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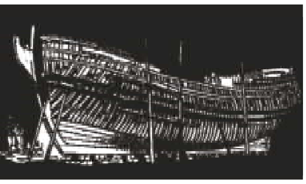

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Blackpool

Model Boat Show

21st - 22nd October 2017

Norbreck Castle Hotel Blackpool

Building on the success of 2016, we have managed to add even more exhibitors & traders to make the show even more varied & interesting

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Sun 10:00am - 3:00pm

For more information go to:
www.blackpoolmodelshow.co.uk
or call: 01248 719353

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contents

Regular Features

Bow piece

This 84 page issue includes two major feature articles. The first is for Brenda, a fine model built by Colin Bishop of a classic fishery protection vessel. The model was started in 1992 and then other interests impinged on his model making, before circumstances changed and work properly recommenced a couple of years ago. The second featured model is S. S. Mullogh, and this month we have Part One (of six) by Phil' Button for his unique steam and sail propelled model. He will be describing in depth the problems that arose along the way and the means used to overcome them.

Bob the Duck is very different and we welcome Eric Morse-Brown who has successfully converted a plastic duck into a functioning and realistic version, the novel feature being that it actually paddles to move around the water.

Gareth Jones has a comprehensive report from the CADMA organised Doncaster model boat show, an event that is always popular in that part of the UK. Colin Bishop was on hand at Portsmouth when HMS Queen Elizabeth arrived, and he has supplied some super pictures for a Gallery, plus we also have the usual regulars and so I hope there is something here for all our readers.

***Paul Freshney** - Editor*

Special Features

Compass 360

Model Boats notice board for your news

Editorial Contact - **Paul Freshney**

You can reach the Editor, Paul Freshney, on 01277 849927. The editorial postal address is: Model Boats, PO Box 9890, Brentwood, CM14 9EF.

The email is editor@modelboats.co.uk

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2017 Blackpool Model Show

This will be taking place over the weekend of the **21st and 22nd October 2017** once again at the Norbreck Castle Hotel in Blackpool. The event is sponsored and organised by the Component Shop, together with support from some well-known model makers. For 2017 it will be building on the success of 2016 and adding more to the event with the aim of making it one of the most interesting and varied shows on the calendar. Doors open at 1000hrs on each day.
More information can be found at: www.blackpoolmodelshow.co.uk

International Model Boat Show

A final reminder that this being held once again during the three days from **Friday 10th to Sunday 12th November** inclusive at the Warwickshire Exhibition Centre. The event will now include a Tamiya Truckin' display arena with some new exhibitors and interests. Address is: The Fosse, Fosse Way, Radford Semele, Leamington Spa, Warwickshire, CV31 1XN.
Further information from: iTel: 01926 614101
Website: www.modelboatshow.co.uk.

Varmint RG65 Feature in September MB

Ian Bell recently wrote to the Editorial Office and has suggested that for those readers who may not be too keen about casting their own lead keel, that there is an inexpensive solution. PJ Sails advertise an RG65 keel bulb, precast for £18. It is listed as weighing 485g, which is in the middle of the Varmint's range, and comes with a slot already milled in and ready to fix to the fin. Website: www.pjsails.co.uk

Vintage Model Yacht Group (VMYG)

The Summer 2017 Edition of 'The Turning Pole', this group's journal and newsletter recently arrived in the Editorial Office. This organisation is, as its name suggests, devoted to vintage models and yachts in particular and has a full programme of events planned for late-2017 and 2018. Membership fee is £20 per annum, and for that the members have access to huge amount of data concerning vintage yachts and the opportunity to discuss their restoration projects with more than 165 like-minded enthusiasts. One of the nice touches is that this journal includes a welcome page, listing its new members and how existing members can get in touch with them. Secretary is: Alistair Roach, tel: 01749 831552. VMYG website: www.vmyg.org.uk

Coalville Model Boat Show 2018

According to various model boating forum reports which appeared in early-September, this event that is usually held in the Spring of each year in Leicestershire, will sadly not be taking place in 2018.
***Paul Freshney** – Editor*

The Historic Dockyard Chatham

This update was recently received from Olivia Horner: No.1 Smithery houses ship models from the National Maritime and Imperial War Museum and with over 3000 items it is one of the finest collections in the world. The store holds many types of model in state-of-the-art storage and study conditions. Readers can see highlights from this fantastic collection, hear more about them, and find out how their storage plays an important part in their preservation and making them accessible. You can combine a tour of the ship models with a visit to The Historic Dockyard Chatham. To arrange a visit, either individual or group, to see all these models, please contact:
Olivia Horner, Groups & Hospitality Sales Manager, Chatham Historic Dockyard Trust
The Sail & Colour Loft, The Historic Dockyard Chatham, Kent, ME4 4TE.
Direct tel: 01634 823815

Personal message from the Editor

All things come to an end as they say and apart from the MB Winter Special which is on sale towards the end of October, this is the last regular magazine that will have my name on it. I was 65 in September and had already decided at the beginning of this year that I would retire from full-time work by 31st October.

I have been Editor of Model Boats since mid-2007 and only intended to stay for five years, having already retired twice from other jobs, but as they say 'the company made me an offer I could not refuse' a few years' ago, and so have remained in post longer than anticipated.

In the last ten years I have been ably supported by Colin Bishop looking after the website and its associated forum, and have had two designers working on this magazine. The first was Richard Dyer who is still with the company, but now works part-time on Military Modelling, and more recently Steve Stoner, who also designs Model Collector. Both are very clever and meticulous designers, and that perhaps is why this magazine has done so well over the years, it now being the only UK produced model boating magazine. A big 'Thank You' to these three guys for their support and behind the scenes work.

As for me? I have never not worked since leaving school and never been unemployed, and when changing jobs have gone from one on a Friday and started the new on the following Monday. My wife has now been retired for five years, so I think I can safely say we have done our bit. It is not quite all over yet, as I am remaining on the payroll after the 31st October for a few more months in a part-time consultancy role within the company, supporting it and my successor where necessary.

The new Editor of Model Boats will be responsible for getting the December issue of Model Boats to press on time in mid-November, which I am sure he will do, as although best known for his aeromodelling skills, prior to that he was (and still is) an enthusiastic model boat builder and perhaps equally important, understands the vagaries of the publishing world. The new Editor is Graham Ashby, perhaps better known to some of you as the previous editor of RCM&E, before he handed over that magazine title to his brother a couple of years ago when going to work for J.D. Perkins.

Thank you all for your support over the years with this magazine now approaching its 68th year of publication. Other model boating magazines have come and gone, but we have always been the most popular title and that is perhaps very much due to the expertise of the magazine's skilled contributors, many of whom were onboard in 2007 and still are today, and so a big 'Thank You' to all of them as well. I won't name them all here, as I would probably forget someone, but I think you know who they are from the Contents Pages of this and previous issues.

I wish you all well and thank you for your support and kind words from time to time, and no doubt will meet some of you at model boating events in and around the UK in the forthcoming years. ***Paul Freshney***
Editor of Model Boats, 2007 to 2017.

Deans Marine Open Days September 2017

Paul Freshney reports from Farcet, Lincolnshire

Ron Dean has for some years now opened his factory in Lincolnshire at least twice a year to the public and model boat enthusiasts for a long weekend. There is no entry fee, but a donation box is strategically positioned. On the Friday and Saturday nights there is usually a BBQ, and refreshments are available during the weekend.

Deans Marine facilities include a small pond, deep enough for submarines, a dedicated shop selling pretty much all that model boaters could want, the aforementioned café and space for clubs and other supporting traders to display their models and wares. This is a relaxed weekend, with no specific running format and all are welcome.

I went on the Saturday with John Elliott, and we were pleased to see that apart from Ron's showrooms and manufacturing facility, a number of other traders were on site. These included Mobile Marine Models, Linkspan Models and Mike Allsop (for flags and ensigns), plus one or two others. These traders all complimented Deans Marine's own offerings very nicely. In addition, some local clubs supported the event including, not unsurprisingly, Peterborough and District MBC.

Right: Mobile Marine Models supported the weekend.

Below: Scale Flags and Ensigns is run by Mike Allsop – a vital service for our model projects.

It was also nice to meet some notable Mayhem Forum regular users, including 'raflaunches', aka Nick Brown (and his father) and 'Klunk', aka Pete' Cameron who is secretary of the Luton and District MBC.

This is a relaxed weekend, with some enthusiasts camping for the duration and it is well worth gong to if you are within practical travelling distance of Deans Marine who are based at Farcet, Nr. Peterborough. Please see their advertisements in this magazine for regular updates as to their future plans.

Left: John Elliott's review model of the Deans Marine 25ft Motor Boat previously featured in this magazine.

Right: This Admiralty Train Ferry is still work in progress by Nick Brown's father. A super and highly unusual scratch built model.

Below: One of Deans Marine 1:96 warship kits, well finished by a visitor from Belgium.

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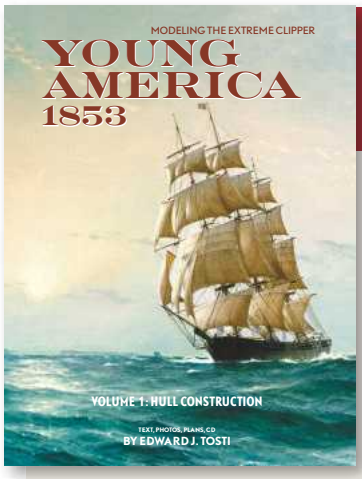

VOLUME 1: Hull Construction

FEATURES

- Large 9"x12" format
- Hard cover with Dust Jacket
- 267 pages
- CD
- 8 sheets of plans in four colors

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$20 Canada
$30 all other locations

Modeling The Extreme Clipper YOUNG AMERICA 1853

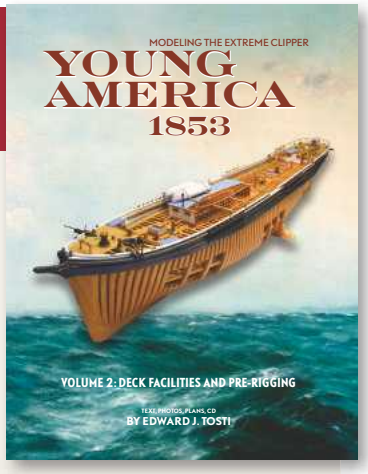
Text, plans and CD by Edward Tosti

THE GOLDEN AGE of the clipper ship produced some of the most beautiful, fast and sturdy sailing ships known to man. People marveled at the majesty of these ships under full sail, being driven to the maximum by their captains.

Ed Tosti, author of the series on the Naiad Frigate, is in the process of modeling one of these ships with exquisite detail in 1:72 scale. His plank-on-frame model is, as an extra bonus, accompanied by instructions on building a 1:96 plank-on-bulkhead model.

Book one will cover building the hull. Book two, will cover finishing the main deck along with masting and rigging her. Book three will be on masting and rigging the model and will follow in 2018-19.

Ed goes into great detail on the materials, tools and techniques. His text is accompanied by hundreds of photos. Every modeler and student of 19th century construction can benefit from this detailed work, and modelers of any century craft can learn from Ed's methods of construction. This is truly a master class in ship modeling. Even if you do not build the model, Ed's jigs, tools and techniques are not to be missed.



VOLUME 2: Deck Fittings and Pre Rigging

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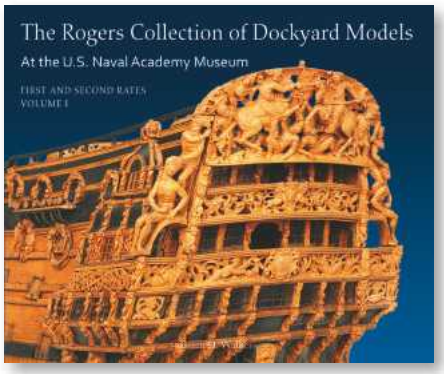
The Rogers Collection of Dockyard Models at the U.S. Naval Academy Museum

Volume I, First and Second Rates

Grant Walker



FEATURES

- 242 pages
- Hard cover
- Dust Jacket
- 11¾" x 10"

VOLUME ONE COVERS the First and Second Rates in the collection. Grant presents an in-depth examination of each model in these classes. Future volumes will cover the rest of the collection.

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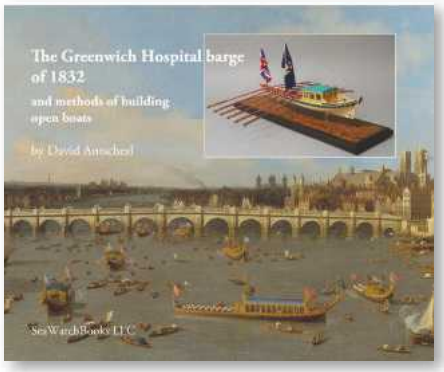
The Greenwich Hospital Barge of 1832

New from David Antscherl, author of the Swan Series



FEATURES

- 86 pages
- Hard cover
- Dust Jacket
- 11"x 8.5"
- 2 sheets plans

THIS BOOK DESCRIBES the step-by-step construction of the scale model of a ceremonial Thames barge, built clinker fashion. It also describes how to construct scale models of carvel-built open boats.

It has been many years since the last book on this subject was published and will fill a need for anyone faced with the challenge of miniature boat-building.

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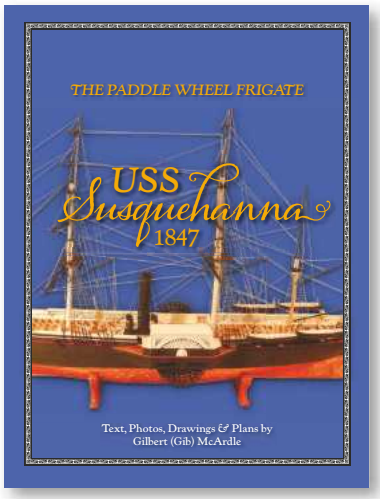
BE SURE TO CHECK THE WEBSITE FOR MORE TITLES AND SALE SPECIALS!

The Paddle Wheel Frigate *USS SUSQUEHANNA*

Introducing Gilbert (Gib) McArdle's superb model

USS SUSQUEHANNA was one of the great transition warships of the early 19th century. Using sail and steam, she had full career in the navy. She served as Admiral Matthew Perry's flagship on his historical trip to Japan and as part of the blockade fleet during the Civil War.

While Gib has built his model using the plank on frame method, it could also be built using plank on bulkhead, or with lifts for a solid hull. Plans for all of the frames are provided along with a full set of templates for a plank on bulkhead build. The ship is fully rigged and makes a beautiful model at 1:96.



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Text by Ab Hoving, plans by Cor Emke, models by Herbert Tomesen, photos by Emiel Hoving

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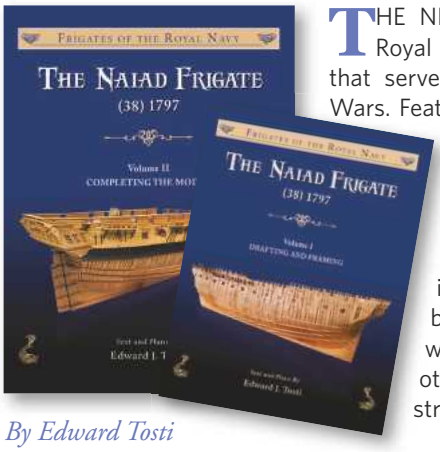
THIS BOOK profiling ten different merchant ships from large to small and the accompanying "Plans Portfolio" of 24 sheets, in both ¼ and ⅛ scale, has something for every modeler. Pick your favorite building method, the size and complexity of the ship you want to build, and you are ready to cut wood. Besides being a treasure trove for ship modelers, this work helps document the merchant ships of one of the world's greatest sailing nations.

The color photography in this book is spectacular, and all lovers of ships will find something intriguing.

152 pages, Full color, Case bound, Dust jacket, Large 8.5x11 format, 24 sheets of plans

Frigates of the Royal Navy

THE NAIAD FRIGATE (38) 1797



THE NIAD FRIGATE was a Royal Navy fifth-rate frigate that served in the Napoleonic Wars. Features include descriptions and photos of jigs and building tools for this "keel up" style of building. Volume II deals with interior construction, berth and gun decks, weather decks and all other details of construction.

By Edward Tosti

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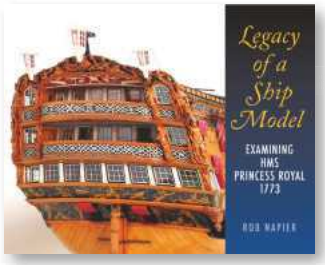

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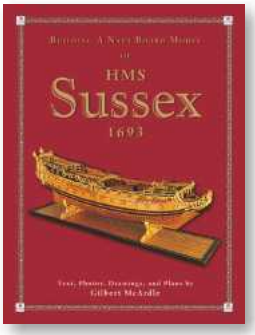

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The Fishery Cruiser Brenda

Colin Bishop describes his long standing project

Why Brenda is probably the first question, and I have to admit that I first fell for this ship in 1992. My previous two modelling projects had been magazine kit reviews of the Tug Imara and the Pilot Vessel Cumbrae from Caldercraft (now part of JoTiKa) and I fancied a return to scratch building, **Photo 1** being the final result. I already had a few possible options in mind, but settled on the Scottish Fishery Protection Cruiser Brenda which was built by Denny of Dumbarton in 1951. The ship had been featured in the October 1977 issue of Model Boats by Phil Thomas who had also produced drawings which were available from the Plans Service. The original Denny plans are held by the National Maritime Museum, but copies of these would have been somewhat more expensive and rather beyond my budget in those days.

What most appealed to me about the vessel was her elegant design with hardly a straight line in her, unlike the severe angles and level decks of modern ships. Of course this would complicate the build, but I thought the result would be worth it and so it has turned out. I wrote to the Fisheries Protection Agency seeking further information and received a very nice reply from the then Marine Superintendent, Captain R. Mill Irving with some useful additional information. Brenda had been his first command and he was very fond of the ship despite her rather outdated design, it being based on the prewar Minna, also built by Denny.

Brenda served until 1982, **Photo 2,** before being sold to private interests for conversion to a yacht, not surprising in view of her graceful lines. During her career she underwent many changes to her external appearance, particularly in regard to equipment carried and in the varying colour schemes applied to her. The original design provided for mounting two guns, one on the forecastle and one on the aft superstructure, presumably to enable the ship to undertake escort duties in time of war, but these were never fitted.

1

2

Photo 1. Brenda took 25 years to build, albeit with long periods of inactivity in the workshop.

Photo 2. Fishery Cruiser Brenda (date unknown).

The model

The original vessel was 189 feet long with a beam of 26 feet and a draft of 8 feet 10 inches. Displacement was 457 tons and at 1:48 scale this gives a length of just over 47 inches and beam of 6.5 inches (7 inches over the rubbing strake). I can only claim that my model is 'near scale' and 'mostly scratch built'. In the first instance the plans are not totally comprehensive and lack certain aspects of detail which cannot be checked from other sources. There were three main hull colour schemes and originally she was overall Medium Admiralty Grey, then had a black hull with 'Fishery Cruiser Blue' upperworks and later an overall Fishery Cruiser Blue which was a sort of duck egg blue.

Personally I did not like the duck egg blue and eventually opted for the initial Admiralty Grey which I think suits the ship better. Equipment changes included differing combinations of ship's boats, masts and rigging, and at some stage an upper navigating position was installed above the wheelhouse which was not shown on my plans and which I found out about later during the build and so decided to stick with the original design in this respect. The ensign staff was originally attached to the after superstructure, but later moved to the taffrail. Other detail had to be interpolated to some extent to remedy omissions or obvious errors on the plans. Some other minor changes in the detail were also made for practical reasons when sailing the model, but it is unlikely that anyone will notice them and I'm not telling!

Brenda is mainly scratch built as although originally intended to be 100% like this when started, the long period spent on the shelf while I did other things meant that some compromise was eventually needed to actually finish the project which entailed using some commercial fittings, the main ones being two lifeboats from Quaycraft, the RIB, some cowl vents and a sprinkling of smaller fittings such as bollards. So, in terms of work, the model is about 97% scratch built by the traditional definition, not that it matters much these days and why has it taken me around 25 years to complete? Well, in 1994 I bought a full size 25ft sailing yacht which proceeded to absorb all my free time for a number of years followed by a smaller craft after taking early retirement 11 years ago or so, which was then kept for three years. Modelling was initially very much on the back burner during this time and when I did give up full-size boating I became involved with this magazine as Website Editor and Forum Manager, plus editing some Special Issues of Model Boats. Although some further work was done on Brenda, including internal fitting out, most of my actual modelling centred on building three kits to support the magazine work.

Two years ago I decided I would make the effort to finish Brenda which had been languishing reproachfully on a shelf in the workshop for most of the time. It took a while to get back into scratch building after such a long break, but like riding a bicycle you never really forget how, and so at long last the model is now complete.

Photo 3. The lower hull is of composite construction.

Photo 4. Main deck fitted and bow section being built up.

Photo 5. Main deck planked, superstructure sides and sub boat deck added.

Photo 6. Hull in primer and bow deck sub-piece is in place ready for planking.

Photo 7. General view of the hull structure.

Basic hull construction

Personally, I prefer traditional building methods and don't much like messing around with GRP, either for moulding or sheathing hulls as it is too smelly and messy for me. Brenda's lower hull comprises a plywood frame largely planked with balsa with the stern section in balsa 'bread and butter' and balsa blocks at the bow – what is generally termed a 'composite construction', **Photos 3 and 4.** The propshaft tubes, made by my late friend Ronnie Lawson, were fitted at this stage. The hull was then covered using the old fashioned method of gum strip paper using Cascamite resin glue solution to wet the gum strip and then, when dry, applying shellac as a sealer. As the gum strip dries it contracts slightly, giving a very smooth base to apply the shellac which then rubs down to a glasslike finish. The gummed strip can conveniently also be used to represent the hull plating using 'in' and 'out' strakes and one can claim the hull is 100% organic!

The lower hull internal void was then decked over in 3mm plywood with appropriate apertures for internal access. The deck edge also doubled as the rubbing strake around the hull. It was necessary at an early stage of construction to decide how the interior of the model would be accessed. I have seen a couple of other models of this ship over the years and both were designed to come apart at main deck level. To me this seemed a bit too close to the waterline for comfort and so decided to make the boat deck lift off instead which gave a much larger margin of watertight freeboard, **Photos 5 and 6.** The main superstructure was therefore constructed of 1.5mm plywood directly on to the lower hull including building up the forecastle with its whaleback sides. The superstructure was then topped with a sub-deck to strengthen the structure, and these photos show the basic construction of the hull and its decks.

The hull and main superstructure was painted using Halford's automotive grey primer with red primer for the underwater portion and black paint for the boot topping. The whole thing was then given several thin coats of Ronseal polyurethane varnish (solvent based, not the acrylic quick dry type), **Photo 7.**

Not being keen on the idea of boring multiple holes for the hull portholes, an alternative method was used, which worked very well, by making soldered brass rings for the porthole rims and then punching out their 'glass' from transparent plastic painted dark blue on the inside which fitted exactly into the rings and was glued in place. The portholes were then simply glued to the side of the hull. Although not technically correct they do look very effective, **Photo 8.** The anchor recesses and hawse holes up to the forecastle area were incorporated when building up the bow section.

Photo 8. The model in 2005 shortly before it was put on the shelf for several years.

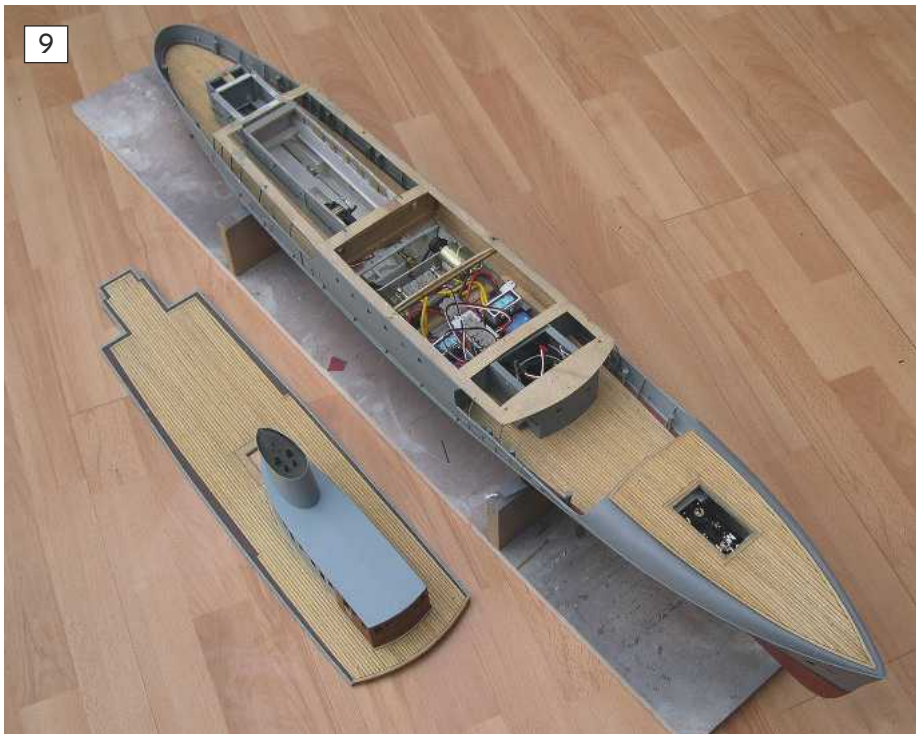


Photo 9. In 2005, Brenda was well advanced with the planked boat deck, upper superstructure and funnel in place and the internal electrics and running gear all functional. The rudder servo is mounted in the rear superstructure while the switches for the radio, main power and lighting are beneath the foredeck gun mounting base.

