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contents

Regular Features

NEW PLAN!

Bow piece

This 84 page July issue features a brand new plan for Wild Duck, which is now available from the Model Boats Plans Service. This hard chine sailing sloop is described in depth, it having been designed by Ray Wood who presents a full supporting construction article starting on Page 10 for this r/c model. It is an easy to build model and sails well, as he comprehensively demonstrates.

In addition, Matthew Jackson has built a super fully functioning model to a scale of 1:72 of the preserved steam tug Kerne, this being just over 12 inches long. Matthew has successfully vac-formed the hull using domestic kitchen equipment, the processes described being of particular interest to Model Boats' readers.

Francis Macnaughton returns to these pages with his r/c conversion of the 1:144 Revell HMCS Snowberry kit. These Flower Class corvettes are a perennial favourite for model boat enthusiasts and the availability of plastic kits in various scales has enabled these WW2 warships to be often seen at the local pond. Also, Chris' Drage is continuing his Waterline Masterclass and revealing more of the techniques he uses and has developed to achieve the perfect diorama.

We also have all the usual other regular columns including Range Finder, Flotsam & Jetsam and Boiler Room, plus a nice Gallery by Phil' Scales for his Hong Kong Police Launch No. 2, based on a Mountfleet Models hull, and so I hope there is something here for all our readers.

***Paul Freshney** - Editor*

Special Features

PLASTIC MAGIC!

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

***Model Boats** is Published by **MyTimeMedia Ltd** Suite 25, Eden House, Enterprise Way, Edenbridge, Kent, TN8 6HF.*

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Balne Moor MBC

On **Sunday 2nd July 2017** this club is holding an Informal Tug Towing and Scale Sailing event, £1 per boat. Also on **Sunday 23rd July 2017** there is a Scale Day with separate classes for large and small boats, £1 per boat. Everyone is welcome, 1030hrs start, bacon or sausage butties are available until 1230hrs, hot and cold drinks all day and homemade cakes until finished! Satnav location is DN14 0ER. More information can be found at: http://balne-moor-model-boat-club.myfreesites.net/scale-and-tug-events or by contacting mikebutler1949@gmail.com

Kirklees MBC

On **Sunday 10th September 2017** this club is holding its annual Warship and Navy Day at Wilton Park, Bradford Road, Birstall, Batley, WF17 8JH, from 0900hrs to 1600hrs. The theme of this event is warships and military, but other types of model boat are welcome, but sorry, no i.c. or high performance fast electric and steam powered vessels will need valid current paperwork. There will be a raffle, refreshments, toilet facilities, free car park, visiting clubs and hopefully some trade support with a large selection of warships on display. Steam powered vessels will need up to date paperwork. The RNLI will be also be on site raising funds. As a bonus there will be a classic car rally in Wilton Park on the same day. Please contact Stan Reffin for more information, tel: 01132 675790 or via the club website: www.kirkleesmodelboatclub.weebly.com

Naval and Grey Boat Day 2017

King Lear MBC will be hosting this event on **Sunday 27th August 2017.** All warship enthusiasts are most welcome for this informal and fun event. There is a jetty and slipway for ease of access to the lake with good access for the less able-bodied, so please bring your boats along for a sail. There is ample parking and picnic facilities at Watermead Country Park, Leicestershire, LE7 1PD. There is a £2.50 entrance fee payable. We hope to have a cold rolls and provide hot drinks on the day. Further information can be obtained from Graham Taylor, tel: 0116 2613959 or by email: kinglearmbc@ntlworld.com. For up to date information please visit the club website: www.kinglearmodelboatclub.co.uk

The International Model Boat Show 2017

A reminder that this three day event is once again being held from **Friday 10th to Sunday 12th November 2017** at the Warwickshire Exhibition Centre. The show will as usual provide visitors with a packed exhibition hall with over 600 fantastic models from over 25 club and society displays. The excellent and varied display of models from early warships to modern power boats and ships will be complemented by action on the large indoor boating pool. This year will also see the development of the show with the introduction of a Tamiya Truckin' display arena.

Over twenty specialist suppliers will also be present offering visitors everything they could need for their boat builds and other modelling needs.

Tickets are also on sale at discounted prices from: www.modelboatshow.co.uk.

The McManus: Dundee's Art Gallery & Museum

A new exhibition has gone on permanent display here as part of their 150th anniversary celebrations. The Maritime Quarter tells the story of Dundee's rich maritime heritage and the city's links to the wider world. Located in the Dundee & the World Gallery, a new bespoke case houses over 30 models from the city's collections. Alongside a range of model sailing ships, warships and half-hulls, the exhibition also features Dundee Perth and eight DP & L Shipping Company models acquired by the museum.

Admission is free, and opening times are Monday to Saturday 10am to 5pm and Sunday 12.30 to 4.30pm.

*Information supplied by **Kevin McGinley**, Communications & Public Relations Officer.*

Two Day Spring Show, 2017

This was organised by the Mid Thames Model Boat Club and was a great success with eight clubs attending with 75 members and 115 models. The event was overshadowed by the recent death of Richard Howard who had over the years supported model boating at this venue of the Beale Park Wildlife Park, Pangbourne, Berkshire. Both MT MBC and KMBDT have agreed, subject to the Trust's agreement, to run the 2018 show over the weekend of 5th & 6th May next year and once again at this Beale Park Wildlife Park.

*Information supplied by **Barry Chapman***

Correction – June MB

On Page 59, Richard Simpson referred to Cleveland Steam which is actually 'Clevedon Steam' – sorry.

Obituary

Richard Percival Howard, 18th May 1936 to 18th March 2017

With great sadness, it has been announced that Richard Howard, Beale Park Chairman of Trustees, passed away peacefully on 18th March 2017. He was an adored husband to Sally and incredible father to his daughter Suzie and sons William, Andrew, James and Duncan, with two step-children, Amba and Selby and beloved Bumpa to his 13 grandchildren and 6 great-grandchildren and will be missed every day by his family. The funeral was private, family only, but there will be a memorial at Beale Wildlife Park in due course.

Richard was of course well known in the model boating world with his large collection of model boats and yachts, and he was a prime mover in promoting model boating and bringing it to the attention of the general public at Beale Wildlife Park and Gardens, Pangbourne, Berkshire, Near Reading. He did a lot of positive things for our hobby and will be missed.

Our sympathies are extended to his family.

***Paul Freshney** – Editor.*

Wings and Wheels 2017

A final reminder that this being held at North Weald Aerodrome near Harlow in Essex over the weekend of the **24th and 25th June.** This is an outdoor event with a decent model boating club input and temporary pond with numerous traders. Admittedly, these traders are generally aero orientated, but there is still much of value to model boaters' such as discounted r/c systems, wood, glues, hardware, etc.
Website: www.wingsnwheels.net

Subscription Enquiries

Please note that queries about existing subscriptions should always be sent direct to the Subscriptions Bureau and include the full name, postal address, email and a phone number of the subscriber. Queries sent to the Editorial Office are only ever forwarded, as the data base is held externally and problems cannot be resolved by myself. The email addresses and relevant phone numbers are on Page Four of this magazine.
***Paul Freshney** – Editor.*

Model Boats Plans

Readers will have noticed that these are now available from the Traplet Shop, MyHobbyStore, our retail arm website, having been sold to them in September 2016. In point of fact, the plans had been printed anyway by the Traplet Shop for more than a year previously. MyTimeMedia who own this magazine, at the same time purchased some of Traplet's magazines and indeed have recently purchased an additional portfolio of titles from another publishing company, thus making this Group considerably larger in the publishing industry. There is no change in the ownership or publishing arrangements for Model Boats, or indeed its Editor!
***Paul Freshney** – Editor.*

Tutankhamun

Anthony Addams asks 'Are you ready for the Underworld'?

Did you know that Tutankhamun took 32 model boats with him into his tomb? Some were in a poor state and they did not leave any tools for him to repair them, but it is nice to know that 3300 years ago our hobby was shared by King Tut' and he even had a nice boating pond within his Luxor Temple complex. The question though perhaps, is whether modern paints and finishes would have still looked this good after 3000+ years?
Enjoy your hobby - ***Anthony Addams, 2017***

Lonabrak
A catamaran workboat

FREE PLAN!

Model Boats August 2017 issue is on sale on the 7th July2017

Next month in Model Boats

The forthcoming August 2017 issue of Model Boats will include a full-size Free Plan for Lonabrak, a catamaran workboat, designed and presented by James Pottinger. In addition, Anthony Addams builds what must be one of the smallest r/c kits on the market, this being the 1:48 scale Fairey Huntsman by David Pledge.

See more about what's in Model Boats magazine month-to-month in forthcoming issues and see some of the articles you may have missed from past issues and subscription offers on our website:
www.modelboats.co.uk

We have a great range of subscription packages that you can choose from, including **our new Print + Digital package** which give subscribers 13 issues a year with 6 free plans, 13 digital editions to download and keep PLUS access to an Online Archive dating all the way back to January 2007.
Don't forget! The August 2017 issue will be published on **7th July2017** price £5.15 – don't miss it! Order your copy now! Or better still why not make it your first copy in a year's subscription to Model Boats magazine? See our subscription offer on **Page 30** in this issue...

