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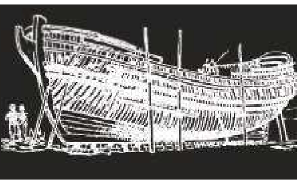

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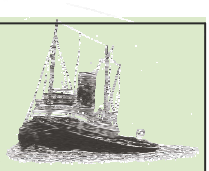

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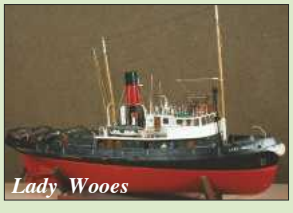
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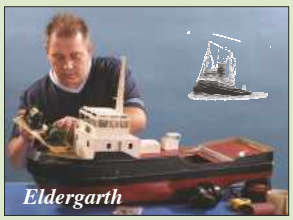
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Vol.68 Issue 812: July 2018

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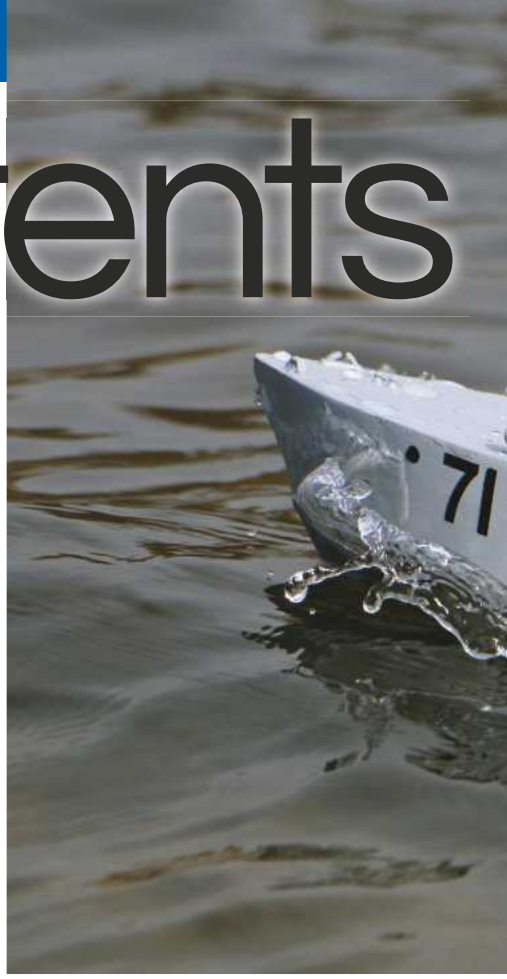

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editorial

Well it all started for me when I was treated to a Birkenhead Star Yacht after a sun drenched visit to Wroxham in Norfolk back in the early 1970s. I'll never forget it; the yacht was such a tactile object painted in glossy red paint with a sharp metal keel and lovely cloth sails. I still had it up to a few years ago when it was discovered buried at the bottom of an old tool box and far too worse for wear.
It was the perfect introduction to model boats and my interest has never waned since, despite being constantly distracted by all forms and subjects of plastic/wood/metal modelling and all things R/C, including aircraft and vehicles (I am master of none of them!) That pretty red pond yacht will always be one of those 'trigger points' in my life and to build on a previous editorial by Graham, I also believe that sowing the seed early enough will encourage more people into the hobby. With the latter in mind, I am a firm believer that within this multi-dimensional hobby of ours, you never, and should never, stop learning. I think that 'old dogs' can be taught new tricks and I for one am one of them! However, I'm going to ease myself back into model boat building with a couple of projects. The first is a Mantua Model Mincio Art.703 in a manageable 1/20 scale which has everything you need in one box apart from the R/C gear, while the other is a little more challenging in the shape of a Sarik Hobbies 1/8 SG&K 22' Gentlemans Runabout. Both of these will be 'bread and butter' builds to the more experienced, but for me, it will be a refresher course that I wish I had taken a few decades earlier. Hopefully, both of these projects will help me to ease back into the model boating world and, you never know, I may even blog the builds on the website; Don't worry, I would not dare make them into an article in the magazine – I'm here to gain readers not lose them!

It really is an honour to take the helm of this illustrious magazine and I would like to say a big thank you straight away to Graham Ashby for his help and support. His handover was one of the most comprehensive that I have ever experienced, with no stone left unturned and not a single one of my dubious questions left unanswered. Graham was instrumental in offering me this position and I shall be forever grateful for the opportunity. As many of you will know, he will be returning to RCM&E and I wish him the best of luck in his 'new' role; although I get the impression that may already have got the hang of running that mag!

Martyn Chorlton

Compass 360

Our news round-up from the model boating world

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Harsh conditions at Whitlingham

Two individual Marblehead ranking events were sailed on Saturday and Sunday 28th and 29th April at Whitlingham Lake, Norwich, in the most appalling conditions, with cold NNE winds, persistent rain (in your face) and soft mud under foot. Mind you, the wind blowing diagonally across the lake gave some excellent racing for 23 competitors in the build up to the World Championship in Biblis, Germany at the end of May. Anyway, the extensive Norwich race team, under the watchful eye of experienced Race Officer Vinnie Zammit, did a fantastic job in these awful conditions where everything became wet and muddy.

On Saturday 10 races were completed in the top end of A rig conditions. In the two seeding races Brad Gibson, sailing his Grunge, and Peter Stollery, sailing his new Up design set the pace at the top of the leaderboard.

RESULTS (TOP SIX)

Saturday

1 Peter Stollery	Up	12
2 Brad Gibson	Grunge	18
3 Tony Edwards	Grunge	28
4 Darin Ballington	Grunge	29
5 James Edwards	Grunge	38
6 Roger Stollery	Up	49

Sunday

1 Brad Gibson	Grunge	13
2 Peter Stollery	Up	29
3 James Edwards	Grunge	30
4 Tony Edwards	Grunge	35
5 Darin Ballington	Grunge	42
6 Duncan Ellis	Grunge	58

Peter read the wind shifts blowing through the gaps in the trees well. He counted five firsts, two seconds and a third to win the Whitlingham Trophy from Brad and the chasing pack of Grunges. This broke Brad's quite remarkable and unprecedented six year unbeaten record. At close of play Vinnie had organised an excellent meal in a nearby pub which went down very well to help warm more than just the frozen hands of the competitors and race team.

Sunday saw 12 races sailed and despite the forecast of a dry day, the reality was a repeat of Saturday with continuous rain, but this time feeling colder. Sure enough the wind was stronger requiring B or C rigs for some. This time Brad was in his element and counted seven firsts and three seconds to win the Commodore's Cup from Peter, James Edwards, Tony Edwards, Darin Ballington, and Duncan Ellis of the home club, all sailing Grunges – Roger Stollery

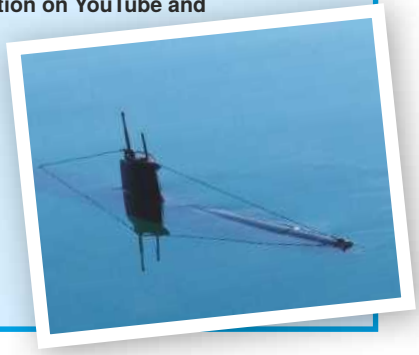
JOIN THE PREMIER LEAGUE

Now, ordinarily, if you were confronted with the offer to turn your hobby into cash you might treat it with a little scepticism, and rightly so. However, we're about to inform you of an opportunity to do just that under the well-established umbrella of Premier Ship Models, the custom build and refurbishment specialist with a client-base covering multimillion-pound oil companies to individual private clients and everything in-between.

Business is good, particularly on the restoration and repair side, and it's prompted Managing Director, Rashid Lalloo, to seek skilled model makers to join the team. So, if you're the sort of person who constantly seeks perfection at every stage of a project, can work with a range of materials and finishes and you live within an hour's drive of the head office in Potters Bar, Rashid would very much like to hear from you. Email: rashid@premiershipmodels.com and, who knows, maybe you can use that talent to even greater effect.

KO-HYOTEKI

Cast your mind back to the February issue and you may recall that John Parker gave a fascinating account of the 1942 Sydney Harbour attack during which three Japanese midget submarines almost wrought havoc on two unsuspecting capital ships. The submarine in question was the Ko-Hyoteki Type A and having supplied a brief history of the craft, along with one of his sensational graphic representations, John commented: "I've never seen a working model of a Ko-Hyoteki midget submarine but I think it could be quite impressive…" Well, shortly after, Martin Pryor got in touch to inform us that he'd already built a 1/16-scale version of HA-19, which took part in the Pearl Harbor attack in 1941. Martin's model is fabulous, can be seen in action on YouTube and is well worth a look. Type 'Bournville September 2016 Submarine Dive In Part 1' into the YouTube search box and enjoy some cracking underwater footage of HA-19, complete with counter-rotating propellers. It appears 19 seconds into the video. Enjoy.



WON A LIGHTNING?

If you head on over to our website forum at modelboats.co.uk you should be just in time to find out if you've won our latest giveaway, a Dumas 1 inch to 1 foot kit of the Lightning sailing dinghy that's raced by hundreds of individual fleets in the US, Canada, South America, Europe and Australia. Designed by Sparkman Stevens in 1938 most Lightnings are made of wood and this lovely kit follows suit with mahogany, balsa and hardwood parts, ready-made nylon sails and an operating centre board. It's a beauty and, what's more, it would make a great R/C conversion. If you didn't enter, don't fret, there'll be more competitions coming soon but you'll need to keep checking our Facebook page and the website for details.

DIARY DATES 2018

Sunday 3rd June
Bournville Model Boat Club Workboat Day – the whole day dedicated to all craft that have to earn a living – tugs, coasters, lifeboats, cruise ships. 10:00am until 6:00pm. All are welcome to attend and, as all always, tea coffee and refreshments will be available. Disabled access is a given. Visit www.bournvillersmbc.org/ for further information.

Sunday 10th June
Balne Moor Model Boat Club – Tug Tow Have-A-Go. Here is your opportunity to come along and have a go at tug towing and learn how to tow vessels through harbours. Don't worry if you haven't got a tug, someone will lend you one. £1.50 per boat. 10:30 start. Bacon / sausage butties are available as well as hot and cold drinks and home-made cakes… until they're gone! SatNav: DN14 0ER. More information can be found at: http://balne-moor-model-boat-club.myfreesites.net/ or by contacting: mikebutler1949@gmail.com.

Sunday 17th June
Stevenage MBC Open Day / Fun Day 10am till 4pm at Fairlands Valley Park, Six Hills Way, Stevenage, SG2 0BL. There will be have-a-go boats for the young and not so young. Come along, bring the family and have a great time on the water. Contact Jeff on 07806281236 or email stevenagembc@gmail.com.

Saturday 23rd June
Millbrook Model Mariners will be holding their 2018 Open Day on the freshwater, (brackish), lake at Millbrook on the beautiful Rame Peninsula in South East Cornwall to coincide with the Millbrook Open Gardens Day. There will be free sailing on the 13 acre lake, (no i.c. or fast electric), static displays, local clubs, a rubber duck race (following the outstanding success of last year), and refreshments. The Club's sailing platform is at the north east corner of the lake near Millbrook Football Club , PL10 1EN and all will be welcomed by this small and friendly club. Enquiries to Richie Richmond on 01752 812898.

Sunday 24th June
The East Midlands Model Lifeboat Day 2018. Due to the success of the 2017 event, King Lear Model Boat Club will again be hosting this informal and fun event for all lifeboaters. We have a jetty and slipway for ease of access to our lake so please bring your boats along for a sail. There's ample parking and picnic facilities at Watermead Country Park, Leicestershire, LE7 1PD. There is a £2.50 entrance fee payable to an unmanned machine. There are no catering facilities on site so bringing your own lunch is recommended. Further information can be obtained from Marie Burdett, tel. 0116 2613959 or email: kinglearmbc@ntlworld.com. For up-to-date information please visit our website at www.kinglearmodelboatclub.co.uk.

Sunday 24th June
Alvaston Pirates Model Boat Club will once again be holding its annual regatta from 10am to 4pm. The day will comprise a display of models both on and off the water and, of course, visitors will be most welcome. There is ample free parking near the lake and the Waterside Café is available for refreshments. Details of the normal club sailing days and times, together with the location of the park and its facilities may be found on the club website at www.alvastonpiratesmodelboatclub.co.uk.

Sunday 24th June
Edinburgh MBC Tug Day, Inverleith Park, Stockbridge, Edinburgh, EH3 5NZ. All welcome, catering and comfort facilities will be on hand. www.edinburghmodelboatclub.org.uk.

Sunday 24th June
Bournville Model Boat Club Warship Day – the whole day dedicated to everything military. 10:00am until 6:00pm. All are welcome to attend and, as all always, tea coffee and refreshments will be available. Disabled access is a given. Visit www.bournvillersmbc.org/ for further information.

Sunday 1st July
Balne Moor Model Boat Club – Tug Tow & Scale Sailing. An informal day towing or scale steering to your heart's content. £1 per boat. 10:30 start. Bacon / sausage butties are available as well as hot and cold drinks and home-made cakes… until they're gone! SatNav: DN14 0ER. More information can be found at: http://balne-moor-model-boat-club.myfreesites.net/ or by contacting: mikebutler1949@gmail.com.

Sunday 8th July
KMBC Open Day. 9:30am until 4pm at Wilton Park, Bradford Road, Batley, W17 8JH. This event is open to every type of model (except i.c. and high performance fast electrics). This will include a display of tug towing, club 500 racing, there'll be a steering course, static displays, yacht racing, free sailing all day and trade support. Once again we hope to have a section for Springer Tugs, modified or non-modified. Steam models will require up-to-date paperwork. Free car parking, large raffle and refreshments available. Anyone who wishes to attend with any type of model will be most welcome. Check the club website for further details – http://kirkleesmodelboatclub.weebly.com – or email Stan at kmbc2015info@gmail.com.

Sunday 8th July
Bournville Model Boat Club Open Day – if it floats, bring it. 10:00am until 6:00pm. All are welcome to attend and, as all always, tea coffee and refreshments will be available. Disabled access is a given. Visit www.bournvillersmbc.org/ for further information.

Sunday 8th July
Knightcote Model Boat Club Naval Day in conjunction with the Surface Warship Association. Any naval ship, static or on the water is welcome and there are launching facilities on site. Free car parking, clubhouse, toilets, model railway displays and our large free sailing water. Hot food and drinks will be available in the clubhouse during the day. Some gazebos and tables will also be provided. Location: New House Farm, Knightcote, Southam, Warwickshire CV47 2EQ. For further details contact Adrian Clutterbuck on 01604 846461, Chris Moir on 01926 612827 or visit www.kmbcmodelboatclub.com.

Sunday 15th July
Chantry Model Boat Club Open Day from 10:00am. We are also celebrating our 30th anniversary this year and would welcome all to come and join us at the lakeside, Bluewater Shopping Centre. We sail all classes of boats except i.c. and steam and we can offer free parking, toilet facilities and a summer buffet. For further information visit chantrymodelboatclub.co.uk.

Test Bench

A round-up of all the latest kits, books and blingy bits

FREE LUNCH!

Test Bench is a service that we provide free of charge to manufacturers, distributors and retailers of model boat-related product. Covering all disciplines, anything from books to balsa is accepted for these pages. To submit material, email the editor via editor@modelboats.co.uk and make sure to include all relevant text and pricing information along with high resolution images. That's all there is to it. Don't let anyone tell you there's no such thing as a free lunch.

Aqualine Acrylics

Scale modelling just got that little bit easier with this new range of water-based weathering colours from Wilder. Suited to application by either brush or airbrush, the colours are non-toxic, quick drying to a matt finish and can be reactivated at any point during the weathering process. Moreover, you can still use your enamel products over the top. Ten shades are available (see below) in 50ml pots, each costing £3.90. Take your pick from:

Brown Mud
Common Rust
Dark Earth
Light Mud
Dry Earth
Orange Ochre Rust
Brown Rust
Dark Track Rust
White Winter Camo
Black Smoke

Get 'em online from www.airbrushes.com.

Futaba T7XC

Just ahead of the Shizuoka show in Japan, Futaba announced the new T7XC land and water-based 7-channel top-of-the-range stick radio. Full details, price and availability has yet to be announced however for those who take their boating seriously this one really will tick all (and we mean all) the boxes. More details when we have them.

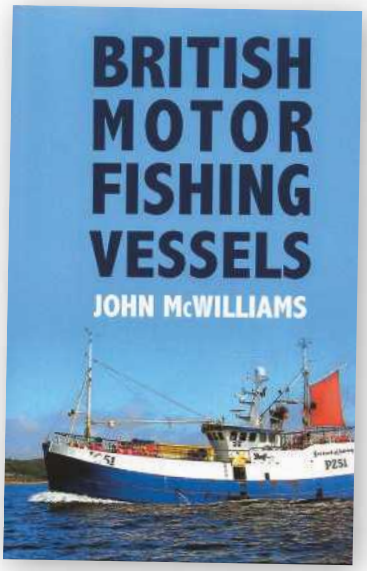
Futaba HPS-CB700

Now then, we fully appreciate that 95% of you good boating folk will consider Futaba's new ultra-fast brushless servo an extravagance, however there are a few (perhaps among members of the BMPRS) who might beg to differ. Sporting a speed of 0.07sec/60° (at 7.4) and a torque of 49kg/cm it's not short of performance in any way, shape or form. Full details plus price and availability will be announced over at www.ripmax.com in the near future.

Mistral

A compact take-anywhere 50W multi-chemistry (LiPo, LiIon, NiMH) balance charger the new Mistral from J. Perkins Distribution offers the perfect combination of user-friendly simplicity and intelligent programming. Sporting both AC and DC power options, an intuitive user interface and clear LED status lights, it's ideal for use at home or at the lakeside. With a variable charge rate of 0.1 – 5A and the capability to handle 1 – 15 NiMH cells and 2 – 6 LiPo cells, it's arguably the perfect pond partner for your immediate charging needs. Supplied with an AC power lead, a DC power lead (with alligator clips), a 4mm bullet to HCT-male charge lead, an HCT-female to Tamiya-male adaptor lead, HCT-female to XT60-male adaptor lead and an HCT-male to Futaba-female adaptor lead, there's little this £44.99 package doesn't offer. Check it out at your local J. Perkins stockist.

British Motor Fishing Vessels



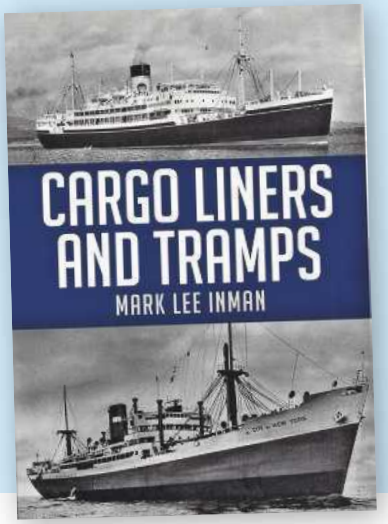
The sailing fishing boats of the British Isles are well documented in several excellent books, however in this new work, the author, John McWilliams tells the story of the motor fishing boats that replaced them.

Over a century ago, progressive British fishermen began to install engines in their boats. This was accelerated further during the First World War with the help of 'motor loans' from the Ministry of Agriculture and Fisheries and much of the fishing fleet was fitted with motors. Motor fishing boats have been part of our coastal scene since then. Local boat builders built boats to suit each home port and its fisheries and over fifty types of boats from all over the country are described in this book together with line profile drawings and photographs of boats such as the Mounts Bay Pilchard Boat, the St Ives Gig, the South Devon Crabber, the Leigh Cockler, the Lowestoft Motor Smack and the Yorkshire Double-ender. Also mentioned are the Motor Fifies and Zulus, the 75-Foot MVF Drifters and Trawlers plus many more, some of which are no longer around. These days modern boats are built of fibreglass and steel and are likely to be much the same whether they work from Shetland or Devon.

Motor fishing boats have always been a popular modelling subject, indeed regular readers will be familiar with the excellent model designs by James Pottinger that have featured in the pages of this magazine.

Written by John McWilliams. Softback, 128 pages, 235 x 165mm, over 130 mono photographs, line drawings and diagrams. ISBN: 978-1-4456-7863-4. Price (RRP) £14.99. Published by Amberley Publishing Ltd. The Hill, Stroud, Gloucestershire, GL5 4EP. Tel. 01453 847800, website: www.amberley-books.com. Available direct from the publisher or through the usual retail outlets – **John Deamer**

Cargo Liners & Tramps



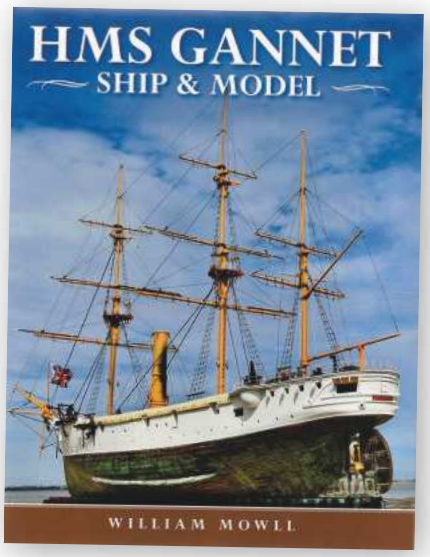
Even in the post-war era, there was still a demand for ocean-going travel, not just on the glamorous liners and mail ships but also on much smaller ships. Many of these vessels could be just as well appointed and comfortable and doubtless provided an intimacy that may have been missing from the larger and faster ships. If time was not a vital consideration, and money possibly was, then travel by cargo liner was an ideal option.

In this new book the author and photographer, Mark Lee Inman, tells the story of Cargo Liner travel using pictures, photographs and postcards to illustrate an era that air travel and the onset of fast container ships has totally obliterated.

Some of the photographs and postcards are from the author's own collection but the majority were acquired between 1961 and 1965 from major British, European, Asian and American Shipping companies, for whom this type of material was a vital part of marketing, promotion and public relations in a world that was soon to disappear. For me, this book was a real trip down memory lane, featuring ships I'd worked on, sailed on or seen, that are now, sadly, no longer around. Thoroughly recommended reading for ship modellers, maritime historians and enthusiasts with an interested in Cargo Liners and Tramps of the post-war era.

Written by Mark Lee Inman. Softback, 96 pages, 235 x 165mm, over 170 photographs and post-cards in colour and mono. ISBN: 978-1-4456-7384-4. Price (RRP) £14.99. Published by Amberley Publishing Ltd., The Hill, Stroud, Gloucestershire, GL5 4EP. Tel. 01453 847800, website: www.amberley-books.com. Available direct from the publisher or through the usual retail outlets – **John Deamer**

HMS Gannet – Ship & Model



HMS Gannet, now beautifully restored at Chatham Historic Dockyard, is a fine example of the small 'colonial sloops' that were built and deployed in the second half of the nineteenth century to police Britain's Great Empire and enforce the peace of Pax Britannica. Launched in Sheerness in 1878 she was, with her white tropical livery and elegant clipper bow, the epitome of the colonial gunboat.

In this book which follows on from his previous work, Thunderer – Building a Model Dreadnought*, William Mowll, ship modeller and author, describes the design and long history, including the restoration, of the Gannet before taking the reader on a detailed photographic step-by-step exposition of the building of his exquisite 1/48 scale model of the vessel a particular feature being the inclusion of a static two cylinder compound steam engine, which is no longer in existence on the prototype at Chatham.

All the information that the ship modeller might need is included in the book, not least hull construction and the coppering of the ship's bottom, the building of the static steam propulsion systems, the modelling of the decks, armament, steering gear, masts, yards and rigging; even the furniture in the wardroom is described. Inspiring with the sheer quality of his workmanship and superb colour photography, the author has brought to life another of Britain's great museum ships. I'm sure that this book will become the definitive reference work for anyone wishing to build a model from this era of British naval history.

Written by William Mowll. Hardback, 128 pages, 254 x 195mm, over 280 photographs, drawings and diagrams in colour and mono, ISBN: 978-1-5267-2628-5. Price (RRP) £25.00. Published by Seaforth Publishing, an imprint of Pen & Sword Books Limited, 47 Church Street, Barnsley, South Yorkshire, S70 2AS. Tel. 01226 734222 / 734555, website: www.seaforthpublishing.com. Available direct from the publisher or through the usual retail outlets – **John Deamer**

**Also available from Seaforth Publishing.*

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Boiler Room

Controllable Pitch Propellers

A collection of thoughts on Model Steam Plants by **Richard Simpson**

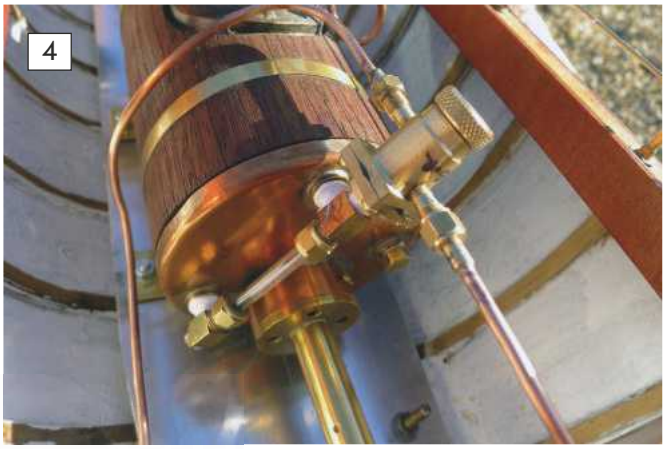
Some of you who may have followed Boiler Room for a couple of years may remember an article I did in December 2015 when I discussed the use of Controllable Pitch Propellers in model boats, along with their advantages and disadvantages and their operating considerations, **Photo 1.** To start with just a brief review of that article, we talked about why we may want to consider using such a device in our model and why they were particularly well suited to a model with a larger single cylinder engine such as a Stuart Turner 10V. The disadvantages of additional complexity and possible challenges with fine control were all discussed and, at the end of the day, my own model fitted with such a drive system, purchased a number of years ago, was tested out, **Photo 2.** I ended the article with the thoughts that, for a reliable and controllable operation, two significant modifications should be considered. These were namely some means of controlling boiler pressure by such devices as the Stuart Models Electronic Gas Valve or a mechanical gas attenuator valve as supplied by Forest Classics, and some means of controlling the engine speed.

Although theoretically the controllable propeller should be able to accommodate a consistent speed of rotation there were a couple of significant challenges noted. Namely on a low speed there was a potential for stalling the engine, which may not start again, and which would never achieve full power, and on a high speed significant amounts of steam were wasted in simply rotating the engine, which would also be very difficult to manoeuvre finely with such low pitch angles being required.

Since then I have sold the model to a friend who is just starting out in the model boat world and who was looking for an interesting and slightly out of the ordinary project to get his teeth into. I realised the model was probably going to sit on my shelf for a few more years before it received the attention it deserved so a price was agreed and the model went off to its new home. Having said that, part of the deal was that I would help to make the modifications I had suggested earlier so, despite being slightly better off financially I still found myself looking at the same model sat on my workbench and still requiring the same modifications doing, that I had been so far successful in avoiding! It did however prove to be an interesting project and one which I thought I would share here to perhaps help anyone else thinking along the same lines as fitting a controllable pitch propeller.

1. The component parts of a Controllable Pitch Propeller. You can clearly see the mechanism to slide the shaft up and down the stern tube and how the inside of the hub operates the rotation of the blades.

2. The model makes for a handsome boat but, as originally configured, it was challenging to operate on the water to the point of being almost unmanageable.



3. Despite original misgivings, mounting an attenuator valve directly on a boiler shell has worked well in the past with this one now being in service for a number of years.

4. Care will be needed to ensure that operating the adjustment hand wheel does not move the top fitting and break the glass. The wheel is nice and free however and the glass mounting is firmly tightened down.

5. A typical fully enclosed steam regulating valve. The operating arm can be set at any angle to suit the servo but it operated from fully closed to fully open in 90 degrees of operation.

Boiler Pressure Control

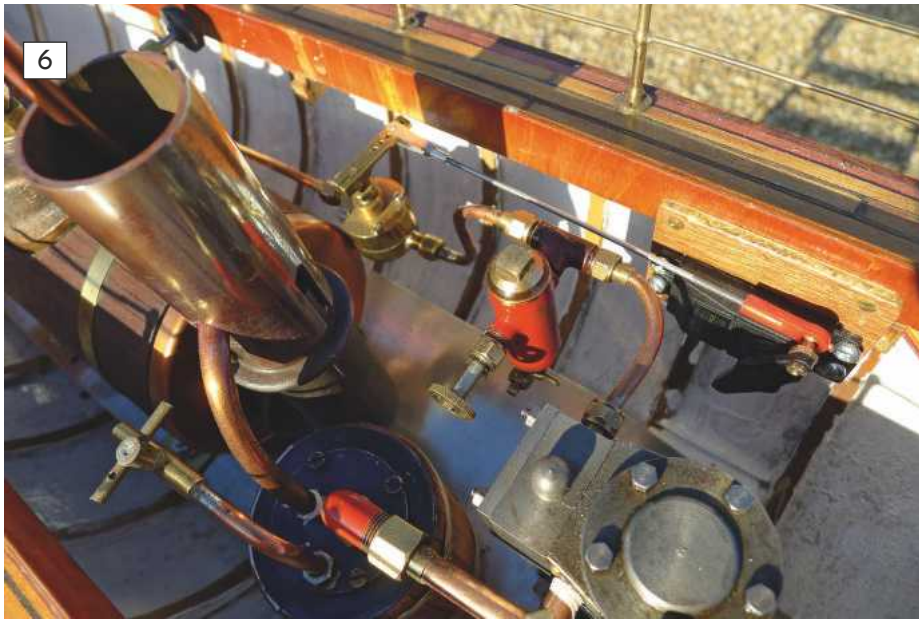
The first thing that needed dealing with was the control of the boiler pressure. If left to its own devices it proved to be almost impossible to maintain a consistent pressure by simply adjusting the gas valve to the burner. Using the engine too much would end up with the pressure falling off and then a very real danger of the engine stopping, which had to be avoided at all costs. Using the engine very little led very quickly to the safety valve lifting, which then wastes huge amount of valuable energy, i.e. gas, as well as accelerating the under cooling of the gas tank and the associated reduction in burner performance as a result of loss of evaporation rate.