Decks

Given the chosen method of construction, it was essential to take some care in getting the boat deck right as it carries the upper superstructure, funnel and most of the equipment and fittings. The shape of the hull required a double curvature to take account of both sheer and camber. It would not be possible to make a rigid structure which fitted over a coaming as is the usual modelling practice, as the deck would need to sit on top of the central sub-deck with no more than about a 4mm overlap. Some shape could be given to the deck by planking it in-situ to effectively apply a lamination to lock in the curvature, and the upper superstructure would also give a degree of rigidity. Brass angle was used along the sides of the deck to help follow the sheer line and provide some overlap to the sub-deck. This still resulted in quite a bit of flexibility and so the boat deck needed to be fastened down around its perimeter. To do this, it was placed in position and drilled through into the sub-deck at seven selected locations. 10BA brass nuts were epoxied into the sub-deck and the boat deck is then fastened down by 10BA machine screws which are quite unobtrusive, **Photo 9.** This of course means that one has to undo the seven screws to remove the boat deck and gain access to the interior of the model which makes this all rather impractical at the pondside, but I don't like removing parts of my models anyway when in such a location as that is when you tend to break things, and normally it should be unnecessary to do so anyway. It is still possible to lift off the engine room skylight which is immediately above the inboard end of the propshafts to check for any water ingress and if necessary remove it with a syringe and tube. The model can always be safely opened-up back home for a thorough check later if needed.

Brenda was fitted with planked decks and stripwood was used for the planking and black thread for the caulking, all stuck on with waterproof Aliphatic glue, sanded and varnished. This was a tedious job, but doesn't look too bad. The planking was fitted directly to the exposed sub-decks at main deck level; to the boat deck as described above to help fix its shape and to a 0.5mm plywood base in the case of the foredeck. The boat deck planking was fitted after first constructing the upper superstructure comprising the wheelhouse and funnel base out of thin plywood. There are hidden drainage holes on the forward well deck and aft main deck which exit below the rubbing strake just in case any green water comes aboard.

Photo 10. The motor, esc's and battery compartments. The receiver is mounted in the next compartment forward under the wheelhouse.

Photo 11. Work recommenced in 2015 with the panelled bridge front and navigation lights being fitted.

Photo 12. When finally finished in 2017, the lights really do illuminate Brenda very well.

Motors, batteries and radio etc.

At this point it was decided to install the electrics and I have always been a fan of pulley drive for the propshafts and have fitted this in most of my models. This method has two big plus points and no real drawbacks. First, it provides an easy method of gearing down the motor to the propellers which allows both to run at nearer the optimum speeds than is possible with the compromise inherent in a direct drive coupling and it also does wonders for power consumption. Second, it is easy to set up and very quiet running compared to a conventional gearbox. Usually a 2:1 reduction ratio from motor to propshaft is a good option and in Brenda, O-rings have been used as driving bands. These are fine as long as you allow them to retain their circular shape as much as possible, but once you try to pull them into an oval, that will introduce energy wasting friction. The secret is to mount the motors above the shafts with a small degree of adjustment to enable you to find the sweet spot of free running without slipping and in practice, this isn't too difficult.

The motors are a couple of low drain type I bought somewhere, but can't remember where and when. The pulleys were actually made double, but then I discovered that only one was needed to drive each shaft. The thrust is taken up by a collet bearing on the outboard end of the tube and not the external shaft A-bracket bearing. Another collet, made of the brass core of a conventional coupling is fitted to the inboard end of the shaft to precisely fit the shaft to the tube and the pulleys are fitted inboard of that and his arrangement can be seen in the photos. At the time of writing, the batteries are four cylindrical Cyclon lead acid cells, two each side of the keel, giving a total of 8 volts although they may be swapped for newer high capacity NiMH cells which are lighter, but unavailable when making the original installation.

The electronic speed controllers for the brushed motors are vintage Astec units, one for each motor and you can see these in **Photo 10.** Brenda has two screws and a single rudder which is usually a recipe for a large turning circle. A Futaba 40MHz six channel set was purchased back in the 1990's, but at that time there was not much on the market in the way of electronic mixers which are commonly used today. The undercarriage channel on the radio is used to switch between running each motor separately (tank mode) and both together, and so by the flick of a switch on the Tx one can change from controlling both motors on one channel for general sailing to the 'tank steering' style for close quarter manoeuvring.

Completion of the model

The work described above was done over a number of years in fits and starts as I gained and lost enthusiasm for continuing with its construction. Everything came to a bit of a stop when I retired and began working on

a freelance basis for this magazine in 2008, which entailed building other models and also editing several Model Boats Special Issues. Brenda was put on a shelf in the workshop (again) and left to gather dust except for six monthly charges to top-up the drive batteries. In the early part of 2015 I determined that I really must make the effort to complete the model as this did not actually entail a huge amount of extra work. The first job was to clean it all and remove the layers of dust and it scrubbed-up quite well, **Photo 11.** Next task was to test the motors and running gear and immediately encountered a serious problem.

Propshaft woes

At some point the port propshaft installation had been damaged, such that while the starboard one purred away very nicely, the port one screeched horribly at high revs for no obvious reason and therefore something would have to be done. Extensive investigation and elimination of various causes suggested that the tube was bent out of alignment. Unfortunately, it was deeply buried in the hull and only partially accessible at its inboard end. Initial efforts concentrated on exposing the tube within the model with some brutal applications from a power drill and attempting to adjust it to allow the shaft to run with less friction. This was unsuccessful as only the newly exposed part of the tube could be bent and it was of thin wall brass, and eventually I managed to tear holes in it with the Dremel tool and totally ruined it. So what to do?

Obviously, like an impacted wisdom tooth the defective tube would have to come out, but probably not easily without damaging the model as it was very firmly epoxied in place. I 'dug out' as much as possible from the inside and then applied the traumatic effect of a hammer to the outside. Eventually the tube moved, whereupon a pair of pliers were applied to the outside and crushed and twisted it before attempting to pull it free. It eventually gave up the struggle and came loose without too much external damage to the hull, much to my surprise.

The next step was to clean and slightly enlarge the hole ready for a replacement. An 11 inch propshaft and tube had been ordered from Cornwall Model Boats which I expected to be a straight swap for what had been the existing tube, although still using the existing shaft as it is much longer and supported by an external A-frame at the stern of the model. However, the tube's external diameter was greater than the existing hole, so back to the internet and an 11 inch Caldercraft thin (6mm) tube propshaft duly arrived and inserted into the hole in the hull and tacked in place with epoxy adhesive. Still quite a bit of running noise though, so the hole in the hull was enlarged to let the tube lie where it wanted before regluing it and you will have guessed by now that there was still some noise!

I was getting a bit frustrated now, but found that inserting a wood wedge where the shaft exited the hull quietened things down quite a bit for no apparent reason. The motor was a bit noisy as well, something that was remedied with a bit of oil on its bearings.

Some water resistant grease was also introduced into the tube and this made things slightly quieter, but the drag of this lubricant added almost one amp to the free running power consumption out of the water, literally doubling it, which was pretty conclusive. So yes, don't stuff your tubes with grease as it is possible to feel the extra resistance when turning a propshaft by hand.

The grease was removed with washing up liquid and then the tube flushed with WD40 which brought the power consumption right back down again and I guess now that ordinary lubricating oil is the best way forward? Although things were now a lot better, there was still an appreciable amount of noise from this port shaft and further checks suggested that the original propellers, taken from an earlier model, were unbalanced and that, together with the length of the shafts, their being some 15 inches long albeit in 11 inch tubes, implied a degree of whipping.

To cut a long story short, larger 35mm props were fitted and the bearing in the Port A-frame was also found to be loose and so was remade. Now, the port shaft remains a bit noisier than the starboard one, but the difference is now reduced to an acceptable level. All this just goes to show how something that initially seems straightforward, such as the installation of propshaft and tube, can give rise to what can be a very frustrating problem.

Lighting

Generally, I don't tend to bother much with working features in my models such as engine noise and sirens etc. but I do like to fit the navigation and some internal lighting, **Photo 12.** I don't know why really as rarely, if ever, are my models sailed at night, but there you go.

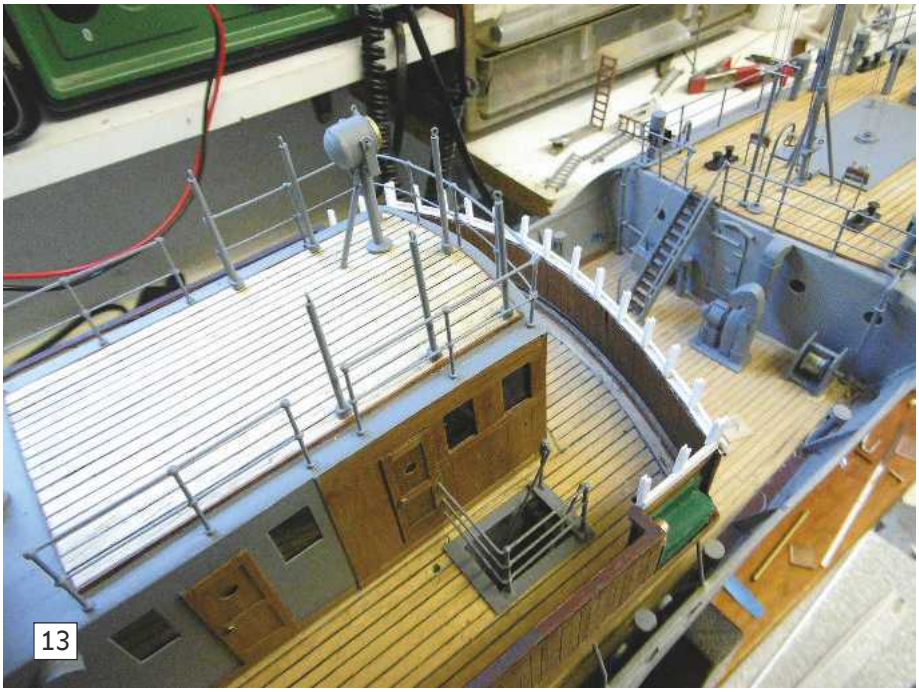
The port and starboard navigation lamps were built-in at an early stage using grain of rice bulbs. I should probably have made better provision for the rest of the lighting when building the main deck superstructure as fitting it later turned out to be a bit fiddly. However, the upside of delaying was that there is now a much better selection of luminaires on the market in the form of different types of LED's. Brenda is now fitted with all her navigation lights including masthead and stern lights, plus interior

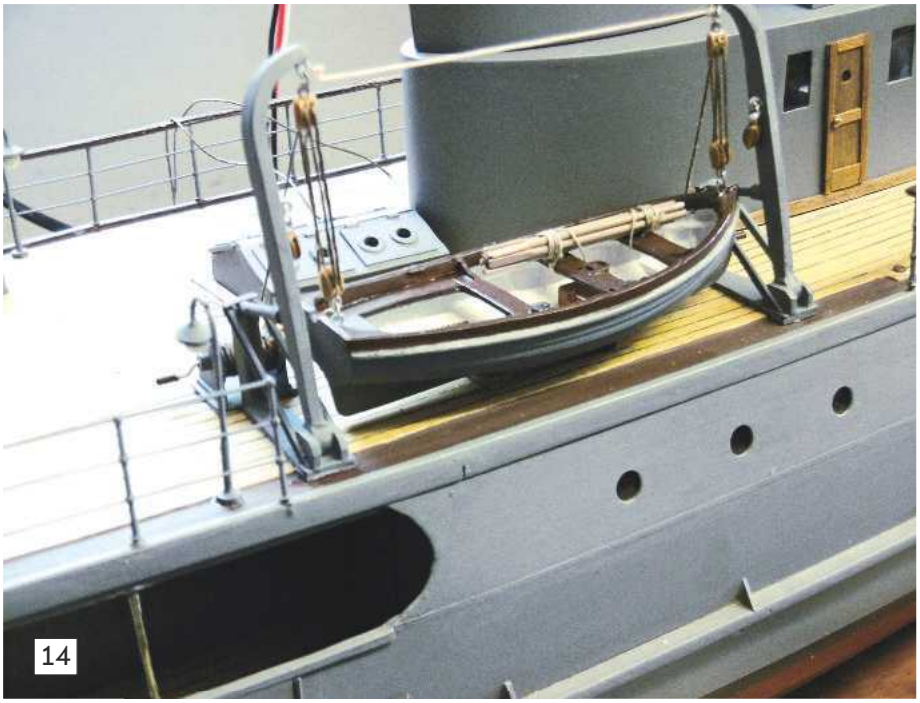
lights and a number of deck lights including two lamp standards intended for model railway layouts. The searchlight on the top of the wheelhouse is also functional. This did entail quite a lot of complicated wiring in the superstructure and on the underside of the boat deck including resistors for the LED's, but I got there eventually.

Bridge deck detail

Apart from the many fittings, the basic structure of the model was now complete except for the detail around the wheelhouse. One of the attractive features of Brenda is the wooden panelling on the wheelhouse and bridge front. The former had been incorporated at an earlier stage using walnut stripwood, but the front of the bridge still needed to be done and this was quite complex with its double curvature and being topped with glass screens. The pattern for the front of the bridge was made in card and transferred to 0.5mm plywood which was then planked on both sides with vertical strips of walnut. This was then glued to the front of the boat deck. A capping rail of styrene angle was then attached ready for the glass windscreen. This was actually applied at a later stage due to its initial fragility, but is described here for convenience. Some rather expensive Plastruct miniature H-channel was purchased and uprights made to hold the 'glass' panels, **Photo 13.** These uprights were painted brown to simulate wood. The uprights were stuck to the capping rail using liquid styrene adhesive which made for a temporarily very delicate structure. The 'glass' panels were cut from transparent styrene and slid down between the H-channel uprights with PVA Canopy Glue used as an adhesive to avoid marking the transparent sections. This was another very fiddly job, but once the whole thing was assembled it became a quite strong structure and looked very similar to the original.

There was another problem with the bridge deck which was how to attach the companionways leading up from the main deck through apertures adjacent to the wheelhouse. After some head scratching, it was evident that the steps would need to be attached to the boat deck and dangle





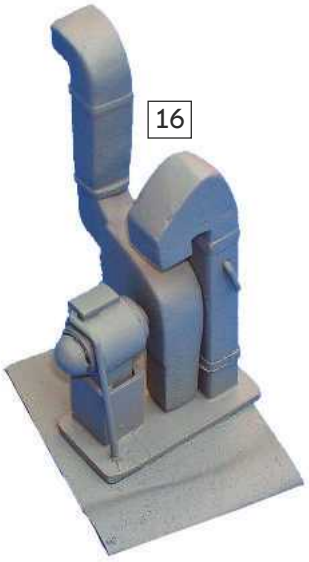
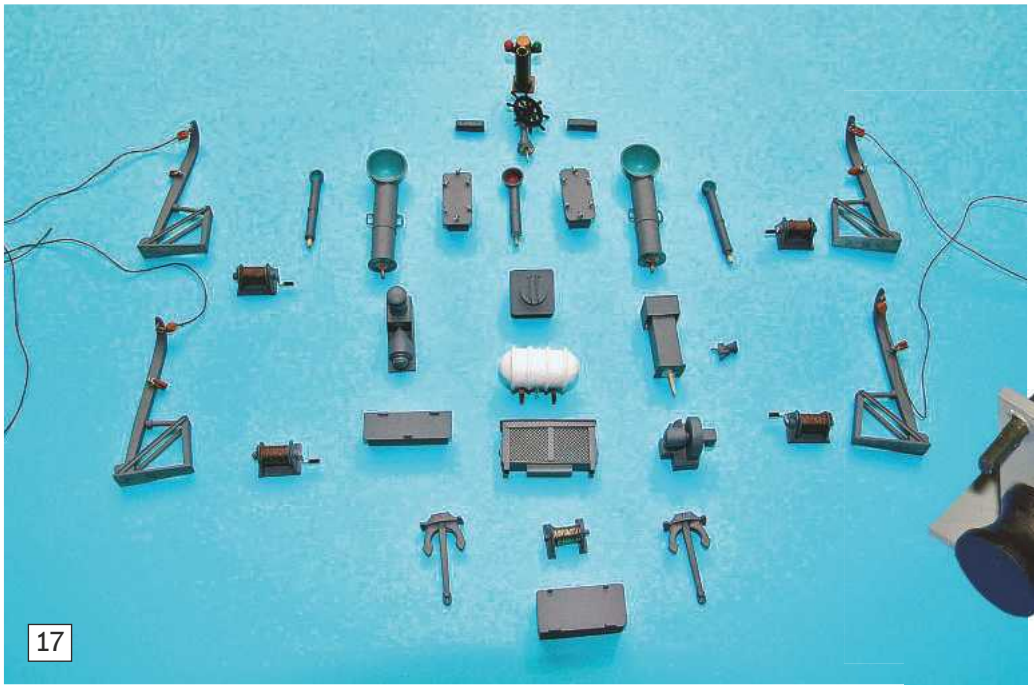


Photo 13. The bridge windscreen was a delicate construction until the glass was fitted.

Photo 14. A Quaycraft boat fitted out and placed temporarily in position.

Photo 15. The foredeck railings under construction. Horizontal joints between the sections were made with unobtrusive thin gauge tube slipped over the cut ends where it wouldn't be noticed.

Photo 16. A complex ventilation unit serving the forward accommodation.



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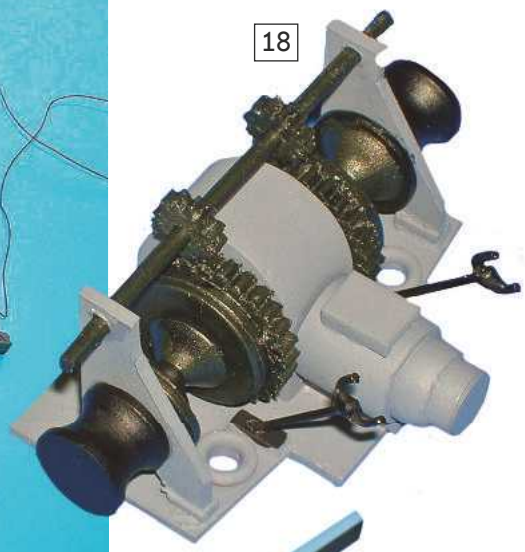

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Photo 17. A selection of painted fittings including the rather complicated boat davits.

Photo 18. The anchor windlass.

Photo 19. The radar mast sits above the wheelhouse.

underneath it down to the main deck. This meant that they would need to be pretty robust and securely attached to avoid them being bent and broken when the boat deck was removed to access the interior of the model. Rather like the windscreens, it would be necessary to make an initially weak structure that gained strength as additional components were fitted. In this case the companionway ladders were of 1:48 scale Plastruct cut to size and initially glued to the underside of the boat deck at their upper ends. A combination of brass wire and stanchions affixed to the boat deck and extending down to the bottom of the ladders with a bit of unseen reinforcement on the inboard side was sufficient to achieve the required degree of strength and rigidity. This pretty much completed the structural part of the model which just left the remaining smaller parts.

Fittings

Brenda has a lot of these and at 1:48 scale they have to be shown in a reasonable amount of detail. The biggest items were the two pulling boats and the RIB. As mentioned earlier, in the interests of getting the model completed I opted for Quaycraft boats and a resin RIB picked up from a modelling show, but they were all enhanced with extra detail, **Photo 14.**

Also, at this scale there was the issue of railings. Soldered wire doesn't really fit the bill as you need proper ball stanchions and so I bit the bullet and bought these from Modelling Timbers. Not cheap, but they really look good and fitting was very easy. Holes were drilled in the deck to accommodate the stanchion bases, and the stanchions located after running a drill through their railing holes to check they were not obstructed. Next step was to thread abraded brass wire through the stanchion ball holes in sections with only one horizontal angle. So at that point the stanchions and the rails were all in the correct positions. I then used a small paintbrush to apply Carrs 188 Solder Paint (Paste) to each joint and then touched all joints with a soldering iron. Many people are unaware of this form of solder which is widely used in the model railway world and which can be a lifesaver in situations like this. The now strong and rigid soldered sections were then removed from the model, sprayed grey and then epoxied back into the locating holes, **Photo 15** being of the foredeck and its part completed railings.

A few of the cowl vents were purchased, but modified to fit the model. Many of the upper deck fittings are lockers and hatches and these were made of plasticard (styrene) with added hinges and fixings, often over a balsawood core. The ventilation gear and motors and other deck machinery were also fabricated from plasticard, plastic tube and items from the bit's box. The ventilation unit on the forward well deck is of a particularly complex construction, **Photo 16.**

A difficult job was making the lifeboat davits which are a variation of the Welin quadrant type. The originals featured complex fabricated sections of varying cross sections bending in two dimensions which are a real problem to reproduce at modelling scales. The davits on the Brenda model are slightly simplified using wood and plastic strip and angle, but look reasonably convincing and these can be seen in **Photo 17,** which is a general view of some of the painted fittings.

Most of the other fittings were reasonably straightforward. The anchor windlass uses old servo gears from the bits box once again and is a good replica of the original, **Photo 18.** Rope and wire reels were easily made using punched out plasticard disks and tubing.

The masts are of brass tubing with diminishing diameters to suggest tapering and in the case of the mainmast, they accommodate the wires to the navigation light. The foremast light has external electrical wiring. The red handwheels on the fire hydrants are in fact a slice out of a TV coaxial cable and look very effective at this scale. The radar sits on top of a short lattice mast, something that was actually quite easy once broken-down into smaller units, **Photo 19.**

Rigging is generally of thin thread, but some

Photo 20. The foredeck completed. Note the railing joins just above the forward bollards and the sections of coaxial TV cable used for the fire hydrant handwheels.

Photo 21. The flag was prepared on the domestic PC and inkjet printer.

Photos 22 & 23. Brenda at sea, or rather on the pond in Bushy Park near Hampton Court Palace.

of the longer stays are of shirring elastic which of course remains taut at all times, but provides some give if knocked by the occasional errant hand and **Photo 20** shows this all quite well. It is always best to go 'finer' rather than 'thicker' if in doubt with rigging cord.

The Fishery Protection Service Blue Ensign was found on the Internet, copied and resized using Photoshop Elements, mirrored to produce both sides and then printed out and crumpled before being given a coat of matt varnish, looking quite effective even I say so myself, **Photo 21.**

On the water

Brenda had her maiden voyage at Fishers Green Sailing Club under the scrutiny of our worthy Editor and it did not disappoint. With both motors running together, the turning circle was fairly wide as expected, but otherwise the model handled very well. With independent motor control Brenda turns virtually in her own length which is impressive. Top speed was well over scale speed (like most of our models!) so plenty of power in hand if needed, **Photos 22 and 23**. Overall very satisfying, although as mentioned earlier, I may substitute lighter NiMH cells for the lead acid Cyclons batteries to raise the waterline slightly. A subsequent sailing session at Bushy Park near Hampton Court Palace had better photographic conditions and clearer water, and the photos from that day when I was assisted by Ashley Needham are used here.

Conclusion

Modelling projects don't come much longer than this one, but I'm glad I got there in the end. Despite some minor shortcomings in the detail, Brenda does make an impressive sight on the pond which is a tribute to the elegance of the original design which I think has been captured quite well. Perhaps more importantly, Brenda is probably a 'one-off' at the moment and the likelihood of seeing another working example at the pond is pretty remote. In a world of kits and RTR models it's always nice to have a model boat that is to all intents and purposes unique and the classic design with its lovely lines beats today's modern vessels hands down in my view.

Plans for Brenda may be obtained from the Plans Service, Plan Ref: MM1239, but no model construction is shown on them though

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Range Finder

Dave Wooley with his Worldwide Review of Warships and Warship Modelling

Welcome once again to our regular sortie into the world of fighting ships and in this issue we have Part Two of a three-part feature for the Polish Navy's Oliver Hazard Perry Class frigate, ORP General Tadeusz Kosciuszko. We also continue with Part Nine of our OSA 2 project.

Generał Tadeusz Kościuszko Part Two

We are continuing the Ship's Tour commenced in the recent October 2017 issue of MB, when we concluded Part One to port just forward of the hangar on the main deck. The heading picture here is a general view of the upper parts of the starboard side. Beneath the overhang of the bridge wing is a short passageway leading aft along the main deck, **Photo 1.**

Moving up to the bridge wing we have a detailed view of this containing a wealth of useful detail shown in **Photo 2.** Along the top edge of the bridge front is a timber capping rail, perhaps a throwback to an earlier period of warship construction, and the type of stanchion and railing used in this area is largely of steel tube. Moving now slightly aft of the bridge wing more detail comes into view, **Photo 3.** Over to the left in this picture is the receiver unit for refuelling at sea and the type and pattern of a watertight door is clearly visible.

A general view of the starboard side and 01 deck of ORP General Tadeusz Kościuszko.

Photo 1. The starboard extension on 01 deck for the bridge wing.

Photo 2. The bridge and its wing close-up, to starboard.

Photo 3. The style of watertight door can be clearly seen in this picture and the fuel receiving hose for replenishment at sea.

Photo 4. The box-like structure in the foreground with various panels around its sides is the SLQ 32 jammer and intercept array.

Photo 5. Mounted on a platform is the egg-like cover for the Mk. 92 fire control radar for the missiles and 75mm gun.