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If you don't want to miss an issue Just ask!

Contents may be subject to change.

PLAN FOR

Wild Duck

The detailed full size plan **MM2127** is available from the Traplet Shop which now incorporates MyHobbyStore and is priced at **£12.50** + p/p as of June 2017. Wild Duck is 21.75 inches (553mm) long with a 7.625 inch (194mm) beam. Plans may be purchased online at: **www. www.trapletshop.com,** or by telephone during normal working hours: 01684 588599.

NEW PLAN

Wild Duck

Ray Wood presents a new plan for a radio controlled single chine sloop model

My passion for home built boat designs comes from my experience during the early 1960's, when my father and uncle built a thirteen foot long sailing dinghy in our lounge, and when complete they took it out through the French doors into the garden for painting. My mother was, and still is, very tolerant of the Wood family hobbies and pastimes. My father had learned to sail on the Nile when he was in the RAF at the end of World War Two whilst being stationed at Aden, and during the 1950's and 1960's most sailing dinghies were of wood construction as this was a time before the mass-moulding in fibreglass caused a boom in production and availability.

The London Boat Shows of that era held at London's Earls Court saw many designers and builders displaying their prototypes and selling sets of drawings for the home constructor. The Jack Holt designed Mirror dinghy was becoming a popular home build project during that time with the advent of the stitch and glue method of joining plywood panels to produce a dinghy with built-in buoyancy, all supplied as a pre-cut kit, the sails coming from Jeckells of Wroxham, and over 70000 were built. Barry Bucknell, the television do-it-yourself expert of the day made programmes about this building project and it was of course sponsored by the Daily Mirror newspaper and one cannot imagine a national newspaper doing that nowadays

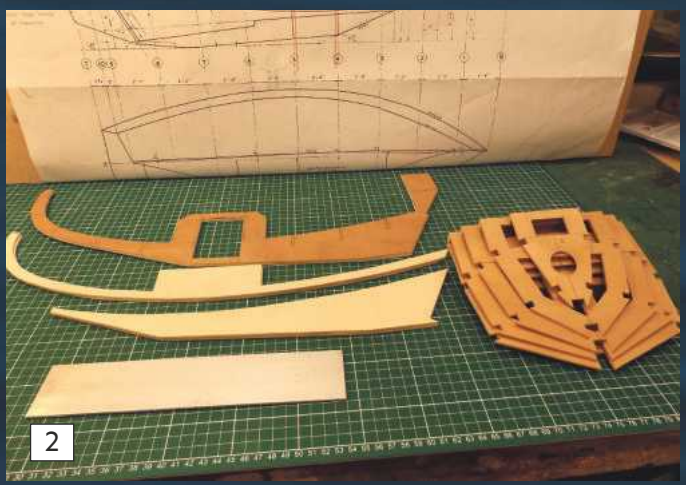
Wild Duck – design and the model

Wild Duck was designed by Alan H. Buchanan for the Yachting Monthly magazine (YM) as a single chine long keel sloop, for which drawings are still available from the Eventide Owners Association who are the custodians of many YM designs. It is my good fortune is to have a copy of Michael Verney's book of 'Building Chine Boats' which when bought in 1965 retailed at 12s 6d (62.5p if that were current UK money), which contains the drawings of many YM designs and is the source of this r/c model yacht. The Vic Smeed construction ethos of keeping the plywood hull and rig simple has been followed, with a few refinements for better performance such as a detachable fin keel if the scale model is required for display, carbon rods for the spars and some RG65 Class shortcuts to make the rig adjustable. Wild Duck is 21.75 inches (553mm) long with a 7.625 inch (194mm) beam. With the extended keel removed, and when presented on a suitable stand to follow full-size practice, she makes a reasonable ornament for display around the house if your domestic management team is in agreement. The Eventide Owners Association website also has a selection of pictures of the full-size yachts for reference.

Hull construction

This is constructed upside down on a flat and true building board, and for this I recommend 3/4 inch (18mm) MDF window board from your local DIY store. This will need a centre line drawn with a good straight edge and the bulkhead locations marked with a square across the board. The keel and doublers ply doublers are traced from the plan as in **Photo 1,** and the bulkheads are also traced and transferred to 1/8 inch (3mm) Birch plywood, but this could equally be Lite ply, **Photo 2.** The bulkheads are extended to the board and cut off later when the hull is structurally complete. The design shows the use of a fin keel with a bulb weight attached, although the long keel on the original design cast in lead would work I should imagine, but

1



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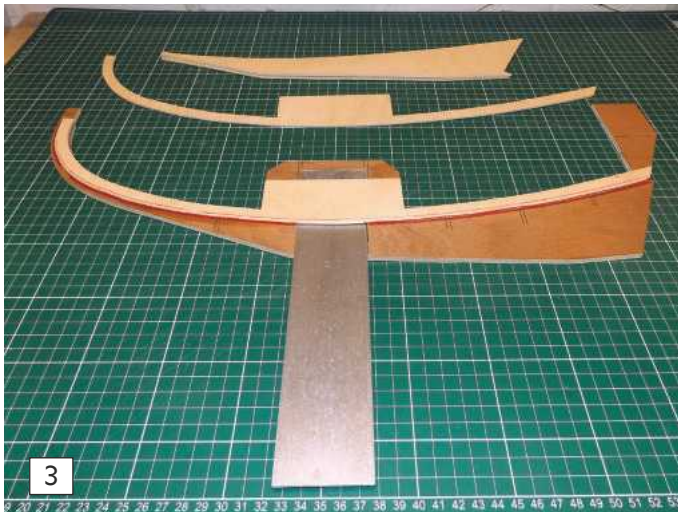
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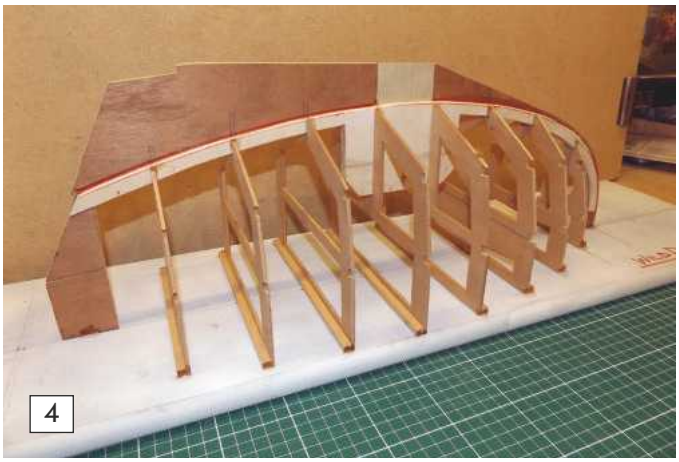
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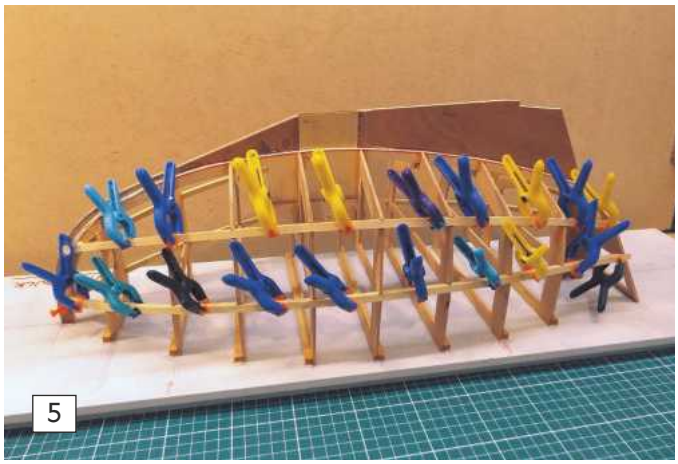
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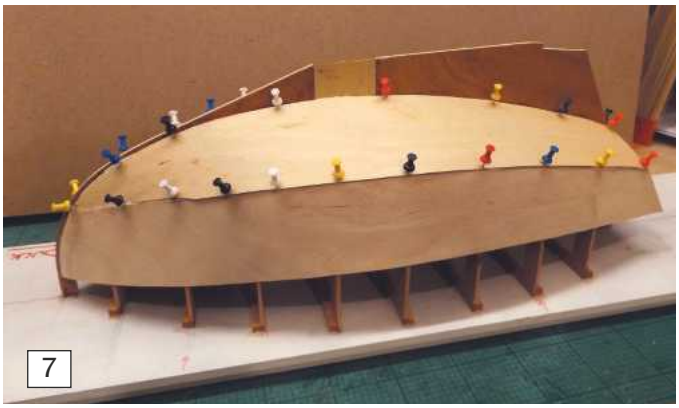
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8

a removable fin keel carries the weight much lower and gives a better righting moment for the same given weight, **Photo 3.** The fin on the prototype is of 1/8 inch (3mm) aluminium sheet and two inches wide, which means the 1/4 inch (6mm) central ply keel has some packing pieces inside the doublers to produce the required 1/8 inch (3mm) wide slot, but this could equally be a 1/4 inch (3mm) plywood fin keel with the leading and trailing edges suitably chamfered.