Of the two possible means of controlling the boiler pressure the simplest and cheapest and arguably the most reliable is the mechanical attenuator valve. This device uses boiler pressure to move a piston against a spring. On the other end of the piston is a valve that controls the gas to the burner in such a way that an increase in boiler pressure reduces the gas to the burner and a reduction in boiler pressure increases the gas flow to the burner. The spring rate is set by turning a knurled knob, and hence the set pressure of the valve. Consequently the valve will control the burner to maintain a steady boiler pressure under varying engine loads. The usual challenge with these devices is where to mount them so they remain accessible for adjustment, while not getting in the way of any other function, such as removing the disposable gas tank. While the vast majority of them seem to remain remotely mounted I have always been concerned as regards the build-up of condensate in the steam connection, so the valve must be mounted above the boiler and with a straight run back to the boiler. Consequently in the past I have mounted one directly to the boiler shell and while early concerns regarding the transfer of heat causing issues seemed to be unfounded the valve has worked reliably for a number of years, **Photo 3.**

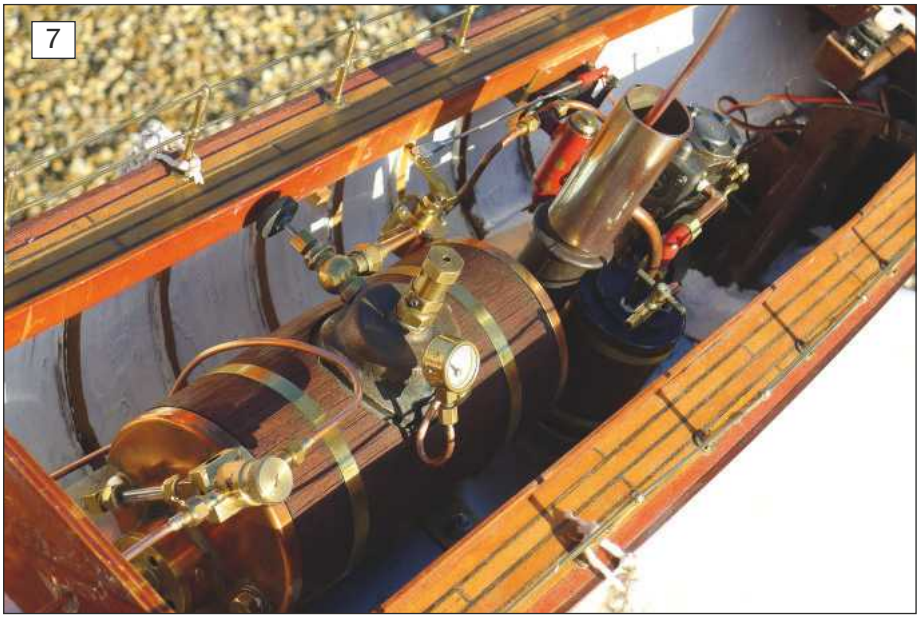
As we were looking for suitable locations to mount the valve on a boiler with very limited available connections I realised that the hexagonal cap on the top of the gauge glass was the correct thread. The main downsides of mounting it there would be the danger of disturbing the top glass fitting while adjusting the valve and the fact that changing the glass would require slightly more disassembly however the valve adjustment seemed free enough and the significant advantage of very much simpler pipe runs won the day. The valve was therefore mounted on the top of the gauge glass upper fitting and new gas pipes manufactured and fitted to the burner and the gas tank connection, **Photo 4.**

Engine Speed Control

Control of the engine speed requires a valve to be mounted in the steam supply line to the engine, which can then be operated by a servo. The valve must be specifically designed for this purpose as its operating arm must have a range of no more than 90 degrees to go from 'Off' to 'Full' in this range to enable it to be fully controlled by a servo, **Photo 5.** This particular valve was sourced from my stocks of bits and pieces and was manufactured by a company known as 21st Century Steam, who I believe no longer trade, however there is a Chinese manufacturer who produces the same type of valve via a well-known on line auction site.



6. I would normally advocate that the servo arm is always in the same plane as the device it is operating, but this is a fairly quick and easy way to locate this one and it can be adjusted later on when we have proved it all works.



7. All in all a much better installation with boiler pressure control and engine speed control neatly taken care of. A good clean up of all the parts and a thorough checking out of everything should help to ensure smooth and long term operation.

8. Although not looking too different from the outside, a good polish up of the bright work and the addition of a few details has made for a very smart model. All we want now is reliable operation and she will be a model to be very proud of.

When mounting such a valve consideration should be given to the pipe runs, which you want to keep as short as possible and ease of operating the valve with the servo. Normally I would suggest that the servo is mounted with the operating arm in the same plane as the arm of the valve to prevent any possible side thrust causing wear in the valve however, for now the easiest location was below the coaming so while the servo was mounted here for now this may well be modified in the future. The original steam supply pipe was used to form the basis of the new pipes to minimise the work required and the valve was installed in the model and connected up to the servo, **Photo 6.**

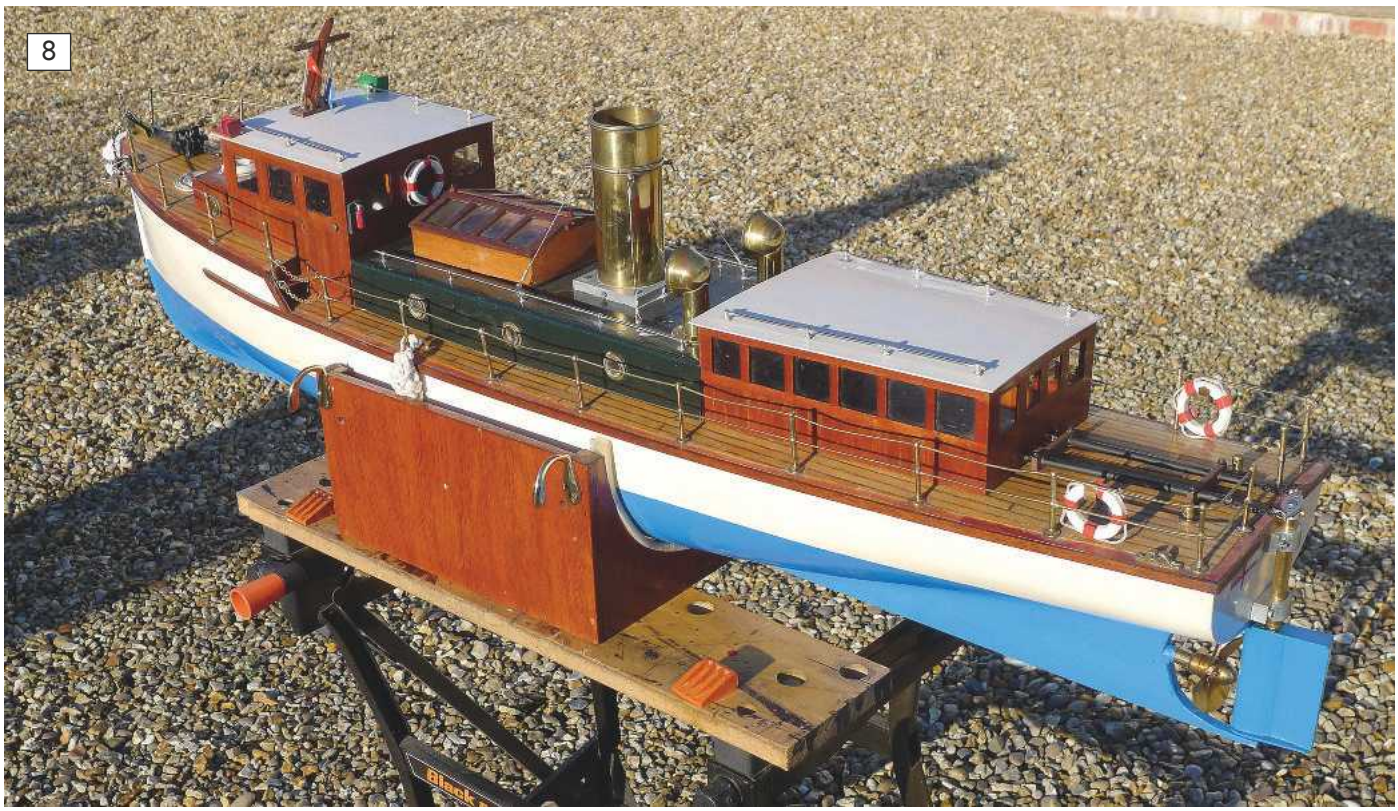
Test Run

With the two modifications in place it was time to fire up the boiler and see just how much effect they had on the operation of the plant.

The boiler was half filled with distilled water, the lubricator was topped up and a fresh gas tank was connected up to the gas line. The steam outlet valve was closed before opening the gas valve and approaching a flame to the top of the funnel. This produced nothing, so I adjusted the attenuator valve until I heard gas flowing and tried again. The satisfying 'whomph' and the subsequent very loud roar confirmed the burner was working well. After only a couple of minutes it was noted that pressure was showing on the gauge, the gas tank was noticeably cooling and water was leaking from a number of places so it was decided to cool down again and attend to the leaks first.

The second attempt again demonstrated how quickly the boiler raised pressure and playing around with the attenuator valve proved that it was shutting the gas down as the set pressure was reached. The pressure was set to a low 30psi and the outlet steam valve was opened up. Initially the engine took a bit of starting and the servo was not powered up so the valve could be adjusted manually but, very soon, the engine was running in a range from a nice low tick over to full speed. The valve control arm was suitably adjusted and reconnected to the servo before powering up the radio and operating the valve remotely. The tick over will require further adjusting in the water to get it just right but the initial bench tests were very pleasing. Plus of course the internals of the model are now considerably neater and in much better condition, **Photo 7.**

A few other issues were noted such as the operation of the pitch control servo but, when these are rectified, the boat can be tested in water and then given a run on the pond, **Photo 8.** I will let you know how it goes!



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MOORING POST

Factory fresh or weather-worn? **Glynn Guest** muses over scale finishes


(Photo: Richard Simpson)

I'll confess that these thoughts came to me whilst wandering around the IPMS (International Plastic Modeller Society) show at Telford. Although dominated by models of aircraft, which are worth viewing anyway, there are some very good marine models on display. Having started out my modelling activities with plastic kits (remember the two shilling Airfix Spitfire that sold in Woolworths?) it's useful to check out what is available and perhaps purchase a few kits which can be added to my R/C model boats. When looking at a table covered with aircraft of the same type, it suddenly struck me that they were all exceptionally well made, but failed to excite any emotion in me whatsoever. A little later and I found myself almost mesmerised by other models that seemed to be 'alive'. The difference in reaction could be caused by small things such as a scuffed finish that is typical of anything that has to work for a living. Some models had open cockpits and access hatches and the control surfaces at angles. There could also be a subtle suggestion of texture which, of course, real artefacts have. This all added up to the feeling that, just like real things, the models were made up from parts, and working parts no less.

Thinking about this later, it occurred to me that this was similar to a common difference between photographs and paintings. The photograph can capture a visually perfect image of an object or person, but can seem flat and lifeless. A good painter might not produce such a perfect image, indeed some detail may be missing being only suggested and some things slightly exaggerated, but the overall effect truly stimulates one's senses. When going around an art gallery I find some paintings generate the sensation of movement, sound and smell even though I know they are just coloured paint which has dried on a flat surface.

What, you may be asking now, has this got to do with our models? Well it does suggest that there are two approaches to building a model to which you want to apply the term 'scale'. A good example would be a model based upon a wooden-hulled fishing vessel. One modeller might spend hours sanding, sealing and priming a wooden hull to produce a perfect mirror-smooth final paint finish. A tribute to their skill and work maybe, but it doesn't feel like the real thing. Another modeller would build a sound hull, but be quite happy to let the shape of individual planks and even some wood grain, show on the final painted surface. Not that it has a rough finish but if you look closely, you can see that it is a wooden hull.

Similar comments would apply to a model based on a steel-hulled vessel. Rarely does the full-size craft display a perfectly smooth hull. If made from plates riveted together you would expect to see the plates. Even an all-welded hull will probably show how it was built, the dimpled effect often seen on warships being a prime example.

At the end of the day it all comes down to the modeller's approach. Those with leanings towards the artisan might be happier with the technically perfect finish, but the more artistic will aim for an effect that engages your senses.

Sea Breeze

With the woodwork coming to an end **Graham Ashby** begins to ponder fixtures and finishes

DATAFILE

Name:	Sea Breeze
Model type:	Traditional wooden motor launch
Length:	24" (610mm)
Beam:	8" (203mm)
Chosen motor:	Turnigy 2836/11T 750KV
Chosen ESC:	Turnigy Marine 30A
Chosen battery:	3S 3000mAh LiPo
RRP:	£80.00 (kit); £10.00 (fittings kit)
Available from:	SLEC Manufacturing Website: www.slecuk.com Tel. 01953 885279

It's funny how my projects will often lurch from dormant to active and then back again, depending on my enthusiasm for the task in hand. Having fitted those dreaded hull skins (April issue) an air of quiet confidence settled over the build and a brief period of accelerated progress was enjoyed. Here, then, I set about installing the running gear which, if you remember, I bought last time having stolen the specification from Dave Milbourn's similar, and fabulously well-sorted, Fairey Huntress. So, let's get it in.

Ever the pessimist

The first thing to nail down was the motor which I'd already decided was going to be a right bloomin' fiddle, not least because the alignment with the shaft was guaranteed to be wrong. I'd arrived at this conclusion some time before, having opted not to use the kit-supplied laser-cut motor mount. A simple affair, this comprises two horseshoe-style cradle brackets into which you drop the motor before securing it with rubber bands... Hang on... Rubber bands? ...RUBBER BANDS!!? Next thing you know they'll be telling us to fit an ancient brushed motor rather than a beautifully engineered, efficient, modern, brushless alternative… Please don't write.

Whilst that may have been said with tongue wedged in cheek, I will admit to being a snob where motor-mounting is concerned. Cheap, cheerful and quick as they are to fit, rubber bands only ever look like... well... rubber bands. Besides, you wouldn't catch Vosper using a length of old bungee to hold down a V12, and I for one like to think they knew a thing or two about boat building.

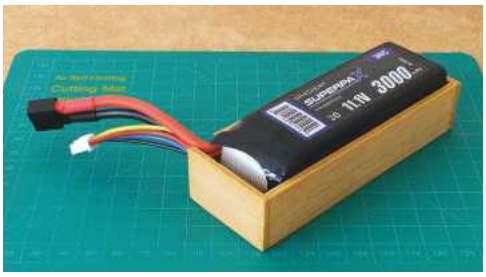
To replace the banded solution I'd ordered SLEC's 380 to 400-size motor mount in the hope that, with a little fettling, it could be adapted to suit my Turnigy 750KV brushless outrunner, and suitably shimmed to align with the propshaft. SLEC, however, had got there first for not only did the motor screw straight to the mount (no alteration needed), with said mount sat on its ply plate the motor and shaft were perfectly aligned. And I mean 'perfectly'. To be honest I couldn't quite believe my luck and can only conclude that the boffins back at Sun Lane had already worked this out. As a result, fitting the motor was an hour's work rather than the two or three I'd imagined. So, I say to you dear reader, take a look at the motor mount photo (left) and tell me, if you dare, that rubber bands would have been nicer.

Order! Order!

In the last issue I alluded to the fact that the instructions were a touch vague where fitting the hull skins are concerned and, once again, they seem to adopt the same policy for radio

LEFT: The Turnigy motor is a perfect fit on the SLEC mount, which sees it perfectly aligned with the prop shaft. Bingo!

BELOW: Liteply is such lovely stuff to work with. My Milbourn-inspired ESC and battery tray.



LEFT: Although both the LiPo and ESC are a cosy fit, I may yet add a bit of Velcro for belt 'n' braces.

BELOW: You don't want to know how long it took me to drill and sand this hole. Let's just say I was determined to get it right. Mind you, the time spent paid off.

ABOVE: ESC and battery box in position. Wires from the ESC to the motor will feed through the elliptical hole.

ABOVE: Taking time over drilling that hole has resulted in a perfectly vertical rudder. And that, makes me happy. Before the rudder tube can be fixed the keel indent will need filling.

installation. Personally I'd like to have been informed of the optimum position for the battery with regard to weight distribution, but since nothing was forthcoming I turned, once again, to that friendly Mr Milbourn whose Huntress article offered a steer in terms of both position and retention method. Dave clearly has my mindset where the fitting of electronic bits and bobs is concerned and had fashioned a neat, tailored battery tray for his 3S LiPo, which really appealed to my sense of order and respectability. Alas, I had no choice but to follow suit and having whittled some offcuts of liteply into a snug box-shape, I couldn't help myself doing the same for the ESC. Positioned as shown my plan is to counterbalance the rudder servo and speed controller (on the starboard side) with the receiver and my proposed driver chappie (on the port side), any slight discrepancy being corrected with self-adhesive lead weights.

With the fitting of the deck looming large a couple of other jobs beckoned, namely the drilling of a hole for the rudder tube and the addition of the laser cut servo mount. For the 8mm tube, progressively larger holes were hand drilled, working my way through my 13-piece bit set from 1.5 to 6.5mm, being ultra careful not to tear the wood. I'm ashamed to say that my drill bits don't take me much further than this so I resorted to a combination of filing and sanding then finished off with an 8mm Dremel circular sanding attachment for a perfect fit. Like any model building I do, it wasn't a quick job but I'd far rather trade time for a neat result.

Rookie error

For some reason I'd got it in mind that fitting the deck would be a piece of cake. This was foolish. You see, like the rest of the boat it uses 1.5mm ply that's beautifully laser etched with simulated planking. Sounds good eh? Well, yes I guess it does, however one must bear in mind that beautifully accurate laser etched planks will also very beautifully highlight any slight lack of symmetry in your hull. Paramount, then, is making sure the centre plank sits bang in the middle at both the bow and stern. That's fairly obvious, but what happens if you didn't use a building jig when assembling your hull and have managed to set the transom slightly askew? Now that really would be a rookie error. The answer (ask me how I know) is that all those lovely parallel plank lines will simply highlight the mistake, a condition accentuated by the short planks that fill the gap between the rear hatch and the transom. Prior to fitting the deck this error really couldn't be seen but with the deck laid, it was blatantly obvious. Fortunately, a bit of lateral thinking helped to hide the problem by using the cause (the plank lines) as part of the solution. Applying a bit of 'cunning' I decided to create an optical illusion by halving the error and cutting the back edge of the rear hatch at a similar angle to the transom. The result is very effective in that the misshapen rear hatch is undetectable yet the flaw is beautifully hidden. Anyway, only you and I know, so do please keep it to yourself. Of course, the moral of this story is that no matter how good you think your eye is, it probably isn't, and you should, therefore, always use a jig to assemble the keel, frames and stringers.

The other slight issue that rendered the deck less-than easy to fit was the relative reluctance of this particular sheet to conform to the curved former tops and, moreover, the dip at the front which produces a slight compound bend. Trying to align the planks, bend the wood in two directions and then hold it firmly along all the edges was a recipe for disaster, and I knew it. As a result I pondered this for some time before finally deciding that the only sensible way forward was to tackle the job in stages. To start, then, I'd align the centre plank front and back and glue the deck beam-wise across bulkhead B4 using my favoured quick-drying aliphatic white glue. With this done I could gradually work my way forward to the bow and back to the stern in manageable stages, gluing, taping tightly down, waiting for the glue to properly dry, then inching on, all safe in the knowledge that the centre plank line was not going to be disturbed. It worked fabulously well and only really took a day and a half to complete. The result was a lovely neat deck that pleased me enormously, not least when I was able to get at it with a sanding block and trim the edges flush with the side skins. I couldn't have been happier. Compare this, if you will, with rushing the job, making a mess, and having to live with the consequences forever. It doesn't bear thinking about!

Hatching out

Keen to hide my transom mistake I quickly set about making the two main hatches using the kit's laser-cut parts. These are relatively easy to assemble, however you will need to check for warps in your wood. My hatch covers were a bit bent and since the underlying framework isn't particularly rigid there was a good possibility that the covers would twist the frame and prevent the hatches sitting flat. To overcome this I added spruce cross braces (see photo). Note the centreline on the end former that perfectly matches the deck's centre plank. This is to ensure precise alignment of the hatch cover planking and main deck planking. Get this wrong and it'll stand out a mile... At least, to you!

New mood

With the hatches fitted my little Sea Breeze project took on a mood of excitement. She was looking great and, to cap it all, I was poised to start fitting out the cockpit, a process I thoroughly enjoy. Cast your mind back to Part 1 of this build (January 2018) and you'll remember that I shelled out for the additional fittings kit which, amongst other things, includes a slatted timber seat and dashboard. The time had come to assemble these and since the seat is simply a slot-together affair, there's nothing to report. For the dashboard I chose to add a little realism by drilling out the dials with a view to adding some decent gauges. Scouring my model aeroplane instruments I found four that I considered would suit very nicely (RPM, clock, compass, fuel), these being put to one side for later.

RIGHT: We're getting there! All I have to do now to complete the basic build is frame up the windscreen and add the rubbing strip.

LEFT: The laser-cut servo mount works well although I had to add bearers to raise the height of the servo so that it cleared the bottom skin on the starboard side.

RIGHT: My chosen servo is massively OTT in specification terms, but it is very lovely!

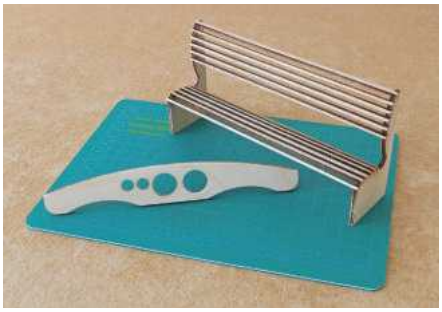
LEFT: The rear and middle hatch. Note the cross braces which I've added to stiffen the assembly (see text).

ABOVE: The slatted timber bench seat and dashboard are part of the fittings kit.

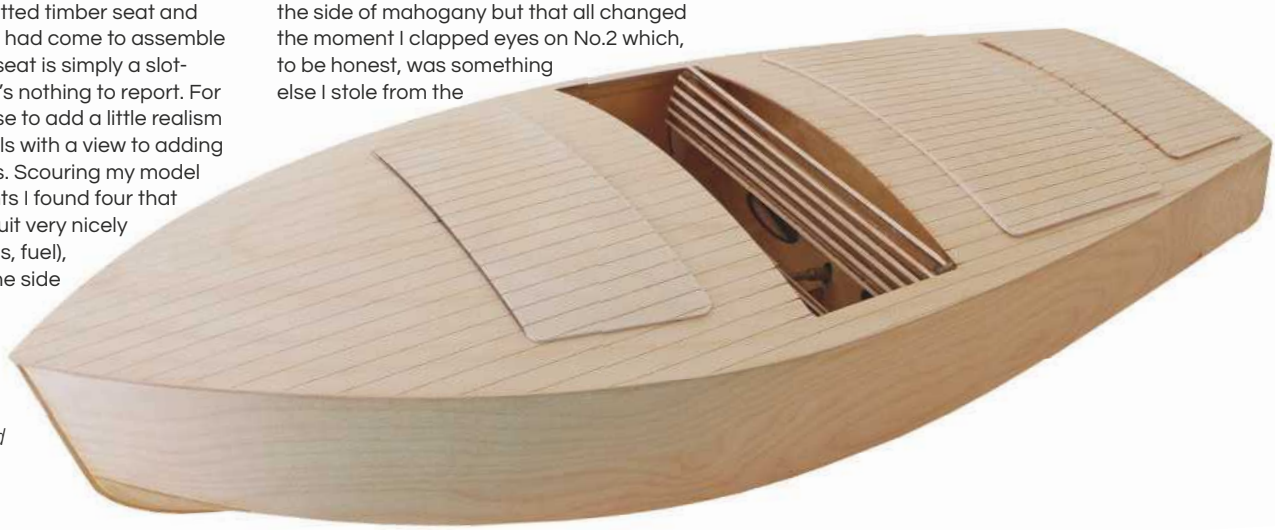
Break out the crayons

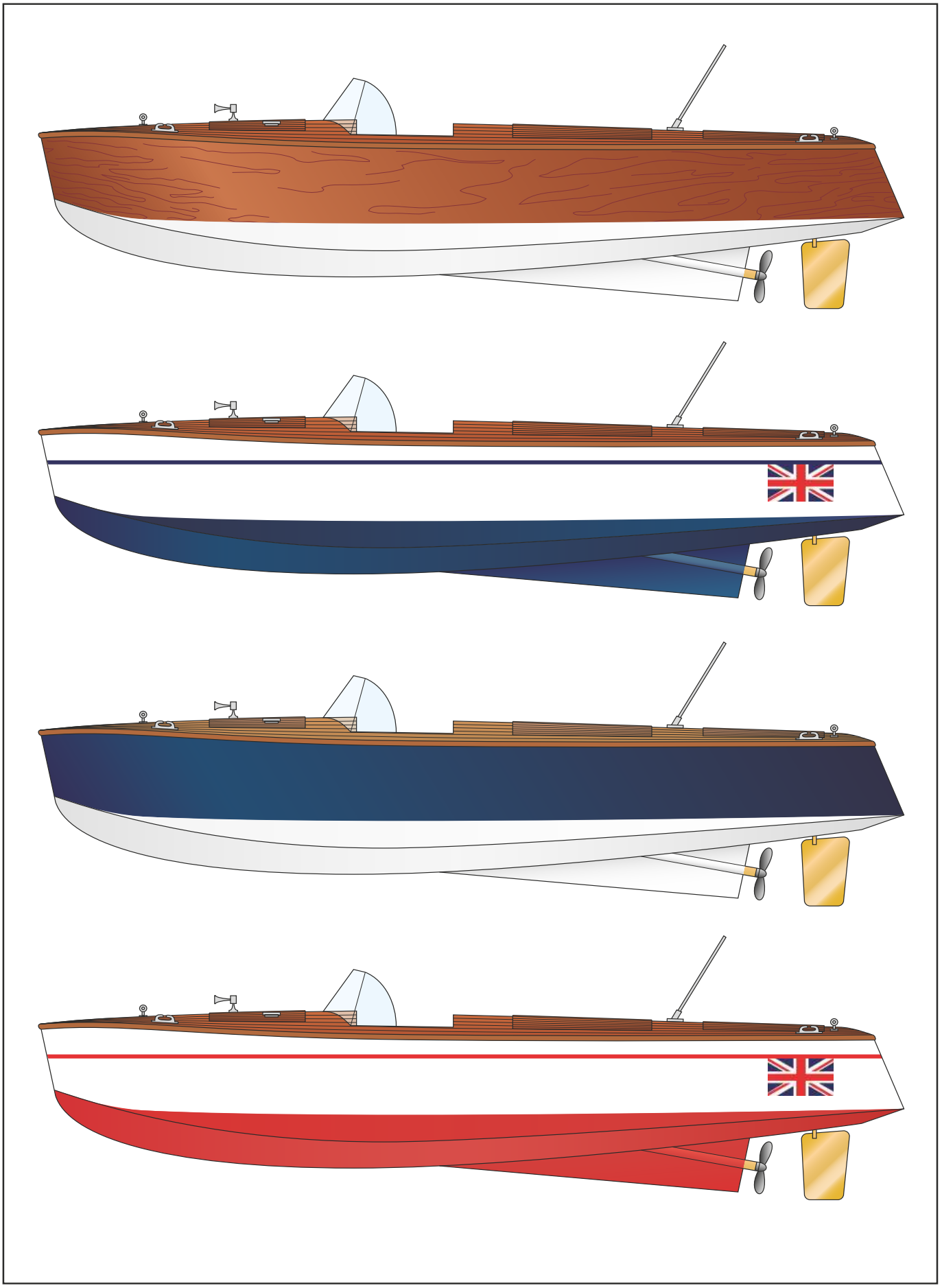
When building a model we're constantly considering the next task and will often prevaricate over fixtures, fittings and colour schemes well before the time comes to apply them. Sure enough, I'd been considering the pros and cons of various colour schemes for ages and was struggling to make a decision. Should I varnish the hull or paint it? And in which colours? Various ideas had come to mind, from the classic varnished mahogany to a simple copy of the SLEC prototype pictured at the start of the article. Trouble is, on one week I'd favour the highly polished mahogany, then the next I'd find myself liking something a little more understated that might, perhaps, better suit the lakes and inland waterways of this fair isle. Struggling to decide I turned to MB's illustrative genius (Grahame Chambers) and asked him to crayon four alternative schemes so that I could finally make a decision. It worked. Prior to the sketches being done I was airing on the side of mahogany but that all changed the moment I clapped eyes on No.2 which, to be honest, was something else I stole from the classic Fairey Huntress. At time of writing, then, that's the scheme I'm going for.