Moving up to the bridge roof we have a better view of the Mk. 92 Mod 2 fire control radar housed in its egg shaped cover, **Photo 4.** Immediately below, and on either side of it, are the SLQ 32 intercept and ECM (Electronic Counter Measures) devices. The Mk. 92 Mod 2 version on this Oliver Hazard Perry FFG is supplemented by a 'Separate Target Illumination Radar' (STIR) mounted aft. From a modelling perspective, **Photo 5** provides much more useful detail especially around the base of the Mk. 92 antennae and the framework associated with its platform, essential when making a model. Moving further aft is the lattice mast supporting the

Photo 6. All of the Oliver Hazard Perry Class of guided missile frigates have this conspicuous tubular lattice mast on top of which is the SPS 49 air search radar.

Photo 7. At the lower level of the SPS 49 mast are two posts (port and starboard) which are part of the replenishment at sea equipment.

Photo 8. Looking towards the rear of the forward deck housing and bridge, and in the centre ringed in yellow, is the receiver hose for refuelling at sea.

Photo 9. The main mast supports an SPS 55 surface search radar and the radio navigation aid usually referred to as TACAN (Tactical Air Navigation) system. If you look closely, you will notice a plethora of halyards and cable hung from the two extending arms of the upper platform.

SPS 49 main air search radar, **Photos 6 and 7.** Remaining within the same area on this 01 deck, but looking towards the rear of the bridge deck housing, is a ladder leading up to the top of the bridge. The handrails on it are all box section, **Photo 8,** and ringed in yellow is the replenishment at sea fuel receiver once again. Looking at the lattice mast now, but from beneath, gives us a different perspective of this structure, **Photo 9,** useful when reproducing it in miniature.

In the foreground of **Photo 10** is the Mk. 36 'Super Rapid Blooming Chaff Launcher'. This is a decoy system using cartridges which can be deployed out to a height of 244 metres. Looking aft now in **Photo 11,** and directly in the centre of the picture, is some form of exhaust, possibly for the generators or even from the galley? In the October issue I mentioned the triple torpedo tubes, port and starboard, and the area above the port mounting has an extension to the deck supporting a rigid inflatable boat, but the same location to starboard does not have such a deck extension and so here we can look directly down on to the torpedo tube mounting, **Photo 12.**

Amidships on 01 deck is the platform supporting the 'Separate Target Illumination Radar' (STIR) radar. The rationale in have two tracking radars is that the 'STIR' has a larger diameter dish, **Photo 13,** and can track targets at greater ranges than the Mk. 92 radar on the bridge roof (please see Photo 4 again).

What is unusual with this class of guided missile frigate, is the position of the 76mm 62 calibre naval gun which is mounted just aft of amidships on 01 deck, **Photo 14,** and not on the main deck forward or aft as is usually the case. This 76mm Mk. 75 gun is a licence-built version of the OTO Malara compact weapon, that originally entered service in 1969. The Mk. 92 radar and its associated fire control system controls both missile launching and the 76mm gun. Our last picture in this Part Two looks aft at the exhaust uptake ('stack' in US Naval terminology), **Photo 15,** and please note the grills around the casing and its exhaust vents. In the concluding Part Three in the forthcoming December issue, we'll take a detailed look at the flight deck and hangar of ORP General Tadeusz Kosciuszko.

Photo 10. The arrangement at the base of the mainmast. In the foreground are the starboard sets of decoy launchers.

Photo 11. This picture gives some insight as to how much is incorporated on 01 deck and the huge amount of external pipework etc. on the superstructure, something you do not see on the latest warships.

Photo 12. On the main deck are triple 324mm ASW torpedo tubes with the torpedoes being ejected by compressed air.

Photo 13. Mounted amidships is the fire control radar which works together with the Mk. 92 fire control system mounted forward on the bridge roof.

Photo 14. The 76mm 62 calibre gun is probably the most widely used naval gun currently in service worldwide.

Photo 15. A detailed view of the exhaust uptake, particularly around its top. A Phalanx CIWS is mounted further aft.

Photo 16. An Iraqi OSA 2 205U fast missile boat complete with its SS-N-2 missile launch tubes.

Photo 17. This picture shows a typical OSA 1 boat with its SS-N-2 missile launch boxes.

Photo 18. In this picture of an OSA 1 boat, the side panel on the launch box has been removed for internal access.

OSA 2 Type 205U Fast Missile Boat Model PART 9

Making the missile tubes

In this issue we will prepare and largely construct the missile launch tubes, **Photo 16** showing these clearly, albeit looking somewhat oversized compared to the rest of this fast missile boat.

The earlier OSA 1 boats were fitted with launch containers, rather than tubes, these being markedly different in appearance to the more conventional tubes installed on the OSA 2 craft. Although they perform the same task, construction was different in so much as access to the missiles could be undertaken by lifting the outer side panels which is impossible with a tube launcher and this difference can be clearly seen in **Photos 17 and 18** of an earlier OSA 1 boat.

The tubes as fitted to the OSA 2's also had a different missile exit door arrangement, **Photo 19,** and as we shall see in the forthcoming MB December 2017 issue, the making of these required some lateral thinking, but for now, back to the initial steps in tube preparation.

The first task was to cut the tube to the required length of 200mm x 43mm diameter and then correctly determine the angle of the front opening. Here, I used an OSA 1 drawing which showed a 50 degrees angle of the 'boxed' tube ends. All that was required was to set the angle with an adjustable set square as in **Photo 20.** All four tubes where prepared in the same way, ensuring they looked the same, **Photo 21.** At the end of the October MB Range Finder were listed all the materials needed for these missile tubes.

Encircling the circumference of each tube are a series of rings (please see Photo 19 again), and it is essential at this stage to mark the position of each ring and for this a styrene band was prepared which slid over the main tube and the location of each of the rings could then be easily marked, **Photo 22.** Referring back now to Photo 19, tubular supports for the launcher tubes are positioned forward and to its rear. Their location on the underside of the tubes was carefully marked, as any misalignment could making the later fixing of the support legs somewhat difficult. As they say: 'Mark twice, but only cut once', **Photo 23.** As is illustrated in this last picture. the rear holes of 5.55mm are larger in diameter than for the forward supports which are 3mm.

At the top of each missile tube is a half-round semicircle protrusion, the purpose of which is to allow the tip of the tail of the SS-N-2 missile to clear the tube. Although the wings open outwards, the tail surface is fixed and with the missile on its rails within the launcher, it exceeds the diameter of the tube, hence the raised section at the top, **Photo 24.**

This raised section has been made by

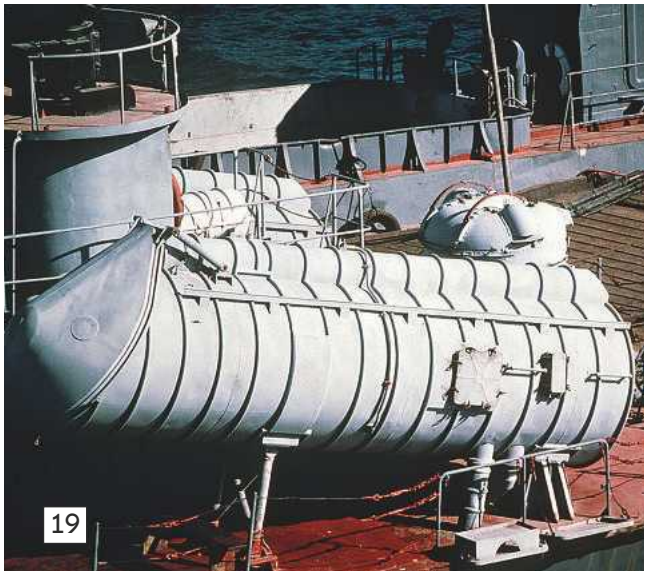
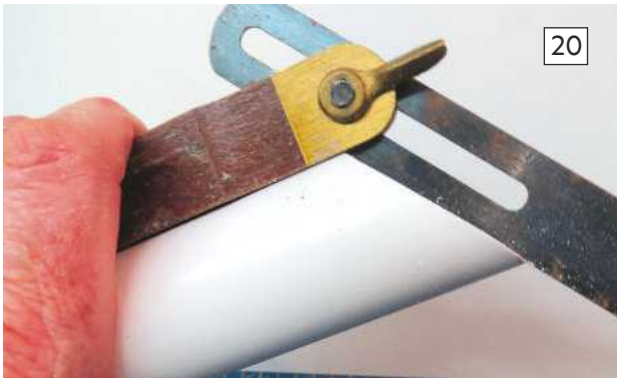


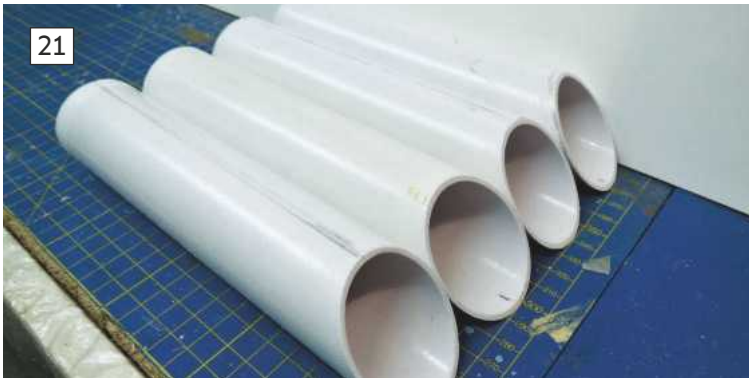
Photo 19. A detailed example of the type of missile launch tube fitted to the OSA 2's, which is very different to that of the OSA 1s.

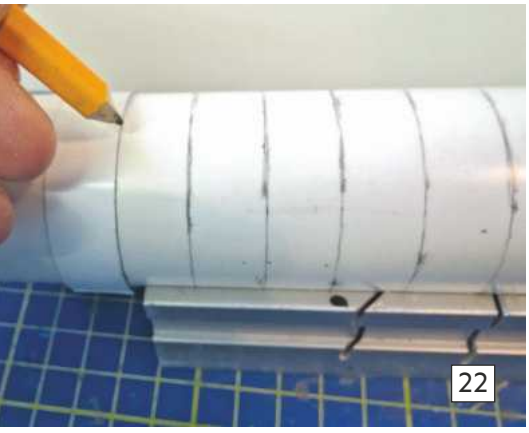
Photo 20. The first task is to take the 43mm o.d. plastic tube and cut it to 200mm in length with one end marked and cut to a 50 degree angle, all checked using an adjustable set-square.

Photo 21. The four basic missile launcher tubes are now prepared.

Photo 22. A styrene band was created to assist in marking out the position of each of the 13 copper rings along the whole length of each tube.







splitting an Evergreen No. 234 tube of 11.1mm o.d. into two pieces along its length then being carefully measured and cut to fit over the top of the main tube. A centre line was marked along the top of the main tube to ensure that this top semi-circular piece when fixed was not misaligned, **Photo 25.**

Launch tube external rings

These tubes and what they contain is of course the primary purpose of an OSA missile boat, and as such they are an exaggerated feature. With that in mind the tubes are in effect models in their own right, and not just 'tubes' stuck on the model. However, in the absence of detailed drawings, care needed to be taken to ensure each tube was made to incorporate as much of the detail as possible that is visible in the reference pictures.

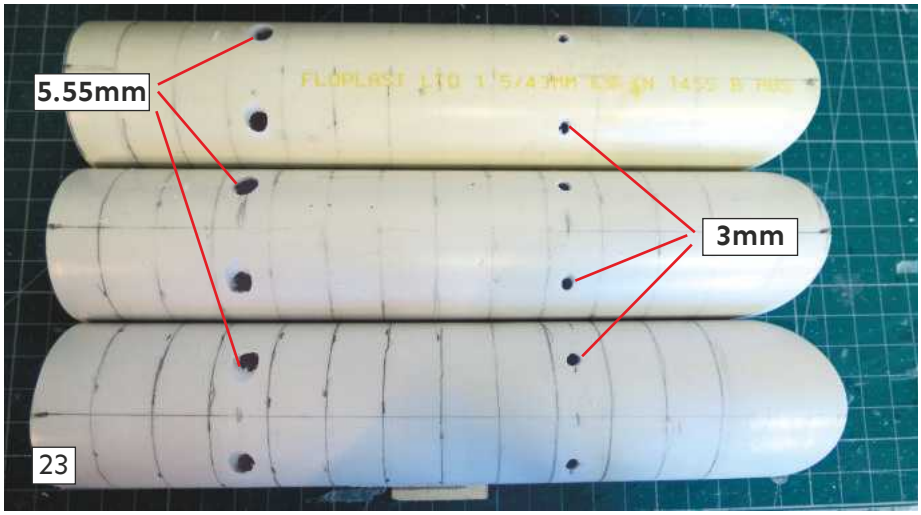
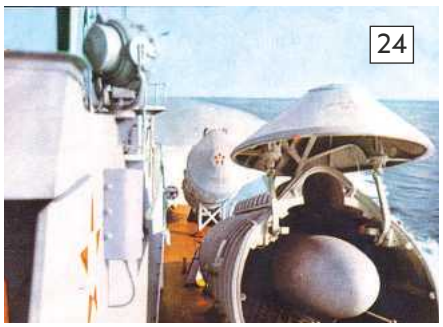
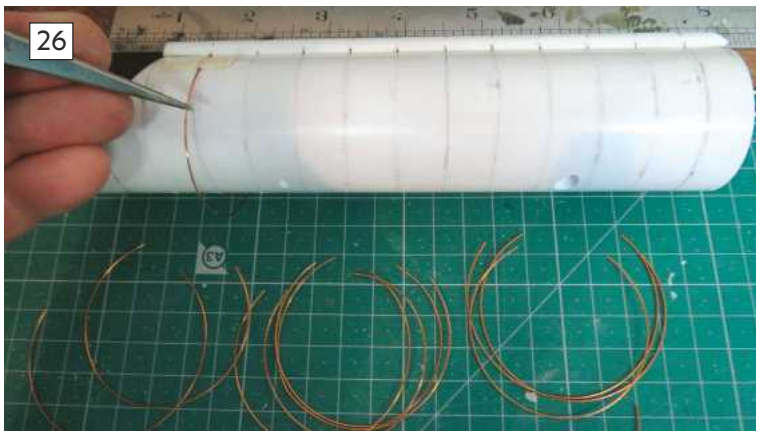


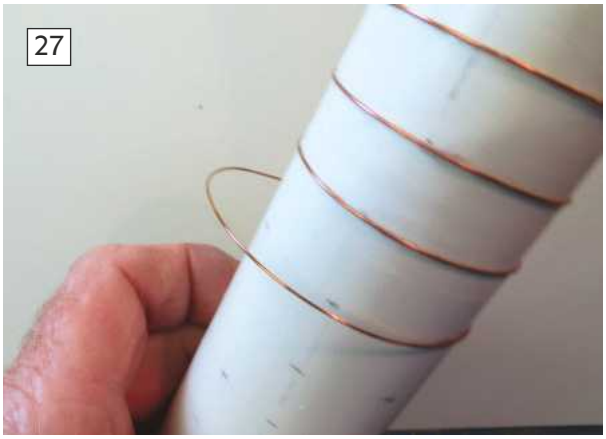
Photo 23. Holes have been made in the undersides of three of the tubes for the two types of support legs.

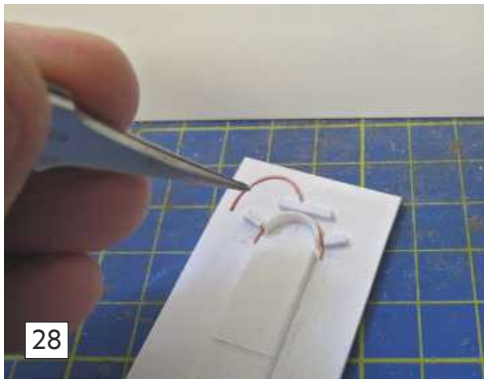
Photo 24. A rare view of the inside of a OSA 2 missile launch tube, see text for more information.

Photo 25. An 11.1mm o.d. tube is divided into two and will form the half-round section on the top of the tube.









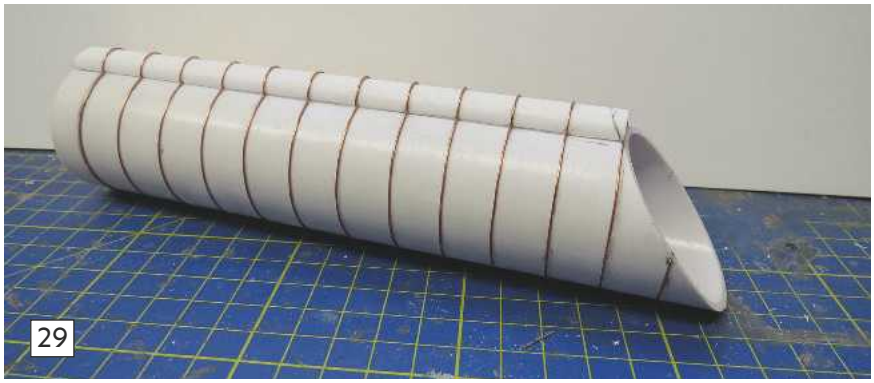


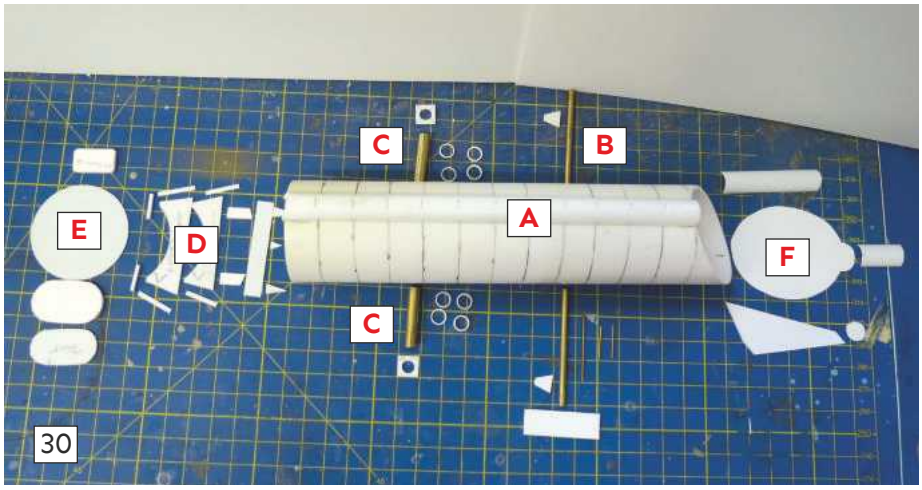
Photo 26. The half round styrene tube secured in place and each 0.5mm copper wire ring can then be fixed into a pre-prepared 0.5mm hole.

Photo 27. Each ring in turn was fixed around the pencil mark.

Photo 28. A simple jig is being used to prepare the half-rings that will be fixed to the top of the half-round section.

Photo 29. The large full rings and smaller half-rings are all fixed into place.

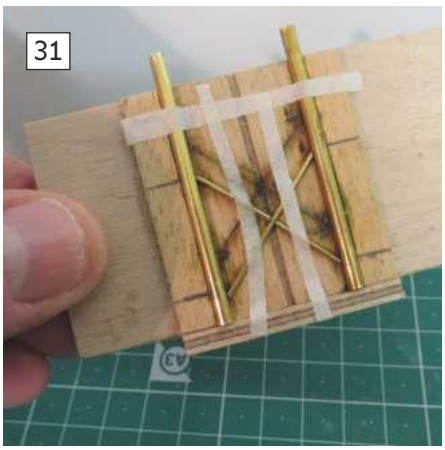
Photo 30. Most of the parts for one missile tube, duly prepared and ready for assembly, please see main text for legend.



As mentioned earlier, each tube has 13 external rings in total and for now, our concern is to fix each of them so it is parallel with the next. For this, a series of holes were drilled at the intersection of the main tube and its semi-circular top section, into which was inserted a pre-shaped circular length of copper wire as in **Photo 26.** Each 43mm ring was carefully wrapped around the tube following the pre-marked lines and secured by gently coating the inside of the copper ring with thin superglue, **Photo 27.** It is best to use a slow setting superglue if possible, whilst using short strips of masking tape to temporally hold each ring in place.

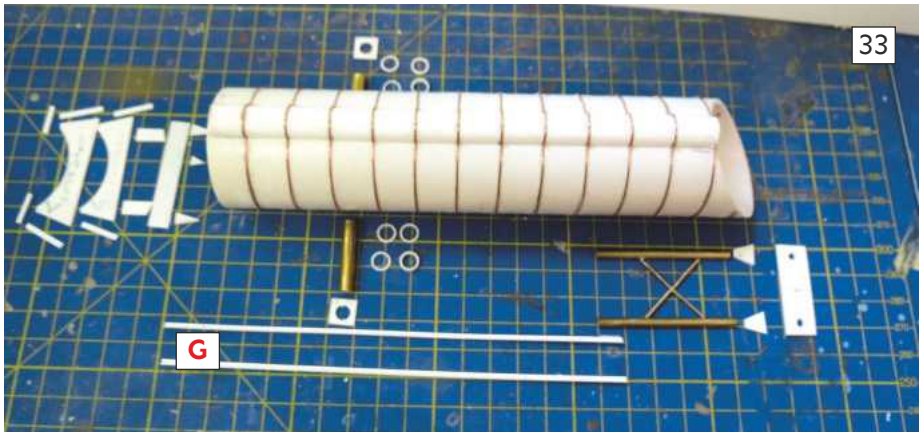
Small semi-circular copper rings

These smaller half-rings are set on to the semi-circular length of Evergreen tube and like the main tube, the location of each semicircular ring was clearly marked to avoid the temptation to just 'guess'. To assist in getting each of these half rings to fit, a jig was made which forms the half round shape whilst making for an easy, but accurate cut, **Photo 28.** The first tube covered in this way took some time as it was all a bit of a learning curve. Once the nuances of 'fixing' were resolved, and without getting personally attached to the rings with superglue(!), the process was quite straightforward. To simplify the method, a small groove was made on the top of the half-round section. All that was then needed was to apply a small amount of cyanoacrylate superglue to the groove and then a thin strip of masking tape to the semi-circular ring and using this, gently guide the ring on to the groove. The masking tape enables some final adjustment without actually touching the ring, and once satisfied that the alignment on each side was correct, the tape would hold each half-round ring in place until set, **Photo 29** being of the job completed, at least for one of the missile tubes.



General arrangement (1)

Regular readers following these projects will know that I tend to follow a method that allows all the basic parts to be prepared and made ready for assembly. **Photo 30**



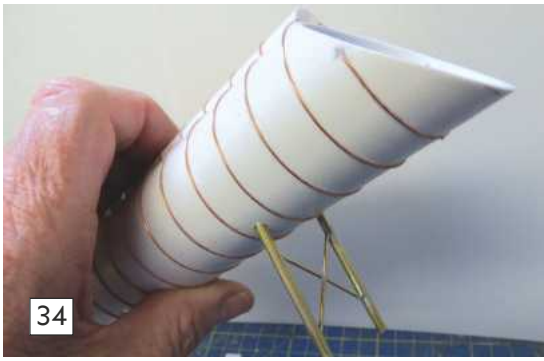


Photo 31. The jig for soldering the front support legs.

Photo 32. Some of the completed legs, the differences between them being self-evident.

Photo 33. This shows the parts for a missile launching tube forward missile tube with its front legs now complete. The support legs bracing spars are positioned differently on a forward tube to those of the rear one, port and starboard.

Photo 34. Using a soldering jig helped ensure consistency, as each of the support legs are slotting nicely into place.

Photo 35. Progress thus far with the adjustable support legs deck plate fitted, but not fixed and you can see what we are now aiming for.

illustrates this method, although many of the parts shown at first glance may mean very little, but as we move through the construction stages it should all become clearer. As a visual aid I have added an identification as to what each part is in this last picture.

A The main launch tube.
B The forward support legs.
C The after support legs.
D The end tube support frame.
E End of tube inspection panels.
E Forward door.

Forming the forward support legs

This part of the project is 'fitting sensitive', or in other words each pair of legs must fit first time. In order to achieve this goal a jig was made to ensure continuity across all four missile tubes. It had already been noted that whilst the forward support legs are all of the same width, the height of the forward tube, port and starboard, from the deck is different to that of the rear. The reason for this is simple in that in order for the after missiles to clear the forward tubes the angle of each aft tube is greater on each side and this is achieved on the model by adjusting the tube lengths of the legs. Also evident on the full-size missile tubes are the cross-spars on the support legs which are at different heights to allow for the exact angle of the tube. This is not a problem, as these adjustments were made on the jig when soldering, **Photo 31.**

This jig has worked well, as all of the support legs with their adjustments were soldered in about 15 minutes, **Photo 32** showing some completed examples. As always, preparation and planning takes the time, although the actual soldering process is quite quick.

References and acknowledgements

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Ships and Aircraft of the US Fleets by Norman Polmar, Pages 162 to 166.
ORP Generał Tadeusz Kościuszko ref:
Combat Fleets of the World, 15th Edition, Pages 560 to 570.
OSA 2's Fast Attack Craft refs:
Brassy, Pages 96 to 98.
Guide to the Soviet Navy, Second Edition, Breyer & Polmar, Pages 238 to 241.
Thanks to **Albion Alloys** for brass tubing and wire, and **Russ French** of Task Force 72 (Australia) for his advice and assistance concerning the Oliver Hazard Perry Class of guided missile frigate.