The fin is retained by a 1/8 inch diameter brass pin through the keel doublers, allowing the fin to be removed for static display. The bulkheads were mounted on some temporary cross members and glued to the building board, not forgetting to make sure they were all on the centre line, **Photo 4.** The chine and gunwale stringers are 1/8 x 1/4 inch (3 x 6mm) Obechi, which bends nicely, and they were pinned in place with some mapping pins and small spring clamps until the adhesive was dry, **Photo 5.** I am currently using Gorilla water resistant glue for all the hull joints and it seems to be very good.

The bottom skins are cut to fit the hull shape and old cereal packets, or as in this case a semi-rigid opaque plastic was used (a bit like tracing paper), make good templates, **Photo 6,** for cutting the 1/32 inch (0.8mm) plywood to shape as its becoming rather expensive these days and we all want to avoid wastage, don't we? **Photo 7** has the actual skins pinned and glued in place and then the long keel doublers were fitted externally, **Photo 8,** to give the keel its correct thickness.

The hull will need a proper supporting cradle and stand for the construction of the deck, cabin and sailing rig, as the hull will now need to be the right way up. In fact, if you want Wild Duck to sit on a stand, but with its fin keel in place, then it will need to be quite tall. The stand was made from 1/4 inch (6mm) plywood and Wild Duck sits on it with the projected waterline parallel to the main work surface. This is vital to ensure that parts which should be at 90 degrees to the waterline actually end up like that, and perhaps more to the point ensures that the correct rake of the mast can be easily determined.


9


10


11

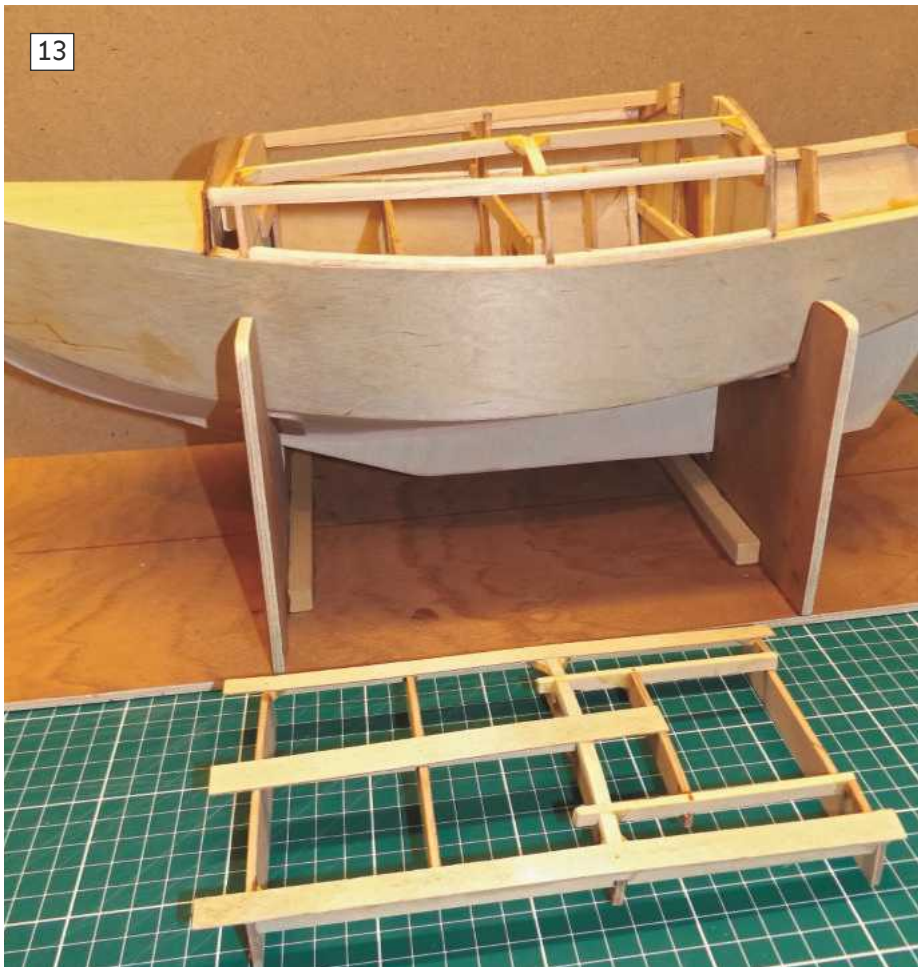

12

Deck, cockpit and cabin

Wild Duck has a foredeck and a coach roof over the main cabin space and the aft open cockpit features seating and lockers. The cabin's front and rear bulkheads sit between the main hull frames, **Photo 9,** which also shows the stand referred to earlier. It's always advisable to plan ahead and cut some holes through the bulkheads at an early stage for the r/c cables.

I like some nice varnished timber areas on a model yacht like this, to bring it all to life and 1mm (0.04 inch) mahogany veneer from Mantua Models is ideal, and once glued to a bulkhead and then lightly sanded before, and between, applications of varnish, it looks a treat, **Photo 10.** However, you must be careful not to get any glue on the exposed surfaces, as it will always show though the varnish and in this last photo you can see the longitudinal stringers between the front and rear cabin main bulkheads. It is worth noting that the front bulkhead shape, as shown on the drawing, has a former attached to give the foredeck its camber and the rear cabin bulkhead was initially tacked into position with some reinforcing strips glued to its sides to strengthen the joints.

The cabin roof has fixed outer sections and a removable central part. **Photo 11** shows the longitudinal stringers and **Photo 12** shows the framework for this removable central part being built in-situ. You must take care not to glue together what should not be glued(!), and **Photo 13** shows this framework separate from the main cabin. Adding the outer fixed cabin roof sections will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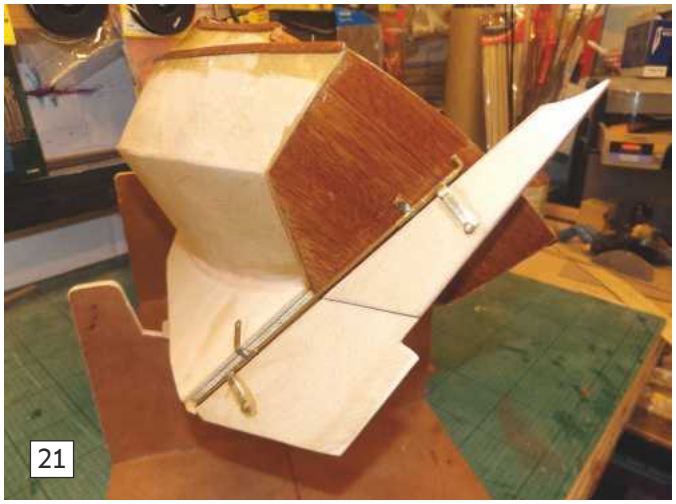
stiffen-up the entire cabin area, **Photo 14,** and you can see here that the foredeck has also been added.

The cockpit floor and its lockers are simple box structures, with one of the locker tops being removable for access to the wiring of the steering servo, **Photo 15,** which also reveals the mahogany handrails to the cabin central roof section.

The cabin sides extend to the bows and beyond the cabin's rear bulkhead. Again, templates are handy, but notably the window openings follow the sheer line of the deck edge and **Photo 16** is of the starboard panel in place, and you can see how it extends right to the bows and the aft end of the cockpit. It may well be better to cut the window openings after these side panels are glued in place, to ensure that they are in exactly the right positions. **Photo 17** is looking from Port to Starboard and you can see how the extended cabin side rises above the foredeck. **Photo 18** is another view of the same, but now looking from bows to stern.

Once both the extended cabin sides are glued in place and checked for symmetry, some decorative edging and beading was added in the form of mahogany strips as in **Photo 19,** and **Photo 20** shows the end result.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Rudder and steering servo

The transom hung rudder has an 1/8 inch (3mm) plywood blade with two 1/8 inch (3mm) plywood cheeks glued each side for scale effect, **Photo 21,** and for the steering linkage, a slot is required in the rudder stock for a small plywood bracket with twin ball joint linkages as in **Photo 22.** This is removable, being attached with four 10BA brass screws, as the alternative for static display purposes is shown in **Photo 23.** The rudder pintle is a continuous 1/16 inch (1.5mm) diameter brass rod running in brass tubes soft soldered to the rudder straps and bolted through the rudder blade and stock. Perhaps having the rudder servo output arm and casing above the rear deck is not ideal, but it is simple and practical, plus perhaps more important, it all works!

Mast, sails and rigging

The original 1950's Wild Duck would have been equipped with a wooden mast and booms, and I guess dowel could be used as Vic Smeed did with his famous Starlet design if that is your desire. However, as a keen Dragon Force RG65 sailor, I opted for the modern approach to these spars with a carbon fibre 1/4 inch (6mm) diameter rod for the mast and 1/8 inch (3mm) of the same for the mainsail and jib booms. Brass hoops were turned on the lathe with brass wire inserted with rings at the end and all soldered, for the fixing points for the sailing rig, **Photo 24,** but you could equally use suitably sized brass tubing for the hoops for ease of construction.