BELOW: Voilà! That didn't take long. Incidentally, the seat fits the boat like a glove so has clearly been purpose-made for it. All I have to do now is decide on the wood stain colour.



Right, I'm off. Next time we'll add the rubbing strip, a few more cockpit details and do some painting. If you have any questions or queries you'll find me at the workbench slapping sanding sealer on the hull – graham.ashby@mytimemedia.com.





DATAFILE

Length:	31.5” (800mm)
Beam:	6” (150mm)
Weight:	2.56lb (1.16kg)
Motors:	Brushed RE360/385
ESC:	10A Brushed
Battery:	6-cell 7.2V 2500mAh NiMH

Part 2 of **Glynn Guest’s** ‘60s-era quick-build cruise ship

Superstructure

AT A GLANCE

Caerleon Castle is based on a small cruise ship. Construction is from balsa, liteply and card although alternatives could be used provided excessive weight is not added. The model is 800mm (31.5 inches) long and designed to have a shallow draught of just 12mm (½ inch). This gives an approximate operating weight of 1.16 kg (41 ounces). As a result a single electric motor of the RE360 or 385 type, powered by a 6-cell NiMH battery pack will provide a more than adequate top speed. Two R/C functions are used to control speed and steering.

The superstructure was built to be detachable and thus a sliding fit over the coaming strips around the hull access opening, see the cross-section on the plans. The plans show the superstructure used on the prototype model, but there is absolutely no reason why you cannot design your own. A mixture of card and balsa was used to make the superstructure which proved robust, light and economical.

To ensure a secure fit, the superstructure was built on the model. Some care had to be exercised to avoid getting glue where it ought not to go. The two side pieces were cut from card and held onto coaming strips with clamps. Transverse balsa strips could then be glued and pinned to these sides, **(Photo 1 & 2).** I wanted some of the ends of the superstructure to be curved to avoid a too angular appearance and so laminated blocks of balsa were used in these positions and carved/sanded to the desired shape, **(Photo 3).**

After adding card decks to the superstructure frame, the extra deck(s) and bridge were glued in place using card and balsa, **(Photo 4).** To produce a smooth surface all the exposed balsa was covered with thin card. The bulwark around the stern block was made from a strip of card. Some of the superstructure decks had bulwarks added using thin card glued around deck edges, see the sketches on the plans. Thin card was also glued to the outside surfaces of the liteply bulwarks, having decided that white bulwarks would look nice and this card made a good painting guide.

Some thick card was also used for the fixed decks at the bow and stern. To get the correct position inside the hull, a few small strips of balsa were glued to the hull sides at the appropriate position, i.e. the required bulwark height plus the card thickness gave the correct distance between the top surface of these strips and the top edge of the bulwark. The shape of these decks was obtained by the ‘cut and try’ method, card being cheap enough (in my case free) to accept that any mistakes could be discarded. After gluing into place, the inevitable few small gaps could be hidden with filler.

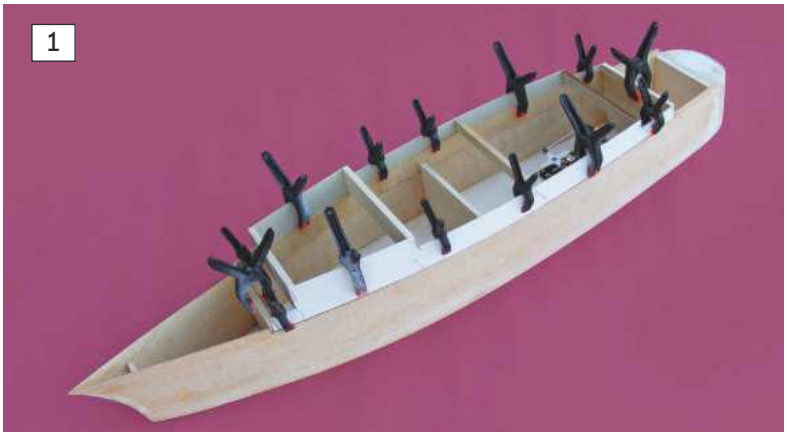
Card rectangles were added to suggest deck hatches, swimming pool and doors after which the outer surfaces were sealed with a couple of thin coats of cellulose dope. I also applied dope to the lower edges of the superstructure block and around onto the inner surfaces that slide over the coaming strips. This, apart from the rudder and propeller tubes, is the only place that water can enter the hull and ought to be waterproofed.

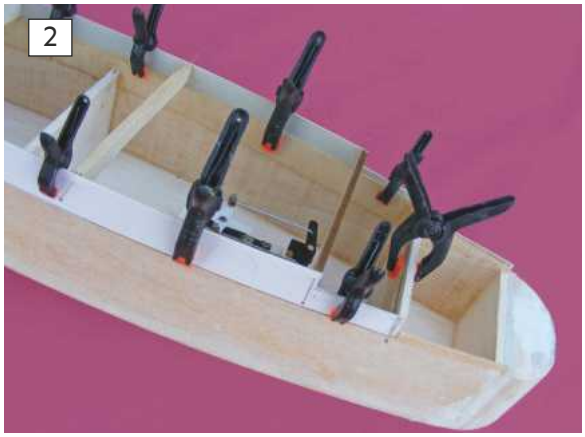
Final Bits

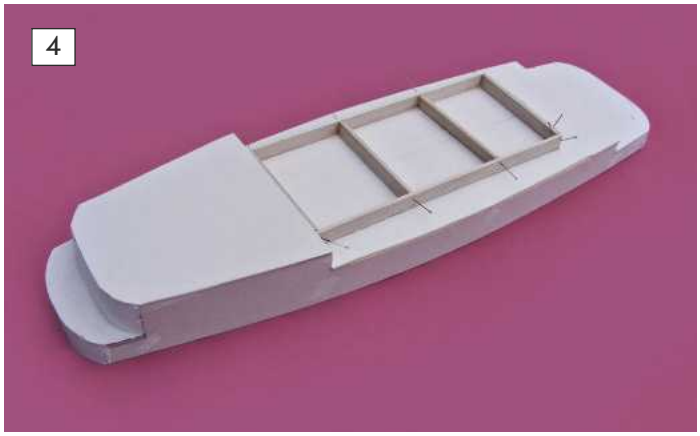
The funnel was built up from balsa laminations, then carved and sanded to a streamlined section. After sealing with dope, a couple of small washers were glued to the top to suggest the engine exhausts.

The mast was cut from a piece of hard balsa found in my scrap box. After sealing with dope, the details were added before fixing to the superstructure. The base of the mast was stepped into a slot cut in the deck behind the bridge block and firmly glued in place. At this point the model was beginning to look quite good, even if I still harboured the thought that it was an overgrown waterline model, **(Photo 5, 6 & 7).**

Lifeboats are an obvious feature of these vessels and I settled on making simple shapes from balsa. Three were to be installed on each side of the model. Small motor







launches, to ferry passengers ashore when the ship cannot dock in a small port, are often found on cruise ships. Two simple launches were also made. I did not add these items to the model until it had been painted, much easier than working around them with a paintbrush.

Colour Scheme

The vessel that had first inspired me had a blue hull, white superstructure and yellow funnel. As smart as this colour scheme was, it really didn't work for me. After idly flipping through photos of similar vessels on the internet, my thoughts returned to the 'Union Castle' scheme of lavender grey hull, white superstructure finished off with a red funnel with a black top. I had previously used these colours on a model based upon one of their fast cargo liners and it always seemed to look smart and distinctive when sailing (Winter Special issue 2016).

The superstructure was sprayed with white primer; three coats were needed to produce a uniform colour. Before spraying the bulwarks at the bow and stern, the insides of the hull were masked with tape and old newspaper around the coaming strips.

Before spraying the hull sides with French Lilac, from the Rust-Oleum Painter's Touch range (the nearest I could find to match the Union Castle hull colour), the hull bulwarks at the bow and stern were masked off. This masking was sufficient to protect the inner surfaces of these bulwarks. Again three coats were needed to create a solid colour. Care was taken to avoid applying to much paint and thus creating paint 'runs'.

Before painting the underside of the hull, a waterline was drawn around the hull with a black indelible fine tipped marker pen to make a painting guide. To draw this line, the model was placed with its hull base on a level surface. This was a problem since the propeller and rudder stick out from the flat hull base. The easy answer was to get out my 'workmate', open the table just sufficient to let the propeller pass through the gap and the hull was now on a flat surface. The alternative could be to pack up the hull so the rudder is clear but the model is still level with the flat surface.

The pen is than packed up with whatever conveniently comes to hand, so when placed on the flat surface, its tip is at the right height to make the waterline. The pen along with the packing can then be drawn around the hull. It might sound tricky but is in fact quite easy provided you prevent the hull from moving, keep the pen and packing together and avoid sneezing!

A dark gloss red colour, obtained by mixing red and black paints, was applied to the hull undersides and up to the waterline mark. The rudder blade and propeller tube were also painted this colour. Union Castle line vessels featured a distinctive red boot topping colour. As with the previous model, this was simply made by using a strip of red self-adhesive plastic tape around the hull. Probably much better than any attempt by me to paint it!

The final painting tasks were matt green decks, a red funnel with black top. White primer was used on the hulls of the launches and lifeboats. The lifeboat covers were suggested with a red/brown shade whilst the launch decks were blue.

Windows

The seemingly endless rows of windows in the superstructure might be enough to deter modellers from building passenger vessels. However, at this scale you can create a reasonable effect with a simple black shape made from self-adhesive tape. It might still seem tedious to cut all the individual 'windows' out and then apply them to the model and keep them in line, but there is an easy way.

I cut some black self-adhesive plastic sheets, the ones which you have to peel off a backing to expose the adhesive, into strips that matched the height of the window needed on the model. The strips were stuck to the superstructure in the desired window position. Sometimes the adhesive does not make a firm bond in which case I apply a little heat to the plastic with an old hair dryer my wife tried to discard some years ago. This warming softens the adhesive and makes it more 'sticky'. With the tape firmly on the model, vertical cuts are made at the position of the windows. The aim is to just cut through

the plastic and not the superstructure, for this reason I strongly advise the use of a new and thus very sharp blade in a modelling knife. This is not hard to do with a little practice and care. The unwanted pieces between the 'windows' can be peeled away from the model. I carefully use the tip of the blade to lift one corner without digging into the superstructure. With consistent cutting you should be rewarded with a line of windows just where you wanted them.

The portholes in the hull sides were made using the 'paint blob' method. The end of a suitable dowel or rod was dipped into black gloss paint and then placed on the hull at the desired porthole position. When lifted off the hull, a circular blob of paint is left behind. Needless to say, the dowel/rod must be applied and removed vertically or you will create something that is not round. For this reason, the hull was laid on its side during this session and left until the paint was fully dry, after which, it could be turned over and the process repeated. Again, practising on some scrap material is not a bad idea. The swimming pool was suggested, not with paint, but a piece of light blue coloured paper which was stuck in place.

With the launches and lifeboats secured to the model, all the above water external surfaces were given a couple of light dustings with a clear satin varnish. It not only provides a little extra protection but, perhaps more importantly, harmonises the different types of paint used, i.e. matt and gloss. This has always seemed to produce a more realistic and less 'toy like' appearance when sailing.

Sailing Preparation

The R/C gear was refitted, but on a more permanent basis than used in the early floatation trails. A transverse strip of balsa had been glued ahead of the second bulkhead into which the battery pack would snuggly drop into. The receiver was held in a cut-out made in a block of foam plastic glued to the rear of bulkhead two and the hull sides. The ESC (Mtroniks microViper), conveniently sat on top of the battery pack, **(Photo 8).**

A quick float on the pond showed that no rearrangement or extra ballast would be needed at which point the model weighed in at 1.2kg (41oz.). This was a shade more than my original estimate, but the model was still very stable. In fact it appeared to be so stable that I started to place metal weights on top of the superstructure block. The model remained stable and upright until some 0.75kg (26oz.) had been added. Even then it showed no tendency to roll over, but would just list a little to either side rather than return upright.

Thus, sailing trials could start with no fears of any stability problems. The only worry was that it might sail in a sluggish fashion since the full power current had been measured at a mere 0.7Amps **(Photo 9).**

Sailing Trials

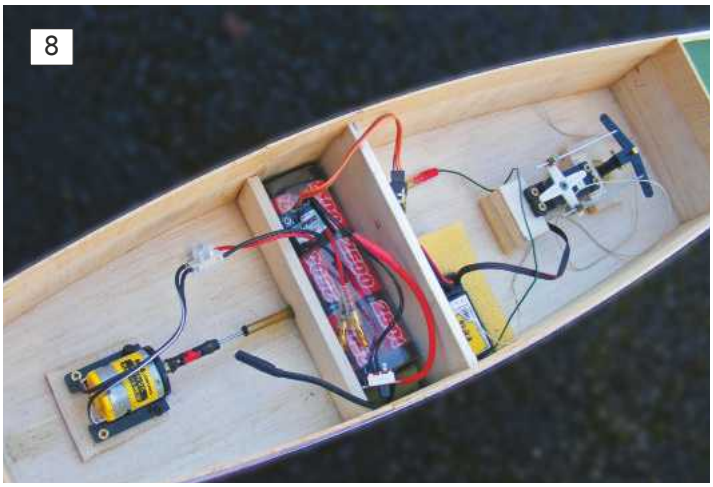
The first sailing run was on one of those bright days with just enough breeze to produce small ripples on the water. On placing the model in the water, an easy single handed job due to its light weight, it was immediately seen to 'sit' in a realistic manner and one could forget about its lack of draught.

The usually slow speed manoeuvring was started; a sensible practice just in case the motor and/or rudder have been connected the wrong way around. With no obvious problems, the speed was increased in stages and the rudder response tested. Pretty soon it was comfortably running at full speed, later measured at about 0.8m/sec (2.7ft/s). This seems to be about right for a small cruise ship which would look silly tearing across the water. So, any worries about it being sluggish soon disappeared.

The rudder response proved to be good, with no indication that it had been positioned further forward than usual. Every rudder command from the transmitter was immediately acted upon by the model. The full speed turning circle was about 1.8m (6ft.) with a rudder throw of about 40 degrees, tighter turns being possible at slower speeds. Astern sailing was good with, once the model had picked up speed, the rudder able to turn the model in either direction.

I was not surprised to find that, with the lightweight, shallow draught, but large side area, any wind could cause noticeable movement of the model. Noticeable it might have been, but it was easily corrected and it's only a problem if you are the sort of modeller who doesn't bother to watch what your model is doing and where it's going.

I returned home with nothing on my 'gripe



sheet' (a list of problems to fix) which was pleasing. This has been a characteristic of subsequent sailing sessions. This model is relaxing to sail (except maybe when spectators ask 'is it the Titanic?') and it, due to the modest current drawn, seems to sail forever!

One thing that has surprised me is the smooth way it sails with only a modest bow wave and little disturbance to the water. I guess this is due to the shallow draught but whatever the cause, it adds to the sailing realism **(Photo 10 & 11).**

Variations on a Theme

You could build the model as designed and hopefully enjoy it, or personalise it with suitable modifications. For example the curved stem could be straightened and the stern block reshaped. Likewise the superstructure would be easy to alter along with the shape and position of the funnel.

A more drastic change might be to lengthen the hull, inserting a parallel section amidships might be the simplest way to do it. This would allow you to add an extra funnel or two and change the model into an ocean liner of yesteryear?

Changing the colour scheme is perhaps the obvious personalisation to make. I like the Union Castle colours but there are a wide range of alternatives. An internet search will quickly confirm that you do not have to limit yourself to black or white hulls.

Whilst the prototypes single RE360 motor was enough for realistic sailing, alternatives are possible. I'm not suggesting the installation of more powerful motors (thinking about the RE380 or SPEED 400 type here) but fitting two RE360 motors. This would allow the motor controls to be 'mixed' to give enhanced manoeuvring capabilities. Also, a simple bow thruster, based on a small electrically driven pump sucking in water at one side and blowing out at the other side of the hull, would not be too difficult to install.

Modelling Munificence

I have to confess that this model would never have been built nor the idea of a deliberately shallow draught R/C model tried, but for reading about a fellow modellers work on the internet. Luckily, when looking through the Boat section of the RCGroups website I came across Barret's posts under the nom de plume 'Greenseaships'. They started in December 2007 and described building lightweight models of ocean liners using cardboard (strengthened and waterproofed with resin) and foam sheets.

They looked so good and sailed well but the shallow draught puzzled me. Hence this model to test if I really understood how they worked. It was also nice to be able to turn an old, almost forgotten design into what I hope is an attractive model.

There is one possible regret that I had whilst building and then sailing this model. Why can't I borrow some of their winter weather from Phoenix? But, having sampled it a few times, definitely not their summer weather……..

Syrian Navy OSA 2. Ringed in red is the larger of the two cordage reels fitted to the OSA 2 205U.

OSA 2 Fast Missile Boat

Dave Wooley continues this fascinating build with cordage reels large and small.

Cordage Reels

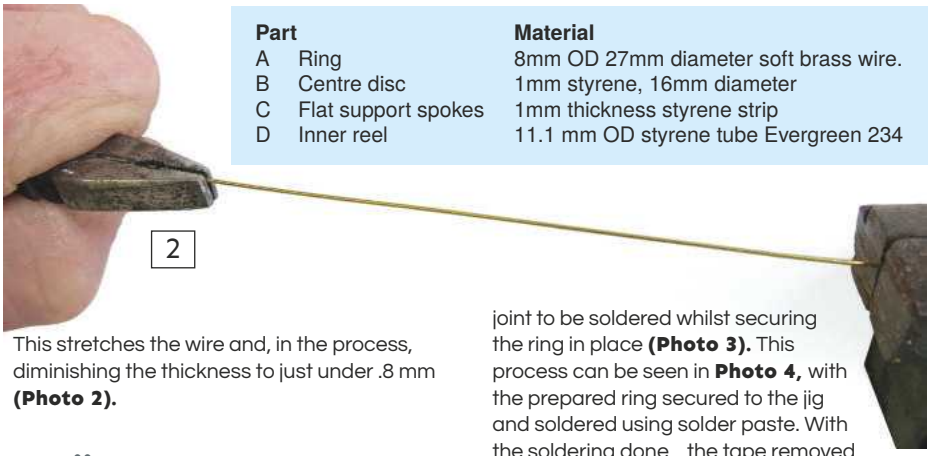
The cordage reel has been part of the inventory of warships for centuries and its basic function has changed little. The OSA 2 boat 205u variant as used by the Cuban and Syrian Navy's has two distinct types of cordage reels which have similarities in appearance but differ in size. Essentially the outer edge/ring and support frame are tubular with an inner disc connected to the outer edge of the reel by means of a series of flat spokes.

Forming the outer ring

The first task is to form the outer ring of the reel. The material of choice for this is extruded .8mm soft unplated brass wire which is very mailable and thus easy to shape and is available in a wide range of thicknesses **(Photo 1).** Unlike strips of brass wire this type of wire comes in rolls and cut to length as required.

One end is secured in a vice whilst with the other taking a pair of pliers and pulling the wire straight to remove any kinks or bends.

Part		Material
A	Ring	8mm OD 27mm diameter soft brass wire.
B	Centre disc	1mm styrene, 16mm diameter
C	Flat support spokes	1mm thickness styrene strip
D	Inner reel	11.1 mm OD styrene tube Evergreen 234



This stretches the wire and, in the process, diminishing the thickness to just under .8 mm **(Photo 2).**

The jig

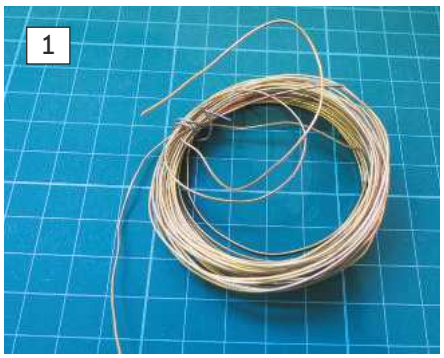
As all those that are regulars to this column will know, I do like using a jig that will make the job easier. For this task of creating a circular ring of two distinct diameters, I resorted to forming two discs made from Jelutong timber (any soft or fine grain timber will suffice) the purpose of which is to wrap the wire around the circumference of the disc to enable the joint to be soldered whilst securing the ring in place **(Photo 3).** This process can be seen in **Photo 4,** with the prepared ring secured to the jig and soldered using solder paste. With the soldering done, the tape removed the complete ring can be easily lifted clear of the jig **(Photo 5).**

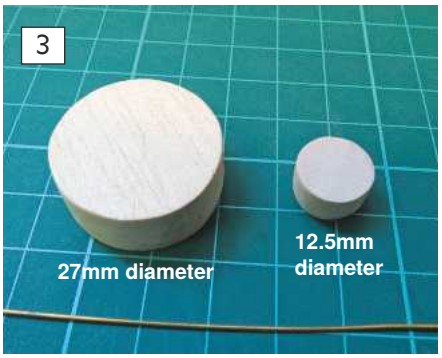
1. Soft .8mm unplated brass wire

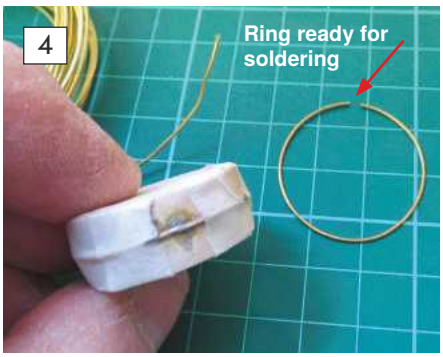
2. Straightening and stretching the soft brass wire before use.

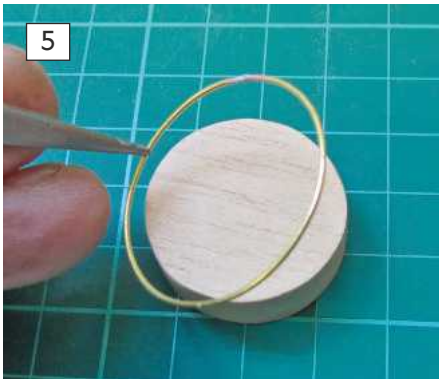
3. Two sizes of jig for forming and soldering the brass rings.

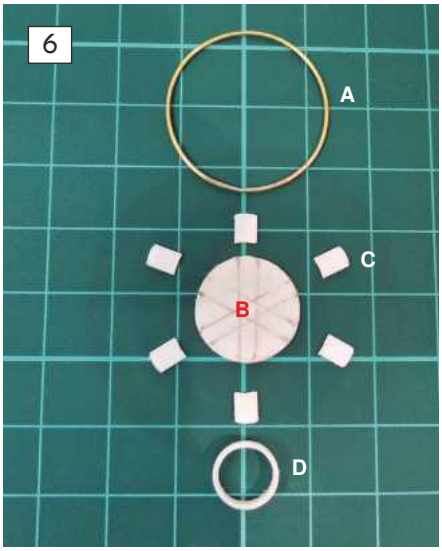
4. Soldering made easy with the brass outer ring taped to the jig.

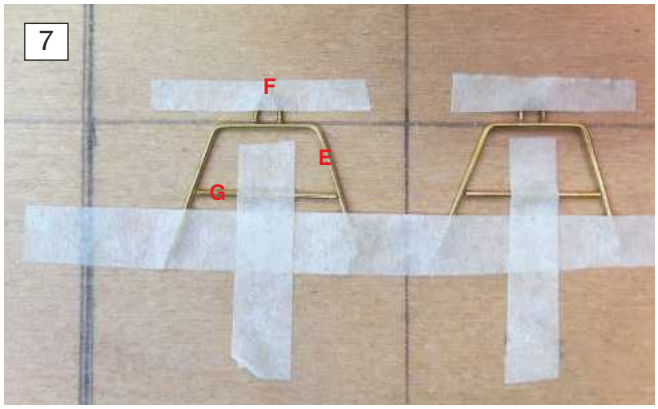


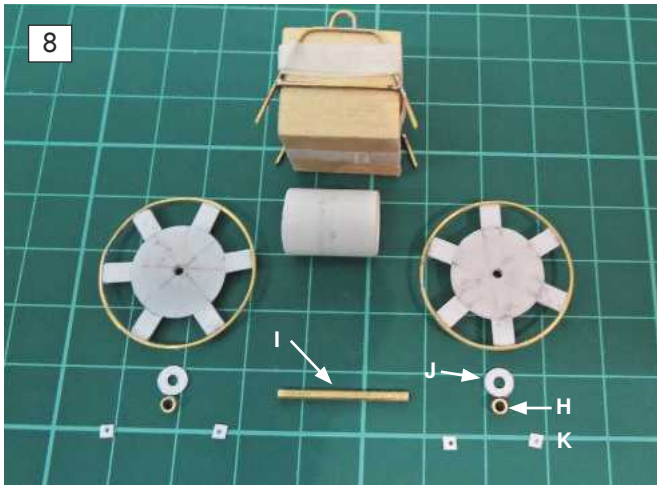


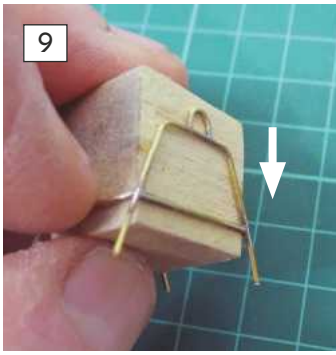


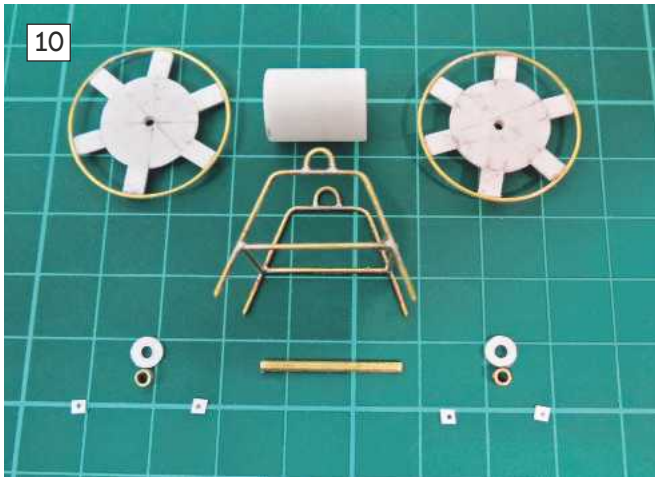


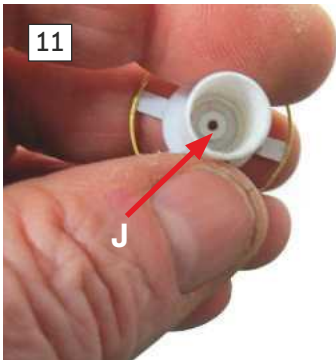












5. With the soldering done the tape removed the ring for one side of the reel just lifts clear.

6. The four basic parts that make up the reel; see text.

7. Preparing for soldering the parts of the support frame.

8. Prepared reel ends consisting of centre disc, outer spokes and ring with support frame within the jig.

9. Separating the soldered support frame from the timber jig.

10. The reel is prepared for assembly.

11. Fixing the inner reel to the end disc.

The basic parts

With the ring prepared, attention can be moved to forming the inner disc which is connected to the outer ring by a series of six flat spokes. This is repeated to form the left and right hand of the reel both of which are linked by a length of tube **(Photo 6).**

Reel support frame

The left and right support frames for the reel are basic and straight forward to make, consisting of three parts, the frame E, with F denoting a small inverted 'U' shape into which the bush for the common shaft is located and finally G, the cross member all made from .8 brass wire **(Photo 7).**

To enable the frames to be soldered together a simple box shaped jig was cut to size with each frame being held in place on the jig by strips of masking tape. This can be seen in **Photo 8.** A cross member was added at the same level to those on each frame and each joint coated with solder paste and soldered. I have mentioned this previously but for those unaware the soldering iron used in all these soldering tasks is a digital temperature controlled iron

Referencing Photo 8, you can see that the left and right parts of the reel are assembled, and additional items prepared as shown in the lower part of the shot. These consist of: See table below

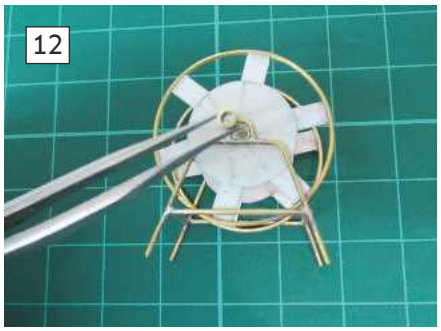
Part	Material	
H	Bushes 2 off	1.7mm OD brass tube.
I	Single shaf	1.5mm OD diameter brass tube
J	Internal shaft support x2	4mm OD styrene tube
K	Deck seating pads x4	1mm thickness styrene