General arrangement (2)

Once again to help in understanding the process of construction, here is included a further general arrangement picture, **Photo 33.** The forward support legs are prepared and other parts are awaiting assembly. For reference purposes, Part G will be fitted to the side of the launch tube, although the purpose remains unknown. Soldering the support legs in a jig is a must, as **Photo 34** confirms, because the legs of this aft launch tube fitted first time, the only adjustment required being with their height. Our final picture for this issue shows the front support legs fitted on to their footing. Again this is adjustable, taking into account the angle of the tube and the camber of the deck. Eventually pins will be added to the undersides of the legs to help fix them securely into the deck, **Photo 35.**

Next month, we will complete this job, but please remember that there are four missile tubes in all!

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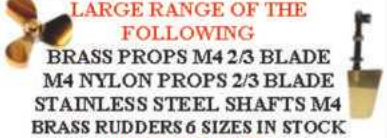

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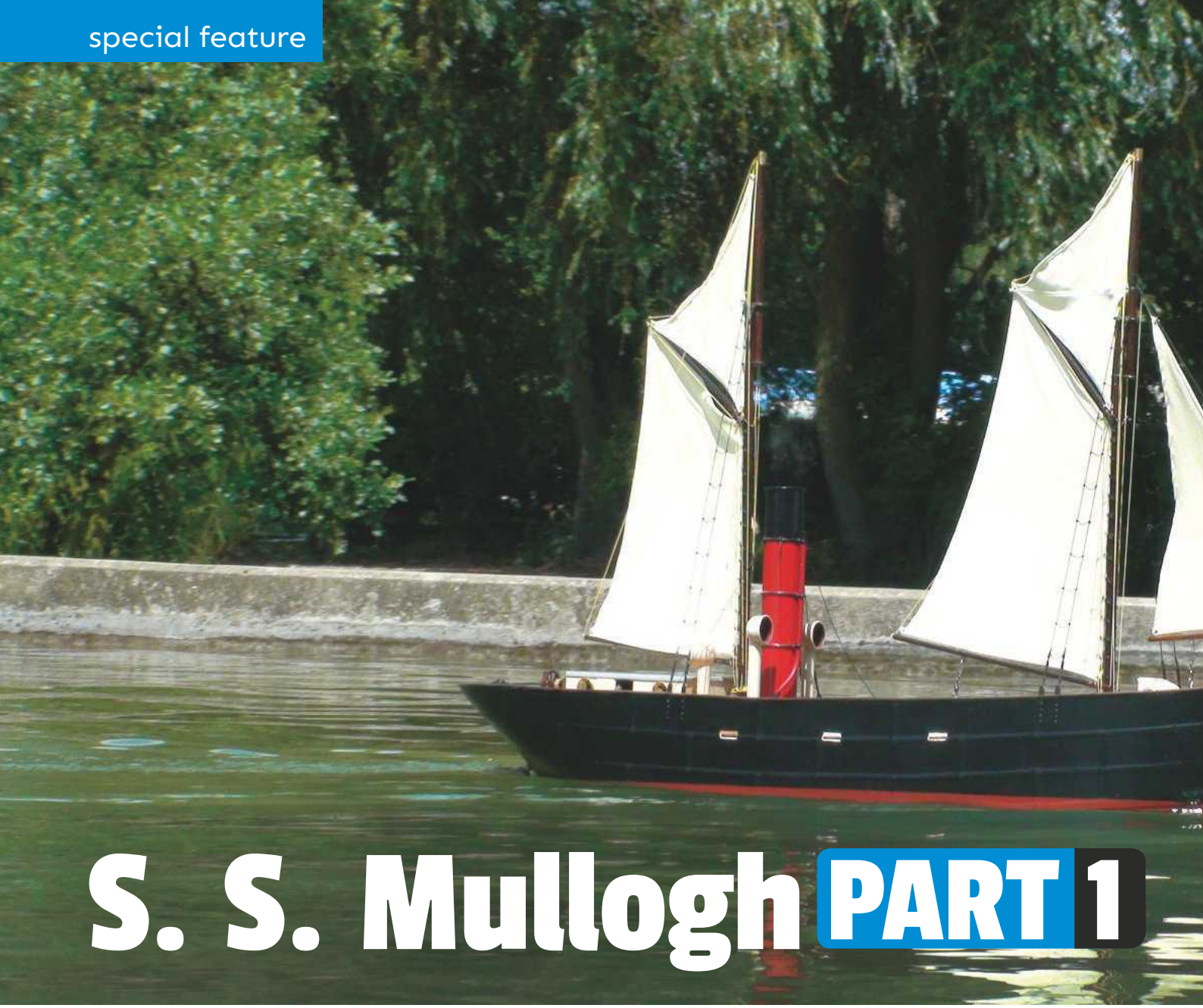

S. S. Mullogh PART 1

Phil Button's totally scratch-built model of an early steamship

Back in 2010, I was between projects and looking around for a suitable prototype so that the design work could be done during the winter when the workshop gets cold and seems to lose its personal attraction. When 'surfing the Internet' one day, I came across a brief history of an 1855 steam ship called Mullogh, and am told that this is pronounced 'Mulloy'. **Photo 1** shows an artist's impression of the ship and this is the only pictorial information about her that I have been able to find.

The ship was built in 1855 by Coates & Young in their Belfast Shipyard at Queens Island on the River Lagan. This yard was a predecessor of the later and much better known Harland & Wolff of Titanic fame. Mullogh was built as a 60 feet long two-masted sailing ship with a single cylinder auxiliary steam engine. She must have been sailed to the purchaser in Melbourne, Australia, when completed, because she could not be steamed all the way, as coaling points would not have been available for the whole route at that date and such a small vessel could never carry enough fuel for the whole trip.

After two years of operation around the Australian coast, she was sold to new owners in New Zealand and sailed to the port of Lyttelton with a cargo of bricks. She operated in and around the Lyttelton area as a general tender for other ships and also as a tug until 1923, when she was stripped and beached on Quail Island. What is left of the ship is still there to this day, although not much remains apparently. Anyone interested in the history can find more details on this website: www.nzmaritime.co.nz/mullogh.htm

Initial planning

The attraction of the prototype was that it had a steam plant, which is one of my pet likes, and also a sailing rig which always poses a model making challenge. The plan was to have the sails and steam power fully operational with this model, although not necessarily both at the same time. As a bonus, the hull is short and tubby and would sit quite deep in the water, which always helps with the ability to carry a heavy steam plant without the attendant stability problems that can result with some ship designs.

With the original vessel being 60 feet long and having a 15 feet beam, one could work to a relatively large scale and 1:15 was selected as the final scale to give a model of 4 feet (1220mm) overall length and a beam of 12 inches (305mm). The length of four feet was chosen as it was the maximum length that would fit the back seat of my car at the time, which was a Fiat Panda. A rough estimate of the likely displacement gave around 45 pounds (20kg). For those of you mathematically inclined, this is calculated by dividing the original displacement by the cube of the scale. Forty five pounds is rather heavy as I am not getting any younger, but at the end of the day is manageable with care and when using a lightweight folding

shopping trolley from Aldi.

I could not find any actual hull lines for the original ship, but did find some plans online for a steam paddle tug called Strongbow which had a similar hull shape. With a little adjustment to the Strongbow drawings to suit the chosen dimensions, suitable hull lines for Mullogh were decided. The plans for Strongbow showed a total of 22 hull sections, so each of these was used as a location for the hull formers.

The plan was to build the hull using 6mm plywood for the formers and 10mm for the keel, the hull then being skinned with 1.5mm plywood pieces. So, the next job was to draw the keel with cut-outs for each of the formers, and then to draw each of them using a PC and Serif 'DrawPlus' drawing software. This is not actually a CAD package, but it works perfectly well for me. **Photo 2** shows the keel drawing with the waterline marked and the line of the propeller shaft is shown cross-hatched. At the top of the keel drawing, the lower red line gives the location of the deck and the upper red line shows the top of the bulwarks.

Each of the formers was drawn to the shape of the hull sections shown on the modified Strongbow drawings, but with the external dimensions reduced by 1.5mm all round to allow for the thickness of the hull skin. Most of the formers were left open in the centre so as to allow the maximum possible useable space within the hull. The only solid former was Bulkhead No. 12, which was positioned to separate the hot and wet machinery spaces aft from the forward radio control compartment.

Slots were drawn in each former at the bottom for the keel, at deck level (for a supporting stringer) and around the hatch openings for the later addition of coamings. The deck camber was built-in to the top of the formers in all areas, except the engine room cover aft and the cargo hold area.

Since it was planned to build the hull upside down on a rigid building board, most of the formers had an extension piece added at the top of the bulwarks, allowing the bottom of the keel (at the top when upside down) to remain parallel to the board during construction. To give a clearer view of these details, **Photo 3** shows the drawing of a typical former, which in this case is one in the area between the boiler space (in the hold area) and the engine room. The shaded areas are the extension pieces which would be cut off later, after skinning of the hull.

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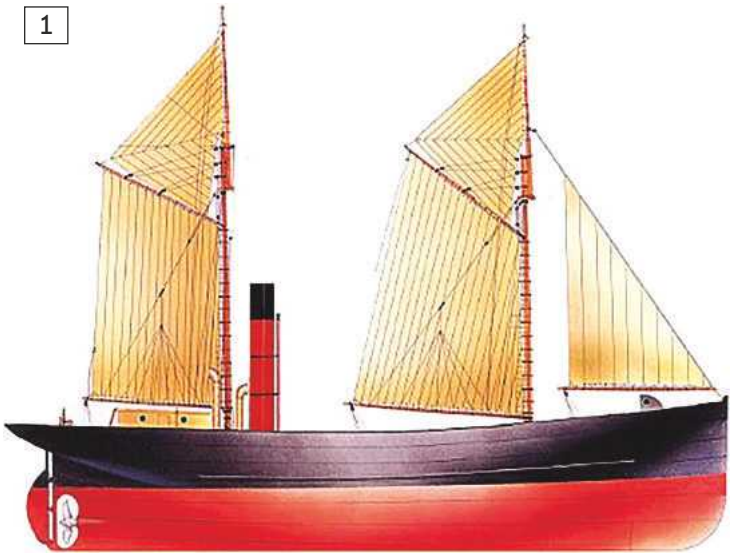

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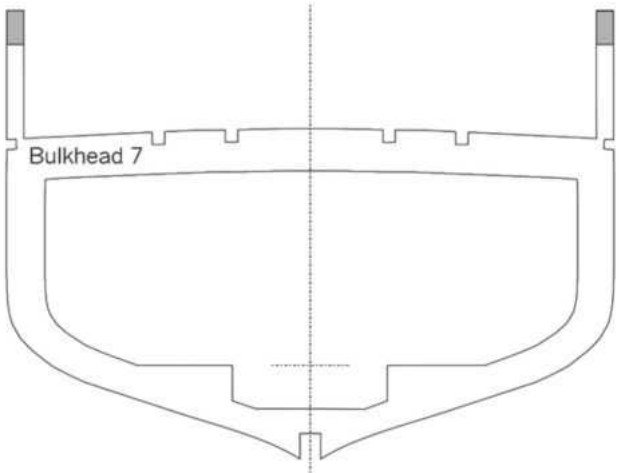

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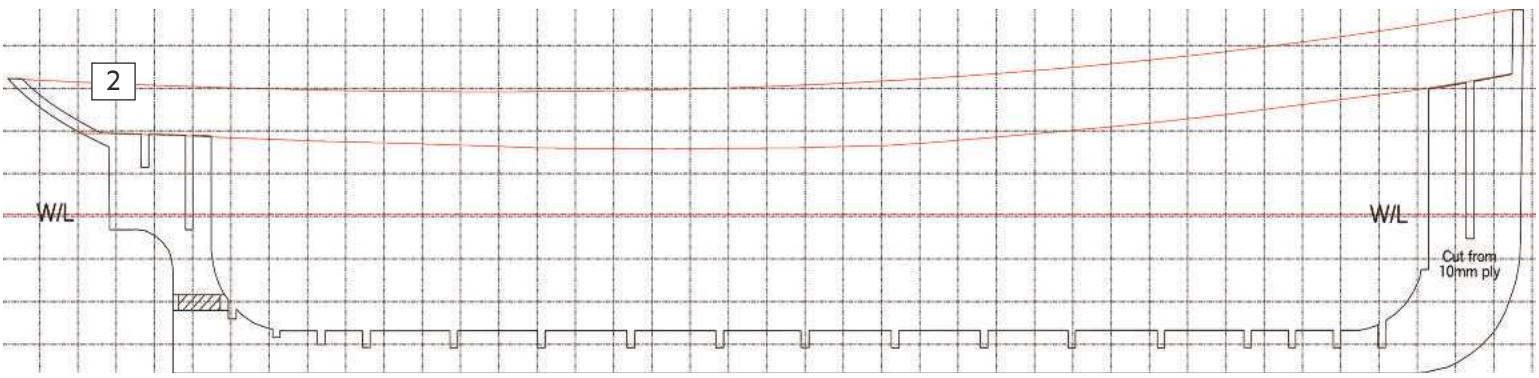


Power options?

The design of the sailing rig could be left until much later as the lion's share of the space within the hull would be needed for the steam plant and I thought it would be a comparatively simple matter, which it later proved not to be, to fit a sail winch and the sheets for the sails either during, or after, the machinery installation. However, in order to finally detail the hull design, it was necessary to know what engine and boiler would be used in the model. Initial thoughts were to use the gas fired horizontal Scotch type boiler from another of my models, the steam tug MSC Archer (please see February and March 2011 issues of Model Boats), since she sat rather lower in the water than I would like and there was a much lighter vertical boiler that could be used in it. **Photo 4** shows the completed Scotch boiler when undergoing a steam test prior to installation in MSC Archer.

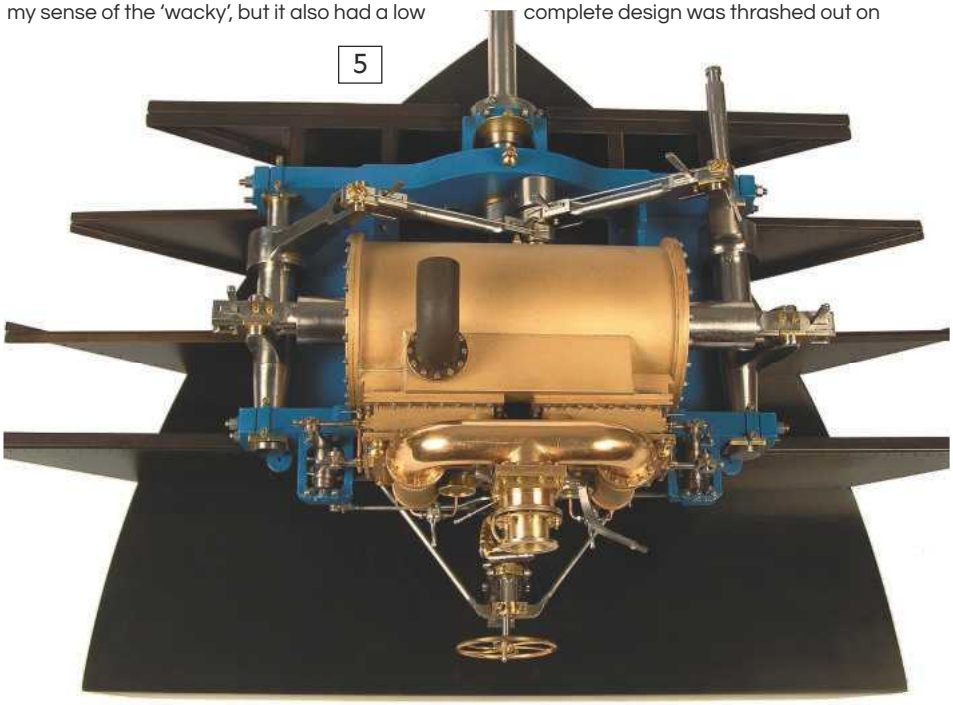

4

The boiler could be installed in the after part of the ship's main hold, leaving plenty of room for a commercial gas canister forward of it to supply the burner with gas. With a minor modification to the existing boiler uptake, this could be taken into the bottom of the funnel just forward of the mainmast. The hull formers were then designed to allow for the fitting of this boiler as low as possible in the hull to keep the centre of gravity low.

The next question was; 'What engine to use'? I had seen pictures of an engine known as a Trunk Engine or Vibrating Lever Engine which was of a type similar to that used on the American Civil War armoured ship 'Monitor'. I was much attracted to that design, shown in plan view in **Photo 5,** since it appealed to my sense of the 'wacky', but it also had a low centre of gravity which was perhaps more important?

In this engine there are two back-to-back cylinders with pistons that work in and out to each side. Each piston is connected to a rod which drives on to one of two crankshafts, one on each side of the engine. These shafts, that also work the engine valve gear, do not make a complete revolution, simply oscillating backwards and forwards, hence the term 'Vibrating Lever Engine'. Secondary cranks are fixed to each crankshaft and oscillate with it, operating two connecting rods which drive the propeller shaft underneath the engine via a single crank. As you will have gathered, this is all very simple….

To cut an otherwise long story short, a complete design was thrashed out on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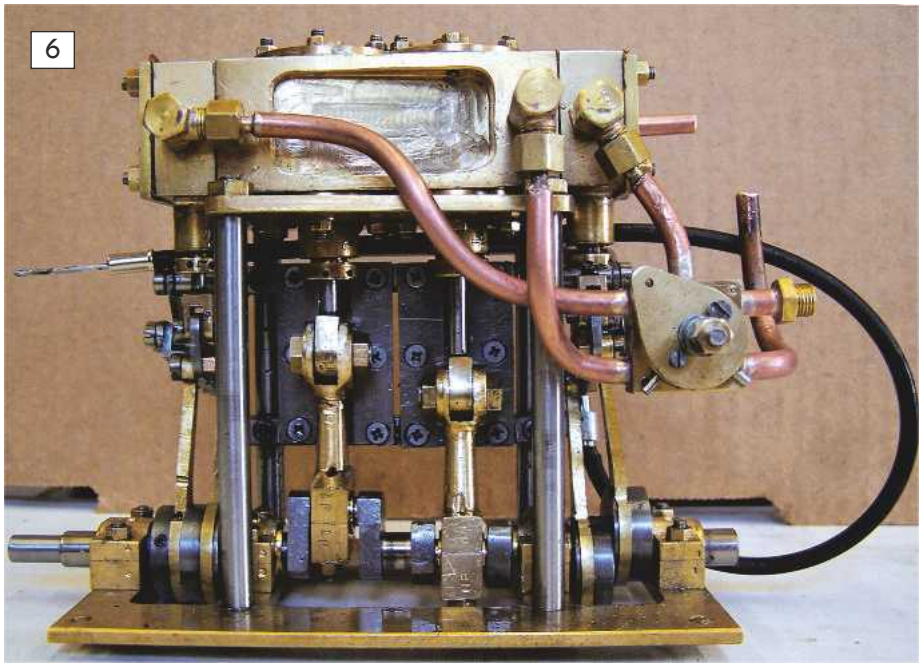
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the PC for a very similar engine, which would have fitted in the engine space of the model and could be aligned with the propeller shaft, but then I decided not to use it. Maybe it will be built and used sometime in the future, but who knows?

The engine finally chosen, **Photo 6,** was a vertical in-line twin cylinder compound, also stolen (together with the boiler) from MSC Archer as a further part of the attempt to reduce that model's weight. MSC Archer was then fitted with a much smaller engine displaced from another ship model that also needed to go on a diet, namely TSS Manxman as described in Model Boats of March, April and May 2016.

After a bit of work on the PC, it looked as if the compound engine could be fitted into the engine space at the after end of the machinery space and actually align with the propshaft. The hull formers in the engine room had to be modified (initially on the PC, a marvellous tool for this sort of work) to allow for the installation of two steel angle engine bearers at the right height to align the engine crankshaft with the propshaft. **Photo 7** shows a scale drawing of the after part of the model with the engine, boiler and a commercial gas canister added.

The positioning of the engine and boiler to fit in the space available in the after end of the ship resulted in a minor problem as it had been originally planned to step both masts directly into the keel, but there was not enough space between the engine crankshaft and the gas burner fitted to the boiler for the mainmast to fit in that way. After a bit of thought, the mast was stepped in a block fixed to the underside of the after deck, which solved that problem.

Hull framework

As mentioned earlier, the hull was intended to have a 10mm thick plywood keel with 6mm thick bulkheads (formers) and to be built upside down on a flat building board. Then, following my adopted standard practice, it was planned to skin the hull with 1.5mm plywood sheet pieces and to use 1.5mm planking of the same, of varying widths where the plywood could not be easily 'persuaded' to take up the required shape.

All of the bulkheads were marked out on sheets of 6mm plywood by pricking through a print of each part, then joining up the dots to give the outline. To help to keep everything lined-up during construction, each component was marked with its centre line. **Photo 8** shows Bulkhead No. 18 during marking-out on the plywood and the completed outline of Bulkhead No. 19. On completion of all this marking, I wound up with four sheets of bulkheads as seen in **Photo 9,** two sheets of 4 feet length, two of 3 feet long and all 1 foot wide. The keel was marked out in a similar manner, but on to the thicker plywood.

Next came the task of cutting out all of these pieces. The idea of doing this with a hand operated fretsaw did not appeal, but fortunately I possess a Clarke 12 inch electric band saw that is more than capable. However, the saw was inside one of the work spaces in such a position that one could not move the plywood sheets around enough to

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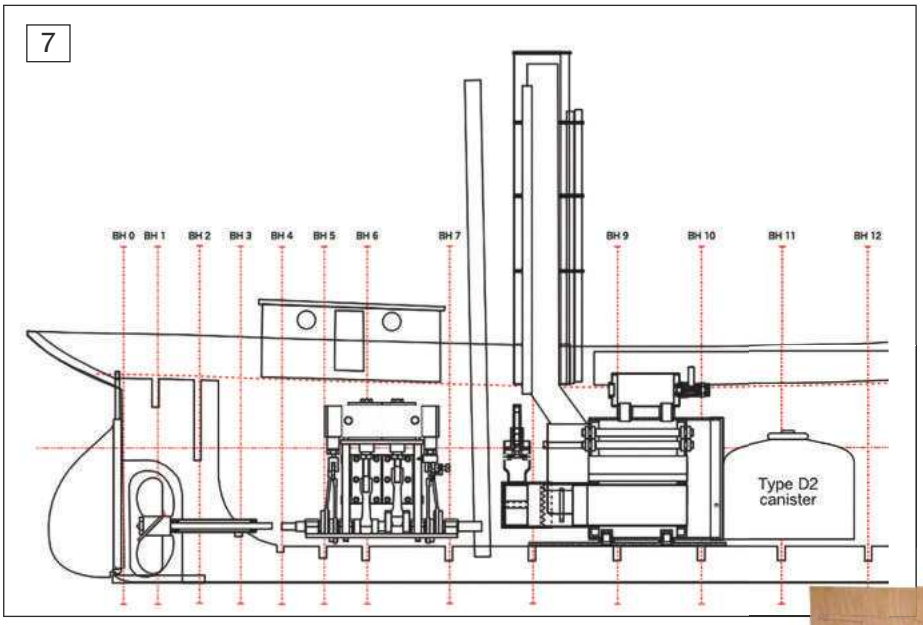

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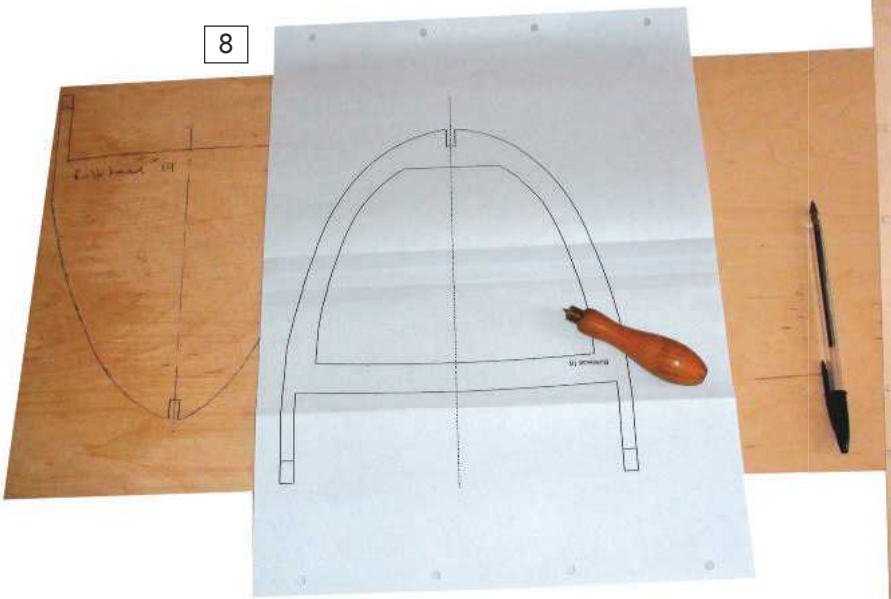

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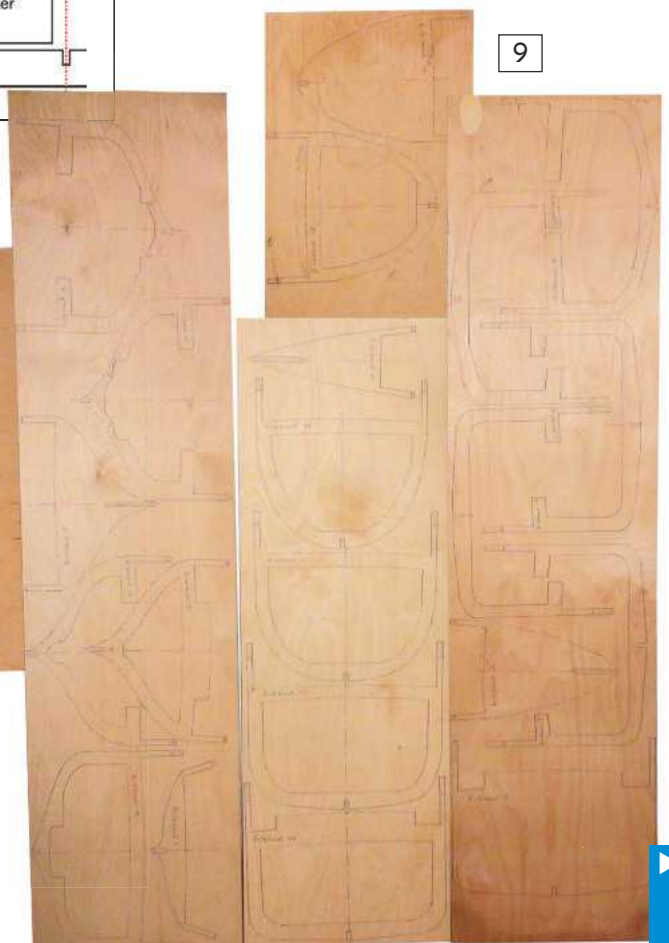

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cut out all the pieces. So, having waited for a day of good weather, the band saw was taken out into the back garden and **Photo 10** shows it on its dedicated bench outside on the grass, with the vacuum cleaner doubling-up as a dust extractor in addition to its more normal workshop cleaning duties.