Early in the design stage, Frank Parsons of Nylet was contacted and supplied with a dimensioned rig layout for Wild Duck and he has produced a top class main sail and jib from Dacron and can no doubt do the same for anyone else building this semi-scale model yacht, **Photo 25.**

The standing rigging is plastic coated stainless steel fishing trace wire with brass tube crimps and adjustable bottle screws to achieve the right tension. The full-size design featured a backstay, but having sailed dinghies which never have one as this is usually for tuning the shape of the mainsail, and since Wild Duck is not a racing boat, the rig has been kept simple. The outhauls to adjust the shape of her sails are made by attaching lines to small sections of silicon fuel tubing which grip nicely the carbon fibre and


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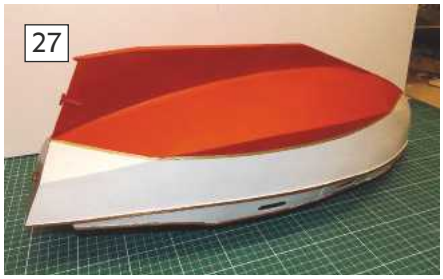
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can be easily moved for adjustment. The main sail sheeting is adjustable with a standard servo, **Photo 26,** fitted with an extension arm bolted to the output disc and it is connected to the sail via a wire loop which is on a brass wire horse across the rear of the cockpit to give a self-tacking capability. The jib is also tethered to a wire horse on the front cabin roof for self-tacking and this is a feature of many small single-handed cruising boats.

A couple of dummy drum winches have been added to the cabin roof for scale effect. The lines used are Dyneema, which are very strong and supplied by Tim Long of Soch Sails, website: www.sochsails.co.uk

Painting and hull completion

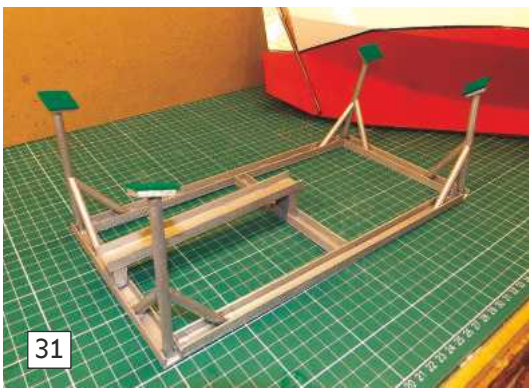
The internal areas of the hull can be painted with epoxy resin or varnish as desired, and the exterior areas likewise. Either way, you want a waterproof hull and building up such a surface can be done by a number of applications of paint, or using epoxy resin first, then overpainting it. Externally this prototype has a red oxide bottom with brushed gloss white Humbrol enamel for the topsides and you can just see the yellow masking tape between the two colours, **Photo 27.** Careful masking was also involved keeping the mahogany parts unpainted, but the overall effect is rather nice, **Photo 28**, with the black hand-painted boot topping, easily done between two spaced masking tape lengths, port and starboard.

The cockpit seats are mahogany slats varnished, and **Photo 29** is a top view of the painted hull and cockpit. Potential figures for the crews of our model boats can often be found in charity shops, and this one cost 50p and nothing to paint him, **Photo 30.** Access to the radio switch is via the cabin's sliding hatch which is retained by an internal rubber band. The scale boat stand pictured here is typical of a yard cradle for a long keel boat and is made of 1/4 inch (6mm) dowel rod and 1/16 inch (1.5mm) plywood, all sprayed silver to look like a galvanised metal frame, **Photo 31.**

Removable fin keel

I bet you were wondering when we would return to this, as it needs a bulb keel weight. I have to say that melting and casting lead is not something you should do unless 100% confident in the process, and you are properly protected as hot lead will scald badly if it spits.

This one was cast in two half sections from a mould, the total weight being 24 ounces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(680 grammes) and was my first attempt at the process. A shaped balsawood plug was made, sealed and inserted to half its diameter in Plaster of Paris to make the mould and only when fully dried was it considered to be ready for use, **Photo 32** being of that mould. Some scrap lead flashing was weighted and melted in an old bake beans tin (also in Photo 32) and when molten, poured into the mould and allowed to cool, which will take some time, believe me. This was then repeated for the mirror image other half of the bulb keel.


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Some trial and error work was necessary to have a bulb keel that was within the desired weight parameter. The two halves were then drilled through, **Photo 33,** to be bolted to the aluminium fin, **Photo 34.** Once bolted in place, the lead bulb was covered with Isopon P38 car body filler and sanded to a smooth profile and everything was sprayed satin black (from an aerosol can), **Photo 35.** Wild Duck with this keel attached will need a higher stand for use at the pondside and a traditional model yacht folding stand will be ideal as you can see underneath the display stand in this last picture.

With regard to melting lead, if in doubt, don't is the simple answer. A practical alternative is to cut some sheet lead flashing (as you can get from a large DIY store) to weight and size, and then fold and hammer this into a rectangular block trapping the aluminium keel within it. Then finish it as for the cast bulb already described, Yes, it may not look that attractive, and certainly will not be aerodynamic, but it isn't seen underwater anyway, and its shape probably won't make that much difference to the everyday sailing performance.

Maiden voyage and summary

Late in 2016 at the Chantry MBC sailing facility at Bluewater Shopping Centre in Kent and beneath grey skies, Wild Duck set sail and showed promise with a fair ability to point close to the wind and make steady progress upwind, all in all a most satisfying end result to most enjoyable build, **Photos 36 and 37,** and the Duck motif on the mainsail? This was cut from some black sticky Fablon sheet and makes the mainsail look just that bit better.

*Enjoy your hobby - **Ray Wood.***

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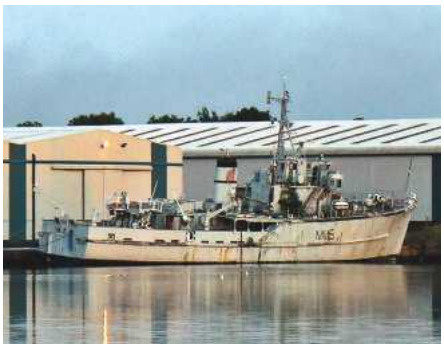


HMS Bronington in a sorry state prior to sinking in 2016.

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 this month sees Part Three of our Photo Tour of the Ton Class mine hunter HMS Bronington, and we continue with Part Five of our short mini-series of the construction of a 1:35 scale OSA Class Fast Missile Boat.

HMS Bronington M1115 Part Three

Just as a reminder, we concluded Part Two of this Photo Tour with an aerial view on the port side looking at a one ton capacity davit. Continuing on from that, in **Photo 1** we are looking at a small lifting bogey, ringed in red, suspended from an H-frame beam. Often, when building scale models as HMS Bronington, such small but important fittings are omitted, but the Ton Class and this warship in particular were what could be termed 'busy ships' and it really does enhance the finished model if these smaller fittings are included. Another such fitting is a valve control unit tucked away on the port side of the funnel, and also ringed in yellow in this last picture, but is seen in more detail in **Photo 2**. Between the funnel casing and the rear of the bridge is a passageway athwartships. As there are two different types of hatches here, I thought it helpful to show them from both above and looking through the passageway from the starboard side, **Photos 3 and 4.**

Photo 1. An amidships view to port. Please see text for full description of highlighted fittings.

Photo 2. A valve control unit feeding into the funnel from the compartment below. What it actually does is not known, sorry!

Photo 3. Looking down on to the passageway between the rear of the bridge unit and the funnel casing. Please note the hatches and the operating mechanisms.

Photo 4. Viewed from the port side is the passageway between the rear of the bridge unit and the funnel casing.

Photo 5. Moving on to the sweep deck aft of the funnel, the mine sweeping winch is a prominent feature.

Photo 6. The controls and brakes on the mine sweeping winch. Many of these winches were taken and refurbished from older decommissioned RN mine sweepers.

Aft sweep deck

Moving down on to this, we can see in **Photos 5 and 6** what was termed an M/S winch for deploying the sweeping equipment. In the 1950's, the Oropesa Mk. 2 Mechanical Sweep was followed by the Wire Sweep Mk. 3 fitted in the Ton Class (CMS, later designated MSC) that gradually replaced the WW2 vintage mine sweepers then in Royal Navy service. This sweep was fitted with explosive Mk. 8 cutters and could be streamed by the minesweeper with a single Oropesa from one quarter, or as a double Oropesa with a wire streamed from each quarter. This sweep could also be used as an Armed Team Sweep

(ATS) where two or more such mine sweepers were linked together. The Oropesa floats can be seen in **Photos 7 and 8,** with suitably menacing toothed mouths painted on them. Our next picture focuses on what is termed the Otter (or Kite), which hangs below the float at the end of the sweep wire, and is trailed on a separate wire attached to the leading end of the sweep wire. The Otter (Kite) were, and still are, used to determine the depth of the sweep gear, **Photo 9.**

Photo 7. One of the Oropesa floats, please see text for more information.