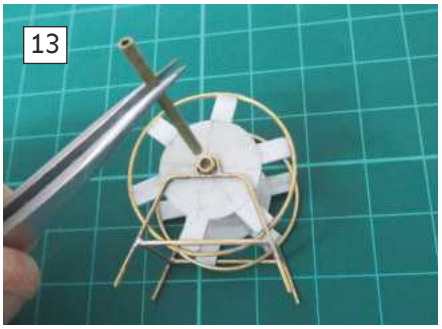
Assembling the parts

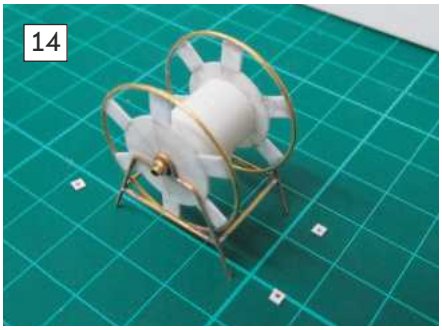
With the soldering completed, the next stage is to remove the tape used to hold the frame in place. With the tape removed the frame will slide freely from the jig as in **Photo 9.** All the parts of the cordage reel are now ready for assembly **(Photo 10).**

First one of the two Internal shaft supports are bonded onto the centre of the internal disc and the tube that is used for connecting the two ends of the reel are fixed to one of the centre discs/ring; this can be seen in **Photo 11.** This is repeated for the opposite end and when set, the reel slots nicely into place between the support frames. All that is required was to line up the corresponding holes on the centre disc with the inverted 'U' shape at the top of the frame into which is fitted the brass bush as of **Photo 12.** This is followed by inserting the shaft through each bush with the reel now rotating freely **(Photo 13).**

Considering the angle of each leg of the frame, a flat was filed on each foot of the frame and the deck seating pads added to each leg **(Photo 14).** On completion, but prior to air brushing, the reel is temporarily placed into position on the elongated deck housing as in **Photo 15.**





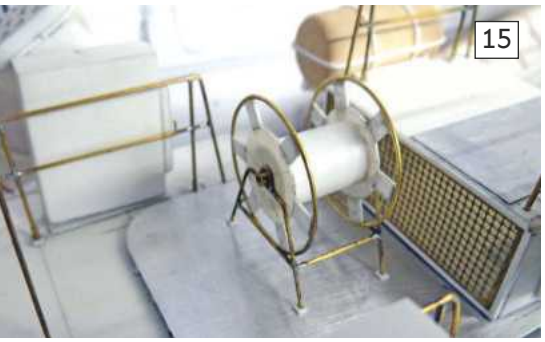


12. Slotting the bush into the bush support bracket.

13. The inner shaft is slotted into the end bush.

14. With the reel fully assembled all that it required is the fixing of the four deck pads.

15. The completed cordage reel temporarily placed in its location on the top of the deck housing aft.



Small cordage reel

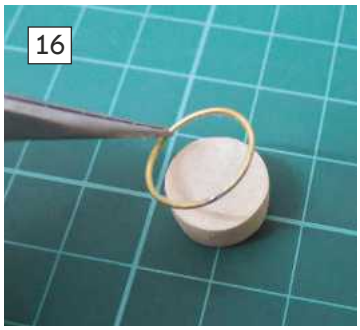
Preparing the small cordage reel follows a similar pattern to that shown above. The first step is to form the two rings for the reel; these are then taped to the jig in preparation for soldering the joint. With the soldering done tape removed the completed ring can then be removed from the jig **(Photo 16).**

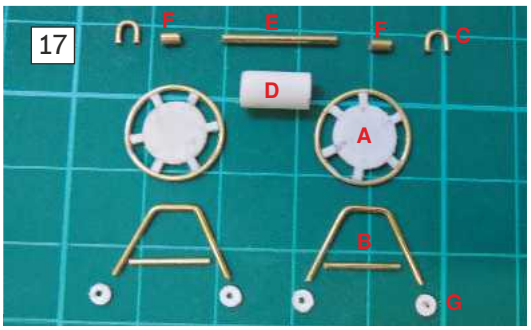
As with the larger reel the centre disc is formed from the same material and follows the same pattern of assembly **(Photo 17).** Here the assembly is underway with the reel ends and inner reel joined as one, with the centre shaft in place. The two ends of the support frame with bush support bracket are soldered together **(Photo 18).**

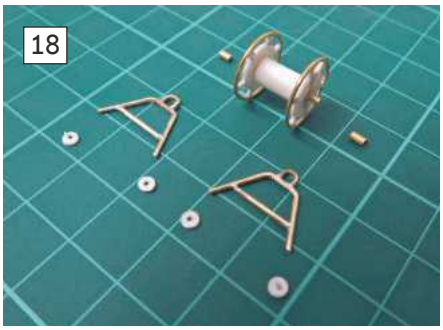
A smaller jig is made from Jelutong timber to allow easy assembly of the support frame. This is held in place with tape and each joint soldered. Once again with the tape removed the completed frame is lifted clear as in **Photo 19.** With the support frame and reel prepared, the final assembly can begin (Photo 20). Once the bushes are added to each end of the shaft and the pads to the foot of each support leg the reel is then complete **(Photo 21).** A comparison of size between the two reels can be judged in **Photo 22.**

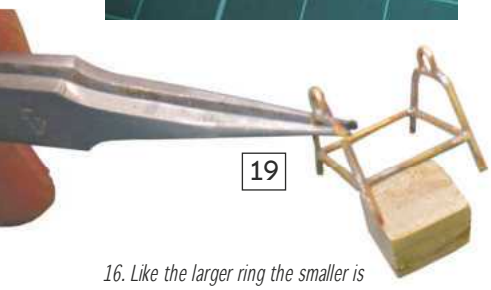
Next month I will be presenting a simple method for making the two decoy launches and a view of the overall progress thus far.

Part		Material
A	Left and right reel ends	8mm unplated brass wire 1mm thickness styrene centre disc; Spokes are Evergreen strip
B	Support frame	8mm brass wire
C	Bush support bracket	8mm soft brass wire
D	nner Reel	Evergreen 229 tube 7.1 mm OD
E	Single shaft	1mm OD brass tube
F	Bushes	1.3mm OD brass tube
G	Deck pads	1mm styrene punched disc.









16. Like the larger ring the smaller is secured to a jig for soldering which can be easily removed.

17. Each of the prepared part for the smaller reel.

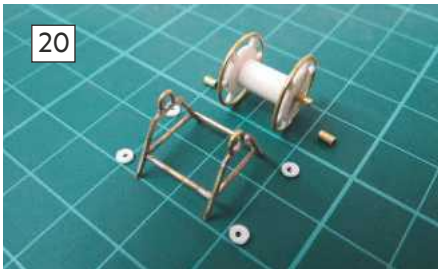
18. The reel is assembled, the two ends of the support frame prepared.

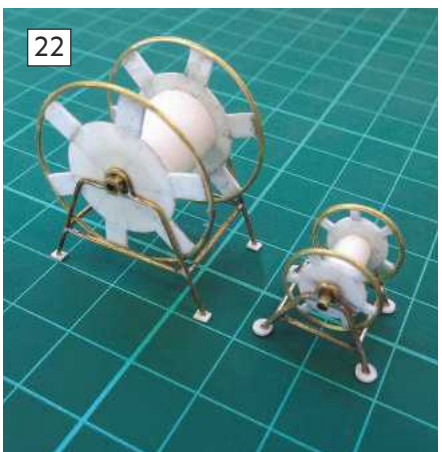
19. The completed frame being removed from the jig after soldering.

20. Almost completed. The reel is ready to be slotted into the support frame.

21. Now fully assembled the smaller of the two-cordage reels is temporarily positioned on the deck forward of the bridge.

22. A comparison of size, here the method of construction can be applied regardless of size.





References and acknowledgements

OSA 2 Boats:
Fast Attack Craft by Professor John Marriot (Brassey): ISBN 0904 6090 73.
Small Craft navies by Christopher Chant (Weidenfeld): ISBN 1854 0904 61.
Albion Alloys for their support (www.albionalloys.co.uk).

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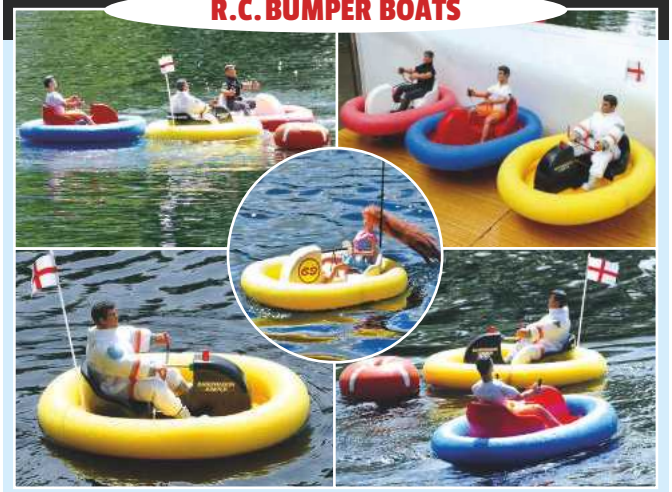

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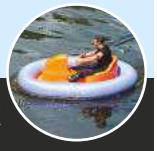

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TYNE LIFEBOAT

Designer: **David Metcalf**

31 in long by 9.75 in beam

Plan Code: MM1390 £14.50 + p&p

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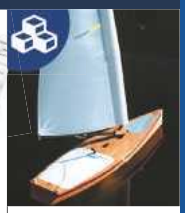
SAVE **Plan & Hull Set** Code: SETMM1390 £51.00 + p&p

WEE NIP

Designer: **Graham Bantock**

DVD Code: DV504 £7.99 + p&p



Plan Code: MAR2966 £17.50 + p&p

Laser Cut Wood Pack Code: WP2966 £31.50 + p&p

SAVE **Plan, Wood Pack & DVD Set** Code: SET2966 £54.50 + p&p

PILOT BOAT

Designer: **Richard Webb**

630 mm long by 190 mm beam

Plan Code: MAR3062 £17.50 + p&p

Laser Cut Wood Pack Code: WP3062 £56.50 + p&p

SAVE **Plan & Wood Pack Set** Code: SET3062 £72.50 + p&p

RIVA AQUARAMA

Designer: **K.J. Laugere**

730 mm long by 210 mm beam

Plan Code: MAR2552 £17.50 + p&p

CNC Wood Pack Code: WP2552 £59.00 + p&p

SAVE **Plan & Hull** Code: SET2552 £74.50 + p&p

HMS CRANE

Designer: **C. Halliwell**

1:48, 588 mm long by 160 mm beam

Plan Code: MAR3524 £14.00 + p&p

Laser Cut Wood Pack Code: WP3524 £34.50 + p&p

SAVE **Plan & Wood Pack Set** Code: SET3524 £47.00 + p&p

MARINER US 80' TOW BOAT

Designer: **B. Thompson**

1:24, 1025 mm long by 235 mm beam

Plan Code: MAR3532 £17.50 + p&p

Laser Cut Wood Pack Code: WP3532 £96.50 + p&p

SAVE **Plan & Wood Pack Set** Code: SET3532 £112.50 + p&p

VERONICA

Designer: **Richard Chesney**

1:24, 42.5 in long by 9.6 in beam

DVD Code: DV513 £7.99 + p&p

BluRay Code: DV513HD £9.99 + p&p

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SAVE **Plan, Woodpack & DVD/BluRay** Code: SET3584 £111.00 + p&p

STAR BABY

Designer: **Vic Smeed**

700 mm long by 250 mm beam

Plan Code: MAR3295 £14.00 + p&p

Laser Cut Wood Pack Code: WP3295 £84.00 + p&p

SAVE **Plan & Hull** Code: SET3295 £96.50 + p&p

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Gay Class Fast Patrol Boat	28.2	7.7	MAR2554	18.99
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Vosper MTB	26.25	7	MM2062	13.00
Halvorsen Seaplane Tender	38.3		MM2077	13.00
US Coast Guard 38' Picket Boat			MM2098	12.50
Vosper RTTL	34	9.5	MM530	14.50
Brave Borderer	36		MM609	13.00
Brave Borderer Hull	36		HULMM609	98.50

Bristol Channel Pilot Cutter 'Hilda 2' DAP003

Vosper RTTL MM530

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	Length (in)	Beam (in)	SKU	Price (£)
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Rother Class Lifeboat	28		MM1286	18.50
Tyne Class Lifeboat	31	9.75	MM1390	13.00
Tyne Class Lifeboat Hull	31	9.75	HULMM1390	38.00
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Selkie	25.6	8.25	MM2072	17.50
Kathleen	30		MM2075	13.00
Fairey Huntress 23			MM2131	14.50

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Ute Wood Pack	24.5	8	WPMM2079	49.00
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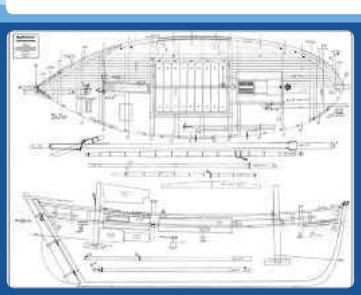
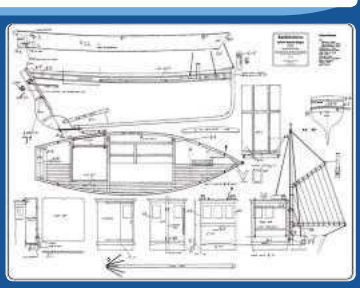


Manx Nobby DA005



Lindy Lou DAP007

Sailing Yachts

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Manx Nobby (Set)	42		DASET005	138.50
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Starlet	34	9.5	MM1048	12.50
Dutch Yacht	18.5		MM1203	13.00
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Midhurst Modellers Exhibition 2018

The Portsmouth Model Boat Display Team in action.

Colin Bishop visits this longstanding show

It's a couple of years since I have been along to this show, but after 36 years and still going strong, it was definitely worth the visit. Held in the Grange Leisure and Sports Centre in Midhurst, West Sussex, it attracts clubs from the general Southern and South East area. The make-up of the show is approximately 40% boats, 40% model railways and 20% other types of modelling including wargaming and military vehicles. It is not a major show as such, but very rewarding in its mix of modelling in an attractive venue and with inexpensive catering facilities. Well worth an hour's drive to any modeller. Obviously I was there for the boats, but I loved the railways too!

The model boats occupy one of the larger halls and a squash court plus there were other stands featuring boats as well. Altogether there were ten clubs exhibiting a wide variety of marine models.

A smaller event such as this, features work which doesn't appear at the larger regional or national exhibitions, so there are often some unique models to be seen. I was particularly taken by Terry Lawrence's TSS Earnslaw having seen the original vessel myself in 2014 at Queenstown, New Zealand. The ship was completed at Dunedin on the coast in 1912 and then dismantled and transported to Lake Wakatipu by rail and reassembled. She had a busy working life and in her later years has become a popular excursion vessel on the lake. There are no plans of the vessel available, but Terry managed to take a plumb broadside photo from opposite to where the ship was moored and used this and photos to develop the model design and I must say it looks just as I remember it. TSS Earnslaw inspired Glynn Guest's semi-scale Earnshaw design published in Feb/Mar 2016 and which is available as a plan from Sarik Hobbies (MM2112).

Another noteworthy exhibit was the 1930s Meccano model of the battleship Royal Sovereign, almost certainly the oldest model in the show. This was displayed by the Runnymede Meccano Guild.

As usual, I will let the photos tell the story but if you missed this year's show the date to put in your diary for 2019 is February 10.

BELOW: A general view of the main model boating hall showing the variety of models.

ABOVE: We have all heard of Banana Boats but have you ever seen one?

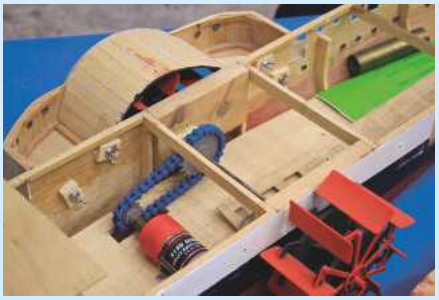
ABOVE: The vehicle ferry Bardic Ferry on the Liphook Model Engineers stand. Many years ago I built one of these to a smaller 1/96 scale from Model Maker plans designed by Vic Smeed.

LEFT: A fine 1/48 scale scratch built example of the classic Thames Barge Will Everard by Ian Glass of the Selsey club.

RIGHT: The Attractive Ocean Breeze topsail schooner built by Selsey club member Peter Fisher.

ABOVE: An extraordinary Meccano representation of the battleship Royal Sovereign. The model was built in the late 1930s and is between 70 and 80 years old.

LEFT & ABOVE Admiralty Train Ferry No.3 on the Portsmouth Model Boat Display Team stand. The original ship was built in WW1 to transport railway and other war material so France. She was later converted to a landing ship and mined off Dieppe in 1945. Some early tanks can be seen stowed just before the bridge.



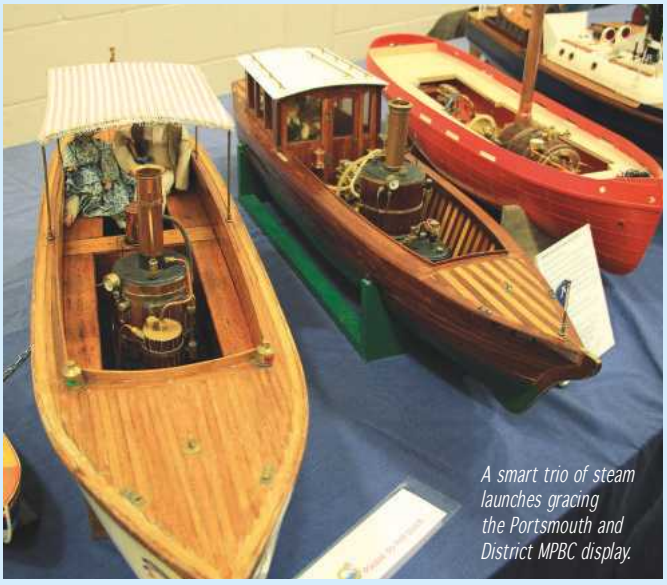
ABOVE: If you have ever wondered what the inside of a model paddle steamer looks like then this work in progress on PS Waverley by Chris Read of the Selsey club reveals all. Note the feathering paddle mechanism.

LEFT: TSS Earnslaw built by Terry Lawrence of the Crawley model boat club. The original vessel was built in 1912.

BELOW: This superb installation of a three cylinder steam plant is fitted in a Caldercraft Imara tug kit displayed on the Phoenix MMC stand.

ABOVE: The Springbok model boat club sail on water in the grounds of the Care Ashore charity for former seafarers in Alfold, Surrey. This is also the location of the popular annual Alfold Show.

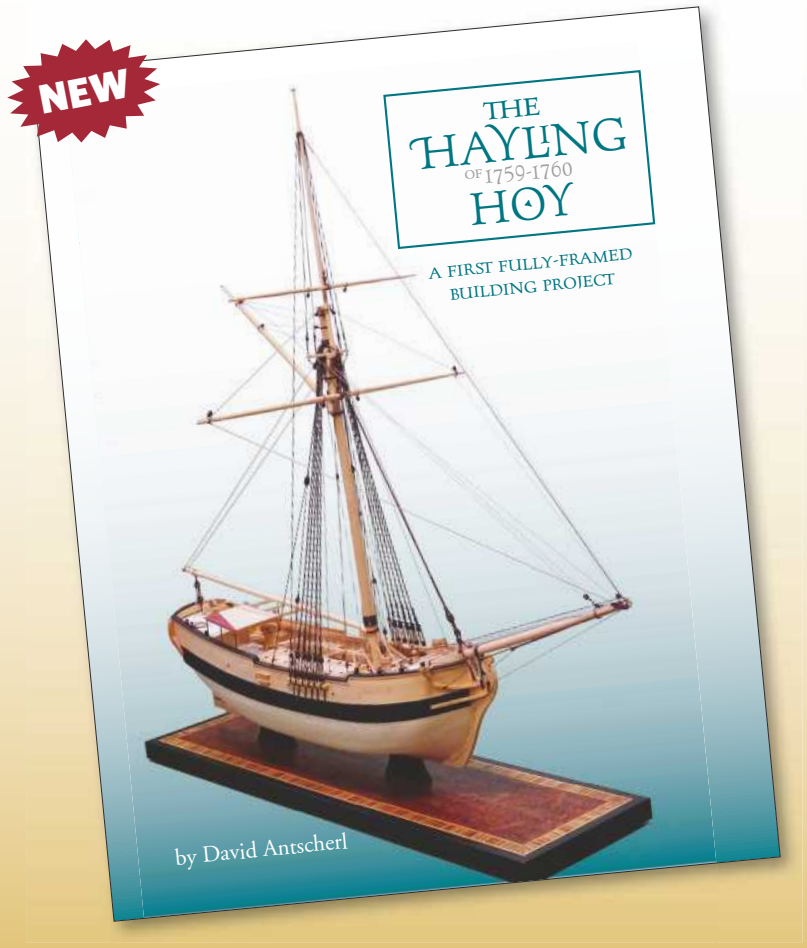
BELOW: A fine model of Alfred Holt's Blue Funnel line Hector of 1950 exhibited by the Swiss Cottage MBC based in Shoreham. The lighting on the weather deck is a bit bright though! A 1/192 scale plan is available from Sarik Hobbies ref: MM1142.



A smart trio of steam launches gracing the Portsmouth and District MPBC display.

Fresh off the Press!

ANOTHER MONOGRAPH FROM THE WORK BENCH OF DAVID ANTSCHERL



THIS TIME it is the *Hayling Hoy* of 1759. This model is aimed at the novice scratch builder or for the experienced modeler who is looking for a small project in-between major builds.

Hoys were small craft used for many tasks in harbor or as small passenger and light cargo carriers along England's East Coast. This 8½" x 11" hard cover book is 200 pages long with an eight page color section and 3 sheets of plans. Whether this will be your first plank on frame model or just a fun project The *Hayling Hoy* is right for you.

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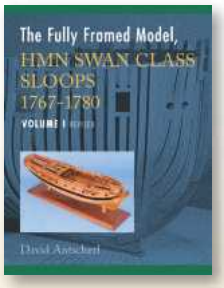

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Volume IV: Rigging a 6th rate sloop.
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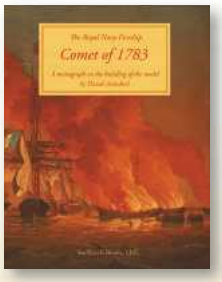

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ARCA

Fraser Gray boards the Netherlands Coastguard research/ survey vessel ARCA at Victoria Dock

The ARCA is a multi-purpose ship operated by the Netherlands Coastguard and is tasked to protect the marine environment of the North Sea and coast line of the Netherlands.

ARCA can launch a helium filled balloon equipped with cameras, to determine the extent and location of an oil slick. Once the oil slick is located, the ship can deploy various booms and skimmers to deal with the pollutant. ARCA is equipped with two 15m long retractable booms located amidships, port and starboard, that can collect oil spills. Below decks the ARCA can deploy inflatable booms from a hydraulic reel system. A small inflatable work boat is stowed on the stern to assist in the deployment of the inflatable booms. ARCA can then sweep the oil together, pump it up, process, and then store the oil slick within tanks inside the ship's hull.

Just below the bridge is the Coat of Arms (Middle State Version) of The Kingdom of the Netherlands, and the national motto 'Je Maintiendrai' (I Will Maintain). Also, proudly emblazoned near ARCA's bow, is the crest of the Nederlandse Kustwact (Netherlands Coastguard) motto 'Servamus Servientes' (Keep Serving).

The ARCA normally has a crew of ten; however certain projects may require extra personnel on board. During these trips two-six crew can be added.

The stern is also equipped with a ROV (Remotely Operated Vehicle) to allow inspection of the ocean floor. ARCA is also equipped with powerful water hydrants above the bridge allowing the ship to fight fires caused by combustible pollutants. In addition to this important work, ARCA can use one of two knuckle boom cranes fore and aft to replace or repair buoys on deck, maintaining the safe navigation of shipping through the Kingdom's waters.

All images credit Fraser Gray

DATAFILE

Type: Law enforcement, survey and research vessel.

Owner: Netherland's Government, Nederlandse Kustwact (Netherlands Coastguard).

Flag: The Netherlands.

Captain: Kapitein Cees Zwaan.

Crew: Ten

Home Port: Rijswijk.

Builder: Damen shipyard, Gorinchem, Netherlands.

In Service: 1998.

Identification: IMO number 9167966.

Call Sign: PDHT.

Gross Tonnage: 2,388 tons.

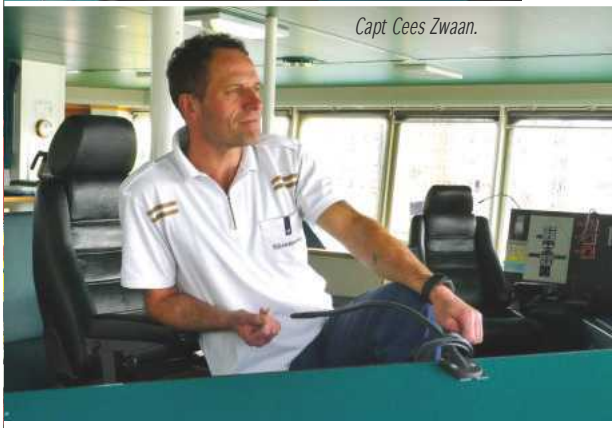
Length: 83m.

Beam: 12.8m.

Draft From Hull Base Line: 5m.

Total Propulsive Engine Power: 2x 1230kw.

Speed: An Average of 9.6Kts.



Capt Cees Zwaan.

Ferret

For those of a certain vintage **Ray Wood's** latest will conjure fond childhood memories of lazy summer holidays, peanut butter sandwiches and boating in the park. Can you really resist its charm? We think not...

The old adage that nostalgia isn't what it used to be is, apparently, not true at all! The fact is, certain gentlemen (and possibly ladies) of a particular age are still very much attracted to the classic Keil Kraft EeZeBILT boat range. I made at least two as a schoolboy in the 1960s and loved them to bits. Simple and quick to build they were primarily designed as starter kits for free running, using a basic low-powered brushed electric motor coupled to a dry cell torch battery with only an adjustable rudder for guidance. These were not designed for radio control. Two basic sizes of EeZeBILT boat were available with four models comprising the larger 14 to 17" series and a further three making up the smaller sub-11" range. The smaller boats were the Terrier motor torpedo boat, Otter tug boat and Curlew cabin cruiser, each presented in a brightly decorated box with an exciting artist's impression of the model as it might look if it were a full-size vessel. All hugely tempting for an impressionable school boy with money to burn or a birthday coming up.

A3 MTB

It was at the Model Engineering Exhibition that our recently departed editor (Graham) suggested an R/C design based one of these appealing little models, the idea being that it should fit on a sheet of A3 paper such that it could be printed across the centre spread of the magazine. In effect, a cheap, quick and easy to build model that might not only appeal to all us nostalgia seeking Keil Kraft fans, but also to newcomers, youngsters, and people who might be seeking a straightforward first build.

Now, as luck would have it, I'd recently completed a Vosper Thornycroft MTB 71 at 1/24th scale from the makers drawing and, since the character of this craft really appeals, I thought it would make an eminently suitable subject on which to base my A3-size model. In practical terms the paper size

DATAFILE

Length: 15" (381mm)
Beam: 4.75" (120mm)
Weight: 15oz (0.43kg)
Motor: 280 brushed
ESC: 10A brushed
Battery: 2S 7.4V 1100mAh LiPo

allows a length of 15"to which I applied a beam of 4.3/4" for the sake of stability and to allow the model to comfortably carry the weight of the drive battery, speed controller and radio.

Construction

As you can imagine, the material list is minimal for this one starting with two balsa sheets of 1/8 x 3" and two of 1/16 x 3". The deck (D1) and the chine (C1) are made in two parts, joined with temporary tape, balsa cemented together, then pinned flat to the building board until dry. Note the deck cut-out for the main access hatch and, in the 1/8" bulkheads, the cut-outs for hatch rails, these from 1/8 x 1/4" obechi strip. If the deck cut-out is handled with care it can be the exact fit for the hatch cover later in the build.

As you'll see from the photos, the hull is built inverted, the deck pinned down to the board and the bulkheads 1 – 4, ST1 and the transom, glued into position. Next the chine sheet C1 can be added, making sure that the cut-out for the motor and coupling is allowed for. The 1/8" keel (K1) is also cut to the outline on the plan and the doublers K2 and K3 cut to the slightly smaller dotted line to allow for the 1/16" bottom skins to sit in a rebate. You'll need to make a slot in the keel to suit the stern tube which is 5" long on the prototype and 1/4" diameter. Similarly the doublers will need to be recessed with a round file or glass paper, after which they can be glued on either side of the tube and keel and the assembly glued into the centreline of the chine sheet. Once this is done the triangular segments of the bulkheads can be glued both sides of the keel.