Photo 11 shows one of the bulkheads being trimmed on the band saw. Some of the bulkheads have openings in them where the band saw cannot reach and these were cut out by drilling a hole in one or more corners and using a Cowell electric fretsaw (anyone remember them?) to finish the job, **Photo 12.** The keel was also cut out using the band saw, and during this process the saw blade was broken by my being somewhat ham-fisted and had to be replaced. Anyway, eventually there was a full set of bulkheads and a keel, **Photo 13,** so that there was no longer any excuse to delay starting construction.

A suitable board on which to build the hull was needed, and since a single piece of wood to take the full width of the hull was not to hand, the board was made up from three pieces of tongue and groove floor board, fixed together with cross pieces screwed to the underside. The completed board was marked with the keel centre line and the positions of all the bulkheads as in **Photo 14.** To retain the bulkheads and keel in place on it, a small piece of scrap plywood was cut to fit around the end of each component and then pinned in place on the board in the correct location.

The first few bulkheads were fitted into the slots in the keel whilst this was still 'right side


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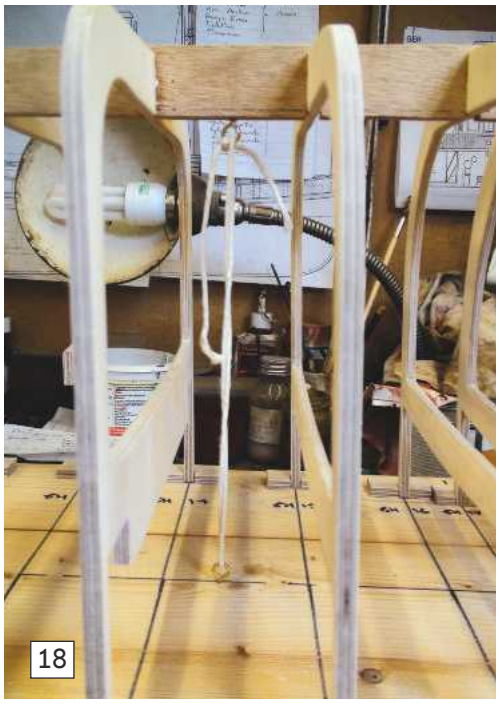
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up', **Photo 15,** then the whole assembly was inverted and fitted into the chocks on the building board and the remaining bulkheads fitted into place. **Photos 16 and 17** show the partial and completed assembly on the building board with scrap plywood bulkhead locating pieces. At this stage, nothing had actually been glued, in order to make sure that it all fitted together, as my drawings rarely work out exactly right.

And so, it was at this point that I discovered that there was a slight 'bow' in the keel such that the amidships bulkheads were lifting clear of the board, which is the reason for the piece of tensioning string seen in the last photo. Since this string could not remain where it was as it would get in the way of the skinning process, another way had to be found to get around the problem. The answer, when it finally occurred to me, was quite simple. Just screw a ring eye to the inside of the keel between two bulkheads and another eye in the building board and tie them together as in **Photo 18.** Yes, perhaps a bit 'Heath Robinson', but it solved the problem and that perhaps is what much of our hobby is about – improvisation.

After making sure that all was well and that everything was square, the whole assembly was taken apart and refitted, complete with tensioning string, but this time using water resistant PVA woodworking glue to hold it all together. To give some extra rigidity to the keel and also to have something to which to fit the ply skins, 6mm plywood 'doublers' were added between all the bulkheads each side of the keel and **Photo 19** shows some of them being glued in place. These doublers had to be chamfered to conform to the shape of the bulkhead lower edges, so that the skin would fit accurately and trust me, it is much easier to do this before they are glued in place.

In addition, I planned to install 6mm square


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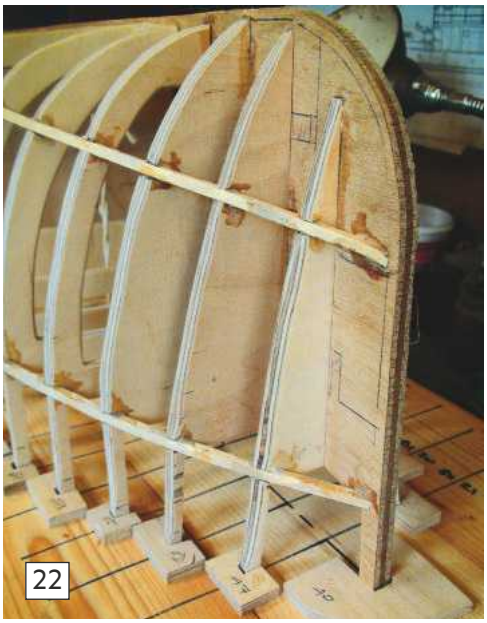
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hardwood stringers along the bilges and at deck level each side of the hull to give additional support to the plywood skins. This is more like model aircraft practice, but is how I like to build and it works okay for me. These stringers should have been fitted into pre-cut slots in the bulkheads, but I forgot to mark them out, so they had to be cut on the assembled frames which was not the easiest way to do the job, but perhaps was my punishment for being forgetful?

Photos 20, 21 and 22 show some of the stages of their fitting, with the finished result in **Photo 23.** With the amount of tension in the stringers, a great number of clamps is required to hold them whilst the glue dries, and you can never have too many clamps.

Hull skinning

Before fitting the skins, and you will note that rather than 'plank', the option of applying large pieces of thin plywood was followed. It is essential to sand the lower edges of the bulkheads (the hull was still upside down) and the faces of the stringers so that they would present a 'flat' surface to the skin. To do this, a piece of square-edged flat softwood with sandpaper glued on to it will bridge quite a long distance, **Photo 24.**

We were now finally ready to start fitting the plywood skinning pieces. Starting at the bow, thin card templates were made to fit where a skin piece would go to cover the first five bulkheads. It is much easier (and cheaper) to make any mistakes in card whilst getting something right for a good fit. Such a skin piece needs to fit over half the width of the last bulkhead to which it will be glued and also to fit over half of the bilge stringer.

When a card template was finally right, two pieces of plywood were cut out, one for each side and yes, they were not exactly 100% the same shape, and chamfered along their curved edges to fit snugly against the keel. The bulkheads, keel doublers and bilge stringer were then coated in epoxy glue and a skin fitted in place on the port side, held by multiple clamps until the glue dried fully, **Photo 25.** This process was then repeated for the starboard side piece, but this was slightly more difficult to hold in place as the clamps kept sliding off the newly fitted port skin until some rubber sheet cut from old bicycle inner tube kept them from slipping. The reason for fitting one section to each side before moving on to the next area of the hull is of course to avoid warping the hull.

The next piece of skinning aft was made to cover the next three bulkheads and again, a card template was made to fit before cutting

Hints & Tips

To stop the clamps sliding off the newly fitted port skin some rubber sheet was cut from an old bicycle inner tube and this kept them in place


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the plywood. The fitting process for these port and starboard skin sections was exactly as that described for the initial lower bow area. Since the remainder of the hull bottom skinning looked relatively straightforward, my attention turned to the skin piece for the after part of the hull as that had some very complex curves and looked like it might prove to be a challenge, which is modern management speak for, 'difficult, if not impossible'!

Stage One comprised cutting and fitting planks of 1.5mm plywood to each side of the hull as seen in **Photo 26.** At this stage it became quite obvious that it would not be easy to plank all of the after part of the hull and so some wood blocks were cut and fitted to make the shaping easier, **Photo 27.** Once these had been roughly, and somewhat enthusiastically, sanded to final shape, some unwanted holes appeared through the planks, **Photo 28,** and these were ultimately patched using 1.5mm plywood pieces inside the hull and making good the outside with car body filler.

Having now had enough of trying to build the awkward shape at the stern and needing


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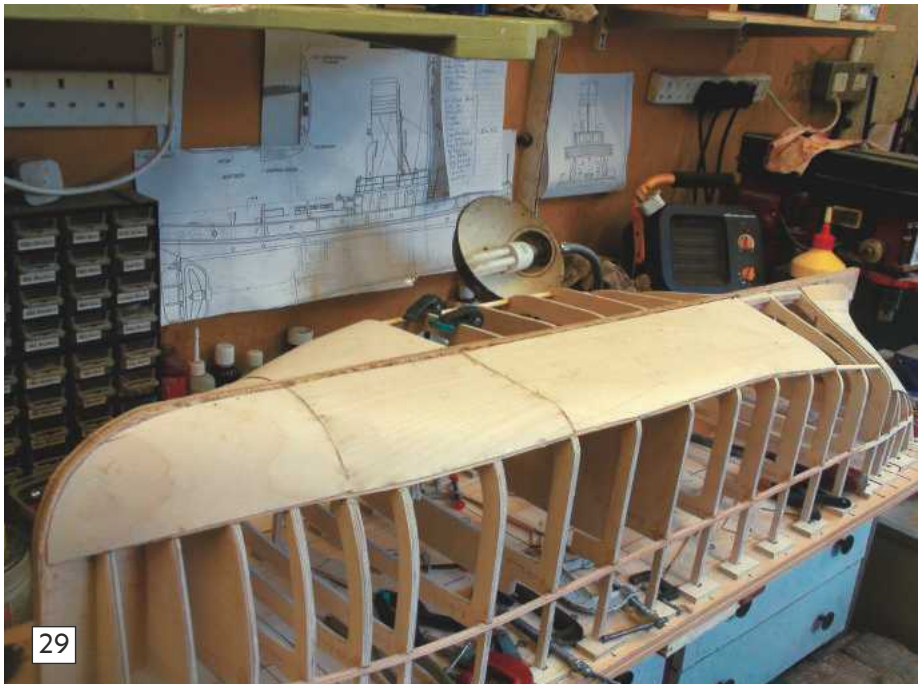
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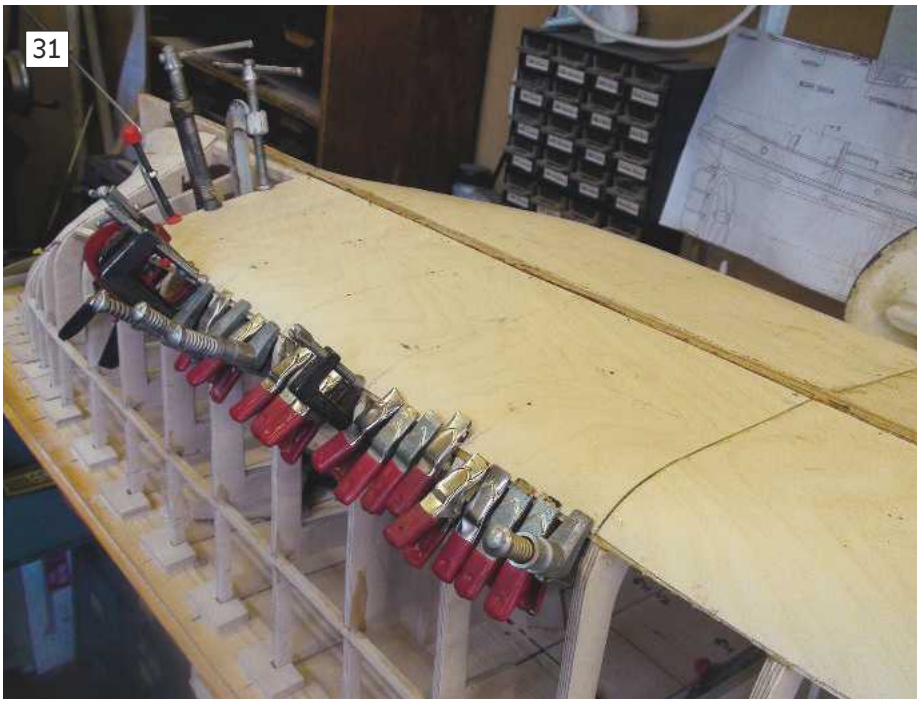
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time to think about how to build the remainder of the stern, work returned to skinning the bottom of the hull using the same methods as described earlier. **Photos 29, 30, 31 and 32** show the stages involved and once again, a vast assortment of clamps was pressed into service.

Continuing with the hull side skins, attention turned to the section between the bilge stringer and the deck stringer. The first requirement was to fit doublers inside both sides of the hull at the bow to provide a good flat area for the skins to be glued to and **Photo 33** shows one doubler fitted, noting that it was sanded to shape prior to fitting.

Owing to the compound curvature of the bow, it was easier to cover the area using 25mm wide planks cut from 1.5mm plywood. These planks were arranged to go one bulkhead further aft than the join in the bottom skin in an attempt to stagger the joints in the finished hull. Once again, this planking was carried out alternately port and starboard to minimise stresses in the hull and **Photo 34** shows the completed planking up to the deck stringer. Before finally gluing into place, each plank had to be cut and sanded to fit. This wide planking continued for another section towards the stern until an area was reached where a reasonably large section of the skin could be fitted as one piece. However, the sharp curvature at the bilge required the fitting of two narrower planks to achieve the necessary curvature. **Photos 35, 36, 37 & 38** show the stages in fitting the starboard side skin pieces and **Photo 39** shows the completed covering. Please don't worry about the rather ragged appearance as this could be resolved later with much filling and sanding!

Next month, this project will continue with the completion of the basic hull.

*Enjoy your hobby – **Phil'.***


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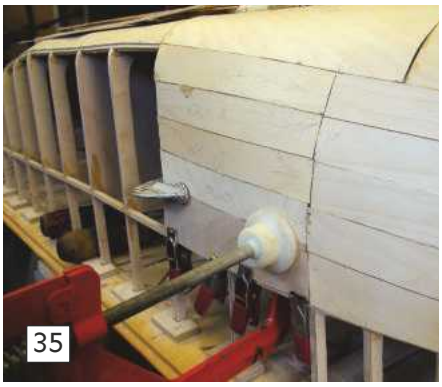
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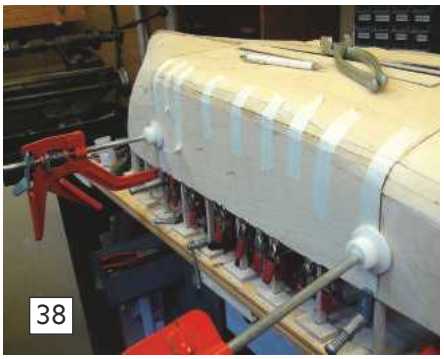
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39

By Colin Bishop

Big Lizzie

Having watched a series of RN carriers towed away for scrapping, it was a welcome change to see one proceeding in the opposite direction with the arrival of HMS Queen Elizabeth, or 'Big Lizzie' as she is already known, on 16th August 2017, even if it did mean my daughter and I getting up at 03:30 to make it down to Portsmouth to greet her arrival. Our favoured position was the Spice Island Inn within the harbour which offered the opportunity to see the ship come through the entrance and proceed up harbour to her berth.

This is indeed a big ship by any standards, her displacement being on a par with the WW2 Japanese battleship Yamato while two Titanic's could fit comfortably on her flight deck. Everything appeared to go exactly to schedule which was no doubt a relief to the RN. Following the berthing we took the ferry across to Gosport from where we were able to observe the take-off of the Merlin helicopters, five of which were on her flight deck as she arrived. The photos give a good impression of the size of the ship and her futuristic appearance with two control towers compared with a conventional one. HMS Queen Elizabeth will be followed by HMS Prince of Wales and both warships will be based in Portsmouth.

The navigating bridge and forward tower.

HMS Queen Elizabeth - vital statistics

Length:	284m (920ft)
Max beam:	70m (230ft)
Draught:	11m (36ft)
Displacement:	65000 up to 70000 tons
Aircraft:	Approx. 36 Lightning F35B & 4 helicopters (will vary)
Speed:	25 knots (nominal)

Left: The size of the ship becomes apparent as she proceeds to her berth.

Above: In this interesting view, the special navigation beacons built to guide the two new carriers into the harbour are illuminated (just beneath the Wildcat helicopter). There is another set of markers to seaward.

Above: HMS Queen Elizabeth fills the harbour entrance as she enters her home port for the first time.

Above: MOD police launches provided armed security – note the man with the gun!

Right: The width of the flight deck is apparent in this view from the Gosport ferry. The Type 45 destroyer astern of 'Big Lizzie' is HMS Diamond.

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Bob the Duck

Eric Morse-Brown converts an idea into a working model

Having joined Stourbridge MBC in late-2013, I was introduced to the idea of modifying and developing model radio control boats by Bob Hutton, a really nice guy who sadly passed away in December 2016. This is the story of that idea that he mentioned in early 2016, to its culmination and the maiden voyage (or paddle) in May 2017, and is therefore dedicated to him.

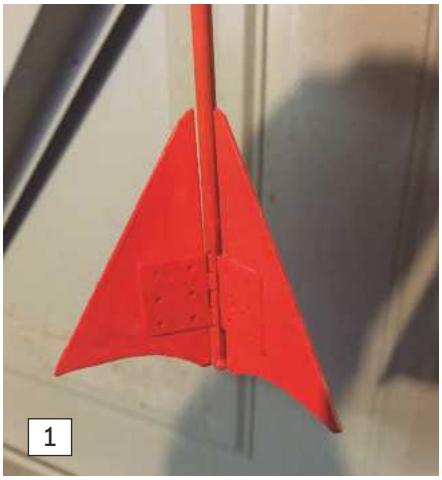
Bob the Duck was created from a hollow plastic decoy duck bought on eBay, and having realised that most r/c ducks are made with a conventional propeller drive, Bob Hutton encouraged me to think about using proper webbed feet to propel it instead. This took some head scratching, but eventually two prototypes of webbed feet were made. The first was made of dowel and other materials, and the second from brass tube and plastic. It has to be admitted here and now, that it was after three gearbox designs that the paddling feet finally propelled Bob the Duck successfully on Mary Stevens Lake.

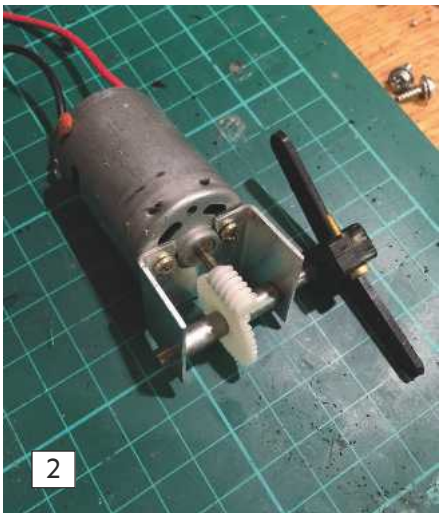
Webbed and functioning feet

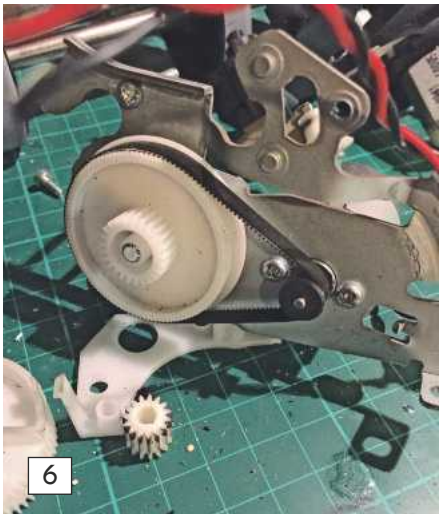
The Mk. 1 foot didn't open properly when being pulled backwards, giving rise to the hinge being set into the brass tube with a replacement pin through its centre, preventing the foot from folding forwards when being pulled through the water, and the small block at the bottom of the rear of the foot making sure that it remained slightly open when being pushed forwards, in order to re-open on the back stroke. Now, this basic foot (paddle) was ready, **Photo 1,** or was it? The next issue was to make the foot swing back and forth to create the desired propulsive effect and the simplest idea seemed to be to pivot the leg and connect a crank linkage from the top of the leg to a rotating cam, driven by a motor, but where to get a motor turning slowly enough to do this? This meant more head scratching, and the conclusion was that approx. 100rpm would be about right. The first idea was to use a worm drive (these are cheap on eBay) with an arm attached, bolted to a small motor from the spares box. Experiments were performed on the bench, **Photo 2,** but the most obvious fault was that this driveline was going to be far too noisy, particularly as two would be needed.

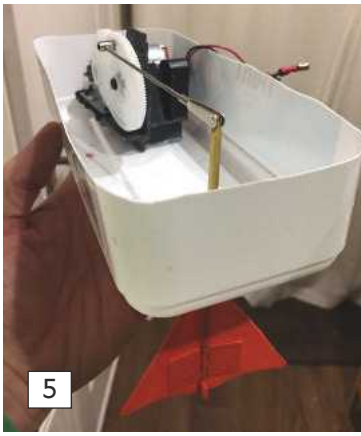
However, this small motor (purchased previously for an r/c model boat) provided the inspiration for the second, and quieter, drive unit. Having just refilled the ink in the inkjet printer that same day, I had noticed a similar motor and gears inside the casing. It was rapidly realised that this was probably a 12v motor running from a transformer inside the printer, but from UK mains (220 to 240) voltage. Clearly taking apart this perfectly functioning printer would not be a good idea, but as is so often the case nowadays, eBay produced 'a printer for spares or repairs', this being an Epson at the end of its life and all for just 99p. It was due 'won', even though the seller was puzzled as to what I could possibly want it for.

One interesting discovery was just how many gearboxes and motors an inkjet printer has within its casing, **Photo 3.** There were three such assemblies in this printer, so it was disassembled and everything duly extracted. It took some time to work through and modify









the various gearboxes to get the output speed down to 100rpm that was 'guesstimated' as being about right for moving the duck's leg. As it so happened, Epson's designs didn't quite fit the requirement and in the end one gearbox was created out of the three, by bolting cogs externally to it to slow the output speed. At this point, since the gears were a little quieter than the worm drive concept, a test bed (or a dishwasher tablet tub in this case) was made to see if the driveline actually worked and somewhat surprisingly, it did, **Photo 4.**

The top of the brass leg was flattened and a small hole drilled through it in order to allow the connecting crank rod (standard issue control arm with clevis pin on one end) to then be inserted into the rotating pin attached to the driving wheel and **Photo 5** is a stern view, as it were, of it all with a single webbed foot.

Water test

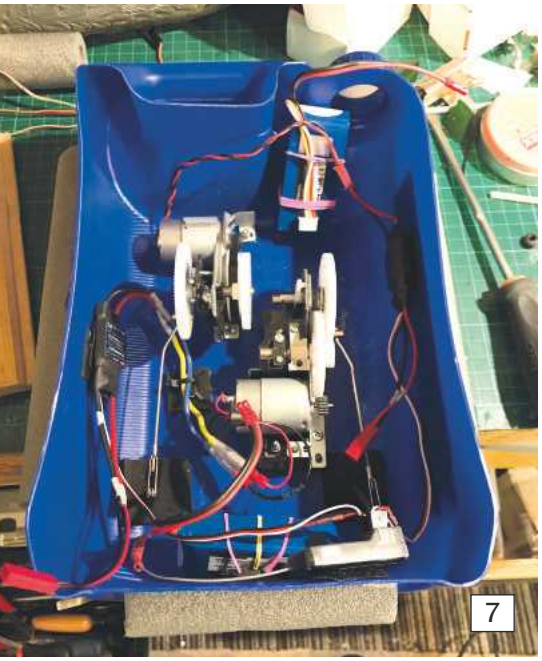
Things were coming together now and so to the bath. This test tub was trialled in the bath and it happily bounced around it at a good speed, albeit leaking, something that later became a major issue. Unfortunately, when creating this Mk. 2 gearbox from the various cogs from the 99p printer, there were not enough to make another for the other foot, so yes, another major problem had arisen.