Photo 8. Two Oropesa floats seen from their rear, stowed one above the other.

Photo 9. A Kite, or Otter board, part of the mine sweeping equipment.

Photo 10. A good detailed picture of the sweep deck. It is from here that the floats etc. were deployed. Plenty of fittings here as well, such as various hatches, hydrants and bollards etc.

> *"Early attempts at mine hunting were made by the Royal Navy between the 1950's and 1960's. One system developed was the Magnetic Towed Gradiometer (MTG), which used a string of magnetic sensors towed across the seabed."*

Mine hunting and conclusion

Although HMS Bronington was converted to a mine hunter, it was in 1964 that HMS Kellington became the first Ton Class warship to be converted into a Coastal Mine Hunter (MHC). She was fitted with the Mine Hunting System (Acoustic) Mk. 1 (MHSA 1). This comprised the Plessey hull-mounted Mine Hunting Sonar 193 and the Interim Navigation System Mk. 1 (INS Mk. 1).

Early attempts at mine hunting were made by the Royal Navy between the 1950's and 1960's. One system developed was the Magnetic Towed Gradiometer (MTG), which used a string of magnetic sensors towed across the seabed. When a metallic object was detected, a trace was made by the appropriate sensor's pen on a paper roll on the ship and a marker buoy could be released. However, this system was limited in its scope and sonar became the method of choice for detecting mines. The actual identification and disposal of mines was achieved by a Clearance Diving Team, which was 'conned' on to the sonar's target by matching the echo of the sonar reflector suspended beneath their dinghy with the echo of the 'mine like' contact on the sonar display. The Ton Class warships converted for mine hunting had their influence mine sweeping systems removed, but still retained the Oropesa mechanical sweeps and usually the winch.

Our final set of pictures focuses on the sweep deck aft and **Photo 10** is looking aft at the transom with another one ton capacity davit

on the port quarter. **Photo 11** is a similar view, but from Port, and still looking aft (with HMS Plymouth astern) showing both davits, with their control wheels conveniently painted red and green for Port and Starboard.

Photo 12 is a side view of the Port stern quarter and please note the riveted bulwark.

We tend to think of the Ton Class being built exclusively of wood, but that was not the case and **Photo 13** is another perhaps rather gothic view of the aft davits at the transom.

Our final picture, **Photo 14,** is an external view of the transom revealing the planked hull and the metal reinforcing plates on the

Photo 11. The roller fairleads, aft centre on the transom, for deploying the cables of the sweeps.

Photo 12. One of the smaller mooring fairleads.

Photo 13. Two more of the one ton davit cranes are mounted right aft for lowering and retrieving the mine sweeping gear.

Photo 14. A good view of the transom.

corners and where the sweep cables could rub against the wood.

For many years, the Ton Class as a modelling subject has been a regular at model boating events, and examples are available in either kit or semi-kit form, including from Deans Marine (full kit) with their 1:96 scale HMS Bronington, or from Sirmar at a larger 1:48 scale. Also, plans of HMS Nurton, including its fittings as of 1985, are still available from Jecobin and there are of course numerous other pictures to be found online. It is a shame that at the time of writing HMS Bronington had sunk at her moorings in Birkenhead. What the future holds for this warship I do not know, but it will no doubt become clearer as the months pass.

Photo 15. The AK 230 is a 30mm twin barrelled weapon fitted to all the OSA boats and is a challenging fitting to reproduce in 1:35 scale.

OSA 2 Type 205U Fast Missile Boat Model PART 5

AK 230 Guns.

This month we are continuing to build the 30mm AK 230 gun(s), **Photo 15,** and are moving on from the recent June 2017 issue now looking at the assembly of the gun barrels and their housing.

As shown in last month's issue, these parts were prepared in a way that enabled the barrels to be fitted for the appropriate elevation adjustment, but also to be removed for painting. As can be seen in **Photo 16,** each barrel is supported within the housing and can be adjusted to suit the length of each barrel as per the drawing.

The barrels were fed into a predetermined location on the trunnion which has been decided by the angle required for the barrels, **Photo 17.** Gun barrels are funny things, since if you fix them over-elevated, they can look wrong on a model, but if installed horizontal, they may appear to be pointing downwards slightly, which is an optical illusion. So, it is best to have some elevation, but not too much depending on the purpose of the weapon being depicted.

The next step was to temporarily place the trunnion, barrels and barrel support piece into the turret. The position of the trunnion was marked, but at this stage the top of the support remained open as in **Photo 18.** Also, the location of the lower grab rail was determined by marking-off and inserting styrene pins which provided an accurate guide for the fixing plates. Next, the top of the barrel support was added, followed by the barrel rings as in **Photo 19,** my normal-sized human fingers giving you an idea of its actual size.

At this stage of this mini project, and remember there are two such turrets, the

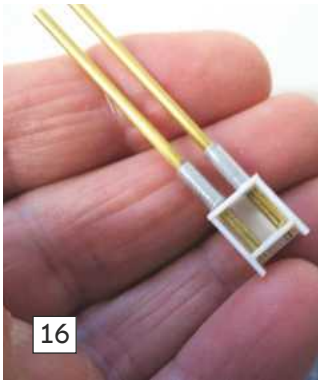


Photo 16. Assembling the barrel support with each barrel inserted into place .

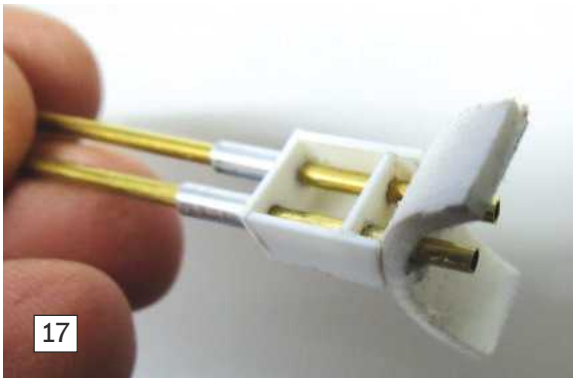


Photo 17. Locating the barrel support and barrels into the semi- circular trunnion.

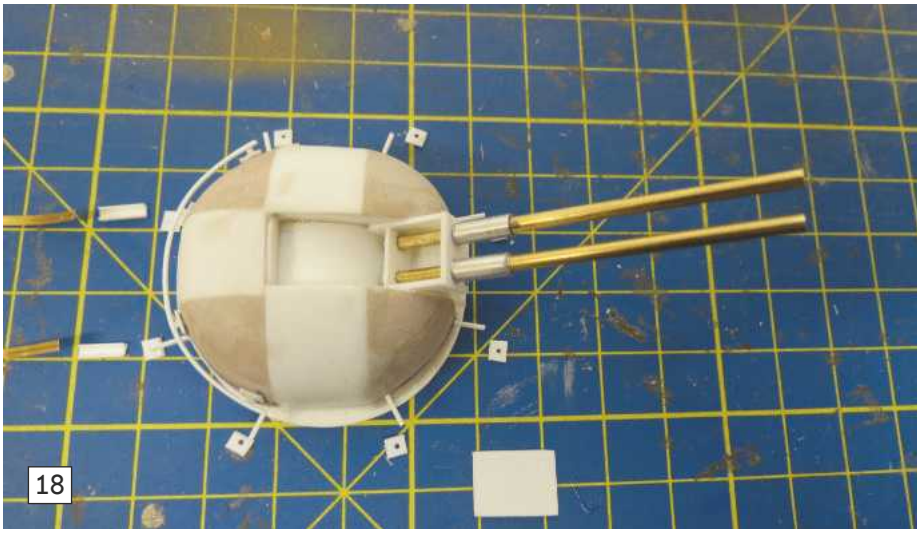
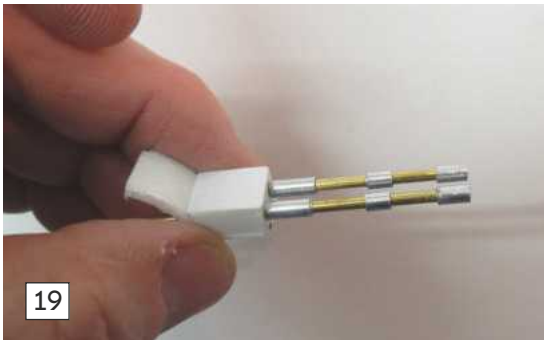


Photo 18. Trunnion with the barrel support temporarily in place within the turret.

Photo 19. The top of the barrel support set into position and the outer barrel rings are located on the barrels.