Your hull will now be ready for sheeting which means that all the bulkheads, deck and chines can be smoothed with a flat sandpaper block to received 1/16" balsa sheet. This is applied to the hull bottom surfaces first, from bulkhead 1 back to the transom. Once dry the sheeting is rubbed down to receive the side skins in the same manner but this time starting at the stem (ST1) and working rearwards to the transom.

The bow is formed from soft block which

ABOVE: The appeal of the Keil Kraft EeZeBILT series was a durable simplicity with just the right level of detail to give a stand-off-scale impression of the craft.

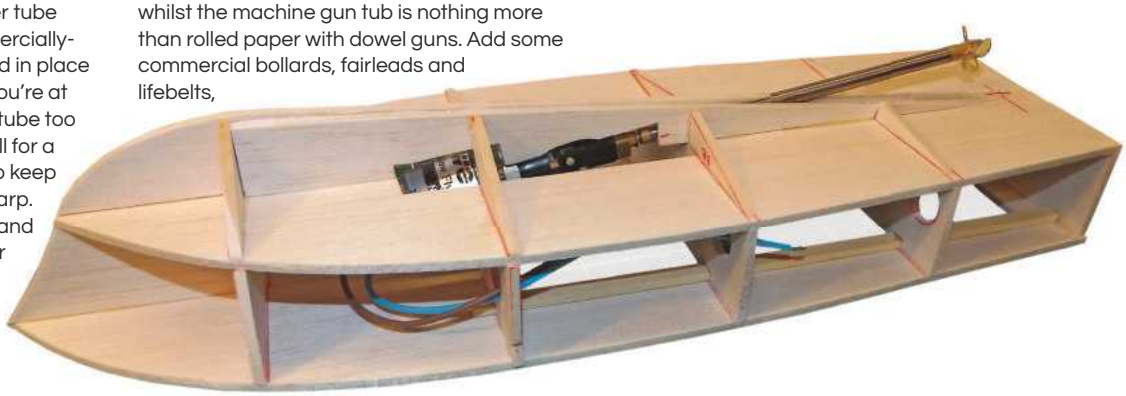
RIGHT: She's a very seaworthy little boat given her size, although you may need to drain the bilges on a rough day.

is carved with a sharp knife and sanded to blend into the sheeting. Spray rails of 1/16 x 1/8" balsa are attached to the chine and, in common with the full-size, allow our little boat to plane much drier. Now is also a good time to add the deck-level rubbing strips (from the same material) and to drill the rudder tube hole before fitting a cut down commercially-available rudder assembly, this glued in place using some 5-minute epoxy. While you're at it, put some epoxy around the stern tube too and, when set, give the complete hull for a good sanding down, being careful to keep the spray rails and rubbing strips sharp. A couple of coats of sanding sealer and the hull's ready for painting (see later note).

RIGHT: This is the kind of model you can start one weekend and have sailing the next.

Superstructure & fittings

The wheelhouse and companionway are very simple block balsa items with thin sheet ply or cardboard sides. The depth charges and torpedo tubes, meanwhile, are 3/8" diameter balsa dowel, glued on small obechi blocks, whilst the machine gun tub is nothing more than rolled paper with dowel guns. Add some commercial bollards, fairleads and lifebelts, sprinkle with a few ventilators, a flagstaff and one or two other bits and she really does start to look the part. I think the mast over the cockpit is a nice feature, created with 1/8" dowel and a bit of thread. I like to have some crewmen on board too and at approximately 1/48th scale this isn't too much of a problem.



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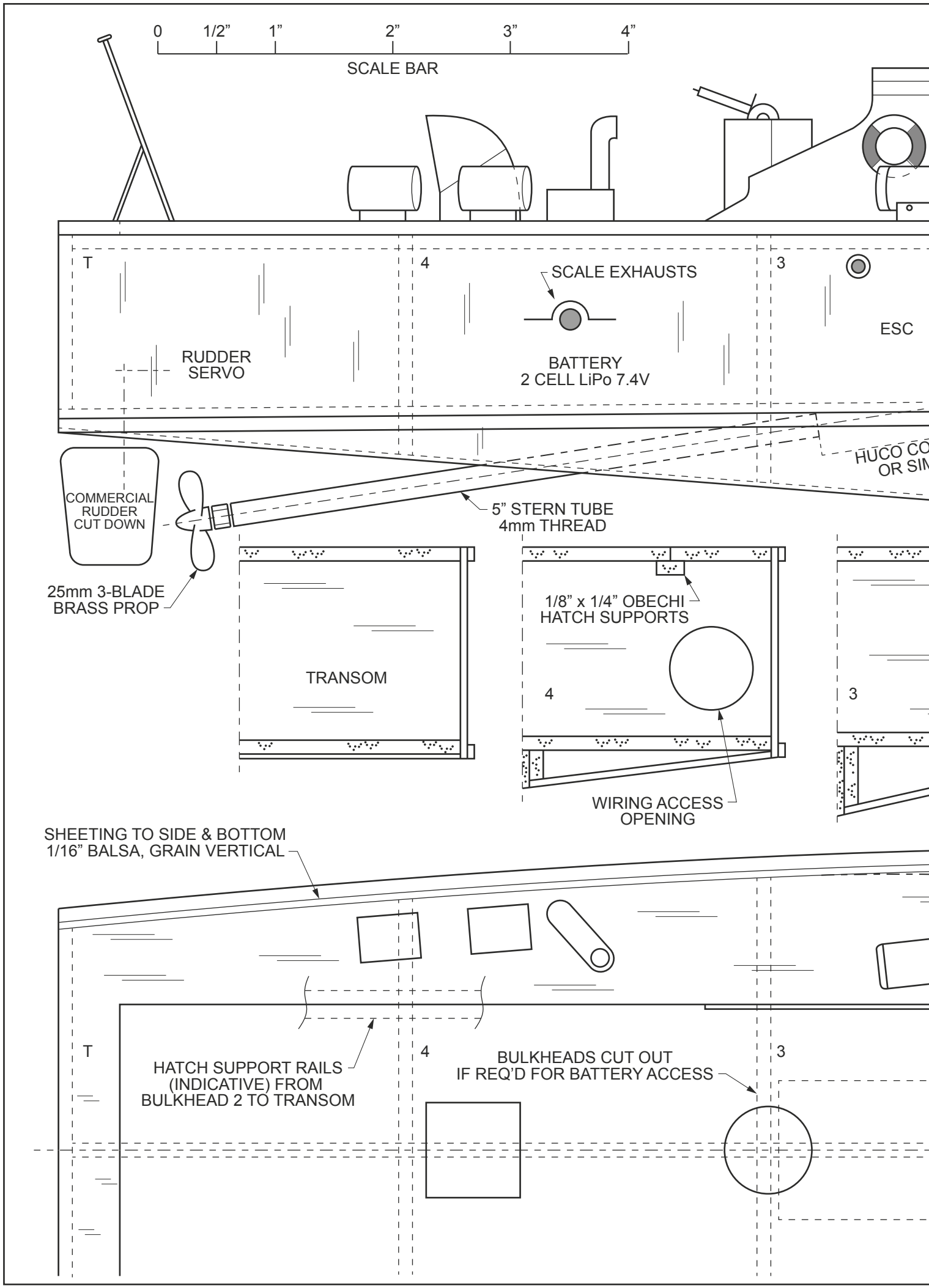
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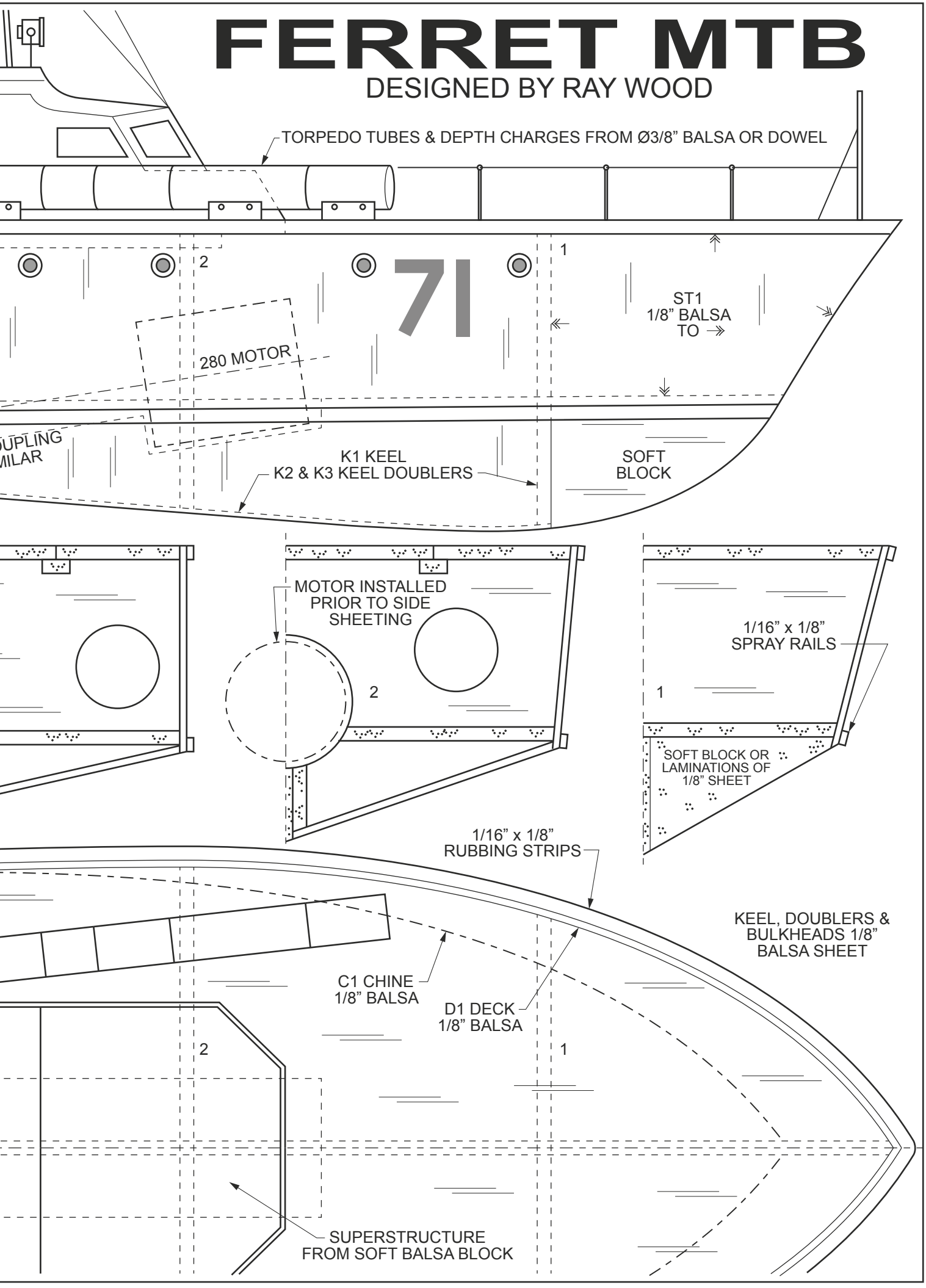
COMMERCIAL
RUDDER
CUT DOWN
5” STERN TUBE
4mm THREAD
25mm 3-BLADE
BRASS PROP
TRANSOM
1/8” x 1/4” OBECHI
HATCH SUPPORTS
WIRING ACCESS
OPENING
SHEETING TO SIDE & BOTTOM
1/16” BALSA, GRAIN VERTICAL
HATCH SUPPORT RAILS
(INDICATIVE) FROM
BULKHEAD 2 TO TRANSOM
BULKHEADS CUT OUT
IF REQ’D FOR BATTERY ACCESS

FERRET MTB

DESIGNED BY RAY WOOD



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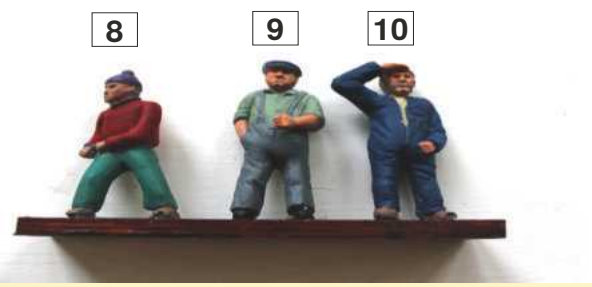
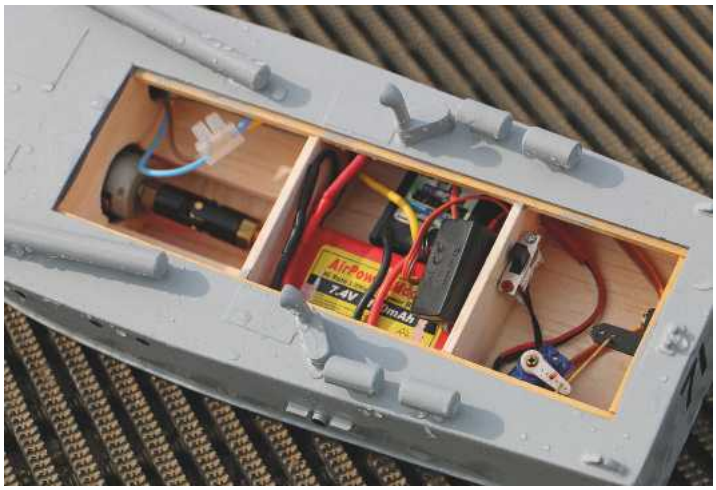


Other scales available 1:12, 1:16 and 1:24

ABOVE: EeZeBILT boats were never intended to be Class-A scale models so forget all about glass cloth. Sanding sealer, tissue, dope and paint is the most you'll need.

LEFT: I spent far too much on this brass three-blade propeller; don't feel obliged to follow suit.



RIGHT: As you can see, there's plenty of room for all the R/C equipment.

Painting & finishing

When applying sanding sealer to the wood, do make sure you rub this down with some fine grade wet 'n' dry paper (used dry) between coats. Also, if you deem that extra strength is required, the hull can be covered with heavyweight Modelspan tissue, doped on. My boat was sprayed with Halfords automotive grey primer, then brush painted with a lighter satin grey from the Humbrol range. For a belt and braces job (which should, to be honest, be considered essential) coating the inside of the hull with sanding sealer or dope will protect it from water which finds its way into the bilges in a chop. And it will, for remember that this is a small boat.

Engine & radio room

There's no need to make this any more complex than necessary, indeed a simple 280-size motor driving a 25mm 3-blade brass propeller provides ample motive power. I've hooked it all to an Mtroniks speed controller (with BEC) and a 2 cell 7.4V LiPo. The steering servo and rudder linkage is located in the rear compartment but, of course, if more room is needed the centres of the bulkheads can be opened out to suit.

BELOW: On calm water this little model is going to be spectacular to watch – I can't wait!

On the water

Launch day dawned bright, sunny and breezy at the Chantry Model Boat Club beside Bluewater Shopping Centre in north Kent. I needed a pre-photo shoot run to make sure all was well before I met with Graham and his telephoto lens. The conditions were fairly rough for a small craft, however Ferret handled the swell quite well and whizzed around with a good turn of speed, planing easily and manoeuvring with ease. All was well and so a second voyage was arranged with Graham at his local water. I was hoping for flat calm but unfortunately conditions were similar. Nevertheless she handled things well, got thoroughly soaked, yet remained in control the whole time. Plenty fast enough on the cheap, brushed 280 motor she'll keep youngsters on their toes at the helm and on flat water I'm convinced she'll be fairly spectacular to watch.

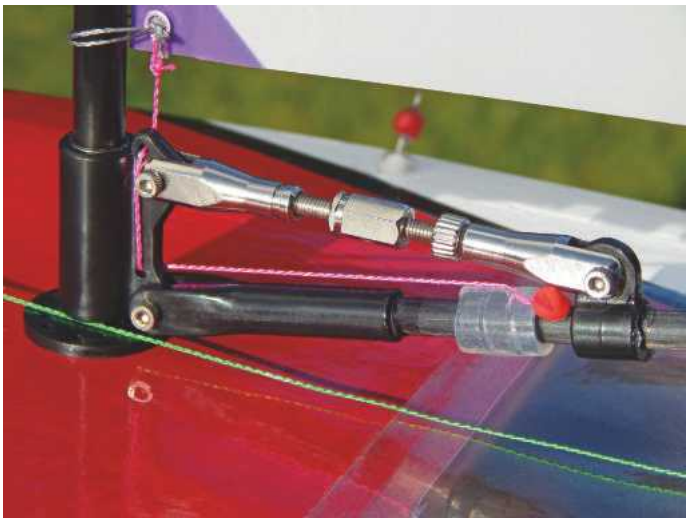
John Goodyear completes his quick-build RG65-legal racing yacht and gives us the low-down on handling and performance. Take it away John...

Alpha

Welcome back Alpha builders for this the last in our trilogy covering the build of my RG-65-legal club racing yacht. If you've only just joined us and are inspired to build your own, you'll need the May and June issues which feature both the full-size plan and parts 1 and 2 of this article. Right, let's press on with the build.

Rigging up

By now the hull should be drying out so we can turn our attention to the mast and booms. As noted earlier, I heartily recommend carbon fibre tube for both using 7mm O.D. for the mast and 5mm O.D. for the booms, both with a 1mm wall thickness. You should be able to buy these from any good model shop in 1 metre lengths at reasonable prices. The only crucial part of the mast set up is the unit that attaches the booms to the mast and permits the sails to be sheeted in and out. You can make your own such device but my recommendation is to order one of the units that are used very successfully on the Dragon Force yacht (Photo 1). This is a ball-raced unit that's been proven to work and work very well in International competition and at the price is a must-have. During assembly, anoint the bearings in the kit with WD40 or similar to prevent water ingress, corrosion and eventual seizure. I did this with the very first one I bought over three years ago and have had nothing but brilliant performance ever since, despite sailing in salt water on a couple of occasions. As for the boom fittings to attach the sails and permit the sheets to work, study the photo's accompanying this feature to determine how everything goes together. There's nothing at all complicated and the techniques used have, again, been proven to work reliably over several years and with use on some 20 different models. One tip is to fit a quick release clip to the line exiting the hull and tie two loops onto the control sheets running to the main



TOP LEFT: The Dragon Force 65 compression strut unit is perfect for your Alpha.

> *"...don't imagine that a yacht heeled over hard is going as fast as it can"*

and jib to fit it. This arrangement will enable you to swap rigs over very quickly with the minimum of inconvenience when the wind increases beyond controllable limits. (Photo 2 & 3).

Fitting the sails to the mast is an art as well as a science and needs to be understood if you are going to make things function well. The key point to remember is that the mast, booms and sails need to operate as one unit and if they don't then the world's best sails fitted to the most rigid mast simply will not provide the performance that is actually available. So, how do we best go about it? The simple answer is, 'I wish I knew'. Alas the top skippers can always make their sails work better than mine despite all my endeavours. What follows, therefore, should be viewed very much as a starter for ten and will allow you to at least have a sail set that works pretty well. Thereafter it will be up to you to study what the experts do and try and emulate them.

Starter for 10

The first task is to attach the foot of the jib to its boom at all three points making sure that the luff cord doesn't slip out of the luff pocket as you do so – you did fasten it in place with tape, didn't you? Next, mount the main boom bearings and the mast on the stub mast projecting from the hull and attach the sail to the crane at the top of the mast. You should aim to have the foot of the sail at the tack, (the bottom corner nearest the mast) about 15mm above the boom. This will allow you the tension the main later. Now attach the clew of the main to the boom but don't attempt to apply any tension. With this done you can tie the top end of the sail to the top to the mast with loose fitting pieces of Dyneema or similar.

Attach the jib boom to the deck fitting at the front and loosely to the mast but don't tension it up yet.

Now for the critical bit. Progressively tighten the backstay to develop a curve in the mast that exactly matches the shape of the luff of the mainsail. Once satisfied, attach the main to the mast all the way up with Dyneema and then check the backstay tension again to ensure that the bend in the mast and the luff of the sail match. You can now tension up the jib which, unfortunately, will affect the shape of the mast. From here on it's progressive little tweaks and adjustments such that you finish up with a really tight jib sheet and a matched mast and main luff curve. It isn't as easy as the experts make it look but if you have something that looks about right you can always adjust it later or get a more experienced skipper to do it for you.

Right, time to adjust the clew of the 'main' inwards or out to allow the main sail to deflect approx. 15mm away from the boom when the wind is in the sail. Do the same for the jib but this time only introduce about 10mm of curve. You're now roughly set up and almost ready to sail. Before you do so there's one final tweak to be done using the lovely little adjuster on the main boom. Get a friend to hold the yacht so that the stern is facing you and turn the adjuster till you get a little 'twist' in the top half of the main. It's difficult to describe but once you start playing with things you will soon appreciate what I am trying to describe. All that's left to do now is to set the whole rig up so that the sails respond correctly to inputs from the transmitter. My recommendation here is to set the main such that when fully sheeted in the tip of the boom points towards the outer edge of the transom. The jib should be set as the main but with an additional 5 degrees, i.e. the jib should be more 'open'

ABOVE: When you get used to her Alpha will give your average RG65 a good run for its money.

ABOVE: There's nothing quite like the feeling of sailing a boat that you've build entirely yourself.

RIGHT: Making good progress with a goose-wing and a gentle breeze from behind – fabulous!

than the main thus allowing it to create a gap between the sails when fully sheeted in, offering and the maximum amount of drive. When fully sheeted out aim to get the jib at 90 degrees to the hull and the main just a little less. This should provide for good down-wind performance. As for the rudder, you should only need around 35 degrees each side. Anything more can and will result in stalling if you bang the rudder hard over in turns.

All done

At this point the build is all but finished. The prototype weighed in at 1162gm with the 600gm bulb and 1062 with the 500gm. I had aimed for the 1Kg mark but made no attempt to build really light since this is what beginners would do. With the 550gm bulb fitted to the final model the overall weight came out at 1110gm. Most RG65 racers are around the 1Kg mark but the Dragon Force comes in at 1220 and has a smaller rig than most so is best suited to stronger winds. If you wish to sail in such winds then you will need to make a smaller rig, remembering, of course, to maintain the ratio of the jib and mainsail areas, otherwise the centre of effort of the rig will change and you may very well experience problems.

Lake-bound

Okay, there's a check or two to undertake and then we can go sailing. So, charge up the batteries, make sure all the controls work as they should, stick on the deck patches and let's make for the lake. Launch upwind with the sails half open and Alpha should glide away from you. Harden the sheets and watch her heel over and head into wind. As an aside don't imagine that a yacht heeled over hard is going as fast as it can because it just isn't the case. When the angle of heel becomes excessive, ease the sheets to permit Alpha to sail more upright and watch the speed increase. Assuming you've built her well your yacht should sail on either tack in a pretty straight line with just a light touch of opposite rudder as the wind increases. From here on it's a case of practice, practice and more practice until you gain a good understanding of what will make your Alpha work best. Getting everything trimmed to expert level will take time and lots of it, but if you're very lucky you will get there in the end. For now, just have fun and enjoy the ride.

LEFT: Making sails is dead easy. Take a look at my previous articles in the February and March issues.

BELOW: Even with the standard (A-rig) sails Alpha will handle a good blow and remain controllable.

I'm guess that most modellers who are interested in building their own Alpha will have warped to this section of the write-up before reading any of the preceding preamble, and why not, it's the important bit isn't it? So, what I can tell you is that Alpha has been sailed by a large number of our club's skippers and all have found her to be a very easy little craft to navigate round the pond. I think we can thus claim it is indeed an ideal beginner's model which was the aim all along. Alpha is, however, more than capable of holding her own in RG65 races in winds varying from very light to quite strong. Despite only flying flat-cut sails she will show a Dragon Force a clean pair of heels in light winds and is quite capable of keeping up with numerous other designs she has been compared against. She points as well as any of the other RG65 class models we've sailed her with and runs downwind remarkably well. In gusts she will try and do a forward somersault when running, but so will every other model with sails larger than the conditions allow. She runs with a very clean wake and accelerates as fast as anything else on the water when the wind fills in. Overall, I don't think any builder will be disappointed to race the Alpha in competitions and should have a fair chance of finishing in the top half of any club fleet. As a matter of fact, the prototype won her very first race, beating a 10-strong fleet of other RG65 designs along the way. As for the future I believe this little model has a great deal of potential to sail and race even better. A suit of pattern-cut sails will most certainly enhance performance as would a lighter, stiffer, composite keel and marginally bigger sails to the maximum area allowed by RG65 class rules. Time to experiment methinks!

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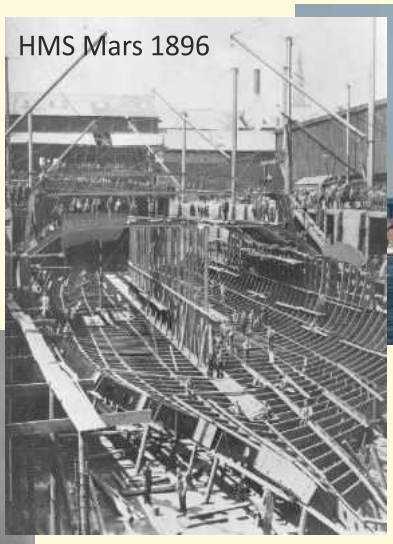
HMS Revenge 1969

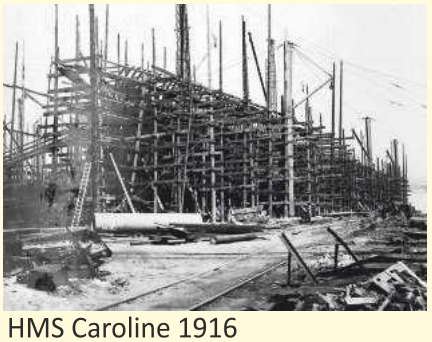

HMS Birkenhead 1845


HMS Grenville 1916


H34 - 1917


HMS Mars 1896


HMS Prince of Wales (blocks) 2014


HMS Caroline 1916


HMS Talisman 1940

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Neville Wade introduces a superseded skill, along with the terminology that allowed tall ships to make sail. Prepare to 'go about', 'wear ship', 'heave-to' and be 'taken aback'

Sailing Square

Square-riggers were built to use the wind from astern, or near to it, in order to travel the world with cargo. Sailing close to the wind is much more the province of fore and aft vessels, schooners and the like, but square-riggers could do it, 'beating', it is called, and it's at the heart of sailing model windjammers on a pond. Of course, a pond is not the open ocean, so you cannot sail with the wind astern for long periods as the bank very soon intervenes. As such, from the moment a square-rigger model sets off from the side of a pond, even a large one, it's owner will be thinking that the other side is beginning to loom large. For the model square-rigger sailor it is a constant pre-occupation as evasive action needs to be timely. If you look at Figure 1 and imagine our owner has set off to windward, beating 'up' the pond, then he will have to tack his way 'up', going about as he nears each bank. You'll notice the words which are beginning already to dominate this article: beat; go about; tack. These are the main features that I'd like to describe here, so I hope you'll find them interesting.

1

Across the wind

Looking again at Figure 1 you'll see that our model is sailing on the port tack, that is with the wind from the port side and the port yardarms forward. Models based on real sailing ships will sail thus in a 'balanced' way, hands off. That's because their original designers knew what they were doing and arranged masts and sails in such a way that the wind, acting from the beam, would simply push the vessel along, without turning either into, or away from, the wind.

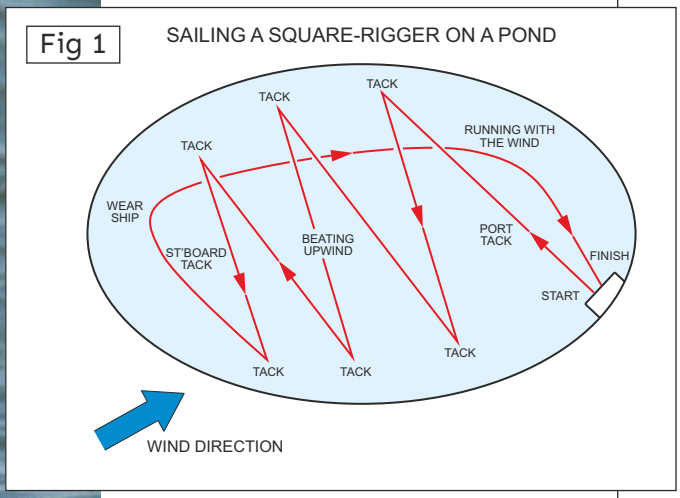
Going about

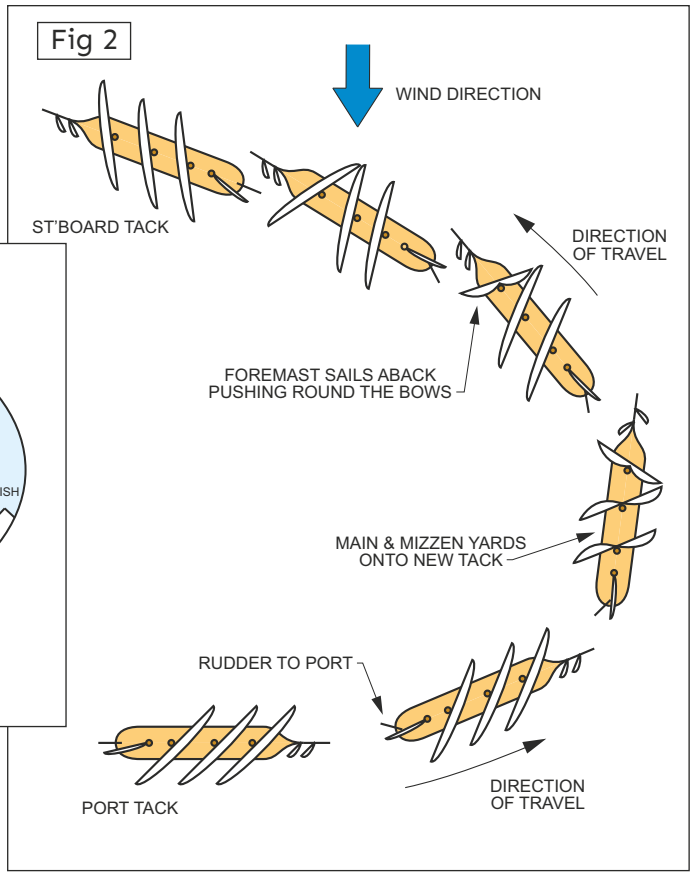
Eventually, we'll have to avoid the bank, in order to proceed up the pond. So we'll have to turn to port in order to 'go about', or 'tack' (Figure 2). Going about means turning the vessel and altering the sails so that you take the wind from the opposite side. In this example, the model is sailing across the wind, on the port tack. We have now to manoeuvre so that she turns and can use the wind from the starboard side, on the starboard tack.