Back to eBay again now, but as you will by now have guessed, another identical scrap printer was not to be found. A similar one, at least in external appearance, was found but turned out to be completely different inside as it had toothed belt drives instead of direct gearboxes, but it was noticeably quieter. Having discovered this gem, yes you have guessed it again, this was also a one-off. Progress now ground to a halt as the day job was really busy (sorry - I'm an estate agent) so the project got put on the back burner for a few months.

Mk. 3 gearbox

Later, when in conversation at the club with a fellow member, Jerry Hayes, he remembered that he had a large A3 printer languishing in his office that wasn't being used. He kindly offered it to the cause and a week later, my garage and workshop looked like an ink-covered tip once again. Happily, this printer had twice as many gearboxes and two of them had toothed belt drives, **Photo 6.**

The gears, drive belts and motors were all carefully extracted and the printer was later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duly dispatched to printer heaven, namely the council's recycling tip.

Now there was the chance to create two similar, and quiet gearboxes with belt drives from 12v motors to a large output gear. This meant the motors and their outputs should turn at roughly the same speed, and therefore the feet would 'paddle' in synchrony, at least that was the hope.

Once the gearboxes were sorted, which involved a fair bit of dismantling, moving gears and belts around, drilling holes etc., they were mounted in half of a blue five litre plastic can, **Photo 7,** as a sort of 'test duck' to see how the feet propelled it, and the result? One bath test later and bingo, the feet moved in synchrony and a bit less noisily, **Photo 8** showing the twin paddling feet.

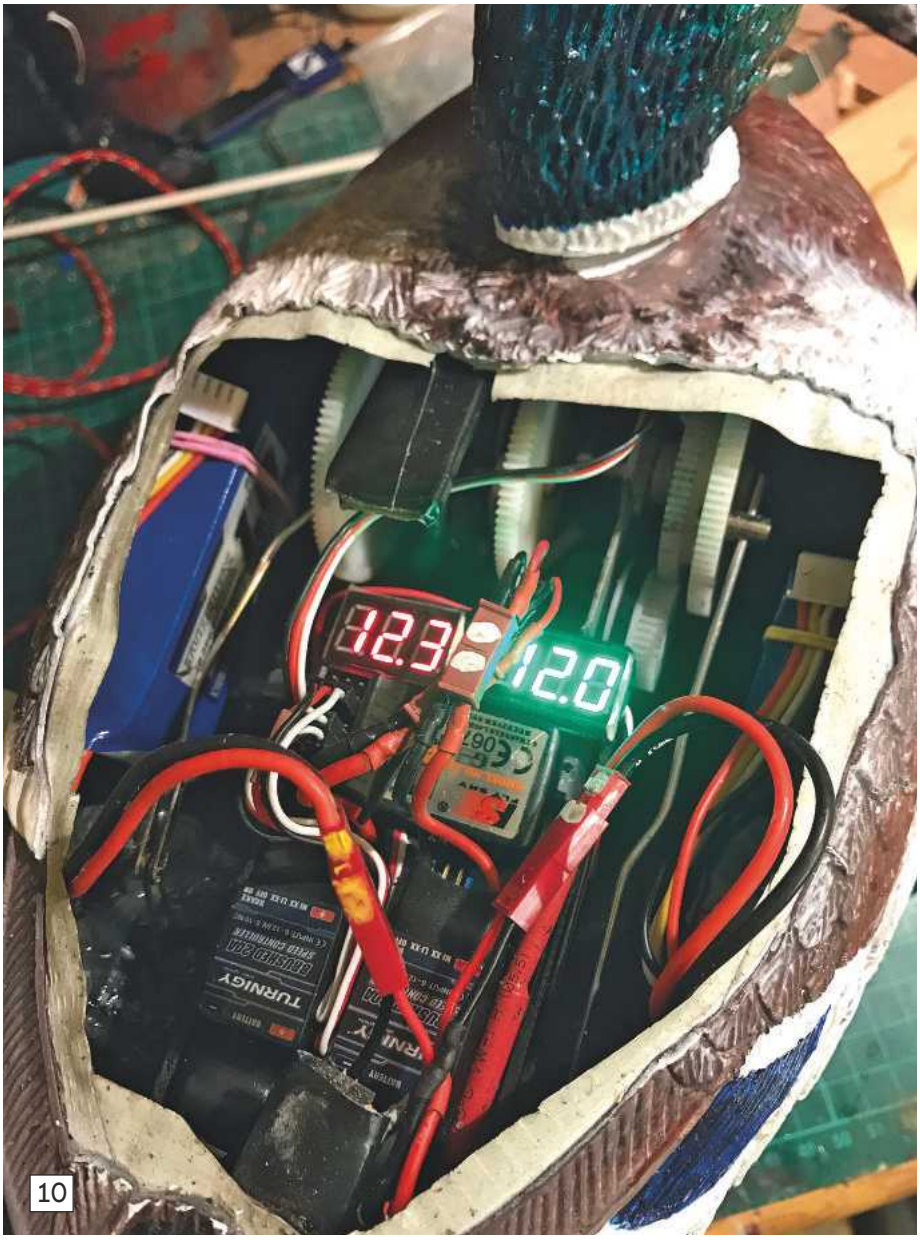
Leaks?

The big question now was how to seal the bottom of the duck to the legs whilst allowing them to move backwards and forwards as the crank moved them, and this proved particularly tricky. Rubber grommets were the first line of attack, but the movement of the leg was moving the thin plastic of the tub up and down, so making the seal still leak, and quite quickly at that. After talking to Tom Billingham, another Stourbridge MBC member, he came up with the idea of thin neoprene layers with a very small hole punched through them, glued to the external skin of the duck. This was actually very successful and after a couple of attempts at gluing the neoprene, this worked very well as the legs were free to move back and forth without allowing water into the 'hull', but it was not over yet as another challenge then arose.

This was how to make the two motors work independently, to turn (rotate) the duck in the water. In a normal r/c model boat, a rudder is used, but here the aim was for it to be an as realistic as possible duck, and so back to the drawing board. The first idea was to 'mix' the two motors so that Bob the Duck would operate in a tank-like fashion, something we sometimes do with our models. However, it was then discovered after buying an electronic mixer unit that the electronic speed controls (esc's) being used, needed to have a reverse as well as forward function. Have you ever seen a duck paddling in reverse? Me neither, so it was off to YouTube to find out how this problem might be overcome. In finding out more about throttle mixing, there were some clips describing how to mix the throttle and the steering such that one stick controlled both motors (and the non-existent rudder) and hours of fiddling about later, and hey presto, a turning (steerable) duck.

Installation

At this point, having worked out the control systems, the next problem was how to get it all into the basic plastic decoy duck moulding, which was clearly not going to be easy. A hatch was carefully cut at an angle in the top of the duck's back, allowing internal access. In order to secure it to the body for operational use, two magnets were fixed on brackets inside the body (hull) and on the underneath



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of the removable cover, together with some gaffer tape to provide a degree of water-tightness.

The leg holes were drilled in the right place in Bob's bottom section and the motors with gearboxes attached placed inside, **Photo 9.** A bit of a tight squeeze to be truthful, and still no batteries at this point. Having had some experience of LiPo batteries in other boats, I looked for some small 11.1v (3S) batteries that would fit either side of the duck internally, and eBay came to the rescue once again, but how to mount them so that they were removable but would stay in place?

Foam mounts with Velcro to attach to the batteries solved the problem and enabled them to be moved for perfect stability, if one can describe a paddling duck as stable.

The next problem was what to do with the electronics? Given that water might seep into the duck, it was prudent to mount these high in a tray that could be attached to a motor mount. The receiver, esc's and battery connections were all added to this tray and it was fixed in place, **Photo 10.** As you can see, it was all a bit of a squeeze, but yes it did just fit, but it was not over yet…..

Turning head?

At this point, thoughts turned to making the head turn left and right, and perhaps even seeing the lake from the duck's eyes which would mean a small camera of some sort. As before, eBay came to the rescue in the shape of a very small camera that could be inserted into Bob's head. This necessitated the removal of the head, **Photo 11,** and then the need to make a platform to mount a servo to turn it all. A mini-servo was purchased and following some testing the head wobbled violently left and right and then fell off its mounting! For some unknown reason, 'servo jitter' was occurring as a result of electrical interference. More YouTube research resulted in the need for a ferrite ring to wrap this servo cable around, which stopped the jittering. Why this problem manifested itself I do not know, but it did. Anyway, a tricky question remained as to how to fix the head to the servo, mounted inside the body?

The conclusion was that there had to be a means of fixing a servo wheel above the mounting plate in the head, through to the mounting plate inside the body. More hole cutting was required, but whilst thinking about this, the question of the camera was suddenly remembered. The solution was as with the 'hull', and two magnets were fitted to the head's side hatch, allowing it to be removed at will. The right eye was cut away to allow the camera to 'see' out, **Photo 12,** but then one had to think about mounting the camera in such a way that it could be removed to be charged.

Thankfully, the camera came with a little


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16

silicone jacket, **Photo 13,** that would stick to the inside of the head with silicone sealant. The camera was covered in Cling Film and Vaseline over the lens to prevent it sticking and then the whole thing was stuck into a big 'squidge 'of silicone inside the head, ensuring that the duck's eye opening and lens were properly aligned. Two hours later, the silicone was dry, the camera withdrawn and the cling film removed. Re-inserting the camera into the silicone jacket was just perfect, **Photo 14.**

Before the mini-servo was mounted in the front of Bob's body (hull) to rotate the head, some expanded foam (a child's blue swimming float, cut to size) was added for buoyancy should the duck start leaking badly, with a large piece added to the rear of the motors to keep his back end afloat too.

In the bath

Everything was connected and Bob the Duck duly powered-up. A slight humming noise and then with a gentle increase in throttle there was movement of the legs in a slow paddling motion, and all that was needed now was the bath test. Sadly, having the additional weight of the servo to turn his head and the camera, Bob was now very 'beak heavy'. More flotation tests followed with further butchering of the remnants of the swimming float resulting in a nicely rounded tummy piece that was stuck-on underneath, **Photo 15,** which gave Bob a much better posture in the water. The only negative, was that he looked a bit bland in his natural grey colour. After telling a good friend, Adrian Lowe, about the project, he kindly offered to lend his artistic skills and so Bob the Duck went on his travels to be beautified. A short time later, he emerged in all his colourful plumage, a fantastic testament to the artist's skills and actually looking quite attractive, perhaps even to the female ducks on the lake?

On the water and conclusion

The day finally arrived for Bob the Duck's maiden voyage (paddle?) and although the weather was grey and drizzly, the lack of wind was ideal as the lake was very calm. He calmly paddled his way serenely around the end of the jetty, turning his head occasionally to view onlookers with his one-eyed stare and recording their actions without their knowing, **Photo 16.** Bob the Duck had finally taken to water, thanks in part to his namesake, the sadly deceased Bob Hutton and to everyone else, especially my wife Rachael, who encouraged me with this unique challenge.

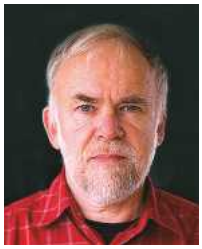
Enjoy your hobby - ***Eric Morse-Brown***

Stourbridge Model Boat Club

This club was founded in 2000 and is a small, friendly club with around 35 members with a wide range of interests, abilities and skills. They build, buy and sail radio controlled model boats of every description including sailing yachts, tugs, launches, warships, lifeboats, submarines and this duck……

The club exists to promote the building and sailing of radio controlled model boats of every description by all ages and genders. Help and guidance is always available to those members that require it. New members can be assured of a warm welcome, whether novices or highly skilled in model making and the club meets on Wednesday and Saturday afternoons at 2pm at their lake located at Mary Stevens Park, Stanley Road, Stourbridge, DY8 2YA.

Flotsam & Jetsam



John Parker delves into the archives

56: Model Maker Magazine

The immediate post-war years in Britain were a time of austerity with almost everything in short supply and food rationing in force, but as the nation began to recover from the shadow of World War Two, minds were at work within the publishing industry to consider the future of hobby magazines. Despite the difficulties of paper supply and bomb-damaged premises, the pent-up demand for hobby supplies and information created by restricted or non-availability during the war years, seemed to indicate there would be a promising future.

Origins

Two pre-war titles whose publication had ceased due to the war sought to re-establish themselves when it came to model boats. The first was Marine Models (incorporating the Model Yachtsman), published by Hutchinson and re-appearing in May 1946 with the Volume 13 Number 1 issue (please see Flotsam and Jetsam No. 32 in the MB November 2015 issue). It failed after a few years, despite a change of coverage and name to Marine and Aero Models. Percival Marshall's Model Ships and Power Boats' turn came in January 1948, and it was successful for a while, but changed its name to Ships and Ship Models in 1954 and was re-absorbed into Model Engineer in December 1958 (Flotsam and Jetsam No. 8, MB November 2013 issue). It appeared there was just not a big enough market for these magazines, with too little commercial industry to support them through advertising.

Meanwhile the Drysdale Press began publishing the monthly Model Cars and also The Model Mechanic on a monthly or bi-monthly basis. The latter covered mostly model engineering topics, but included significant coverage of model boats from time to time. A new series began in the July 1948 issue, 'Scale Model Boats' by M. Cowell and A. Palmer which included fine designs for the 21ft sailing dinghy and 38ft river cruiser Dubarry featuring on the cover. The editorial expressed concern that Board of Trade restrictions on paper supply meant that the magazine could not be printed in the required numbers, and was partly responsible for a price increase from one shilling and three pence to two shillings. Ultimately neither magazine proved sustainable on its own, leading to their amalgamation in December 1950.

Above: First ever issue of Model Maker, December 1950.

Right: Advertisement for Model Cars magazine, 1948.

Below: Model Mechanic, July 1948 issue.

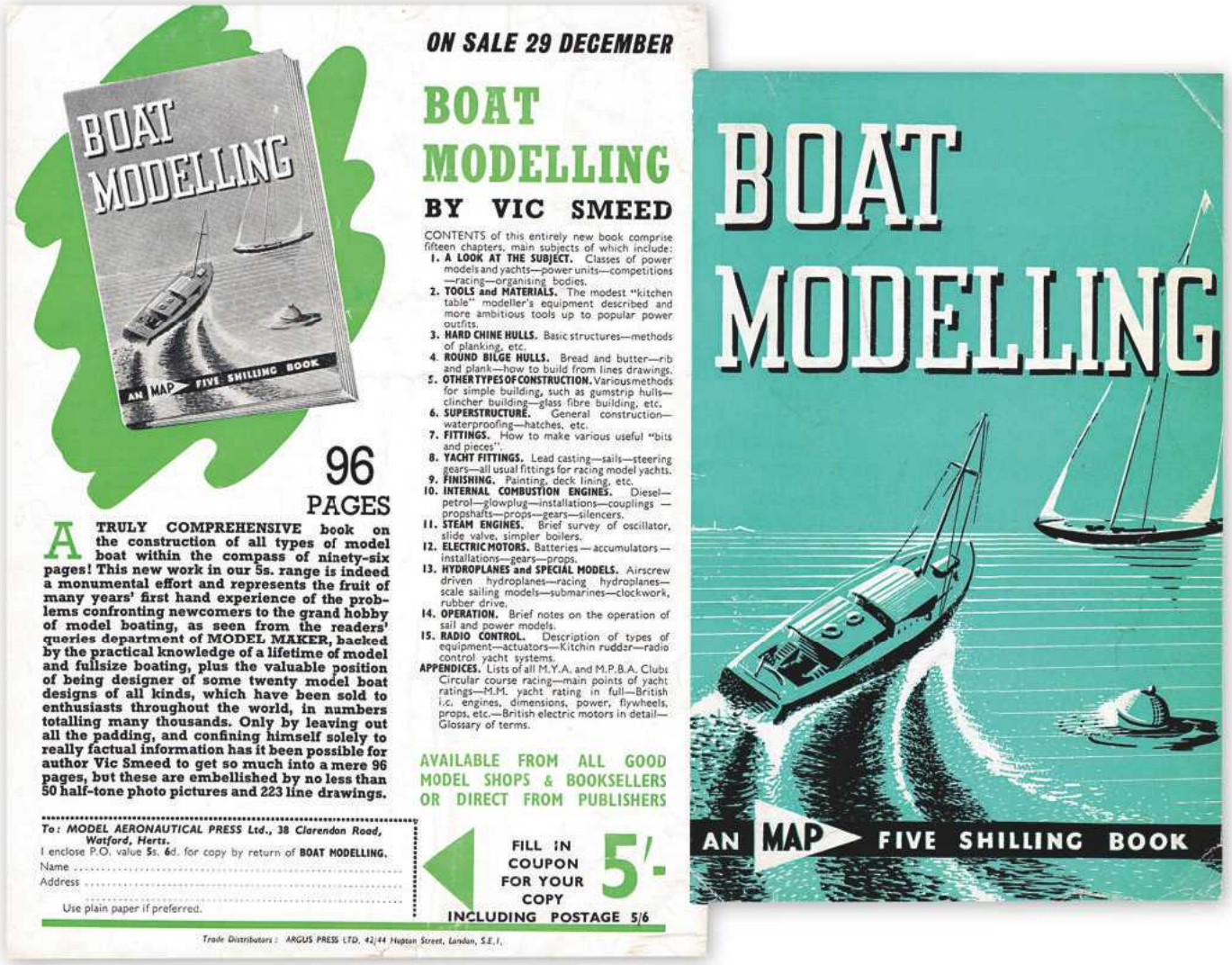
Above: Joint Aeromodeller and Model Maker Plans Handbook, 1955.

Model Maker

The new combined magazine was called Model Maker and its remit was coverage of all aspects of modelling except model aircraft, which remained the concern of its sister magazine Aeromodeller. Jointly edited by G. H. Deason and D. J. Laidlaw-Dickson after the first issue, there was no shortage of material for Model Maker to fill its 68 pages each month. Drawings for workshop equipment and live steam locomotives were interspersed with articles on tethered cars and model yachts; technical articles tackled topics such as speedboat hull design and waterline calculations; a regular series described the latest car designs; scenic and architectural models sat alongside features such as building a flash gun or a Wimhurst Machine; there were engine tests and reports on race meetings and regattas.

There was very much a sense of the magazine feeling its way, trying many things and relying on reader feedback to decide the best content. Another way of judging the popularity of a subject was according to the sales of plans from the embryonic Model Maker Plans Service, of which the earlier Model Mechanic and Model Cars plans formed a nucleus. This was steadily added to month by month, gradually becoming probably the largest model plan collection of its type.

Right: March 1956 issue showing typical period cover style.



Above: Vic Smeed's new Boat Modelling book being announced.

Below: December 1959 issue with plan for the tug Cervia.

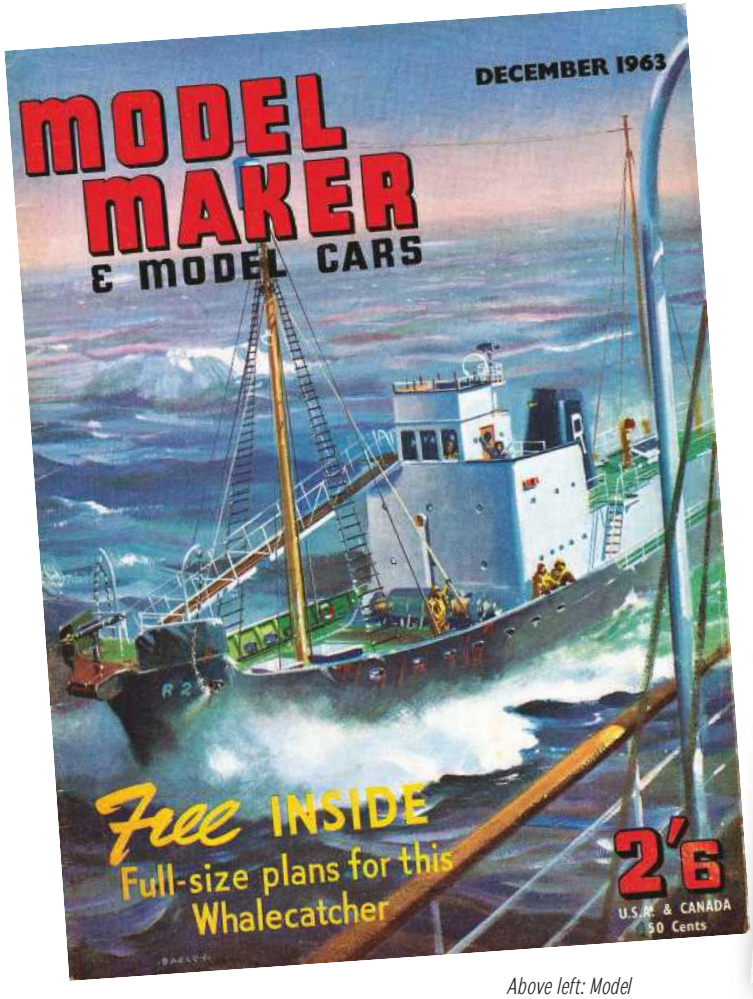
As the magazine settled into its stride, the coverage of architectural and novelty or oddball subjects began to reduce, and the more mainstream ones of model cars and model boats began to predominate; more than two dozen designs of the latter were published in 1954. More and more model boat hardware, fittings and kits, such as the Aerokits range, were being produced by the trade, and by highlighting these within its pages the magazine helped the industry grow, and grew with it by benefitting from their advertising. The newly dawned space age was not to be ignored, as there was a flurry of space models in 1955 and 1956, penned by Peter Holland and rejoicing in names such as the TEAL (Tripetal Electric Ambulatory Locomotive).

Vic Smeed

The well-known Vic Smeed, who had previously been a contributor, joined the staff as Assistant Editor from the April 1954 issue under Laidlaw-Dickson and became full Editor in January 1959. With his first editorial in the February 1959 issue, he issued a new readership survey, remarking that circulation has steadily grown since the previous survey of six years previously and promised to make; 'Whatever changes the readers wanted', within the bounds of possibility, that is.

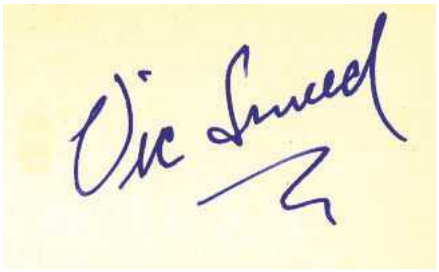
Vic's editorial duties did not prevent him from continuing to design an immensely popular series of model boat designs, often aimed at the beginner or modeller with limited workshop facilities. His book, Boat Modelling, appeared in 1956 followed by the more comprehensive Power Model Boats in 1959 and he also found time to compile the Model Maker Manual for 1957 and the Model Maker Annual for 1963. The publishers of all these and the magazine was now known as the Model Aeronautical Press Ltd, later changed to Model and Allied Publications Ltd to more accurately reflect the company's activities whilst retaining the well-recognised 'MAP' logo.

The 9.75 x 7.25 inch (248mm x 185mm) cover of Model Maker at first featured black and white photos of an event or the models described inside, but later this changed to a single subject photo with two-colour enhancement. Occasionally, a painted cover illustration was used, and the artist was usually Laurence Bagley. His best work appeared on the 'Bumper Christmas' issues reproduced in more colours. These enlarged editions carried a heftier two shillings and sixpence price tag against the usual two shillings cost, but included a separate free model boat plan of a subject carefully chosen for its wide appeal to the readership, usually



Above left: Model Maker and Model Cars, December 1963.

Above right: A new dedicated radio control magazine was proposed in 1959.



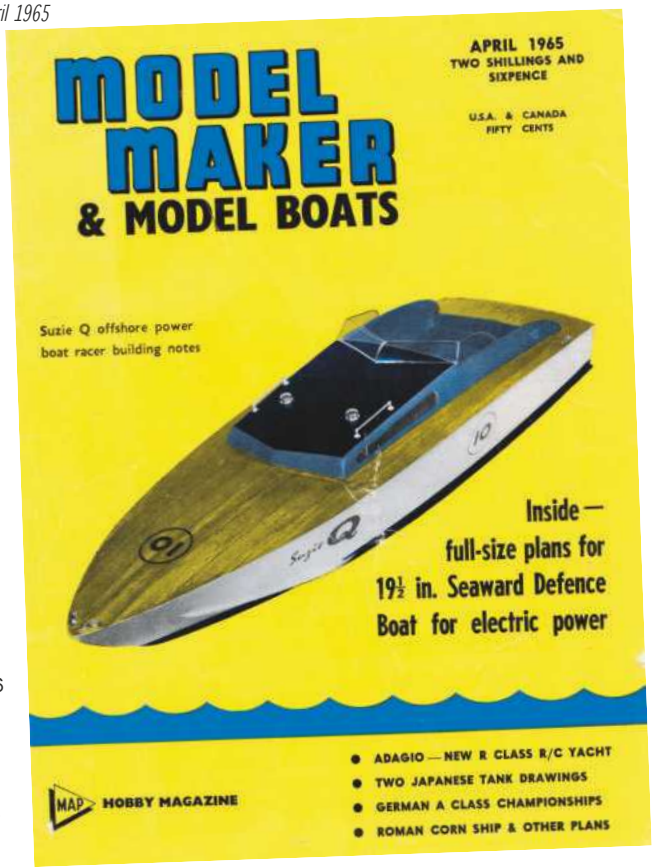
Left: Vic Smeed's signature, very much in the style of the times. We send emails and texts now, usually without a hand-written signature.

penned by the editor himself. These included the Vosper RTTL (1958), tug Cervia (1959), express cruiser Pirana (1960), E-Boat (1961), missile boat Slalome (1962), whale catcher R2 (1963), fast electric Remora (1964), motor yacht Dimarcha (1965) and the yacht Starlet (1966).