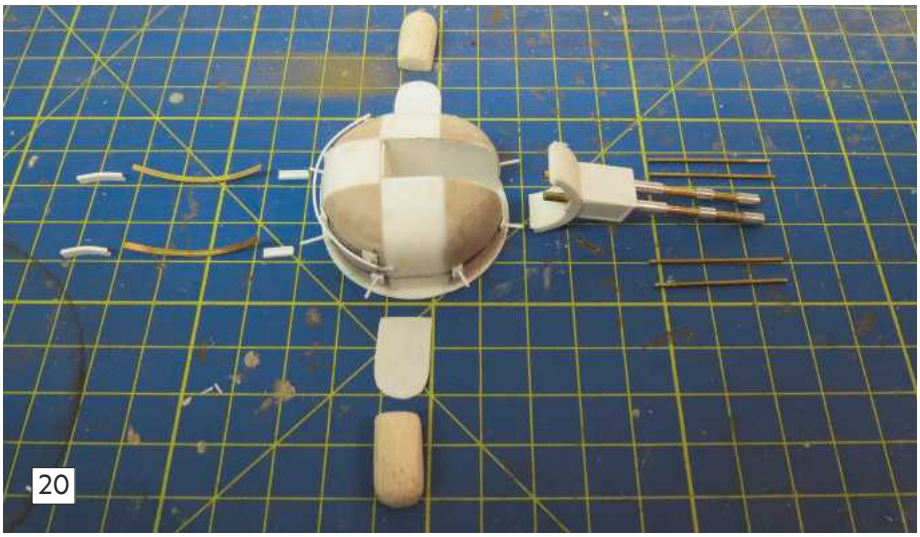
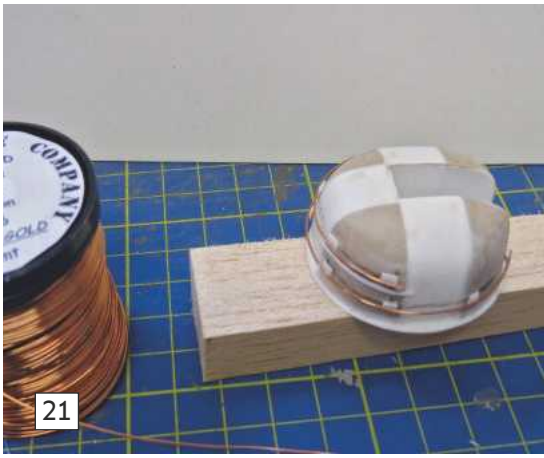


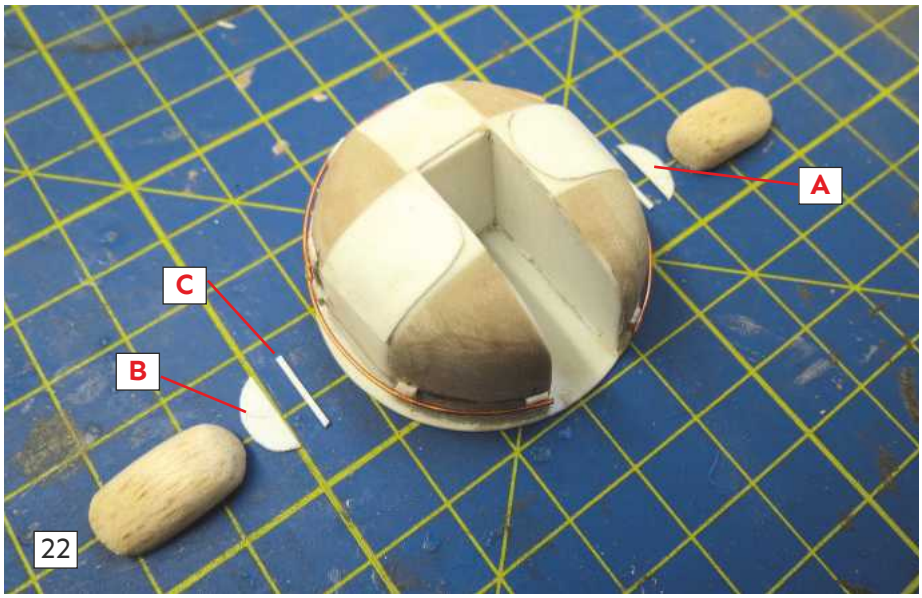
Photo 20. All of the AK 230 turret parts laid out for inspection!



remainder of the fittings were laid out in their pre-assembly sequence and it was obvious that there was going to be a problem with the use of styrene strip for the grab rails around the outer circumference of the turret. They had noticeably started to deform, at least to my eyes, in their longer lengths of the lower rail, **Photo 20.** The decision was therefore made to remove the upper and lower rails and replace both with malleable 0.5mm copper wire, which could be pre-formed to the circular pattern required and was easily fixed to the mounting plates as in **Photo 21.** This looked much better and is stronger too.

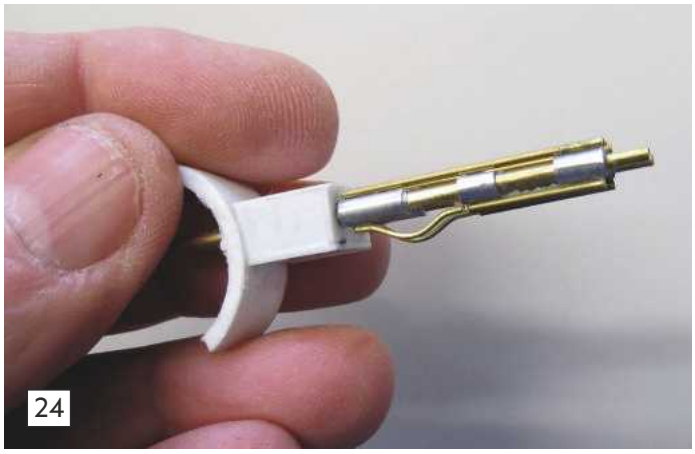
Photo 21 With some strength and shape considerations, 0.5mm copper wire was used to replace the earlier styrene strip for the grab rails around the sides of the turret.

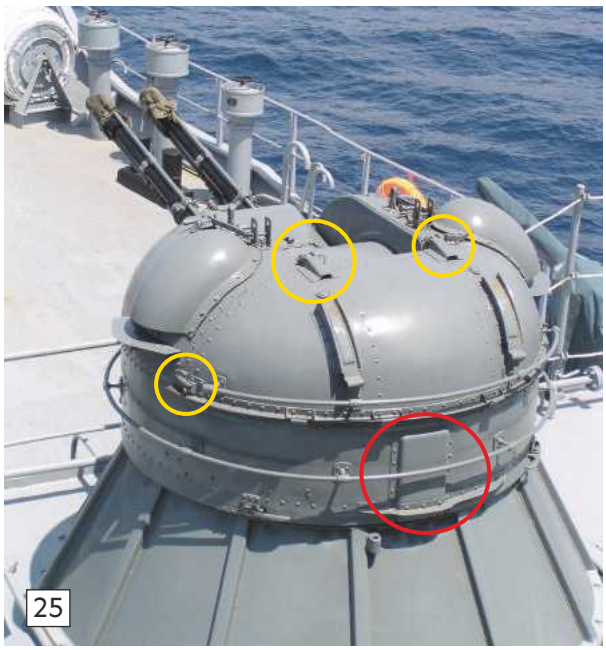
Photo 22. The base plate for each side vent was fitted to match the curve of the turret's exterior. Also, the curved anti-splash plates beneath each vent (Parts A & B in the photo) have been cut to shape and the spacer, Part C (visible for one vent) have all been prepared.

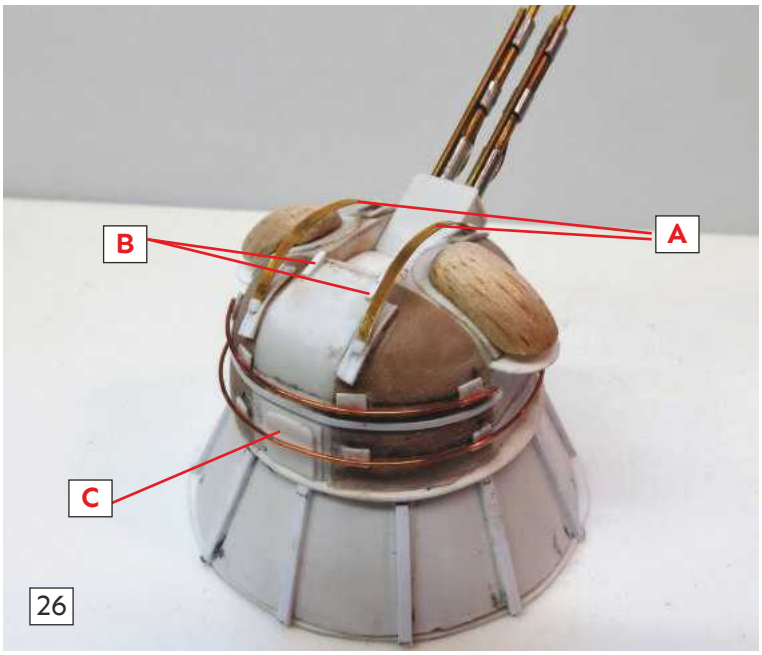


Fixing the upper vent housings

Attention now shifted to fixing the back plate for the vent housings using 0.5mm styrene sheet which was easily formed to the curve of the turret. Also, beneath the vent housing is fixed a curved plate, its parts marked as B & C (spacer) in **Photo 22,** there being a small gap between the bottom of the vent and the plate. Part A is the curved plate for the other side of the turret and is a mirror image







of Part B. The purpose of the gap is unclear, other than perhaps to deflect water spray from entering the vent. It's worth noting that at this stage that very little else has been added to the turret, but now **Photo 23** shows a vent housing and its curved spray deflector fitted in place. The balsawood vent housings had several coats of sanding sealer pre-applied, so as to be ready to accept the overall primer coat later.