The model is allowed to turn away from the wind a little, to pick up speed, then the sheet of the spanker (the fore and aft sail on the aftermost mast) is pulled right in, so that the wind, acting against the spanker, pushes the stern away, downwind, as much as possible. The rudder is put over, hard to port, to start turning the model into the wind. Hopefully, with good way on, she will turn smartly into, and across, the eye of the wind. As she passes through the eye, the yards on all the masts, except those on the foremast, are braced (swung) round completely, on to the starboard tack (with the starboard yardarms forward). The wind should now be on the after side of these sails, and that will hold the vessel so that she does not start to make sternway (go backwards). As she continues to swing across the wind the foremast sails are 'taken aback' (receive the wind from in front), and, in that state, will push round the bows even more **(Photo 1),** until she is fully

Fig 2. The sequence of events which take place as a four masted barque is tacked from port to starboard. See text and you will see why independent control of the foremast yards is useful.

Fig 1. A voyage up, then back down, the lake at Tynemouth, showing what's involved in making square-rigger progress (see text).





BELOW: The four masted full rigger, Peter Rickmers, with the wind from astern. This is simple sailing.

BELOW RIGHT: The five masted, two topsail schooner, Carl Vinnen, with yards squared to a fair wind, in lots of waves. This is boisterous sailing!

round. At this point, the foremast yards can be braced round on to the new tack, and the model can start to make progress again, this time with the wind on the starboard side. As she regains speed, the spanker sheet can be let out so that she is successfully sailing on the new tack. If you look at **Figure 1 and 2,** in conjunction with the above, I hope you'll follow the steps easily.

Real ships used to tack but only in relatively light winds, and they used to do it exactly as described here. In heavier weather they used to 'wear ship', which is to turn the vessel away from the wind, not towards it. In order to wear ship, the spanker sheet is let out, so that the spanker offers as little resistance to the wind as possible, and the rudder is turned to point the vessel away from the wind. As the ship starts to turn, all the yards are braced, initially off the backstays, and then further round, keeping them at ninety degrees to the wind, as the hull's angle to the wind alters. As the hull continues to turn, the yards will go through being square with the hull, and then start to be on the other tack. Now, because we are trying to beat back, 'up' the pond, we will bring the vessel close to the wind, with the yards on the backstays, and pull in the spanker sheet, to help push the stern away from the wind, and keep the bows up to it. We shall now be sailing 'close to the wind'.

LEFT: The four masted full rigger, Peter Rickmers (square sails on all masts) 'running', sailing with the wind from right aft. Just like the real ships, you'll make good progress like this but you'll have to watch the steering, as the vessel will yaw about her course.

ABOVE:This is the four masted barque, Queen Margaret, beating on the port tack in plenty of wind.

ABOVE: Peter Rickmers, with a good wind and not much sea. She is pointing as far up to the wind as possible, 'beating'. Note that the spanker is pulled right in, to keep her head to the wind.

Angles to the wind

A yacht will point up to the wind, to an angle of about thirty degrees to it. A real square-rigger will only manage to get to about sixty five degrees to the wind, and our model is much the same. Whereas a model yacht can be relied upon to get close to the wind virtually on its own, by pulling in the sheets, our square-rigger will need constant watching, and encouragement, to make progress close to the wind. In the case of my boats, when sailing close to the wind, I simply watch for the slightest sign of the sails on any particular mast shaking to give me early warning of their being 'taken aback'. When it happens, I let the little ship fall off the wind a bit, to ensure that the wind stays behind the sails, and progress continues.

You'll see from the diagram of my particular lake, at Tynemouth (Figure 1) what progress into, and away from, the wind looks like. The lake is about 200 metres long and about 80 metres wide and sailing down it, with a good breeze takes a couple of minutes. To get back, up it, takes many tacks (much more than shown in the diagram), and can take half an hour, all the time watching your angle to the wind.

Waves and currents

Given flat water my boats will sail in up to 25mph of wind and, more or less, the more wind there is, the closer they can sail to it. However, in large ponds where there is a good, open aspect, waves will build up and surface currents will inevitably start to be present. An 80mm wave, at 1/70th scale means a 5.6m wave for the real ship. These vessels would regularly encounter ten and fifteen metre seas so waves shouldn't be a big problem for our model, and they aren't, but they do make it more difficult to go about and, you could argue, more fun.

On any model boating pond there will be 'highways', which all the boats using the pond will have to use, for instance to get to and from landing stages. For our square-rigger the use of these will be heavily affected both by wind direction, plus currents and waves. It's a complex business this and space here doesn't allow me to elaborate, suffice to say that it will often be easier to tack one way, rather than the other, meaning that wearing ship will be required, when going about the other way, in order to reach specific places.

Oddballs

Sailing ships were capable of some surprising manoeuvres. They could come to a halt (called heaving-to) and, to a limited extent, they could sail astern. Sailing models can do the same things, though in the case of heaving-to, less successfully. A real ship could reduce sail and alter the set of her yards – some on one tack and some on the other – so that she would come to a halt and simply make leeway. A model can do it to some extent, though less predictably.

Sailing astern often provides entertainment for spectators, especially if they are incredulous yachtsmen! More often than not, real ships used to do it to swing round in the confined space of an anchorage, so as to get the ship at the best angle to the wind, to sail away, and it is perfectly possible to do the same thing with a model. The wind has to be taken on the fore part of the sails, and that's achieved by putting them on to the tack opposite to the one which gives forward progress. Thus all the sails are taken aback, and the model will move astern. If the rudder is turned to windward, the model will turn her

"Sailing astern often provides entertainment for spectators, especially if they are incredulous yachtsmen!"

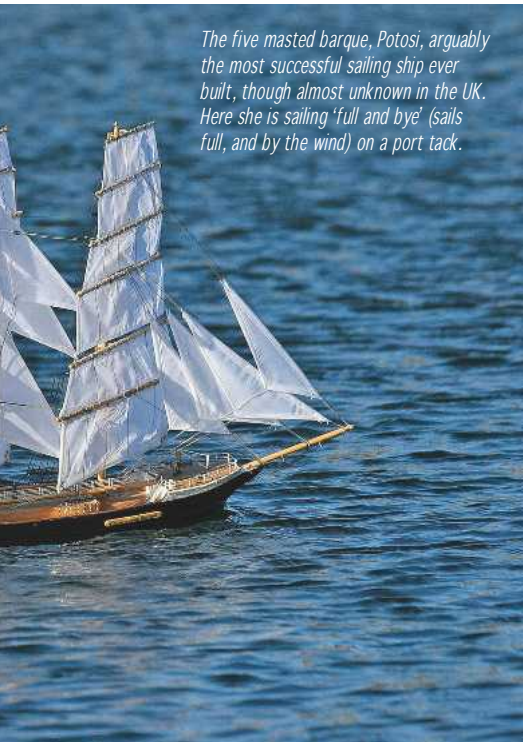
ABOVE LEFT: It's not always sound and fury! The little full rigger Joseph Conrad, beating gently on a fine summers afternoon. The masthead flag will give you an idea of wind direction.

ABOVE: The four masted barquentine, Mozart, romping along in a good breeze. You can sail hands-off like this.

head away from the wind, letting the wind get on the after side of the sails, and they can then be braced round, square to the wind, and the boat will sail away. If the rudder is turned to leeward, the model will sail straight astern, simply backing away from the point at which the manoeuvre was started.

This business of getting the sails 'all aback' can be used as an emergency stop. If it is necessary to stop quickly, with the vessel making progress on one tack, it can be done by bracing all the yards round, on to the opposite tack. As soon as the wind is being taken from ahead, the model will stop, and then start to sail backwards, as above. Being taken aback can happen inadvertently **(Photo 2),** if the wind veers round far enough and that could happen to a real ship, sometimes with disastrous consequences. For our model, it simply means a sudden stop, and then a kind of three-point turn, initially sailing astern, then turning to get the bows away from the wind, and sailing away.

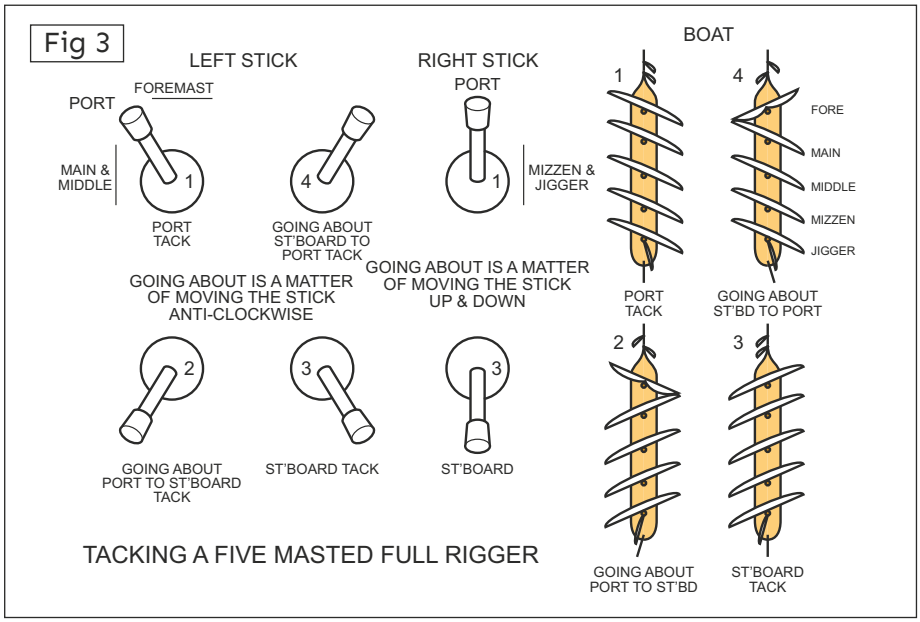
Fig.3: The transmitter stick positions in relation to the positions of the yards on a model of a five masted full rigger (see text).



The five masted barque, Potosi, arguably the most successful sailing ship ever built, though almost unknown in the UK. Here she is sailing 'full and bye' (sails full, and by the wind) on a port tack.

Control

As you will understand, carrying out some of the manoeuvres described here involves quite a bit of stick twirling on the transmitter. With that in mind, I decided very early on to arrange my controls in such a way as to make their operation as intuitive as I could. I take off all the return springs, except for that which centres the rudder. I use the left-hand stick in left / right mode to control the foremast yards, as it is helpful to use them separately (see above) and I use the left-hand stick in up / down mode to control the next mast(s) astern. With the stick in the top left corner of its movement, all these yards are on the port tack. I use the left corner because port is to your left if you were aboard the ship. The aftermost mast(s) are controlled by the up / down mode of the right-hand stick, with 'up' putting those yards on the port tack, to follow suit with the left-hand stick. If you look at **Figure 3,** you can work out the sequence of actions required to go about by tacking and, if you follow the actions on the Tx gimbals at one side of the picture, and the reactions of the boat, on the other, you'll see that going about is simply a matter of taking the left-hand stick anti-clockwise round its movement, and moving the right-hand stick up and down, to make the required yard movements. Having no return springs fitted means I don't have to try to hold anything in place. Plus, not having to think too much about where to move each stick makes life easier for the brain!



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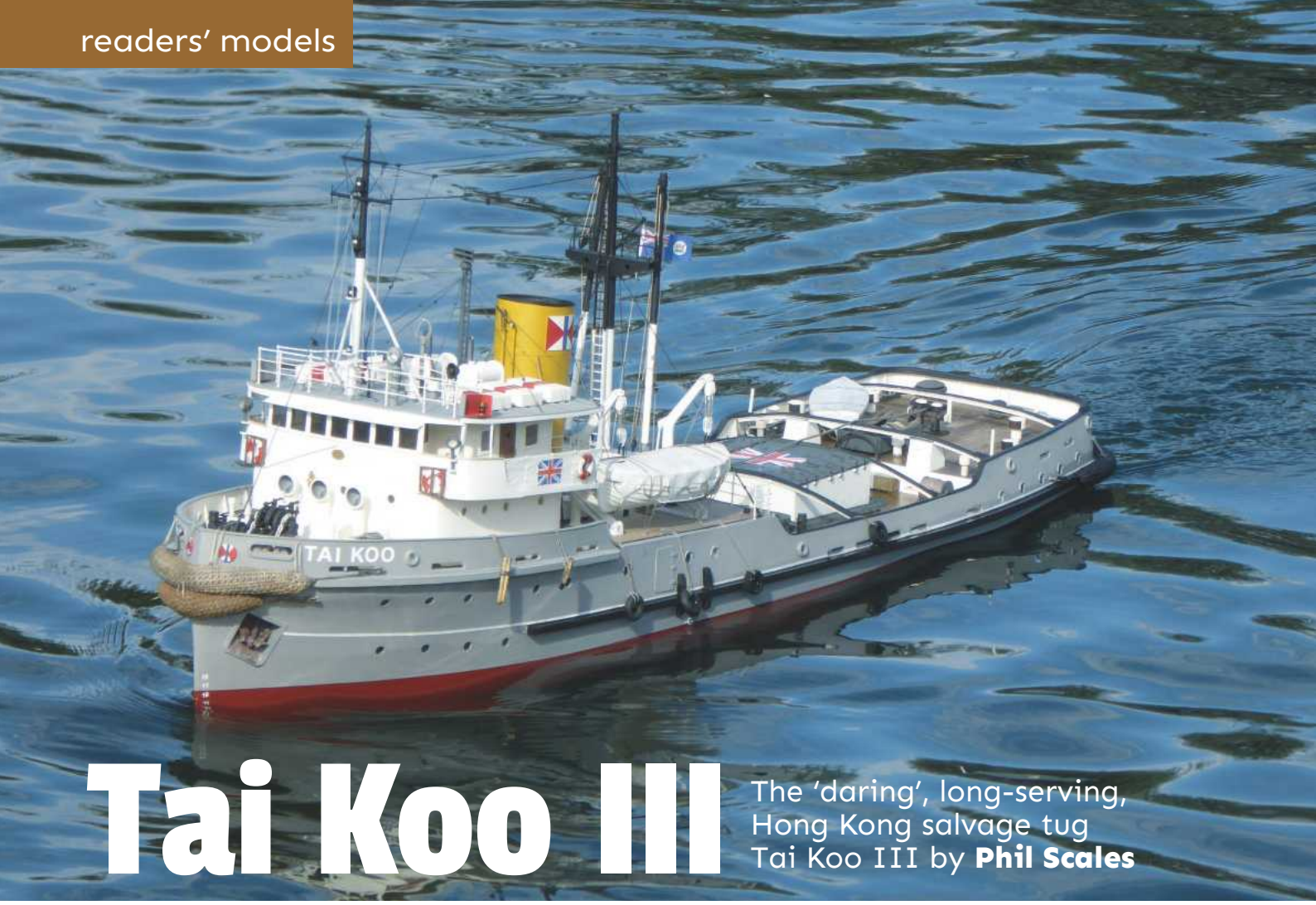

Tai Koo III

The 'daring', long-serving, Hong Kong salvage tug Tai Koo III by **Phil Scales**

The salvage tug Tai Koo III was very famous in Hong Kong during its lifetime from 1949 until 1973, carrying out many daring and well-reported rescues. I have always wanted to build a decent sized model of this famous tug but was never able to source a hull, not being a hull builder myself. However, help was at hand when, from the brilliant plans by Jim Pottinger, a colleague in our club was able to make me an excellent fibreglass hull at 1/48 scale. This left me to do the rest.

The original Tai Koo was a Swire Co. vessel and had the distinction of being designed on scraps of paper by European staff of the HK & Whampoa dockyard whilst interned in Stanley Jail by the Japanese invaders between 1941 and 1945. They designed a rather hybrid tug with excellent sea keeping, but being unaware of contemporary diesel engine developments, it was oil fired and steam driven via a pair of three-cylinder steam engines but with propellers shrouded in up to date Kort nozzles.

Tai Koo III was a large deep sea tug, 170ft long and of 1,800ihp, could steam 3,500 miles but could never reach her design speed of 12kts and suffered all her life with a range of problems. She carried an impressive set of equipment including diesel and steam driven portable pumps, diving equipment, welding gear, underwater cutting gear, modern 'walkie' talkies, mushroom salvage anchors and chains and a wide variety of repair gear.

On normal harbour duties, her mainly Chinese crew of 33 was boosted on salvage missions to 60 by divers, welders and riggers. She was uncomfortable in a seaway, being keel free and rolled to 25 degrees even in moderate seas; her bridge was so far forward that in head seas the bridge could plunge up and down by more than 40ft. She did, however have a raised poop deck to cope with following seas in during regular typhoons and had excellent sea keeping; she was also a powerful towing boat. She was refitted in 1960 with a raised foc'sle, amended funnel cap and modern radar and communications

ABOVE: Bow area showing bridge and hull lines; note the timber fenders.

ABOVE: Bow area showing anchor winch, rope boxes and bridge window Visor; note Swire badges.

ABOVE: Bridge roof with six liferafts, two water tanks and other equipment.

ABOVE: Poop deck area, showing the Kort nozzle below.

ABOVE: Tow hook area, note salvage hatches and salvage equipment, plus the prominent Union Jack.

equipment.

Her life and adventures are memorably told in the book 'NO CURE NO PAY' by Capt. Bill Worral known throughout the China seas as 'Steamboat Bill'.

No mean task

Building the model was not easy, as there is a shortage of good photos, none in colour and only the Pottinger plan. I was assisted somewhat by examining a decent model in the Honk Kong Maritime Museum, but this was slightly wrong in some areas.

Decks are from 3mm Plasticard and are planked throughout due to being in the tropics. The various structures were built using 1mm or 2mm Plasticard and the bridge was quite challenging, having curved corners and two decks with both sheer and camber producing compound curves. The masts, ventilators, davits and salvage booms were all scratch-built, helped by a semi-overhead photo of the tug. She is built to tow with a strengthened hook and gob rope bollard at the stern. The bridge roof is particularly busy and incorporates six life rafts, early radar, DF, loudhailer, compass, access hatch, two water tanks, mushroom ventilators, railings and foremast and much rigging. Internal access is via the superstructure and the engine housing with detachable rigging.

Power is from two 12v Buhler motors independently operating two 60mm props in fixed nozzles, via a 2.4mhz six channel receiver and two MTroniks 30 amp ESC's. The colour scheme is quite colourful and follows the original scheme with a grey hull and bridge roof, mainly white superstructure and inner bulwarks, yellow funnel with the Swire badge, metal decks and upper surfaces are dark grey while the lower timber fender is in black as is the rear capping rail and towing bows and fittings. Boats and canvasses are white and the three prominent Union Jacks are because she often sailed in Chinese waters and could be (and was) shot at!

Fully ballasted she weighs in at 12kg (27lbs), is very powerful and manoeuvrable and overall is a colourful and atmospheric tug which looks good and different on the water.

ABOVE: Winches for salvage booms on the rear deck house.

RIGHT: Tai Koo III at full speed in Hong Kong roads en route to a salvage call.

RIGHT: Stern view under way with prominent fenders and stern anchor; crew quarters below the poop deck.

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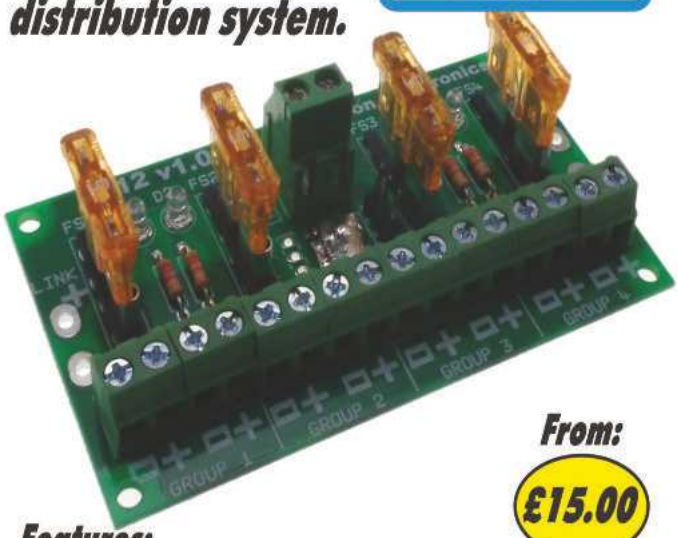

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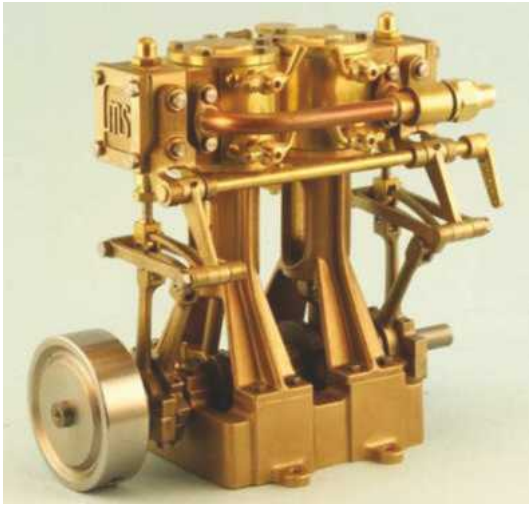

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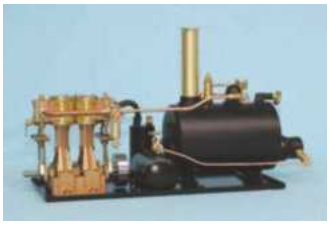

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Range Finder

A 1/10 scale model of the Super Battleship IJN Yamato Part 1 by Dave Wooley

Welcome once again to our regular sortie into the world of fighting ships. This month sees a two-part feature on what could be considered the world's largest model warship, the IJN battleship Yamato

Firstly, I would like to thank Tracy Astle for taking these detailed shots of this amazing model and his Father Mick for providing these pictures for publication in Model Boats Magazine.

Perhaps there might be questions asked as to why a Japanese Museum would want to display a model of such size considering Japan's position following the end of WW2 and the choice of venue to house such a model. I'll touch on these points as we go on our tour of this extraordinary scale model.

Before taking our tour of this 1/10 scale Yamato, perhaps it would be useful to review some detail and statistics on this, the largest and most powerful dreadnought ever constructed. I use the description dreadnought, as all armoured big gun battleships following HMS Dreadnought had a similar design philosophy, but it must be remembered, both Yamato and her sister ship Musashi may have been the ultimate expression of that design philosophy but where not the last of the super dreadnoughts.

The battleship Yamato

Both Yamato and Musashi where built in great secrecy at the Kure Navy yard located on the southern end of Honshu island. The IJN Yamato was constructed between November 1937 and December 1941. Everything about this battleship was impressive. For example, the displacement when fully loaded was 71,659tons in a hull, 862ft 9ins in length with a beam of 121ft 1in. The main armament consisted of nine 18.1in (46cm) guns, each with a turret weighing in at 2,530tons and each gun capable of firing a 3,220lb AP round set at a 45-degree angle to a range of 45,960yds.

Apart from the numerous AA weapons, the armour belt was a colossal 16.1in thick and to protect against plunging fire it had a deck 7.9 to 9.1in thick. Each main turret received between 7.6 to 25.6in of armour. The internal arrangements were specifically designed to give maximum protection not just plunging shells from 18in guns but also against mines and torpedoes.

ABOVE: This 1/10th Yamato is housed on the first floor of the Kure Maritime Museum. Interestingly over 50 experimental test tank hull designs were used to find the optimum hull form which resulted in the development of what we now call a bulbus bow.

BELOW: A view of the stem and the distinctive 16-petal chrysanthemum denoting the Imperial seal of Japan. Below the seal is the armoured degaussing cable's which runs the entire length of the hull.

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Japanese Warships of WW2 by A J Watts (Littlehampton); ISBN 0711002150, Pg. 27-33

ABOVE: Moving on to the deck right forward shows the anchor handling arrangements and the huge anchors resting in the Hawse pipes. On the original Yamato these weighed in at 50 tons apiece and were held in place by the slips. Ringed in red is the roller fairlead for deploying the paravane and in yellow the timber leadsman's platform.

RIGHT: A turret with a view towards the triple 6.1in (15.5cm) 60 calibres and the tower bridge.

BELOW: Familiar fittings on any warship are the cable holder deck pipes and standing alone just forward of the deck pipe is the capstan.

BELOW RIGHT: Looking towards the break water immediately below the barrels of the 18.1in (46cm) main armament. Also, in view is a cluster of five cordage reels.

Although IJN Yamato was flagship of the combined Fleet at Midway, Philippine Sea and Leyte Gulf, the design as a gun platform in a battleship to battleship action was never really tested. Yet Yamato did in fact fire no less than 104 18.1in rounds in what at first appeared to be a one sided action off Samar on October 25, 1944 against TF 77.4.This was an assortment of US escort carrier knows as 'Taffies', accompanied by destroyers and destroyer escorts, all part of the Leyte Gulf operation to retake the Philippines.

Yamato's nemesis was not big guns but carrier aircraft. On April 7, 1945 whilst operating as part of the Ten-ichigo operation, which was the last great sortie of the Imperial Japanese Navy; a sort of one-way suicide mission to defend the Japanese home islands. During that operation the US Navy's TF 58 targeted the Yamato with no less than 250 aircraft, consisting of Avenger torpedo bombers and SB2C Helldiver dive bombers attacking in three waves. In all, the world's most powerful battleship was hit by no less than eleven torpedoes and numerous direct hits from dive bombers. 2,498 of Yamato's crew went down with the ship.

Seen through the eyes of the Japanese, this was a heroic, if not futile last-ditch defence of Imperial Japan. Perhaps this answers the question as to why a huge model of Yamato is housed in a specially prepared building at Kure Maritime Museum and has such significance with the Japanese public today. The official quote from the museum's own press release is: 'We wish to convey the history of Kure which made the battleship Yamato, the importance of peace and the splendour of science and technology to the future.'

Viewing the Yamato

I have often heard the expression when relating to ship models, 'now that looks real'. This can be appreciated when you see a well-composed picture of an R/C model performing on the water or a superbly

ABOVE: A view of the break water from the portside showing the various type of ventilators.

BELOW: 'B' turret and the colossal 18.1in barrels

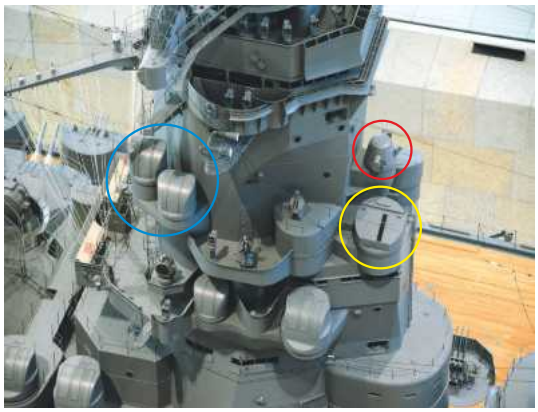
LEFT: The top of 'A' turret supporting two-gun tubs each having the Type 96 triple 25mm.

RIGHT: At the top of the armoured tower is the main low angle Type 89 Hoiban director and 15m rangefinder. Below that is the air combat post (the crew member and an array of pedestal mounted binoculars).

LEFT: Aft of 'A' turret is the triple 6.1in known as the 'Nendo Shik' which denotes its type and was also installed on cruisers of the Mogami-class. Unusually, a tripod aerial mast is mounted on the turret roof.