Change of name

Two trends could be identified at this time. One was the growing interest in radio control, stimulated by a fledgling radio control industry but still largely the domain of experimenters who built their own equipment. A survey was issued in November 1959 asking readers if they would support a magazine dedicated to the subject and following a favourable response, the first issue of Radio Control Models and Electronics duly appeared in May 1960. Looking through some early issues is a reminder that Vic Smeed was also a prolific designer of model aeroplanes. That magazine continues today, restyled RCM&E and with the emphasis on flying models rather than electronics. Another trend was the growing popularity of table-top electric model car racing. The battle between the rival slot and rail systems had been underway for some time and it was felt that the time had come for electric car racing and associated modelling to have its own magazine. To this end, Model Maker was retitled Model Maker and Model Cars from February 1961 as a prelude to hiving off the model car content into a separate magazine, which nevertheless didn't happen until the first issue of the new Model Cars appeared in April 1964. Left with a content that was predominately model boating and with other specialist magazines to cater for model engineering and model railways, Model Maker became Model Maker and Model Boats from the July 1964 issue, and the move to a dedicated model boat magazine was completed when the April 1966 issue appeared carrying the simple title Model Boats. It has carried this title ever since, the longest running monthly magazine with model boating content, the magazine that you are now reading and Paul Freshney being only its third editor, having been in the 'seat' since 2007 for the last 10 years, John Cundell coming after Vic Smeed and serving for more than three decades until 2007.

Below right: Model Maker and Model Boats April 1965 with Suzie Q on the cover.



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Boiler Room PART 7

PART Eighty three: Affordable Steam

Richard Simpson's series on model steam plants

The first six articles of this mini- project have related to the building of the Anna model which is now completed, but so far little testing had been done on the steam plant to determine its operational ease and convenience, apart from identifying the best location in the hull. This final part of the project therefore discusses what to do to get Anna seaworthy before its first successful run on the water.

Preparing the 'Tiny' steam engine

I would always recommend a period of running-in of a steam engine to relieve its tight manufacturing tolerances and get some oil into the right places. With this engine being such a small and simple device, there was no need to make a lengthy process of this, but it is necessary to start the process of bedding-in of its running surfaces and to prove that it works reliably. Tiny was put in a vice (very carefully!) and an airline attached to one of the connections, **Photo 1.** Usually the easiest way of lubricating an engine internally when running in, bearing in mind that a displacement lubricator will not operate with air, is to inject oil into the supply airline. In this case it was much simpler to push the port faces apart by compressing the holding spring with a finger and place a couple of drops of oil on them and to the piston, **Photo 2.** The oil will lubricate the faces and be carried over into the cylinder while it is running on air. Normal engine oil is my choice for running-in, both internally and externally, so after a couple of drops on the port face and a spot on each of the bearings, the air was very slowly opened up until the engine would run when flicked-over. It was then run in both directions for around 60 minutes, being lubricated approximately every 10 minutes. The speed was varied slightly to give it a thorough run before everything was thoroughly cleaned and notably, the piston in this Tiny steam engine can actually be

Photo 1. Running in an engine is something we should always consider before the first use. If you use compressed air, then oil has to be applied manually and frequently. I prefer normal engine oil to bed the parts in rather than steam oil, which works so well as to prevent the bedding-in process.

Photo 2. Tiny is easy to work with and the piston can be removed in a couple of seconds. Pushing on the end of the port face spring holder allows access to the faces for lubrication and the piston can be dropped out for a clean and an oiling.

removed by simply pressing the holding spring until the connecting rod comes off the crank pin.

Initial bench testing

I cannot emphasise enough, the importance of testing a steam plant on the workbench under as normal operating conditions as possible. The first few trials may well hopefully uncover one or two things that need attention as well as giving you the valuable information needed to be able to put it on the pond and confidently see it sail away out of arm's reach. The first test is having a play with the accessibility aspects of the model and ensuring that everything can be operated quickly and easily. This process had already been started with the selection of the USE boiler as well as fitting the lubricator into a wooden stand to ease filling and emptying while still allowing it to be easily moved. What I was now looking at, was how easy it would be to actually put the water into the boiler, light the burner, add oil to the lubricator and lubricate the engine, empty the separator and assemble the model ready to put on the pond. The USE boiler is designed to be filled through the safety valve mounting with the level plug on the forward end removed to vent it,

Photo 3. When water is seen at the level plug, the boiler is automatically filled to the correct level so the plug can be replaced and the safety valve refitted. It is then time to lift up the boiler, place the fuel in the burner tray and light it. This immediately raised one concern, which was the fact that without a steam valve on the outlet, the water was then free to drain into the supply line and produce a big 'slug' of cold water, which would be the first thing through the engine.

Continuing on this theme, another thing I noticed was that it took some time for the fuel tablet flame to establish itself, so closing the boiler too early could actually put it out and this further highlighted the concern of the water running down the steam line. I had a play using domestic tea lights in the heating tray below the boiler, but the flame was too high and the boiler always extinguished it when lowered, plus the heat given off was very weak and the soot deposits left on the casing seemed excessive. However, at the time of writing, tests with another option of a gel type of fuel, show great promise for the future, but the recommended heating tablets are what we are running with here.

Photo 3. Without a sight glass, the boiler level can be guaranteed by filling through the safety valve mounting up to the level plug. The boiler holds far more water than the fuel tablets can use, so there is no worry of it running dry.

The first steam test proved to be quite disappointing and there is no denying that. There were leaks from the level plug seal and the safety valve, and the boiler could not generate enough steam to even turn the engine over before the heating tablets were spent. Not a good start! A study of the safety valve showed that its adjustment method is quite basic in so far as you simply crimp the spindle a bit higher up to force the spring to sit a bit tighter, but adjusting to a lower pressure would be significantly more challenging, so to enable the test to progress with the minimum of downtime, the safety valve was replaced with one from the spares box. The seal on the level plug was also replaced and another test run instigated. Once again, the steam pressure was not adequate to operate the engine before the heating tablets had been used, so it was time for a rethink.

Modifications

One thing that frustrated me and was really an overspill from my experience with larger model boilers, was the fact that I didn't really have much of an idea of what was going on, mainly as there was no pressure gauge to check. I also suspected that steam was leaking through the steam line while the boiler struggled to get up to pressure and it took a significant amount of heat to get cold water up to temperature, thereby wasting a large proportion of the available tablet's heating energy. So, a pressure gauge and an isolating valve on the boiler seemed to be a good idea.

Photo 4. A simple hearth and a couple of silver soldering jobs made the components of the outlet manifold.

It was a bit disappointing to have to put some more money into the project at this late stage, but a valve and a pressure gauge was going to be necessary for the safe and reliable operation of Anna, and of that I was now convinced.

An arrangement was sketched that would work, bearing in mind that the fittings would have to clear the insides of the hull when the boiler was lifted. Normally I would advocate that a pressure gauge be mounted directly on the boiler shell, but with no spare mounting available and the gauge being only for guidance rather than as a regulatory requirement, it was mounted on the steam line. The valve and pressure gauge were purchased from Tony Green Steam Models and making the modified steam line components was commenced, **Photo 4,** for the pressure gauge and isolation valve. This was all assembled into a branch, **Photo 5,** designed to be accessible yet clear the internal components when the boiler was lifted, **Photo 6.** This was all fitted to the boiler and checked for clearances and it was time for another test, **Photo 7.**

Photo 5. The finished manifold with pressure gauge and isolation valve ready to fit. A conical fitting was also added to the end of the outlet pipe on the boiler.

Second bench test

This time the knowledge gained from the first test was taken into consideration. First, the isolation valve to the engine was closed and the boiler filled with water. The big difference now was that the pressure vessel was contained and it was filled with boiling water from the domestic kettle. It is probably not too much of a hardship to have a flask of very hot water with you at the pondside for the boiler, as this will save a lot of fuel energy and should greatly increase your sailing time on the water. So, with hot water and a closed steam line the tablets were lit and the boiler dropped down over them. This time, steam pressure was noted after just a few minutes and the boiler did not show any signs of leaks, so it was all looking a lot more promising.

With the engine ready lubricated and steam oil in the lubricator it was time to slowly open the steam valve. With only a small pressure showing on the gauge, the Tiny engine finally kicked into life after a flick of the propeller and its speed was easily controlled with the steam valve. The engine ran for the whole duration of the fuel tablets 'burn', and for well over 15 minutes. This could only be a rough estimate of endurance, as a difference will be noted when any model is on the water and its propeller is under load, but at least it now all worked okay.

Photo 6. The new manifold in place on the boiler. The arrangement is neat and tidy and now allows pressure to build before opening the steam line to the engine, plus you have a good idea of what is going on inside the boiler.

Photo 7. With a folding boiler, the operation of lifting it up cannot be interfered with and so the manifold had to clear all the internal components when in that lifted position.

First time on the water

Feeling rather more positive, Anna was taken to the pond and duly equipped with a flask of hot water, steam oil and some fuel tablets, the model was prepared for the first time on the water. The same process was followed as at home on the workbench, after making sure that any existing water in the boiler was removed to ensure the new supply was as hot

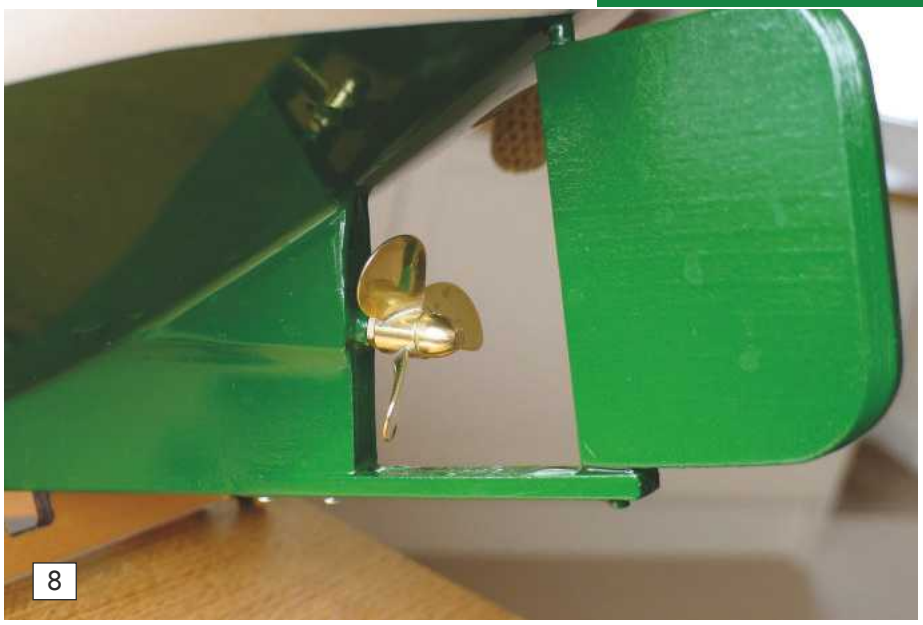


Photo 8. The plastic propeller proved to be poorly designed and extremely ineffective. The new brass version is very reasonably priced and not only performs considerably better, but looks much better as well.

as possible, and as soon as steam was raised and the engine flick-started, Anna was placed on the water.

What a disappointment! Performance was dire to say the very least and while I expected that the Tiny steam engine would never pull a water skier, I did expect it to actually move Anna around! The speed was so slow that it was frustrating to watch, so the tablets were allowed to burn out before taking Anna home, and back to the drawing board. There was no desire to change the engine and I couldn't see how I was going to get much more pressure out of the boiler and any event, the Tiny engine did seem to be turning over at a reasonable speed. The steam plant was run again on the workbench, when it suddenly dawned on me what was wrong. Looking closely at the kit supplied plastic propeller and studying its pitch, it was clear that there were a few degrees of pitch at the boss, decreasing as you would expect the further away from it, but to a point where there was almost zero pitch at the blade tips. Clearly the area of the blades supposedly doing the most work had almost no pitch on them. It was compared with other propellers and sure enough that was obviously the problem, and so time for a little more expense.

Second time on the water

A new propeller was purchased from Model Boat Bits and a nice brass, three bladed 60mm dia. type was chosen, and apart from anything else it looked a whole lot better than the black plastic type, **Photo 8.** Hopefully this would be the last unexpected expense, but the next time on the water would tell. The next Sunday it was down to the pond again, the same starting procedure followed as before and on to the water and hooray! Off Anna went moving around the pond at an acceptable pace. This steam launch is never going to go so fast as to scare the ducks, but at least it could now be considered to be a successful working model and we can consider the project to be properly completed, **Photo 9.**

Conclusion?

If you remember the four criteria we looked at when we set out on this project, the following were considered:

1. It had to be as cheap as it possibly could be.
2. It had to use readily available off the shelf items that could be bought by anyone in the UK.
3. It had to be easy to build, therefore attractive to newcomers.
4. It had to be simple and reliable in operation.

As mentioned then, we could take each criteria to an extreme, but a balance between them a was the aim and everything was sourced from UK suppliers which has been also a positive consideration. Apart from a couple of challenges and one or two modifications, it has been straightforward enough and certainly all within the capabilities of the beginner.

As regards cost, it all came to the following:

Anna Kit:	£ 99.00
Tiny Engine:	£ 45.00
USE Boiler:	£ 105.00
Separator:	£ 16.00
Lubricator:	£ 12.00
Battery holder:	£ 5.00
4 x AA rechargeable batteries:	£ 8.00
Switch:	£ 10.00
Radio Set:	£ 30.00
Rudder servo:	£ 2.00
Pressure Gauge:	£ 23.75
Isolation Valve:	£ 16.50
Brass propeller:	£ 17.20
Total:	**£389.45p**

We have achieved an affordable steam powered model for a price considerably lower than a lot of model boat kits cost nowadays. Admittedly it is simple, however the original thought of using it as a starting point to which modifications could later be made, such as perhaps a more powerful and reversible engine, have now been changed as the simplicity of it all is quite appealing. Anna is reminiscent of models from years ago when all you had was a non-reversing engine and their non-r/c rudder was simply set in the hope that it would eventually return to the side of the pond, but this 2017 version does at least have steering, and all for less than £400. Whether we met the criteria I will let you decide, but I enjoyed this project and am sure you can as well.

Photo 9. The performance of a model with such a small single cylinder engine is never going to be exciting, but Anna moves around the pond gracefully and gently for around ten to fifteen minutes. As long as you are watching the time you should always get her back successfully to the pond's edge and enjoy sailing the model for many years to come.

Above: York MBC won the Best Club Stand award.

CADMA Model Boat Show 2017

Gareth Jones reports

As usual, this year's show was held at the Doncaster Deaf Trust at the beginning of June. It is a popular event, serving the East Midlands at a decent venue. There was a wide combination of clubs and traders attending, with a well-supported Bring and Buy stall, hot and cold food available at reasonable prices and for some of the time at least, the upstairs bar was open. I got the impression that visitor numbers were slightly smaller than previous years, but it may be that they were just spread out more evenly over both days rather than the very busy Saturday morning as in the past. The main hall and upstairs display areas were all completely filled with no empty spaces. An inflatable pool was available in a covered area adjacent to the hall for those that wished to do some sailing over the weekend.

The models

There were a wide range of these on display, some of which for a variety of reasons had been many years in the making. On the Nottingham MBC stand, Alan Norwood had his model of the Titanic, built from a weekly part-works magazine. It took him two years to collect all the parts and a further 16 years to build the model! However, judging by the number of other models built by Alan on the same stand, he has not dedicated all this time to the Titanic……

On the Goole MBC stand was a model of the Sea Link ferry St. Columba, built by Andrew Marr. The model was started when he was a young man and has finally been

Below: Andrew Marr has recently completed this model of St. Columba.

Above: Chris Behan is a top-class model maker as is confirmed by his Schnellboot 100.

Left: TLM Plashy is still in service today, and this is Jim Wormer's very nice model.

Below: Serica III has been finally completed by Gareth and Elizabeth Jones.

Above: The tug Maycock is being sympathetically restored by Tony Middeleton.

Right: Springer Garden by Linda Spicer.

finished 30 years later. The highlight of the Vintage Model Yacht Group stand was the A Class yacht Serica III, designed by Bill Daniels in 1956 and hull construction started by Arthur Levison later that year. After passing through several more owners, the bare wooden hull was bought by Gareth and Elizabeth Jones in 2016 and it was finally completed and sailed for the first time by the author and his wife only a few weeks before the show.

The prize for the model on show with the longest history, probably goes to the 1938, all metal model tug Maycock on the York MBC stand. She started life as the Marina, built by the Evans brothers of the Victoria Model Steam Boat Club and was rebuilt as the steam powered tug Maycock in 1948. After passing through the hands of a number of subsequent owners around the country, she was acquired by Tony Middleton of York MBC in November 2016. He has begun a

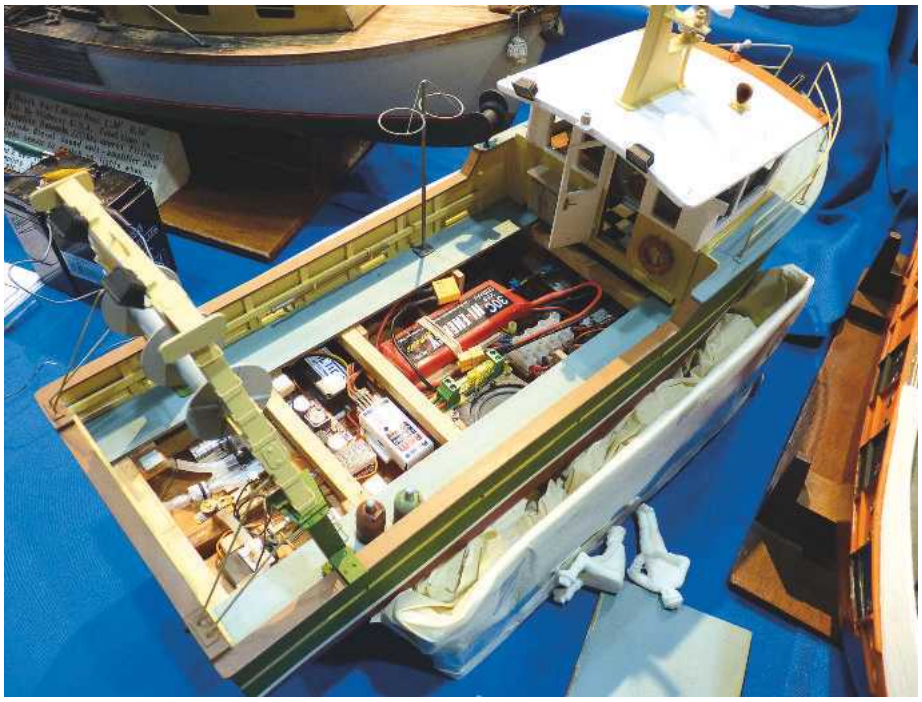
sympathetic refurbishment, where possible making matching metal components, and is about to add an all-metal reversing gearbox and radio control to extend Maycock's useful life into its 80th year.

Not all the models on display were serious scale models though. The Hull Castaways stand displayed a number of cleverly constructed models by husband and wife team Alan and Linda Spicer. Linda's Springer tug Springer garden was accompanied

by Alan's model Jerry Springer, and in the background of the picture is his model steamer Maid of Ply. On the Nottingham MBC stand were sailing models of a Dalek and R2D2 robot; the CADMA stand had a Minion rowing a small boat and Sheffield Ship Model Society had Bill Allen's quirky Huntsman.

For the more serious enthusiasts there were a number of fine scale models including Lulonga by Mick Ellwood of Roker Park MBC and the dialectically named trawler Wor Lass, built by Ray Bell from the same club. Chris Behan had a well detailed, crisply finished model of a German Navy Schnellboot 100 and Stan Reffin's latest project of what might be thought to be a simple small fishing boat, revealed with the deck removed some electronic complexity inside. There was a very nicely detailed model of the Thameslink Marine tug Plashy by Jim Worner on the Rawdon MBC stand and a fine Velox tug, which I think was John Pollitt's, on the Balne Moor MBC stand.

Below: Stan Reffin has managed to fit a huge amount of electronic wizardry in his small fishing boat.



Judging

The judge for the competitions was Mark Hawkins and after a thorough evaluation of all the models, he awarded Best in Show to Chris Behan's Schnellboot. The Best Club Stand award was taken by York MBC, perhaps in no small measure due to the efforts of Tom Pearce who could be seen patiently assembling it all by himself on the Friday afternoon before the weekend.

Conclusion

Brian Hill was the organiser of the show, ably assisted by Bryan Smith who has a long association with the CADMA club and its sponsored shows. Bryan was keen to point out that the strong points of the show are the quality and variety of models on display, and the friendly atmosphere that exists throughout the clubs and the decent number of traders that attend. However, I did see one trader's patience being tested by a customer who was haggling for an additional 'special show discount' on an item that cost less than £5!

Brian Hill will be retiring as organiser after this year, so the CADMA club will be looking to find someone to step into his shoes to organise the 2018 show. I am sure though it will be well worth a visit if you live in this part of the UK, so please make a note in your diary for the beginning of June 2018.

Above: Velox is currently in service at Southampton.

Above: Jerry Springer by Alan Spicer.

Left: Yes - Even a Dalek and R2D2 can be made to operate on water by radio control!

Below: This Titanic has been built from the Part-Works series.

Mayhem at Wicksteed May 2017

Nick Brown reports

Above: The early Saturday morning view across part of the display area which extends around a large part of the lake's perimeter.

Left: Dean's Marine latest kits.

Right: Mr. Mayhem himself, also known as Martin Davis!

Model Boat Mayhem at Wicksteed, to give its full title, is an annual gathering of members of the online Mayhem Forum at the famous Wicksteed Park. The forum was started by our brightly-coloured-shirt wearing leader Martin Davis, and in 2007 he contacted Wicksteed Park MBC to organise the meeting for the forum members and now it is in its eleventh year and still going strong. The show is held on the Whitsun Bank Holiday weekend (Saturday and Sunday) with many travelling to the park on the Friday to get as much model boating in as possible. Over the years, the weekend has been supported by numerous clubs, traders and individual exhibitors from all over the country and even from across the English Channel.

The 2017 weekend

For this year, the weather played its hand and the vertical mist (rain) fortunately stayed away, but Saturday afternoon did suffer from sudden gusts of wind. This didn't put off the Mayhemer's though, as during the two days more than 150 models were on display and many sailed on the lake. On the trade side for 2017, Ron Dean of Dean's Marine showed his latest releases which are two different versions of a Dutch minesweeper and Carl Tunnicliffe of Linkspan Models revealed the ongoing development of his forthcoming 1:96 scale Norland/Norstar North Sea ferry kit.

On the water

The show has always been very much a free sailing event, which means you always get a good mix of models on the water at the same time and one of the attractions of this event is that you never know what you're going to see until the actual day. For 2017, we had a combined WW1 and WW2 battle fleet sailing amongst trawlers and tugs, plus large scale yachts mixing it with motor launches.

The weekend always attracts some 'funnies' and King Lear MBC never disappoint and for 2017 we saw bathing beauties, ducks and a rather fantastic stern wheeler, crewed by Wallace & Gromit, built by Paul Mason. The 'Scots Lads', who are a combined group of enthusiastic modellers from north of the England/Scotland border, had three beautifully made Fifie armed fishing boats in various stages of completion. John Dowd from Runcorn MBC made the most of the good wind, sailing his J Class Endeavour yacht and amazing us with its manoeuvrability. Geoff Dixon who has built some amazing 1:96 scale battleships of the late-Victorian era, showed his latest development with the working guns on board HMS Iron Duke. The effects of gun smoke and flash from the barrels is certainly worthy of being seen in action, and he has posted details of how he made everything work on the Mayhem Forum.

One of the longest serving members of the forum is Phil' Abbot, aka 'Steamboat Phil', who has been working on his brushless straight runner for the last ten years (!) getting the bow just right. He hopes that the model will stay above the waves and not puncture any part of the human anatomy when it is stopped!

Above: The Wallace & Gromit stern wheeler.

Below left: Linkspan Models latest ferry kit was not complete at this time, but looking very good and due to be released later in 2017.

Above: A bathing beauty!

Right: Two Dreadnought battleships in manoeuvres.

Below: Geoff Dixon's fine HMS Iron Duke model.

Conclusion

Thanks in particular must go to Ruth and Gina Davis for the seemingly endless supply of coffee and bacon sandwiches, and to the Wicksteed Park MBC ladies for running the tombola stand. Many thanks as well to all who organised, displayed, sailed and visited in this 2017 year, for without you there wouldn't be the fantastic atmosphere that we have annually. Next year's Mayhem Weekend has already started to be organised and we have a Vic Smeed and Glynn Guest building competition that we hope everyone will want to take part in. We hope to see you here at Wicksteed Park in 2018!
Model Boat Mayhem Website & Forum: www.modelboatmayhem.co.uk

(Acknowledgement - a big Thank You to Alan Burgess for the use of his pictures)

(Editor's note: Nick is in the RAF, and he was deployed just after this Mayhem Weekend event, hence the unexpected delay in his getting this report to MB)

Below: Three Fifie armed fishing boats in various stages of construction brought to the Mayhem Weekend by our friends from Scotland.

Elbe 1

Bryon Calverley's unique model

Elbe 1 is a large model, 60 inches (150cm) long.