Gun barrel watercooling pipework

Each of the straight barrel water cooling pipes are of 0.5mm brass tube from Albion Alloys, whilst the flexible pipes beneath the barrel are formed from malleable 0.5mm brass wire. The straight brass tube was installed almost full length to the top of the barrel whilst the lower set are only half the length of the barrel with the remainder being malleable brass wire replicating the flexible piping as in **Photo 24,** with my human fingers once again giving an idea of scale.

As an aside, at one of the events that I visit from time to time, I was approached by a very accomplished model maker who made the observation that very small scales can look full of detail, yet at the same time much of that detail can be superficial but working in such scales requires intense concentration, not to mention good eyesight and a fair degree of patience. He considered much larger scales to perhaps be much less demanding. This observation has some merit, but it all depends on the volume of detail within a given fitting that the model maker would like to expose. Scale is only relative to detail, in so much as that detail on a particular fitting can become almost invisible at certain scales, yet be glaringly obvious at others. There is no cut-off point and it all depends on the individual model maker, but in scales small or large the difficulties, or more to the point, the challenges, can all be the same.

Looking at a full-size AK 230 gun, there is plenty of detail that can be incorporated into a 1:35 scale replica and there is other detail that will remain hidden, **Photo 25.** In this picture, some of the fine detail such as the cover plate to the rear of the turret, is ringed in red and the clips (ringed in yellow) that hold the rear top part of the turret in place are all fittings that are clearly visible at 1:35 scale.

I have endeavoured to incorporate as much detail as possible that is practicable, although perhaps not 100% perfectly modelled. For example, in **Photo 26,** Parts A are the pair of springs that that provide the tension on the back cover of the turret. Parts B are the hinges that secure the back cover and Part C is what appears to be an inspection plate, although I can't see how it is removed on the full-size turret.

At the rear of the trunnion within the turret is fitted an angle plate and for this, 0.5mm

Photo 23. An anti-splash plate in position below its vent.

Photo 24. Each of the liquid cooling tubes are fitted to the barrels.

Photo 25. Ringed in yellow are the clips whilst ringed in red is what looks like an inspection hatch.

Photo 26. Adding the last of the fittings to the turret, please see main text for more information.

styrene sheet was used. Coincidently this also allows the trunnion, barrel support and barrel to be held in place, but remain removable for airbrush painting, **Photos 27 and 28**. The angle of all this within the turret has been determined from pictures of the full-size AK 230 turret. Our final picture for this July issue shows the completed AK 230 gun, **Photo 29,** although the lines of rivets are still missing at the time of writing……

Conclusion

Although the OSA 2 fast missile boats are on first impression not over-detailed, fittings such their AK 230 guns, missile tubes and the foremast need to be reasonably detailed to make the project not just interesting, but are also a bit of a challenge. Referring back to Part One (March 2017 MB) the upper open bridge is also a busy area and should be well detailed to finish the model nicely. In their day, the OSA 2 boats were well regarded as mobile and exceptionally quick missile boats, but of course they needed to be since once all their missiles had been discharged, speed of escape was the best protection for them and their crews. Next month we will be examining the foremast in detail and its construction.

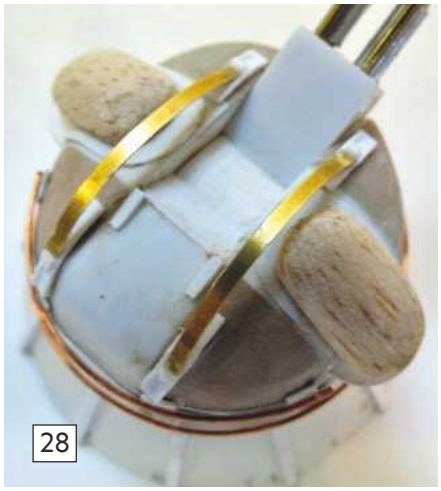


Photo 27. An angle plate fitted to the top rear of the trunnion determines the final elevation angle of the barrels.

Photo 28. A further picture as to how the angle plate to the trunnion has been fitted.

Photo 29. The 1:35 scale AK 230 thus far, and not looking too bad even if say so myself, but please remember that there are two to be made……

References and acknowledgements

HMS Bronington refs:
Janes Fighting Ship 1974 to 1975, Page 357.
British Warships since 1945, Minesweepers, by Jack Worth, Page 85.
Mine Warfare Vessels of the Royal Navy, 1908 to-date by M.P. Cocker, Pages 100 to 103 .
Sirmar website: www.sirmarfittings.com
Jecobin website: www.jecobinplans.com
Deans Marine: Regular advertisements in this magazine.
AK 230 refs:
World Naval Weapons Systems, Page 446.
Guide to the Soviet Navy, Fourth Edition, Page 417.
Additional optional fast missile boat reading:
Naval Fast Strike Craft and Patrol Boats by Roy McLeavy.
From Monitor to Missile Boat by George Paloczi-Horvath.
Small Craft Navies by Christopher Chant.

Dave Wooley

Readers who use our Model Boats Website Forum, and other online hobby discussion sites, may be aware that Dave Wooley was in hospital in February of this year for elective surgery, but I am pleased to say that at the time of his writing and preparing this article in late-March, he was making a rapid and full recovery and back regularly in his workshop. I am sure we all wish him well and thank him for his ongoing masterclass in warship model making. ***Paul Freshney** - Editor*

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Steam Tug Kerne

Matthew Jackson's scratch built model

I admit to being a new convert into the world of r/c model boats, despite having a long standing interest in modelling all modes of transport, mostly railways, but also some ships and aircraft. A local vessel which I have had affection for since a child is the Steam Tug Kerne which was preserved in 1971 and is kept in working order on the River Mersey by a dedicated group of volunteers. I have been fortunate enough to sail on the tug on several occasions, taking my turn with a shovel in the stokehold feeding the twin furnace coal fired boiler and more recently when time permits, assisting in maintenance work aboard. The idea of making a model had been around for a long time, but as a relative novice in the hobby, I had no idea how to go about it.

A few years ago, an r/c model boat was received as a birthday present, it being the now out-of-production Model Slipway 1:72 scale Clyde Puffer kit. This kindled a new interest in r/c boats as it had not occurred to me that radio control could work in such a small size of model. Once completed, the puffer was taken down to my local lake where I (we) met a group people who proved extremely welcoming to a newcomer, even if the puffer was the smallest craft to have ever graced one of their meetings. Being primarily an OO-Gauge railway modeller, this 1:72 scale craft was to a familiar size, but also manageable as there is little room at home for large projects and it was an ideal kitchen table project. I then went on to convert some conventional 1:72 scale plastic kits into working r/c boats, but still my mind kept wandering back to thoughts of the Steam Tug Kerne to the same scale.

Having obtained a set of drawings from the preservation society, these were carefully examined and it was clear that a 1:72 scale model would be a similar size to the puffer, which had already proven to be a good performer on the water. S.T. Kerne is 75 feet long, so the model would be a fraction over 12 inches (300mm) long. The challenge though was how to build the hull as no commercially available item appeared to fit the bill and after purchasing and reading some books about the subject and seeking advice, it was becoming clear this may not be an easy task. Plank-on-frame would be not practical (at least for me) in such a small scale and as a novice, the use of GRP (glassfibre) was somewhat daunting. The only other possibility seemed to be vac-forming a hull over a master, but I had neither the experience nor equipment to tackle such a project. However, salvation was to hand as my brother Andy is an engineer by trade and an enthusiastic hobbyist who, to boot, has a home built CNC milling machine. Having showed him the drawings, he was 100% confident that he could easily make the formers once the drawings had been converted to CAD form for a CNC milling machine to use.

The formers

Due to the complex shape of the tug's hull, and the small sharp radius involved at the stern, we decided to make the vac-formed hull in three parts.

1. Two 'half-hulls' as mirror images of one another separately up to deck level.
2. The bulwarks as a single oval piece to glue on to hull's lower unit once its two sides were bonded together and the deck added.

After making a list of materials and equipment we set to work, Andy having the technical job of making the three hull

plug formers on his milling machine and myself with the simpler and much easier woodwork task of making the vac-forming table. In Andy's workshop, he (wisely) chose to machine the formers from a dense foam modelling board, having previously had a bad experience with the immense amount of dust that MDF produces when being milled. The material used for the basic formers, **Photo 1,** was a polyurethane medium density modelling board and this was the most expensive part of the project, but once milled they created durable and smooth formers. **Photo 2** is of the milling machine doing its work and **Photo 3** is of the completed formers. Please do not forget that the hull is only 12 inches long……

As these pictures show, this hull was milled in three sections, with a computer controlling the entire process. I appreciate that this might not be the conventional method of making a hull former, but with modern technology this computer-driven process ensured perfectly matching half-hulls and the bulwark section.

