibitions and model boating events. Other readers might know more about him.

It is, of course, possible that Mr Price may have himself may have been responsible for the production of these kits, as he would certainly have had the materials and tools available.

The shop (now long gone) was on the High St/ Broad Street junction, atop the road bridge over the Waterloo Circle and Shepperton railway lines, and the property is now numbered 87/88. There have been many changes to the town since my youth, thus the numbers might well have been changed during the last 65 years. The address on the Watercraft box illustrated in last month's issue, No. 65 High St., on the other hand, was apparently further down towards the river Thames; it is difficult to determine exactly where, as the shop fronts do not display numbers! I don't recall seeing any obvious model manufacturer's premises along that part of the street, or any other part of the High Street, back then, although it's not beyond the realms of possibility facilities could have been tucked away at the back of them.

In 1955 I had just starting model making, developing an interest not only in balsa boats and Keilcraft rubber band-powered aeroplanes but in warships in particular. Consequently, as a regular visitor to the shop so I would have been well aware of the Watercraft kits had they been on sale there, and I feel sure that Mr Price would have been a first-choice outlet for such a local enterprise. Considering this, it's more likely they were launched/ marketed in the late 1940s (before my time).

While growing up, I could find little in the way of books to assist with my modelling, as although I still have numerous Ian Allen books relating to warships, but they contain very little constructional detail. 10 years after the war, most people didn't want to talk about it, and, besides, few had any detailed knowledge of naval matters. Perhaps, then, the

manufacturer had some connection with the navy?

I hope my memories/observations might be of interest, and that they will perhaps prompt others who can offer information to come forward.

TREVOR FORD
EMAIL

Thanks for this fascinating retrospective of 1950s' Teddington, Trevor. As you suggest, these Watercraft kits may have been produced as a sort of 'cottage industry' enterprise by someone living either above or behind the high street shop specified as the address for the brand on the box.

Since receiving your email, I've now done a little more digging and, interestingly, another listing has popped on up on eBay, for a Watercraft destroyer (HMS Devonshire), which includes some paperwork. Having downloaded the images to my desktop and zoomed in so that I could read the script, I discovered that at the end of the instructions the range is promoted as consisting of:

- *4 Aircraft Carriers*
  HMS Illustrious, HMS Victorious, HMS Formidable and HMS Indomitable
- *3 Cruisers*
  HMS Devonshire, HMS Sussex and HMS Norfolk
- *8 Destroyers*
  HMS Icarus, HMS Ilex, HMS Imogen, HMS Imperial, HMS Intrepid, HMS Impulsive, HMS Isis and HMS Ivanhoe

(although there's the possibility further kits could have later been added).

Prices specified are as follows:
**Aircraft Carrier – 7s 6d*
** Cruisers – 6s 6d*
** Destroyers – 4s 1(?)d (pence unclear due to crease in paperwork)*

Also, after each price, mention is made of postage costs, which suggests these kits must have been advertised somewhere, although, frustratingly, I cannot find any period ads online for them to back this up.

I may be wrong, but I imagine these kits would have been produced in very small numbers and that majority of them sold would have been built and the packaging disposed of long ago. But it's quite a considerable range (although I appreciate it probably wouldn't have been that difficult to make the minor changes required for the individual ships within the three vessel type categories), so you'd think more examples, perhaps even unsold shop or mail order stock (considering these were being offered in post-war austerity period) would have survived (unless of course everything was written off and disposed of when the business folded).

Like you, I am hoping that someone reading possibly knows more. In the meantime, I will continue to trawl the web and eBay listings every now and then, as there must be answers out there, and I do love trying to unravel an unsolved mystery. Ed.

Telford Model Boat Club

Further to Andre Duys' letter in the March issue, the Telford Model Boat Club is still in existence. I am a member. We share Priorslee Lake in Telford with the water skiing and sailing clubs. Our main sailing time is on a Wednesday morning, although we do have other slots that can be used, and our members sail electric, IC and yacht models.

I have copied in Kelvin, who is the chairman, and Anthony who is the secretary, both of whom will be able to provide Andre, and anyone else interested, with further details.

Hope this helps.

MARK STEPHENS
TELFORD MBC MEMBER

Thank you so much, Mark!

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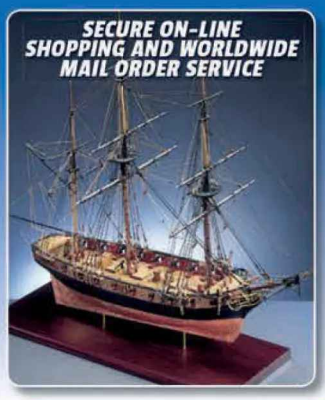

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