Readers may remember Bryon's S. S. Master model in the April 2016 issue of MB, when it was mentioned that Elbe 1 was the next project, but he awaited the plans. When these arrived, they were crisp and highly detailed on six sheets with numerous enlargements of the smaller fittings, albeit drawn all to a scale of 1:50. The plans were enlarged for a model length of 60 inches and construction took eleven months. The following is a transcript of his letter.

Research & background

The reader could be forgiven for thinking the ship's name is ELBE 1, however that was the geographical location of the lightship station, rather than her name. The lightship was actually named Burgermeister Oswald, honouring an executive of an organisation for trade and shipping in the Hanseatic city of Hamburg in the 1800's. There were at one time four lightships, all deployed at the entrance to the Elbe River and each with different superstructure configurations.

The original Elbe 1 (Burgermeister Oswald 1) was built in 1911, taking up position at the Elbe River estuary shortly afterwards and the bowsprit is clear evidence that the designer remembered the era of sail and perhaps it was even rigged as such initially? In 1936, this first ELBE 1 capsized in a violent storm killing all 15 crew members, the world's worst maritime disaster involving a lightship and due to the very bad weather, her recovery was not considered viable.

The original plans of this first Elbe 1 were then used to build a replacement vessel, Burgermeister Oswald 2, which would

Right: Elbe 1 being launched – note the transport trolley, necessary because of the model's size and weight.

Below: Amidships detail and lifeboats. This Elbe 1 was hit 50 times, between 1948 and 1988, so the lifeboats were probably essential!

Above: Wheelhouse and flying bridge detail.

Right: Elbe 1 illuminated on a foggy morning.

continue the service, providing navigational aid to vessels transiting the Elbe Estuary en route to Hamburg. She served in that location from 1948 to 1988 enduring fifty collisions, the worst in March 1970 when she was rammed by an Argentinian cargo vessel of 8000 tons. To everyone's surprise, ELBE 1 did not sink, but the collision destroyed her diesel motor and resulted in considerable damage to the starboard side amidships. She was repaired and returned to station seven months later, but now fitted with an upgraded engine of 650hp. To ensure the ship remained on station, a three tons weight mushroom anchor was designed to bury itself in the soft silt at the bottom of the estuary and the chain locker housed 245 metres of cable. The lantern on this ELBE 1 was rated at 1500 watts and designed to flash for ten seconds, then go dark for five seconds, enabling ships 30km away to identify her warning, and the foghorn signalled at a frequency of 300Hz.

In 1988, the vessel was retired and fitted with a large temporary tent like structure aft to support her new role as a historical and cultural museum ship, maintained and operated by a group of volunteers. She is affectionately referred to as the 'Red Lady', conducting regular sailings for locals and tourists from her home port of Cuxhaven to local areas in and around that part of the North Sea.

The model

Late in 2015 whilst searching for a new project, I was looking for a working vessel of vintage design. A friend suggested this German lightship and a photograph was passed to me, and my response was an

Above: Lantern detail.

Left: Foredeck and bowsprit, the latter being a throwback to the sailing era.

Above: Elbe 1 - starboard side.

immediate 'Yes'. After a few days of surfing the web, modeller's plans to 1:50 scale were found, available from a company based in the German city of Baden-Baden, website: https://www.vth.de

A German friend was asked to purchase the plans and mail them to me, and a few weeks later they arrived, were duly enlarged and construction commenced. This model was a great challenge as it required sourcing and detailing materials far more than for all my previous models. A friend with electrical expertise assisted in the installation of the LED lights throughout the hull and deckhouse, as well as the lantern at the masthead. Sailing ELBE 1 on a foggy morning, when illuminated, replicates the real vessel on station in a ghostly sort of way.

The hull is plank on frame construction with Sitka spruce used throughout. A single Robbe 755/40 motor is fitted, driving a 45mm brass propeller, propelling the model at well beyond scale speeds. However, speed was never a concern for the real vessel, as it steamed at only 7 knots maximum and spent most of her time on station, anchored! A six channel r/c system controls the throttle, rudder, LED lighting and rotating radar. Two large 12v 7Ah SLA batteries are installed, together with 15 pounds (7kg) of lead as additional ballast.

On the basis that pictures tell a 1000 words, I hope the accompanying images convey to you some of the features of this r/c model and a big 'Thank You' to John Callin for his photographs and all his support with this and my other projects.

Enjoy your hobby - ***Bryon Calverley***

Below: Proof that Elbe 1 does move under its own power - note the wake at the stern.

Test Bench

Model Boats looks at new products

Attention-Manufacturers & Distributors

● These pages are open to you - your shop window to bring to the attention of our thousands of readers, new products - kits, books, videos, engines, R/C gear, motors, anything that could be of interest to model boat builders. Send your information initially to **Model Boats Test Bench, PO Box 9890, Brentwood, CM14 9EF** - or ring the Editor on **01277 849927** for more details.

You cannot afford to miss this opportunity!

New airbrush sundries

Supplied by The Airbrush Company

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ABOVE: Iwata Lube.

LEFT: Iwata Spray Out Pot.

RIGHT: Iwata Universal Airbrush Holder and Hanger.

and it features two universal airbrush hangers that hold any combination of gravity-feed, side-feed, bottom-feed and trigger-style airbrushes. It has a heavy-duty clamp with extra depth for thick tables up to 3 inches (76.2 mm) thick and a bracket for connecting to the Universal Spray Out Pot (sold separately). £29.95 inc. VAT.

These products may all be obtained from The Airbrush Company Ltd, 79 Marlborough Road (East), Lancing Business Park, Lancing, West Sussex, BN15 8UF.
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Review by ***Paul Freshney***

Modeling the Extreme Clipper* – Young America 1853

Volume 2: Deck Facilities and Pre-Rigging

Written by Edward J Tosti, hardback, 224 pages, 312 x 238mm, over 500 black & white and colour photographs and diagrams. ISBN: 9780990404194, Published by SeaWatchBooks, LLC, 19 Sea Watch Place, Florence, OR 97439, USA.
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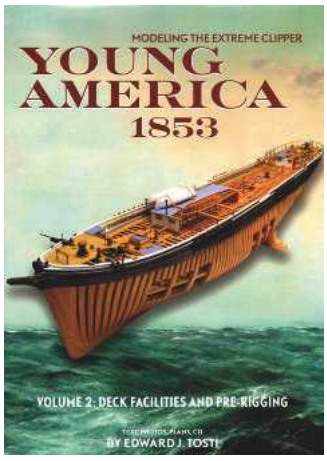
This book is only available from the publisher. Price: $75 plus $9 Shipping & Handling USA, $20 Canada and $30 all other countries.

The extreme clipper Young America was one of a specific class of American merchant ships, built by William Webb at his shipyard on New York's East River in 1853. The design of these ships was largely driven by extraordinary business opportunities created by the discovery of gold in California in 1849.

Unlike the typical freight vessels of the day, the clippers were designed largely for speed and 'extreme clippers' almost exclusively so. Profits on the sale of goods in Gold Rush era San Francisco were so high that East Coast merchants gladly paid exorbitant freight rates for fast passages.

This is the second volume in a series of books by Edward Tosti, in which he describes the building of his incredible model of the Extreme Clipper – Young America of 1853. The first volume**, which detailed the construction of the hull, was published in 2015 (reviewed in MB in the December issue of that year).

In this Volume 2, he continues with his unique, 'step-by-step', pictorial guide using text and hundreds of photographs, including a colour section to



describe in exquisite detail, the construction process; materials, tools and jigs etc., used to build the deck fittings and pre-rigging, including the weather deck enclosures, rails, capstans, bilge pumps, windlass, helm, anchors, forecastle and poop detail, boats and outer hull, concluding with a chapter on preparing for the masting and rigging. There is also a separate sheet of plans and a CD included with the book.

As with Volume 1, this is a superbly written and illustrated book by a master model maker, that will not only be an essential reference work for ship modellers wishing to build this model, but will also serve as an extremely useful guide into the methods, tools and techniques employed in the construction of ship models of this period.

Volume 3, which will be published in 2018/2019, will cover the Masting and Rigging.

* Please note American Spelling of the word 'Modelling'.

**Copies of Modeling the Extreme Clipper Young America 1853, Volume I, are available price $80 (plus shipping) from SeaWatch Books LLC, details as above, who regularly advertise in this magazine.

Book review by ***John Deamer***

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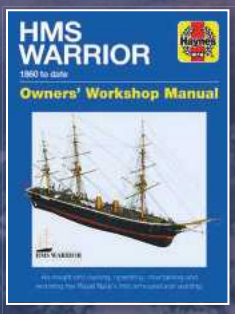

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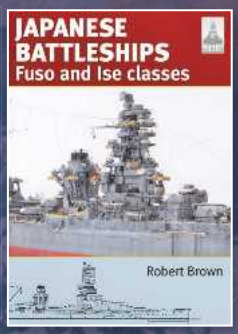

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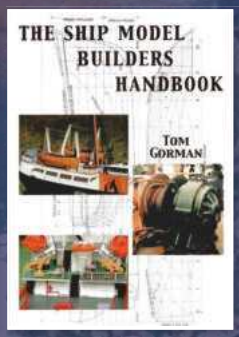

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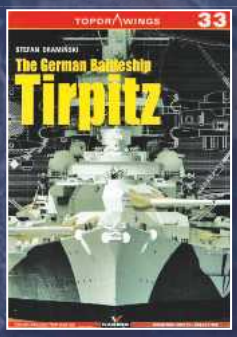

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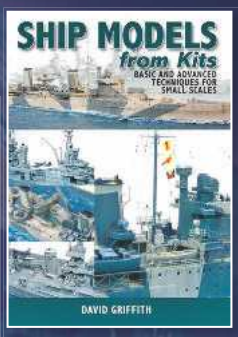

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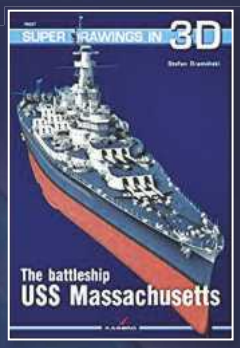

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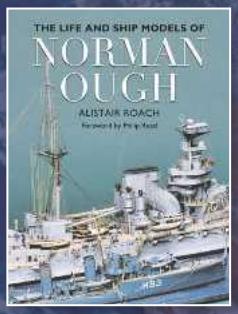

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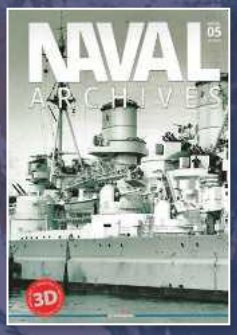

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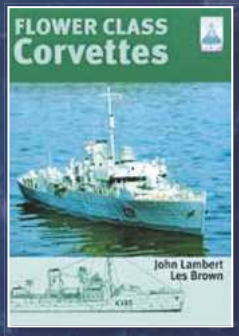

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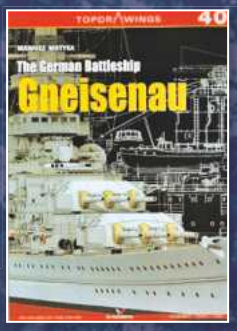

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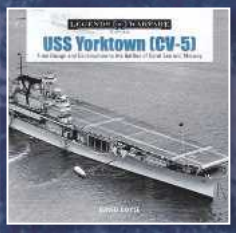

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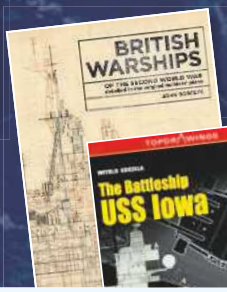

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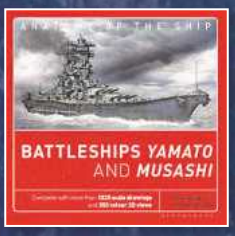

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SPEEDLINE LCM3 with Electronize esc & motors, Futaba r/c, 4600mAH battery, 5 amp BEC, sailwinch operated door with locks, stronger deck to take Tamiya Sherman tank & added detail, £500. Tony Long, tel: 02085 976560 (Dagenham, Essex).

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TRUMPETER BISMARCK 1:200 scale, 50 inches long, two motors, sails well, £450 ono. John Taylor, tel: 07928 244132 (Stevenage, Hertfordshire).

SCALE SUPPORTER modified and detailed AZIZ conversion to North Sea AHTS. Featured in MB, May 2016. High quality multiple prize winner. 1:48 scale with motors, esc's. Photos available. Only £650. Phil Scales, tel: 01772 629363 (Preston).

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SEVERN CLASS RNLI LIFEBOAT PLANS. A copy will suffice and al expenses met if anyone can assist please. Ivor Robinson, tel: 01704 222989 (Merseyside).

GRAUPNER PREMIUM ARTR KM GRAF SPEE. Are you now tired of your Graf Spee? if so, then I would like to buy it, reasonable price paid for original condition. Phil Scales Tel: 01772 629363 (Preston).

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1:700 Scale Naval Dioramas PART 8

Cruisers in action and at anchor

Chris Drage explains how to build these miniatures

At the time of writing, sadly, none of the ships described here is currently available as a 1:700 scale kit, at least without searching the 'after-market' for unbuilt models. However, although the WW2 cruisers in this piece are currently not manufactured, there is nothing to stop you creating similar dioramas for cruisers from other navies or indeed featuring any vessels of any type during any era and why this 1:700 scale? Well, as soon as you double the scale to 1:350, you actually quadruple the volumetric size of every vessel. Thus, you will need a lot of space to display a 1:350 scale diorama. With 1:700 scale you can get away with a number of ships in a very small space, yet still include enough detail to make them interesting, something that can become a problem with the very tiny 1:1250 scale models, and hopefully the following dioramas illustrate the point.

Right: Detail of HMS Sheffield. This cruiser survived in RN service post-WW2, not being broken-up until 1967.

Below: Detail of HMS Edinburgh. This cruiser was lost later in WW2.

Operation Halberd, 1941

During 24th to 28th September 1941, Operation Halberd sailed from Gibraltar with nine transports bound for Malta. Force H, reinforced from the Home Fleet, included HM ships Nelson, Rodney and Prince of Wales, together with air cover from HMS Ark Royal. Included were the cruiser elements from Force H and the Second Cruiser Squadron. This diorama features the cruisers in this operation, namely HMS Edinburgh, HMS Kenya and HMS Sheffield in line of bearing as shown in an I.W.M. (Imperial War Museum) archive photograph taken during the convoy's passage.

HMS Sheffield (Town Class) and HMS Edinburgh (Town Class third group) were each W.E.M. kits and HMS Kenya (Colony Class) was a Skytrex white metal casting.

In terms of detailing, each model required increased AA armament, which each ship had during the latter stages of 1941. The camouflage variation could not be more diverse with HMS Edinburgh in overall AP507b, HMS Kenya in Mountbatten Pink (a sort of grey/pink colour) and HMS Sheffield sporting a disruptive scheme, which continued from the sides over the decks and Alan Raven's Warship Perspectives Series proved a godsend here. All ships were detailed with photo etched (PE) brass and resin parts. Model maker's licence was taken with regard to the two Walrus spotter planes which are being prepared and launched from HMS Sheffield and HMS Edinburgh respectively. It adds interest to their otherwise bare decks and it is quite likely that reconnaissance flights would have been made with the Italian fleet posing such a threat to the squadron.

I managed to create a reasonable attempt at a 'lumpy' Mediterranean Sea and as the

Above: HMS Edinburgh, HMS Sheffield and HMS Kenya during Operation Halberd. HMS Sheffield is the centre warship, HMS Edinburgh has the well-spaced sloping funnels and HMS Kenya has the upright funnels. HMS Edinburgh was a sister ship to HMS Belfast, currently moored in the Pool of London.

HMS Sussex was a County Class heavy cruiser of the Royal Navy and she had 8 inch guns for the main battery.

Above: HMS Sussex: Port side detail.

Above: HMS Sussex: Starboard side detail.

cruisers in the original photograph clearly showed a lot of white water wake due to their speed, there is a lot of rough water in these areas. Once again, the dissolved toothpaste effect was employed to create spume just under, or on, the surface. Spray around the bows was created with teased-out synthetic material. It was not easy to model each bow wave to replicate those of each vessel accurately, but the waves that fan out from the bow wave are particularly pleasing. These are executed more accurately than in any previous attempt as at last, I was remembering the guiding adage of, 'less is often more'.

HMS Sussex - August 1942

In 1985 during a housing market downturn, my wife and I purchased a cottage very cheaply in Sussex. Years later, when White Ensign Models (WEM) announced that they were releasing HMS Sussex in her revised WW2 fit, I promptly put in my order and 'Here's one to grace the cottage', I thought.

HMS Sussex owed her modernisation to heavy damage from enemy action. While being refitted by Fairfield in York Hill Basin on the Clyde, she was hit by a German bomb on 22nd November 1940 just when the refit was almost complete. Being unmanned and filled with inflammable stores, she was gutted by fire and wrecked by an explosion. In order to avoid a major catastrophe, the order was given to flood her and HMS Sussex capsized in dock and sank with hundreds of tons of water on board. Repairs to the damage lasted until 9th August 1942. When she recommissioned, HMS Sussex had substantially the same appearance as before, but her pole masts had been replaced by tripods and her secondary armament was entirely new. She then went on to serve in the Home Fleet in 1942 and 1943.

The diorama depicts her as in the series of three photographs in Alan Raven's 'Man o' War County Class Cruisers' book. I had to set the diorama on a rather uncharacteristically small base in order to fit on a particular shelf in the cottage. This was largely dictated by the Domestic Authority, who never seem to understand the needs of modellers! The photos in the book show very little activity going on in and around the ship, thus the diorama provided an opportunity to liven things up a bit. The ship is at anchor in the River Clyde about to take on board her Walrus aircraft. Being at anchor, she has her starboard boom out to secure any whalers, motor boats and launches. A tug passes towing a barge of scrap metal destined for further up the River Clyde, and a Clyde Puffer fishing boat is bound for the open sea.

HMS Sussex was a straightforward build from the excellent WEM kit. The quality of this kit was extraordinary and please note the fine deck planking in the photo taken above the stern. The Walrus was also a WEM kit with etched brass detailing. The tug and barge were modified from the Tamiya Tugger set, whilst the fishing boat is scratch built. Employing the use of scrap pieces of etched brass, a cargo of scrap metal was created. A ship at anchor provides opportunities for activity on and around the ship and in this instance, a whaler has pulled alongside with the crew at 'oars aloft' prior to stowing them. The gangway is down in order to receive any launches the come alongside. The ship's crane is lowering its hook for the navigator to attach to the lifting ring and the co-pilot appears to be shouting instructions to him. Meanwhile, various crew members in overalls are preparing the catapult to receive the Walrus when it is hauled back onboard. Adding a crew, even in 1:700 scale (they are very tiny) does bring a model ship to life. Please also note the activity on the quarter deck close to the gangway and adding details like the oars to the whalers stowed

Above: HMS Sussex bow view.

Right: HMS Sussex stern view.

on their blocks on deck, adds that little extra which defines a good model.

It is important to protect the results of all your hard work in a protective case. I have built my own diorama cases quite cheaply using acrylic sheet and plastic glues to secure the sides, which are just butt-jointed together. It is important to actually build the case prior to completing the diorama so that rough handling required during fitting the base and side won't disturb the model. The result may not be the most professional looking case, but they are quite acceptable. If you want to add lighting to enable the full joys of your creation to be appreciated, perhaps try the small undershelf LED light strips available from eBay and other outlets? These are designed for shelves in cabinets, but when secured with black tape on the top of the diorama case, provide excellent lighting.

References

Antics Online
Website: www.anticsonline.co.uk
For Tamiya 1:700 Tugger Set, No. 31509

Woodland Scenics (American Company)
Website: www.woodlandscenics.com
Products are available via numerous UK stores if you check the website and its store locator facility.

Mod Roc
This is a plaster bandage used by sculptors and is handy if creating a mountain or cliff for example.

Polyfilla
Ideal for creating seascapes and any number of other features.

Primer Coat
Halford's Grey Plastic Spray Primer.

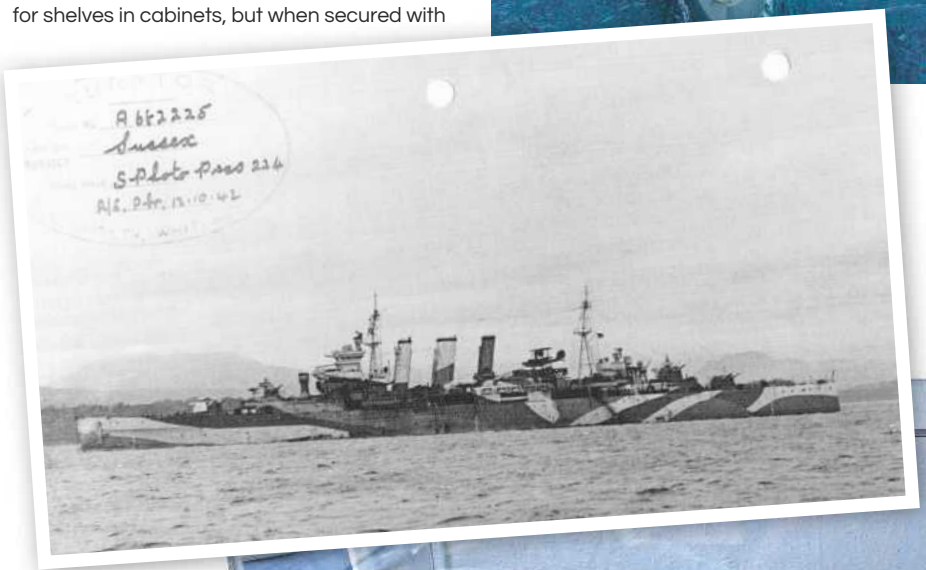
Acrylic Paints
Artist's acrylics, available from most art retailers.
The varnish is Tamiya Gloss Varnish.

Enamel Paints
Humbrol and WEM Colour Coat.

Conclusion

Dioramas provide a context for your waterline ship models and getting the seascape looking as realistic as possible is worth all the effort. Woodland Scenics are releasing the new 'Water System' this year and this product promises to enable modellers to create 100% realistic water for puddles or oceans. It should enable the modeller to create a seascape for a full-hulled model ship with its hull partially visible under water and not to mention the odd swimming shark etc. if it is a tropical seascape – so something to look forward to!

Next time it is the turn of the capital ships to feature in two more dioramas.



Above: HMS Sussex in an original b&w photo obtained from the public domain.

Right: HMS Sussex in its homemade Perspex case.

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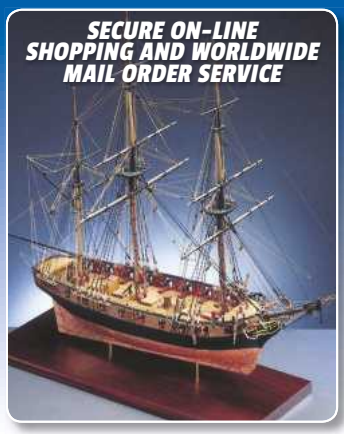

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30 years of know how

24V VIPER Marine
Brushed speed controller
Available in 15A, 20A, 25A or 40A

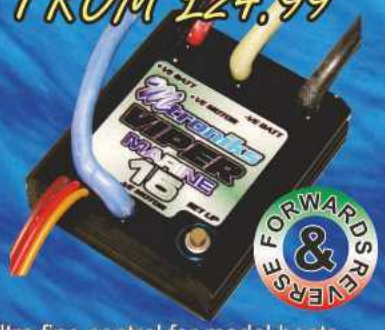
FROM £32.99

No Relays or moving parts!

Ultra fine control for model boats running up to 24V.
Available in different power ratings to suit all sizes of motors.
100% waterproof for trouble free modelling!
See website or contact your local dealer for more information.

VIPER Marine
Brushed speed controller
Available in 15A, 20A, 25, 40A or 75A

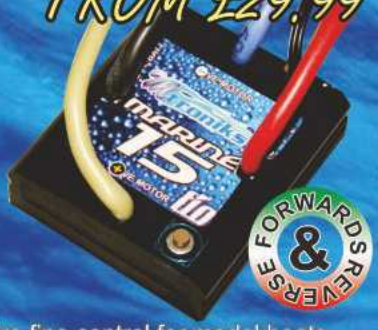
FROM £24.99



Ultra fine control for model boats running up to 12V.
Available in different power ratings to suit all sizes of motors.
100% waterproof for trouble free modelling!
See website or contact your local dealer for more information.

tio Marine
Brushed speed controller
Available in 15A, 30A or 50A

FROM £29.99



Ultra fine control for model boats running up to 12V, including Lipo cells!
Available in different power ratings to suit all sizes of motors.
100% waterproof for trouble free modelling!
See website or contact your local dealer for more information.

microVIPER
Brushed speed controller

£24.99

Ultra fine control for small model boats running up to 12V with a 10A motor limit.
100% waterproof for trouble free modelling!
See website or contact your local dealer for more information.

DIGISOUND
Realistic engine sound system

£65.99

Waterproof, 12V, amplified sound module for model boats that require realistic sound with engine start/stop, horn and changing running sound.
Speaker included!
See website for available sounds.

Marine motors
Brushed motors for model RC boats

M400

£6.99

M500

£8.99

M600

£10.99

24 Month Warranty on all Mtroniks electronic products

Mtroniks marine products are available from all good model shops, we are always available for advice direct

High quality speed controls designed and manufactured since 1987 in the UK

Mtroniks electronics innovation

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