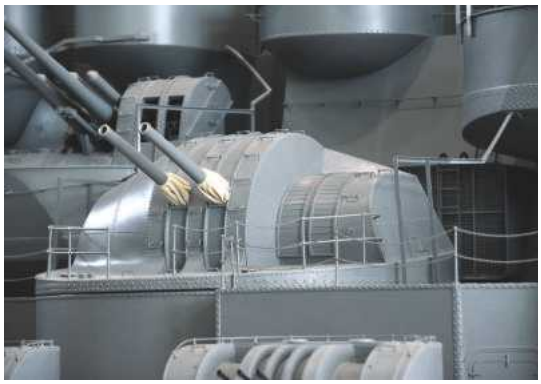
LEFT: Here we are looking down on the low angle director and on either side mounted on the rangefinders are the two-mattress antenna of the Type 21 radar array, known as Kai 3 an air and surface search radar, with a range of 120km (74miles).

ABOVE: This giant model is so good that it can be used like images of the full size ship to examine detail as an aid in the build of any subsequent model. Ringed in yellow is the twin horn microwave surface search radar operating at 10cm, known as the Type 22 Kai-4 which was fitted to Yamato in spring of 1944.



LEFT: The starboard side of the tower is a cluster of directors. Ringed in red is a 1.5m navigation rangefinder whilst ringed in yellow, machine gun control towers and over to the left of the picture just visible in blue are the search light control towers.

RIGHT: At the base of the main control tower on either beam and ringed in red is a 4.5m rangefinder directing the 12.7cm/40 calibre high angle (HA) AA guns.



LEFT: Immediately below the 4.5m rangefinder shown here on the starboard side, is one of three twin 12.7cm HA AA guns.

RIGHT: Occasionally there can be difficulties in locating the exact position of the flag lockers (extremely important position). Even tracing the run of the halyards doesn't immediately expose this location. However, here is a good close in shot of signal platform at the rear of the main tower.

RIGHT: Panning back we can gain a better perspective of not just abaft of the main control tower but the run and number of signal halyards from the signal yards to the platform.

represented diorama of a static model. Yet when you view this series of pictures you really do get a sense that this is more than a large-scale model. Given that the meaning of the word Yamato implies, the soul or spirit of Japan. With that in mind perhaps when viewing this extraordinary model, we are metaphorically, if not actually visiting the real ship.

As mentioned, the Yamato model is to a scale of 1/10 and is 23.6m in length and as is customary we shall begin our tour from the bow. I'll let the pictures do the talking!

Acknowledgements

My thanks to Tracy and Mick Astle for allowing the use of these high-resolution images of the Yamato model at Kure Maritime Museum. Also, my appreciation to the staff and members of the Kure Maritime Museum, for such an amazing exhibition and display of historical artefacts. Next month in Part 2, amidships, ships boats and aft including the after catapult arrangements.

1/96 scale hull available through Fleetscale www.fleetscale.com/store/gb/ijn-yamato-musashi/171-1-96th-ijn-yamato-hull.

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BONNEY AND KELLY clam dredger, Model Slipway, 600mm long, receiver, ESC and servo – £200. Buyer to collect. Tel. 01295 251842 (Oxfordshire).

THE LADY JAN empire class tug, 1:32 scale model. All fittings, lights and smoke unit. In case. VGC – £520 ono. Tel. Brian on 01480 819295 (Cambs).

YORKSHIREMAN TUG, Model Slipway, twin brushless motors, battery, bow thruster, lights, transmitter and receiver. Only recently completed and very well made. Ready to sail – £350. Email davidmelors@gmail.com for photos or info. Tel. 07443 038038 (Chesterfield).

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Mailbag

Air your views, seek a solution, or just tell us what you're up to in the pages of the hobby's favourite R/C model boat magazine

We welcome all letters of model marine interest, please title your email 'Model Boats Mailbag' and send to: editor@modelboats.co.uk

More please

Hooray! More model boat plans that can be used straight away. Great, just what is needed to get people building models. I see that the May issue has not one but two designs that can be built directly from the drawings. Simple to do and two very different craft. Just photocopy cut out and stick to the wood. Just like I used to do with RCM&E plans. I will agree that lines and section plans can be built from but a fair amount of work is needed to even start getting to the build stage. Glynn Guest models are presented as useable plans and are a great introduction to working from drawings. The middle ground has been absent for far too long and it's wonderful to see these plans in the magazine. Keep up the good work. I am sure that somebody could write a how to article on converting traditional builders plans to components for a boat.

John Manning

Hi John, we're glad you approve, however primarily we think you make a very good point about the need for an article that guides people through the process of converting traditional three-view plans into components for a boat. Park that one with us for a while and we'll see what we can do – Ed.

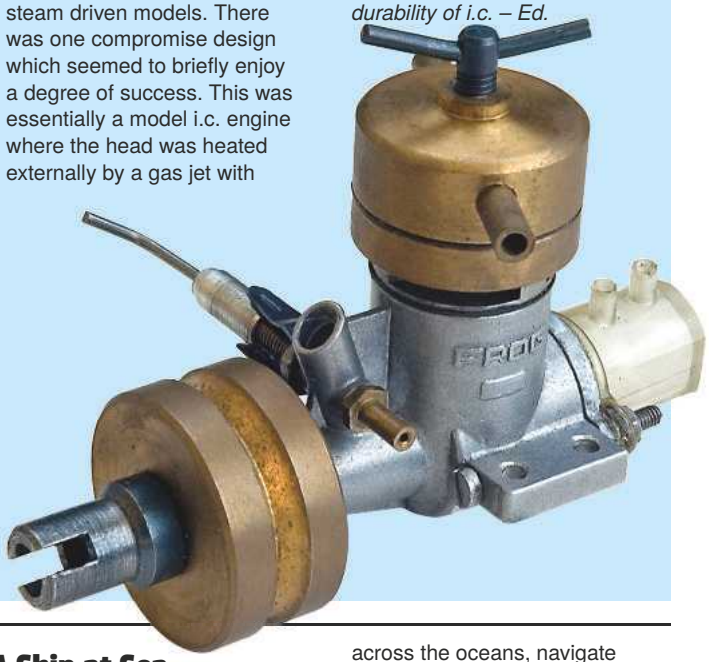
Memories, memories!

Flotsam & Jetsam 62 by John Parker was very interesting and certainly brought back a few memories of my own early 1960s days of model boats. Despite the continuing advance of electrical technology I doubt that electricity will ever match the power and durability of i.c. Most councils seem to have a blanket ban on the use of model i.c. driven models on the various park lakes and other such bodies of water, although they do seem to be far more sympathetic towards steam driven models. There was one compromise design which seemed to briefly enjoy a degree of success. This was essentially a model i.c. engine where the head was heated externally by a gas jet with water injected and compressed against the heated head which then flashed off as steam. Essentially it was a steam engine without the boiler. At least one model was built and tested successfully but then the whole project seemed to fade into obscurity.

If any reader has further details, or even a working model, these could prove very interesting for a future article.

James Wells

James, we'd hazard to suggest that electric boats have already matched the power and durability of i.c. – Ed.



A Ship at Sea

I came across an article in your magazine published in the summer of 2016 written by Chris Drage on his build of a diorama incorporating HMS Poppy. I have a largish watercolour of Poppy pictured in cold looking seas, providing stern escort to a convoy visible in the distance. It was drawn and signed by Sub Lieutenant D.S. Brooks(e) who served on her alongside John Beardmore (Navigating Officer). It was described only as 'A Ship at Sea' when acquired at auction but research uncovered that it is Poppy (her number is on her stern).

Long before this, and the age of the camera, commissioned seamen not only had to be able to sail those amazing vessels across the oceans, navigate by the stars and fight very 'up close and personal', they also had to be able to draw. There was no other way to capture an image of unknown and dangerous coastlines or to record momentous national events such as Trafalgar, Cape St Vincent and so on. As someone who has spent time on the seas under sail, the accuracy and feel which the sailor artists achieved is staggering. Paintings by sailors from the mid 20th century, such as this of Poppy, are very much rarer than those of the Age of the Enlightenment and of sail, as, by this time, the need and the ability to draw had largely faded away.

Anyway, I thought he might like to see the painting as it is not a published image.

Graeme Perkins

Lobster Pot!

After trying to purchase a Midwest Boothbay Lobsterboat kit from the US and failing due to a bank-to-bank transfer going… lobster shaped, my partner suggested doing a scratch-build using photos from the Midwest website. The following is, clearly, not an exact copy but more a representation.

The whole boat is made from 2mm liteply and simply cut out using a sharp blade (I think we all know the type) guided with a steel rule. The hull has a basic construction using four side skins glued around three formers, sealed on the inside with fibreglass and resin, then any gaps filled with car body filler. The main one-piece deck is fixed on top whilst a lower working deck rests on blocks of wood across the formers. Mahogany planking was used for the rear working deck (this is the place that gets hammered with the lobster pots going off the stern).

A simple construction was adopted for the cabin which is assembled in several parts to give shelter to the skipper. The lobster pots are made of slim offcuts from the cabin's leftovers with scenic scatter sprinkled over them, after all they spend a lot of time on the sea floor (but no luck today!). A working hoist lifts them on board.

With accessories from Macs Mouldings, that do a great job of bring the model alive, she's driven by a motor from Graupner and the usual Mtonics bits.

Keith Holmes

Prestwick

Seeing your free plan in his month's Model Boats (April '18) took me back about 58 years to when I was 13. My father's friend 'Albie' who he worked with at J.L. Thompson Shipbuilders as Platers on the Wear (where he must have got a copy of the plans) decided to build a model of the tug Prestwick which he called Amanda Jane after his daughter. He cut out two sets of all the bulkheads and keel, and with one I built my own model based on the superstructure of the 'Grangetown Sunderland' which worked on the Wear and was the same as the centre tug in your photo on page 39. To get them sitting in the water at the correct waterline we used a large 6 volt motorbike battery and a starter motor to run constantly when switched on. In those days we couldn't afford radio control so normally just set the rudder to go straight, then we'd run around the other side of Roker Park boating lake to catch it. I think Albie

eventually put radio control in his tug years later but mine was sold as it took up too much space at home and my mother was sick of moving it about. Unfortunately this photo is the only surviving one I have of my model. Wouldn't it be lovely to think that it's still around? Albie passed away a few years ago so I don't know if his is still around either.

Ernie Liddle

ORCA

I'd like to build a scale model of the boat ORCA from the original Jaws film and wondered if anyone could point me in the direction of a suitable plan. Any help would be greatly appreciated. You can email me direct at: ahornby45@live.co.uk. Many thanks.

John Hornby

Finding another crew!

Hasegawa Hobby Kits produce two 1:48 scale U.S. Navy Pilot / Deck Crew sets, Set:A and Set:B. The box label on Set:A states: "This kit contains 30 figures in 12 poses. English instructions." Looking at the parts in my kit the figures should need only a minimal amount of paring / scraping to remove side-arms etc.

Steve Anso

The real deal

Just got back from Hong Kong today and was nicely surprised to see my Tai Koo featured in the May issue. While in HK I had a day out on the latest Tai Koo (No.5) which was wonderful. A model may result in due course!

Phil Scales

Phil; which just goes to show – you contributors have all the fun. Looking forward to seeing the model – Ed.

A mystery vintage speedboat

Most kits arrive with instructions, or at least some hint as to what the finished model should look like. **Phil Parker** didn't have any of these and had to work it out the hard way.

A wise man once told me to read the instructions before starting work on any kit. Good advice if there are any, but what if you don't have that luxury?

Simple, you would think, look at the models other people have made using the same kit. That should provide plenty of pointers.

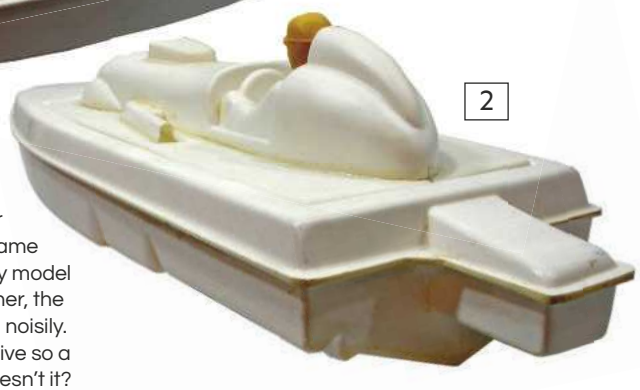
Unfortunately, with this kit, I couldn't even do that. Bought from George Turner when he was winding down his model boat kit business, I've never seen another example of this, built or unbuilt.

Photo 1 shows what I started with; a built up display model. I liked the vintage speedboat look and the resin head of the driver is brilliant. I'm not even sure this model ever appeared in the range properly; maybe it was just a test for future production?

At the back **(Photo 2),** there was a boxy lump which I guessed would be for a rudder. Racing speedboats hold their rudders away from the hull on long rods and presumably this was a vacuum formed version of the same thing. Had I thought about it, I'd have asked the man himself when I paid up, but I forget to. Still, how hard can building a model boat be?

Knowing development work was required, I started at the back end by hanging a big rudder off the box. A vertical hole was drilled though and the outer bearing glued in place after being sliced in half. Inserting the rudder made sure everything was aligned and Pound Shop epoxy resin held everything together. I had to blank off the hull end of the box with plastic sheet and more epoxy, but the results

1



2

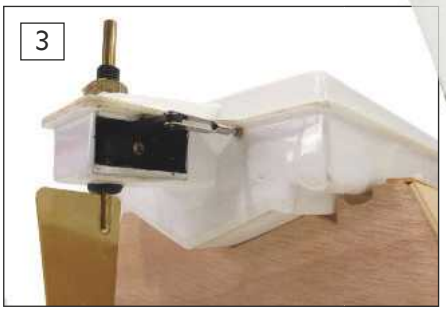
(Photo 3) seemed OK.

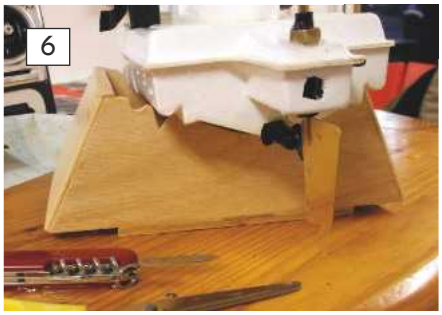
Speedboats are supposed to go fast, so power has to be from a brushless motor **(Photo 4).** The Leopard models motor and controller seemed like a good bet. It looks the same size as the units used by friends at my model boat club. Plugging everything together, the propeller went round fast and not too noisily. I know that noise equals inefficient drive so a quiet drive means a powerful, one doesn't it?

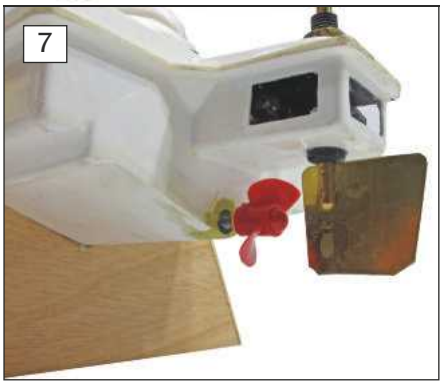
Not knowing how much current the motor would require for a reasonable run, I worked out that a six C-Cell pack was the largest battery that would fit. A removable plastic box **(Photo 5)** held the cells in place on the model's centreline and bathtub testing showed the weight distribution to be about right. You can't properly test a model like this in the bath though, so off to the lake.

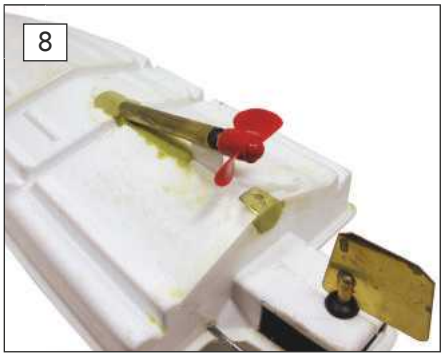
Early trials with the boat at speed, when I say 'speed', I am talking about very pedestrian progress, was not what I was hoping for at all. Watching the model, the back end dipped down as soon as the boat moved forward and I wondered if the rudder support box was acting as a parachute, filling up with water and holding back progress. With a limited toolkit, Swiss Army Knife and scissors, I made a hole in the back of the box **(Photo 6).** This made a bit of a difference, or at least in my mind it did, so back at the bench, I made a much neater job as seen in **Photo 7.** To be sure, the side of the box was opened up too, if the water was getting stuck in there, I was going to set it free!

On the water, the results were better, but still, I was forced to admit, rubbish. Clever readers will have spotted the problem in the last photo. Aiming to keep things neat and streamlined, the prop shaft came out of the









back of the hull. Tidy, but at a cost of placing the propeller in a hole made in the water by the hull as it moved forward.

The solution was to take everything out of the hull and have another go. **Photo 8** shows the revised setup with a propeller that would always be in the water rather than the air. Quite a lot of Milliput filler on the outside of the model was used, and epoxy glue on the inside kept things watertight. Inside **(Photo 9),** the motor moved further forward. Mounting these outrunner brushless beasts is a nuisance since you can't just grab the casing since it has to be free to revolve. I screwed the rear support to a 2mm thick piece of plastic and applied on ever more epoxy to hold this in place.

All this work made a marked improvement but I still wasn't happy with the back box dipping in the drink. My feeling was that is acted as a brake once the model climbed up onto the plane, so it had to go.

Smoothing the stern off took more plastic filler and epoxy. More importantly, I needed a new rudder and concocted this version **(Photo 10)** from brass sheet and tube. As a railway modeller, I'm used to structural soldering and was quite pleased with my results. It certainly looks pretty with very pleasing curves.

Before what I hoped was the final testing, I faced the other development issue this kit threw up; fixing the top down while keeping water out. So far I'd been relying on insulation tape but that wouldn't do for the finished model. Again, there was no indication how the designer intended this would be achieved so I had to experiment.

Photo 11 shows the front of the hatch with a plastic lip to tuck under the deck at the front of the opening. That's not going to come up, at least not without doing significant damage; however I still needed to hold the back down. Neodymium magnets are tiny, super-strong magnets available for next to no money on-line. A 3mm cubed magnet stuffed up the exhaust pipe on the top, aligned with a similar size unit glued under the deck, works nicely. It's important to check the orientation of each magnet as the attraction is much stronger if the poles are properly oriented. Now the boat can be lifted by its top, no water gets in either. Just to be sure though, top and


10


11


12

boat are tied together with a long length of wire so if it does come off during a run, the two would stay together for recovery.

Inside, the C-Cells have been replaced by a much lighter set of six AA cells. This pack tucks under the prop shaft, balances the model and weighs less than half as much.

One final change was to try a brass propeller in place of the plastic version **(Photo 12).** In my mind, brass should work better, but it is a lot less aggressive knocking quite a bit off the top speed, so it's back to plastic.

Picking some colours was yet another challenge. I fancied something vintage, this looks like an old speedboat designed for record breaking, but looking at prototypes nothing jumped out at me as 'right'. I decided to keep things simple with red hull and engine covers sprayed using a Humbrol rattle can and aluminium top applied with an airbrush **(Photo 13).** The exhausts were hand-painted with Gun Metal and the driver painted white; the most popular colour for vintage driver's overalls. It looked a bit plain, so some advertising logos from a Bec vinyl sheet completed the job. Actually, not quite; the finishing touch was a hand painted name. Considering all the trouble this model cause, I decided 'Miss-Chief' would be a suitable moniker.

13

On the water, this is a lovely boat to sail. She's still not what you'd call fast. Most RTR micro boats will run rings around her, but she's swift enough to rise up on the plane and looked good doing it. Manoeuvring is better than expected, although I'll probably stay clear of steering competitions. Sailing lasts quite a long while. Despite the AA batteries, I easily get 25 minutes at full speed out of her and could probably squeeze a bit more. This tells me that I need to look for a slightly more aggressive propeller at some point as I'd rather trade a bit of duration for propulsion, especially on a cold day!

She is really pleasant to sail however. I'm no speed merchant and just enjoy pootling around on the lake dodging in and out of the buoys. It's a great stress reliever as you have to lose yourself in the sailing, but not concentrate too hard. After all the trials and tribulations of the build, I can't complain at this!

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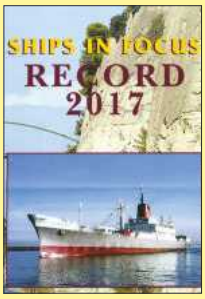

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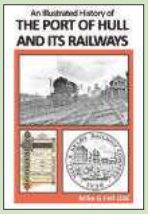

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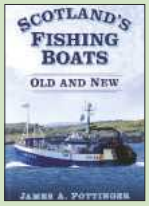

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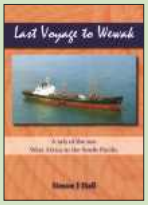

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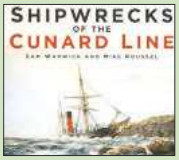

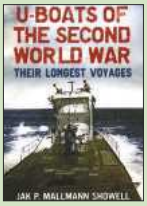

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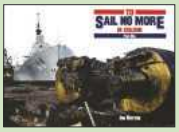

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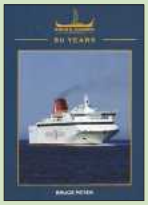

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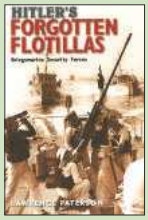

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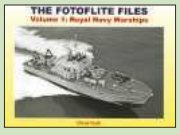

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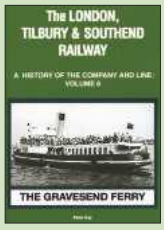

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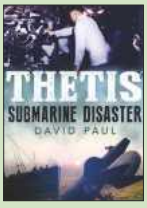

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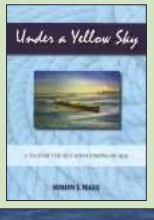

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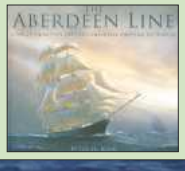


Flotsam & Jetsam

64: Mabuchi Motors

John Parker continues to chart the rise and rise of this successful range

To continue the story of Japanese miniature electric motors in general and Mabuchi in particular from last month's issue, the trade distributor RipMax announced a 'new Super Orbit' range in 1968. They were virtually identical in construction to the original Mabuchi/Super-Q range and had closely similar performance but came in a gold passivated finish with a red end cap. A smaller '005' model was added to the bottom of the range at just 3s/6d (3 shillings and 6 pence) and the '605' was dropped but two larger motors were added at the top end, the Super Orbit 705 and Super Orbit 805.

Johnson Super Orbits

These motors were not made by Mabuchi, but by the Johnson Electrical Industries (JEI) Company, founded in Hong Kong in 1959. To the best of my knowledge they (the cheaper models at least) were close copies of Mabuchi motors made without the blessing of Mabuchi, and were able to sell at a lower price due to preferential tariff arrangements. This was the prompt for Mabuchi to establish factories in other Asian countries where the cost of labour was cheaper in order to compete. The Johnson/Super Orbit motors, despite RipMax labelling the basic range '005' to '505' in a continuation of the previous Mabuchi/Orbit nomenclature, were known as the '120' to '170' to Johnson, as indicated by a stamp on their base plates. They were also sold by Keil Kraft, but under their original designation of Johnson 120 to Johnson 170, and in other markets such as Australia had their own Johnson 120 – 170 branded boxes.

Other Mabuchi products

In the late 1960s Mabuchi were making a couple of inexpensive model outboards, the OB-300 and OB-500. The small OB-300 had its 1.5-3 volt motor built integrally with the housing, whereas the larger OB-500 used what appears to be a standard blue-case Mabuchi 35 motor rated at 3-4.5 volts. Both were of moulded plastic and quite attractive in appearance, but had spring flex drives working through a 90-degree angle that soon suffered from wind-up and corrosion. Their performance was sedate, but they cost only one third to one half as much as a German model outboard.

To stay ahead of the game, Mabuchi released an improved range of model motors as depicted here in a later advertisement (Image 2). Now five models made up the range, from the RE-14 at 58p to the RS-54K at £3.13, plus the seldom seen Mabuchi Baby at 30p (1973 prices). The motors now had a fully-round body (hence the 'R' designation) with a gold passivated finish, end mounted brush gear and a mounting base retained by a small screw into the nylon end cap. I had a RE-56 in 1970 that powered a scratch-built model submarine. It was overloaded turning the 38mm three-bladed propeller in direct drive, but continued to work well until its brushes (non-replaceable, alas) gave up after about two hours of running.

The RE-14 motor was chosen to go into another Mabuchi model boat product, the S-1 Underwater Power Unit or Submarine Motor announced in 1967. A self-contained propulsion pod, the S-1 was powered by a single AA pencell and could be mounted to any floating toy via its suction cap to instantly turn it into a powered model boat whose course could be set by the rudder. The S-1 caused quite a sensation when it was released. I can vouch that it worked, and continued to work well, for I had one at the time. Even in a swimming pool its motor and contacts (you rotated the case to turn it on) remained dry and rust-free; speed dropped off as the battery wore down, but it continued to run for ages with a near-

BELOW: Super Orbit advertisement, March 1968

LEFT: Johnson motors from 120 (Super Orbit 005) to 170 (Super Orbit 505)

RIGHT: Mabuchi OB300 and OB500 outboard motors

LEFT: The new Mabuchi motor range

BELOW: Mabuchi S-1 Submarine Motor

flat battery. It is still being made today as a Tamiya product.

Mabuchi also made power units for electric flight in the pioneering days of this technology. The AP-35 used a geared Mabuchi 35 motor and came with a metal battery holder; the later A-1 of the 1970s used an RE series motor in a plastic housing that incorporated two small rapid-charge nickel-cadmium cells.

New markets opened up as Mabuchi began to make motors for audio equipment (cassette and tape decks), automotive applications (automated mirrors and window winders), household appliances and tools. A selective line-up of motors from the 1970's applicable to modelling is shown in one of the photos. The RE- motors now had improved brush gear and a neat mounting base that simply clicked on (with supplementary screws in the case of the RE-280). In Japan, these came with an amusingly illustrated leaflet describing motor care. The other two motors shown in this line-up, the RS-380 and RS-540, were to have a profound effect on modelling and indeed on the world in general.

Produced by the million

The by-now standard Mabuchi construction of a deep-drawn case with curved ferrite magnets, reliable

BELOW: Left to right, the RE140 (standing in for RE14), RE260 (standing in for RE26), RE36, RE56 and RS54K

ABOVE: Motor line-up from the 1970s on for the domestic market

LEFT: Kenichi Mabuchi, founder of the Mabuchi Motor Company Limited

RIGHT: Don't hurt the little guy! Leaflet found enclosed with motor

armature and rugged brush gear, was economical to make and capable of high performance. This made the motors perfectly placed to provide the motive power for the dawning age of cordless appliances made possible by the rapid-charge nickel-cadmium battery – power tools, compressors, screwdrivers, vacuum cleaners, garden tools and so on. Production by the million kept the price low and enabled them, however differently badged or fitted with aftermarket tuning modifications as they might be, to be incorporated into every conceivable type of radio controlled model such as racing cars, off-road vehicles, tanks, electric aircraft and fast electric and scale model boats.

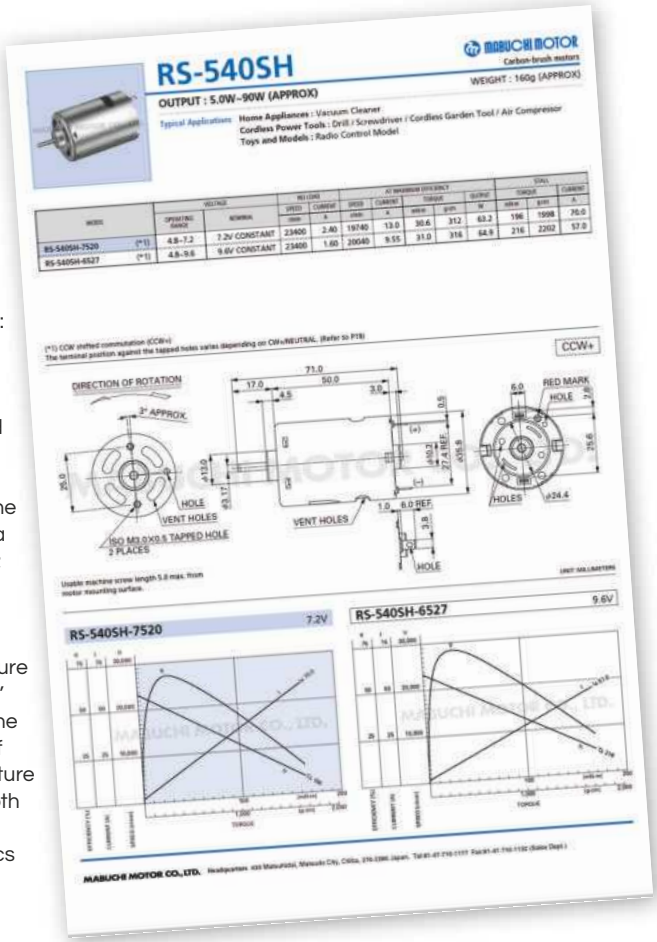
In 2012, the Mabuchi Motor Company Limited made its 40 billionth motor. They employ over 25,000 people and according to Wikipedia hold 70% of the world's market for small motors; a far cry from when Kenichi Mabuchi, the late founder, gathered his eight employees around him in 1946 to discuss what products they should make. In an episode recalled by his biographer, he was burned by an explosion when he attempted to run a model boat on petrol instead of the alcohol it was intended for. It is tempting to think that the experience influenced his choice of product, electric motors!

Website

The Mabuchi website is well worth a visit, both for specific product information and general explanation about motor operation. Some basic concepts are discussed at: https://www.mabuchi-motor.com/product/knowledge/ with motor classification explained at: https://product.mabuchi-motor.com/search.html?method=4

A data sheet for the ubiquitous RS-540 is reproduced here and it is worth noting that a lot can be learned from the full part number. Take for example the RS-540SH-7520. 'R' designates a round motor; 'S' carbon brushes; '5' is a code for the armature diameter; '4' a code for the housing length; '0' denotes a 3-pole armature (a 5-pole armature would have a 5 designation); 'SH' anisotropic magnets and 7520 the winding specification, 20 turns of 0.75mm diameter wire per armature slot. Thus two motors that are both nominally of the "540" type may have very different characteristics depending on their winding specification and construction.

BELOW: Data sheet for the RS540 motor



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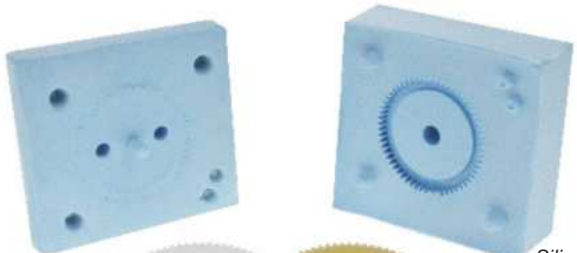

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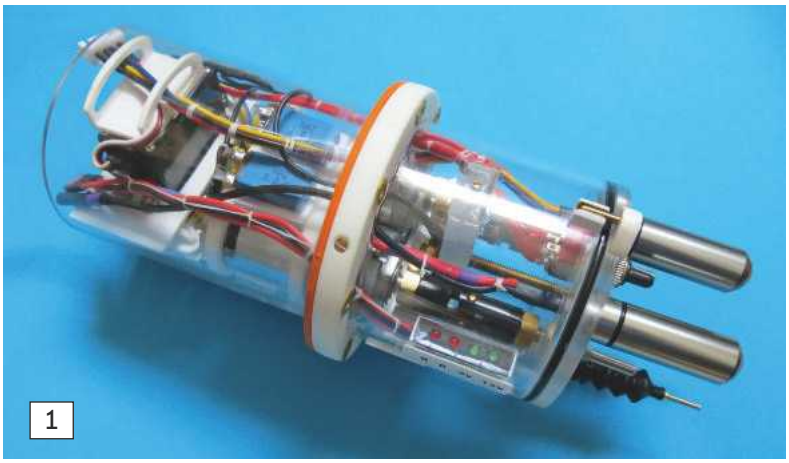
NR-1

Where submarines are concerned, 'mechanics maketh the model' and in this respect you can't be too thorough or careful, as **Roger Suitters** displays in the fabrication of the drive motor module and the final fitting-out of his scratch-build nuclear research sub

With the ballast tank, air tank and water pump assemblies complete and operational (see June issue) my attention turned to the drive motor compartment housed at the stern. **Photo 1** shows the unit in its entirety, the whole housed within a 3 inch dia. tube complete an acrylic 8mm thick end cap that was turned on a lathe and shaped to take an O-ring as before. The acrylic tube itself has been angled on the inner edge of the circumference to ensure that the O-ring properly locates. Complex thought it may look, the process of creating this was actually quite simple in that a cast Alumilite disc was fixed to a brass shaft, put on a lathe and its outer edge turned to the required angle. Fine emery cloth was then glued to this angled disc face and the disc placed in a hand-held electric drill. The rotating disc was then offered to the acrylic tube's end, and slowly (very slowly!) the desired angle was lapped in place. The alternative of trying to put a bevel on a fragile (at the best of times) acrylic tube in a lathe, whilst using machine tools, means that it will almost certainly shatter.

The main drive motors are standard 385 brushed types, with which we are all familiar, each having a 5:1 reduction gear ratio, and wired in parallel **(Photo 2).** Secured on top of each motor is an auto reset circuit-breaker to guard against the propeller become tangled in weed. The motor support plate, meanwhile, is of styrene (plastic) card. To get the correct mid-point height of the motors, the acrylic tube end was placed on a sheet of paper and a line drawn round the outer edge of it to obtain a circle. This circle was then cut out and folded in half to give the motor shaft heights. With this, two small cones were made and placed on the shaft of each motor **(Photo 3),** their pointed ends towards the end cap. The paper template could now be offered to the acrylic tube in lieu of the end cap and the motor support plate trimmed in width to obtain its correct height in accordance with the paper template, taking into account the silicone pads fitted between it and the tube's inner face. Power was then gently applied to the motors and as their shafts turned two marks were left on the paper. Placing this marked paper template on the motor housing end cap accurately indicated where it had to be drilled for the propshaft tube outlets.

Universal joints were fitted to the propshafts and then two locating blocks, complete with their silicone pads, were fitted towards the stern to correctly position the plate. An additional long silicone pad is positioned at the other end of the support plate, helping to dampen any vibration and noise. Behind the motor support plate, is an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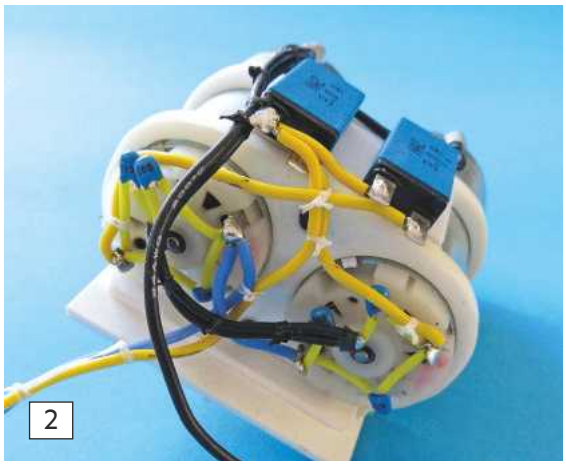
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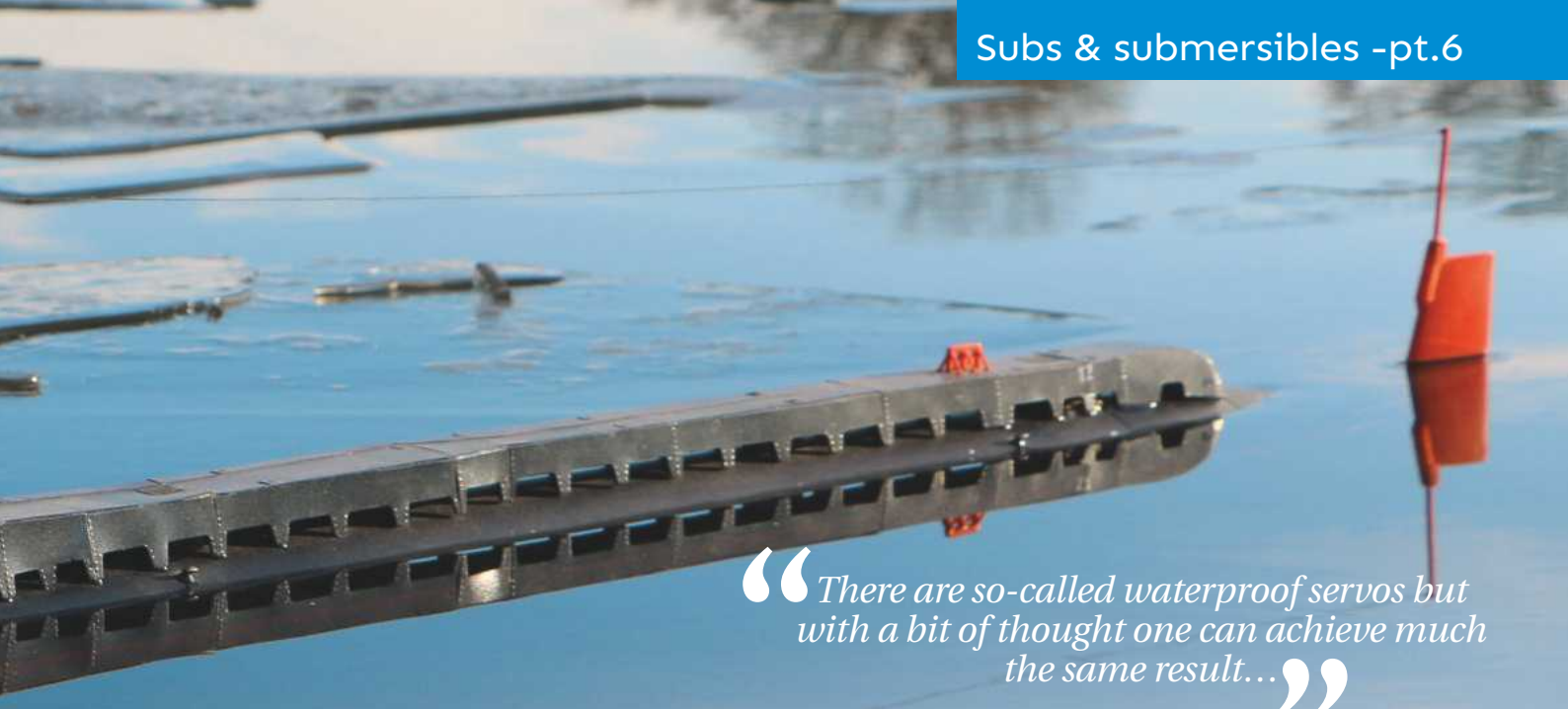

"There are so-called waterproof servos but with a bit of thought one can achieve much the same result…"

inverted servo to control the rudder. This is secured by two small screws on its underside, after the acrylic tube was reinforced with glass fibre to prevent splitting. Slid on to the servo is a styrene (plastic) card bridge which secures it and locks the motor plate in place. Linkages lead from the servo to the rudder via bellows, beneath the motor support plate.

To secure the end cap, a large acrylic oblong block was made which was drilled in its centre and tapped 2BA. A matching stud was placed in the lathe chuck and the block screwed onto the stud and rotated until the diameter met with that of the inner wall face of the acrylic tube. This block, including the stud was then glued and screwed inside the acrylic tube. The end-cap with its centre hole could then be easily placed over the threaded stud and secured with a nut and sealing O-ring.

With the end cap loosely fitted, it was rotated until the two propeller shafts became level with each other, at which point a keyway was made and fitted. This ensures that when the cap is removed and later replaced, everything always aligns correctly, and in all directions. Once aligned, holes were drilled, and more of the previously mentioned 'F' connectors fitted to the outer wall of the end-cap. Inside these, silicone tubes filled with grease were fitted, enabling a watertight seal for the propshafts.

You'll notice a small unit attached to the acrylic tube's inner wall which houses some LEDs, one indicating that the 5 volt circuit is in operation and the other indicating 12 volts. Both of these LEDs are green and, in case you were wondering, the two red ones are not in use at present. I'll think of something for them in due course! You'll also see that a switch has been fitted to the end cap with a waterproof cover on the outside. Either side of this switch are two, tubular, waterproof containers, exposed once the outer hull section is unscrewed. Unscrewing one of these reveals the electrical charging point for the LiPo battery whilst the other gives access to the LiPo balancing plug. All the wiring is silicone covered wherever possible, and the servo cables are identified with a white letter, for example 'A' connecting to 'A', all very much in military style KIS (Keep It Simple) style. Bullet connectors are gold plated and also colour-coded with the main battery which has a Deans (HCT) connector. The entire drive motor section slide-fits inside the outer hull and, if you've a mind to study it, **Figure 1** is the wiring diagram.

Fitting the bow battery section completes the watertight modules. The bow battery compartment is also a 75mm (3 inch) diameter acrylic tube, once again with Alumilite resin shapes cast and glued to its inner wall holding the 11.1V (3S) lithium drive battery in place. A bracket locks this in place, secured by two brass screws. Either side of the battery, attached to the acrylic tube's wall, is a small styrene bracket holding a circuit supplying 5V to the various systems in the submarine and an auto-levelling circuit. On top of the battery is a fail-safe circuit so that immediately activates the pump and servo-operated valve to bring the model to the surface in the event of signal loss or low LiPo voltage. Fitted to the outside of the end cap, is the receiver and its housing **(Photo 4).**

Bath time

This was the moment of truth! Would it, or would it not? A dip in the domestic bath was called for and, sure enough, when powered-up the 130dB alarm sounded, which meant that there was a leak somewhere, and most likely in one of the seals. Not 100% unexpected and even modern full-size submarines have their teething problems as we know, however all was resolved after a bit of fiddling around.

Auto-levelling

Model submarines should ideally have an auto-levelling system. In many ways, their principle of operation is a bit like cruise control on a car, that device maintaining a steady speed until the driver overrides it using the brake or accelerator. Likewise, an auto-levelling device keeps the sub level but if its

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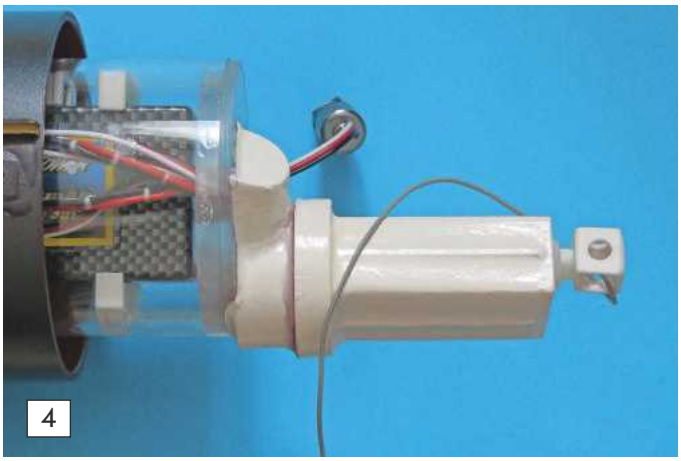

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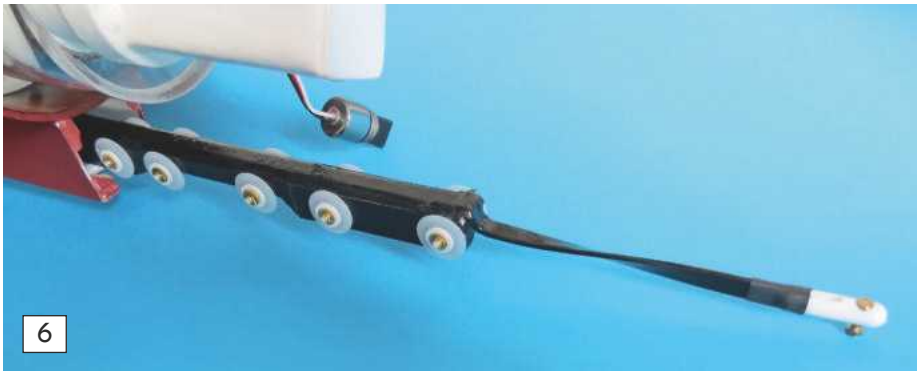
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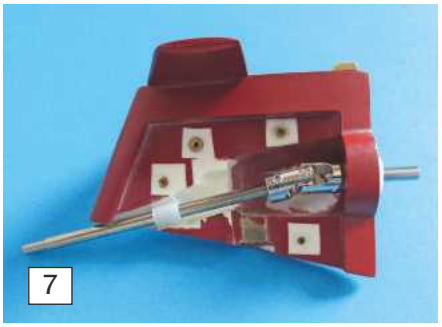
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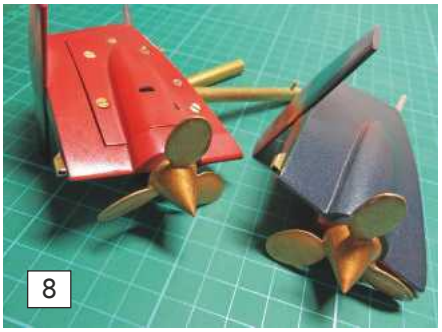
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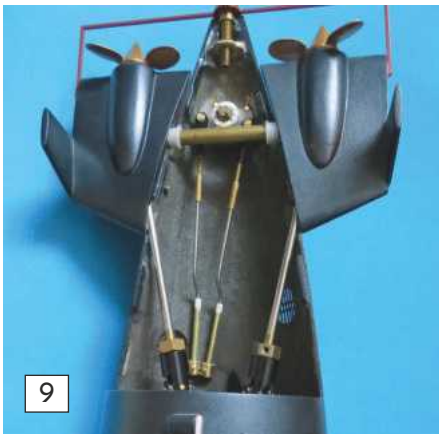
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operator chooses to use the control stick on the transmitter to drive the model down, or up, this immediately overrides the system. Now, to physically control the auto-levelling system of the NR-1, one servo had to be outside the sealed dive module and, therefore, needed to be waterproof. There are so-called waterproof servos but with a bit of thought one can achieve much the same result and perhaps even better? My servo was made waterproof by gluing strips of styrene card either side of it and around / over the servo joints, then running a substantial amount of glue everywhere between them all. Meanwhile, the servo horn was removed to allow the fitting of an O-ring beneath, it being coated with a waterproof grease before reassembly. Finally, a heavy-duty bracket was made to secure the unit **(Photo 5).**

An auto-levelling circuit normally operates the hydroplanes however the NR-1 does not have rear hydroplanes but instead has stabilizers housing the turbines to drive the propellers. From a model submarine point of view, having a drive shaft and propeller incorporated within a stabiliser is not conducive to the auto-levelling function which means the stabilisers could not easily be configured as moving hydroplanes. The novel and perhaps unusual solution was to incorporate a 2.5lb (total) lead weight, within the keel tube, which is on wheels so that it can run freely back and forth as a sort of weight train **(Photo 6).** The auto-levelling device is connected to the 'exposed' servo which moves this weight back and forth keeping the submarine level. The servo is easily able to move the weight (even at a 35 degree angle to the horizontal) with little no problem at all. Does it work? Yes, is the answer and, in fact, there's nothing new in this concept for it's used on certain small full-size submersibles. Those who read the earlier parts of this series will know that the original intention was to hide the drive batteries in the keel within a sealed tube, however the enforced three-year non-building time provided plenty opportunity to think about it all, and this modification was the result.

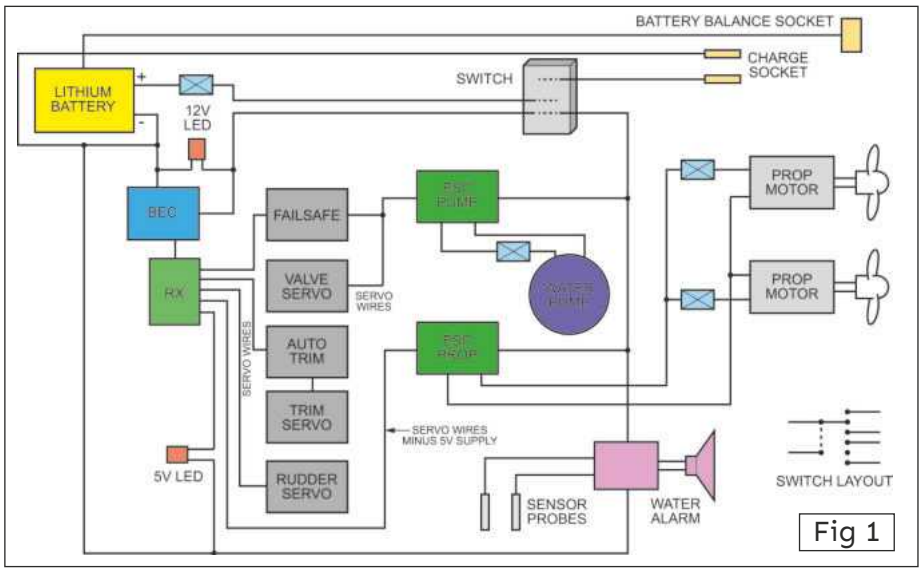
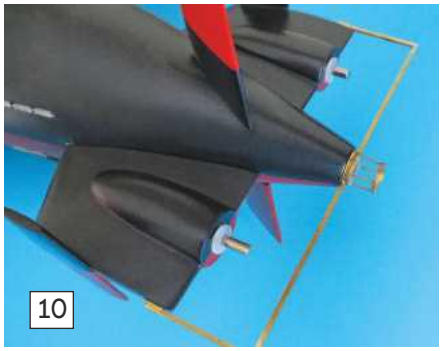


Fig 1

Join me for the final part of this series when we'll get the NR-1 out on the water and, more importantly, under it.



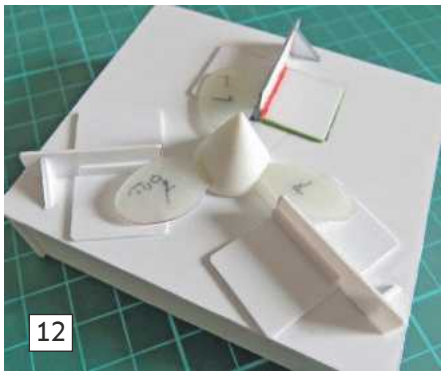
Propulsion

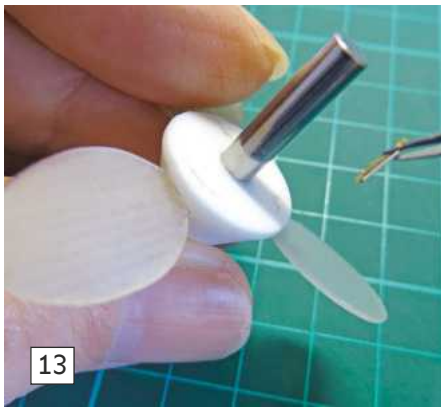
The two 385 drive motors sit within the sealed stern module as already described. On the outside of its end cap a set of universal joints have been fitted to overcome the connecting angles required. With the upper stabiliser offered up to the hull, another smaller universal joint was fitted and pencil lines drawn on the inner surface to display the shaft angles etc. This marked area was then filed away to accommodate the shaft within the stabiliser **(Photo 7),** the front of the stabiliser being to the left of this picture. Nylon bearings were made on the lathe, these being a good fit on the shafts, but a loose interference fit in the stabilisers, the idea being that they would then find their own best positions with car body filler packing them out as necessary. Next, a template was made of this shape enabling it to be transferred to the other stabiliser sections for equal removal on each. **Photo 8** is of the two stabilisers, looking at each side and **Photo 9 i**s the drive layout complete, looking down from above. Note, in this last picture, the control linkages to the rudder post, positioned just above the cross tube for the stabilisers. **Photo 10** is the same but with the stern top cover in place. Note the nylon outer bearings on the

propshafts. The two halves of the rudder, top and bottom, have their shafts connected by a sliding keyway which means that they're not permanently joined to one another. If they were the two halves of this stern section could never be separated for maintenance purposes. Photo 10 also shows the propeller guard that is fabricated from brass strip and rod, plus, of course, the stern light guard. I must reiterate that the stabilisers do not actually move on this model, since the motor to propeller linkages prevent it.

Propellers

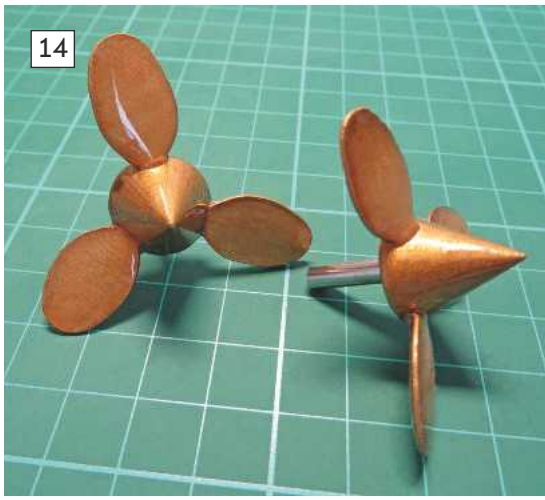
Having got this far, and having made everything else, not to make the propellers would have been lazy. As with most things in our hobby, and with a bit of thought, these actually become quite easy, once broken-down to individual components. Each propeller is built on a stainless-steel shaft with flats ground on it to grip an Alumilite resin cast cone on the end. The cone was made by casting a tubular block of this resin onto the end of each shaft and then turning it in a lathe to get the cone shape. It's quite easy to set-up a shaft vertically, put a false platform around it with a tube around the exposed shaft and fill this with casting resin. Remove the tube and false platform and the lathe will do the rest, but whilst still in the chuck, three marks at 120 degrees to each other were transferred to the propeller boss for the propeller blade positions. Preparing the holes for the blades to be inserted required much care, a jig ensuing these were all cut at the correct pitch angle. Next, a single propeller blade was shaped from black styrene card and photocopied 6 (and more to be on the safe side) times. These shapes were cut to size and glued to thin sheets of industrial glass fibre **(Photo 11),** one or two spares being included. The shapes were cut to size with a fine saw, sandwiched together, secured, and filed as one to exact matching size. Their tabs were then inserted into the slots on the propeller bosses, the jig for cutting the pitch angles being resurrected to ensure they were all the same angle **(Photo 12)** and then tack-glued with a drop of cyano. Having checked that each propeller looked good, epoxy adhesive was used to fill and reinforce each blade to boss joint, these being doubly secured with a small brass pin from the rear





(Photo 13). To achieve a nice aerodynamic shape to each blade, which was a bit tedious as the job had to be done 12 times, each was coated on both faces with a very small (and identical) amount of epoxy adhesive, to create the convex meniscus. The difficulty was that each blade had to be held perfectly horizontal for this to work without the meniscus occurring towards one edge or another and yes, once again some experimentation was needed. Anyway, the final result shown in **Photo 14.**

And that marks the end of a build that I can only describe as challenging, at times frustrating, massively rewarding, long, baffling, and sometimes tedious. Par for the course where scratch-building a submarine is concerned. Which leaves us with an impending launch. See you next time...



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The Endeavour

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Next month in model Boats

Continuing to build on a diverse range of subjects in Model Boats next month's issue continues in the same vein. As well as the usual news and reviews, we will be treated to a feature about brushless ESCs, an exquisite model of the Shell Welder and a show report by the new editor on the big Model Boat Mayhem Show. Fraser Gray continues the Gallery with a walk-around of the fisheries research vessel Endeavour and Roger Suitters concludes his excellent series on the novel NR-1 submarine; an inspiring project for us all. There will also be the whiff of steam, tranquillity of sail and the buzz of electric.....not to be missed!

Readers' models the Shell Welder

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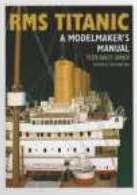

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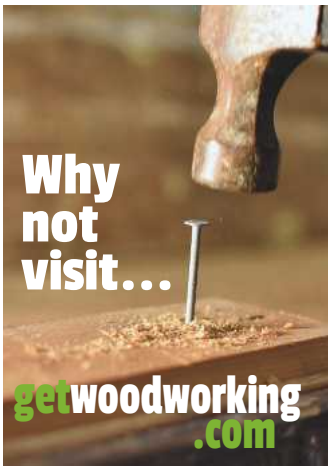

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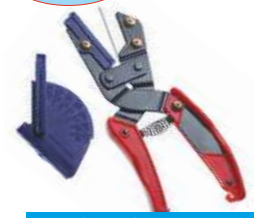
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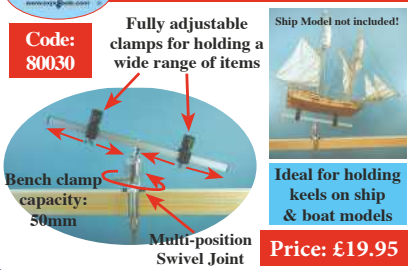

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Camera: Canon EOS Rebel T6
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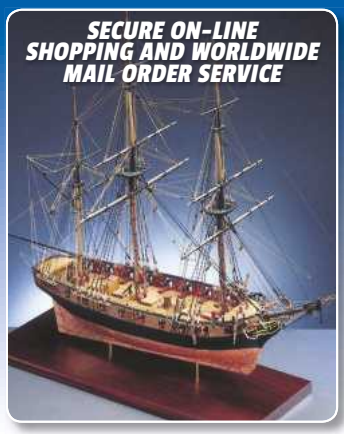
Photographer: Romi Iga



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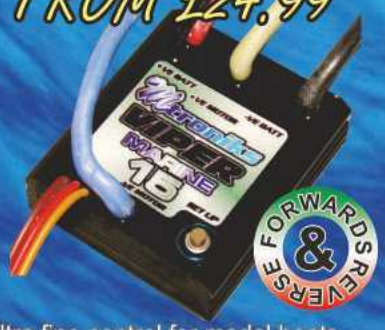

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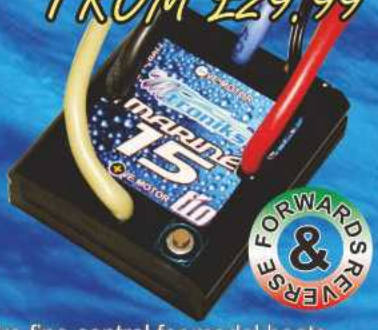

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