Vac-forming table

This was straightforward enough and is made from 10mm MDF offcuts. The top was perforated with 4mm holes drilled at 15mm intervals and a large hole in the side of the box to connect to a vacuum cleaner hose, and **Photo 4** shows the two half-hull formers sitting on the perforated board. The idea of course is that the vacuum cleaner draws air out of the box pulling the part-melted plastic sheet down over a former. In practice though, only one half of the hull or the bulwark section was moulded at the same time.

Vac-forming

We chose Polyethylene Terephthalate (PET) 1mm thick plastic sheets for the actual moulded parts, as these are inexpensive and thin enough to form easily to shape. The actual vac-forming process was carried out on Andy's kitchen floor one Sunday afternoon,


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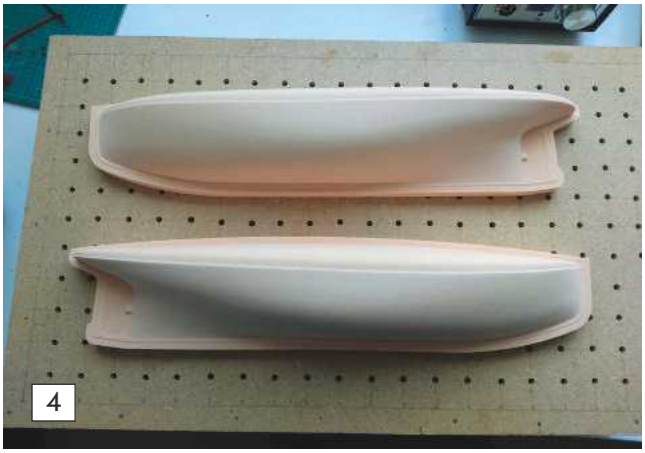
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but despite a trial and error approach, this yielded excellent results after only two practice runs. The PET sheet was secured in a homemade aluminium frame and heated under the electric grill in the oven, **Photo 5,** until it was sagging. Then, the vacuum cleaner was turned on and the sheet placed swiftly over the former, **Photo 6,** on the table. All very basic, but it worked and **Photo 7** shows the end result. This was repeated with the other formers and **Photo 8** shows the first three vac-formings.

Once cooled, the hull sides were carefully cut out with scissors and the edges roughened before gluing them together. It was at this point that it was realised that PET plastic was not the best choice of material as most glues will not bond it. Eventually, Loctite Any Plastic glue which utilises a solvent (applied before the adhesive itself to soften the plastic enough for the glue to adhere) was used, but subsequent hulls would be moulded in styrene and **Photo 9** shows these more conventional white styrene (plasticard) mouldings made later on another day. The One Pence coin gives you an idea of the scale.

Construction of model – basic hull

Once the two halves were bonded, a 1/16 inch dia. brass rod was used for the propshaft running in a plain 3/32 inch o.d. tube and the rudder and its linkage were made from offcuts of thin brass sheet, also with a 1/16 inch rod for the rudder post, **Photo 10.** A small 6v brushed motor turns the 25mm plastic propeller which is slightly undersized for scale, but more than adequate for this tug model. The PET hull material is thin and quite flexible, but when suitably braced with two internal styrene bulkheads and (later) the deck, it became rigid enough for normal handling.

It was tested to be watertight in the bathroom sink, **Photo 11,** and the amount of ballast likely to be needed was determined. Lead sheet (flashing) was eventually used, but the sash cord weights were an easy way of seeing how much would be needed.

Radio control

In a model boat of this size, r/c equipment is usually quite simple and a basic four cell Turnigy 4.8v NiMH battery pack provides the power; a Hobbyking GT2B 3 channel receiver for communication; a cheap but effective forward/reverse electronic speed controller from eBay and a KingMax three grams micro servo for rudder control. A Graupner 6V smoke unit controlled from channel three via an r/c switcher unit (from eBay) was also installed. Getting adequate


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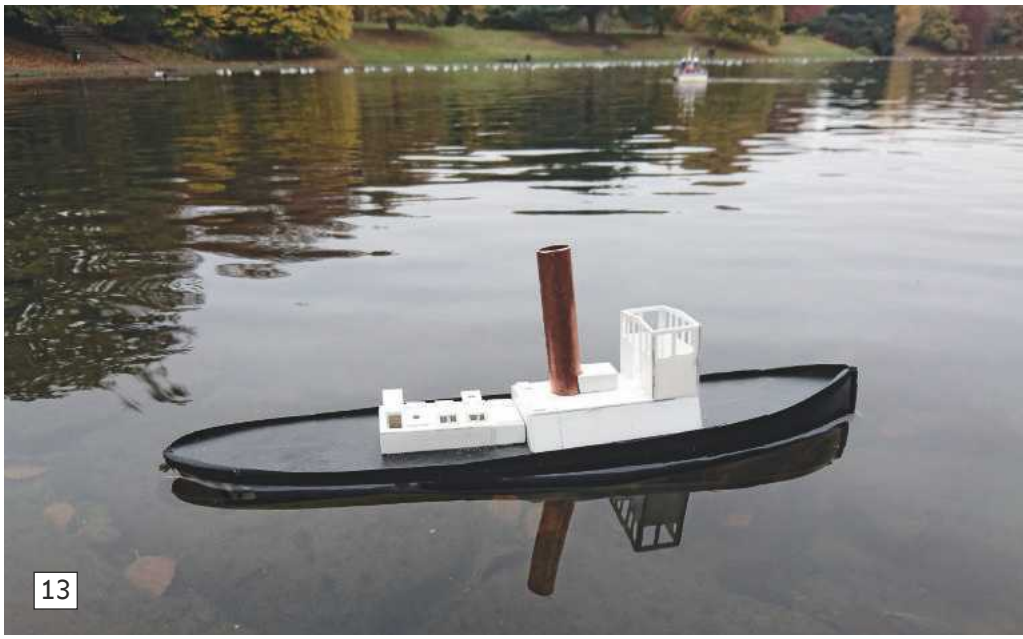
throw on the rudder proved tricky as the space is tight, but a tiller type mechanism was devised that allowed full movement of the servo and adequate swing of the rudder without anything rubbing on the inside of the hull, **Photo 12.** Once all the electronics were tested, a further proper sea trial on a calm day at the pond seemed like a good idea to prove it all worked and **Photo 13** is of that event, before the deck and bulwark vac-forming were properly installed. As you can see, the freeboard is very low and it is not much more even with the bulwark moulding added.

Deck, bulwarks, superstructure and detail work

The deck is 1.5mm styrene (Plasticard) cut to match a template printed from the CAD drawings that Andy had made for the hull. With this deck piece properly glued to the top of the hull, the remaining vac-forming, the bulwarks, could then be glued to this. Long strips of offcut PET sheet were added between the deck and bulwark on its inside faces to hide the join and add strength. A novice mistake was to make the rudder servo totally inaccessible, so when the inevitable happened (and very quickly at that) and the linkage jammed, the deck had to be cut open to repair it all, but this thankfully occurred before a start on the more fragile detail work had commenced. This access hole is now covered with a rear deck piece which is a small sheet of 0.5mm styrene secured with a bead of silicone bathroom sealant. This is waterproof, but enables ease of access should access be needed again in the future.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Having the real vessel moored for the winter in a dock only a 15 minute or so bicycle ride from my house, enabled frequent trips with the camera and made interpreting the drawings much easier for work to start on the rest of the superstructure. This is made from 0.5 and 1mm styrene sheet, the funnel ultimately being an offcut of plastic water pipe; the mast is a chopstick turned-down


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on the lathe and the other fittings are from plastic sheet, brass rod and sheet. The white metal boiler room ventilators are the only commercial off-the-shelf fittings on the model. The boiler room superstructure with the wheelhouse and funnel attached lifts off to access the battery and receiver and is secured with two spring clips made from thin brass. To access the motor, the towing hoops can be removed from their holes in the deck and the engine room cover and skylight lifts off and **Photo 14** shows the completed model in primer.

The switch for the electronics can be accessed with a small screwdriver or other suitable implement through an open engine room access hatch which you can see in this last picture, saving having to remove the superstructure to turn the radio and power on and off.

Painting

The whole model was given a coat of Halfords grey primer and once satisfied with this undercoat finish, it was painted with a mixture of Humbrol enamels applied by brush and Humbrol acrylic spray for the wheelhouse. To be honest, I always get poor results when brush painting white and hence this compromise. The tug is as she looked in the 1970's when initially saved from the scrapyard with her Liverpool Lighterage funnel markings. Like most vessels of all types, S.T. Kerne has had various modifications, refits and changes of paint scheme over her years of service. **Photo 15** is of the completed S.T. Kerne to 1:72 scale and **Photo 16** is of the interior arrangements. The stays for the mast are of cotton thread and differ slightly from the prototype by being attached to the hull sides rather than the main superstructure, which allows the latter to be removed without disturbing the rigging.

On the water

S.T. Kerne certainly looks the part amongst other 1:72 scale craft and even with larger models, **Photos 17** and **18.** The original tug was built primarily for harbour work, but spent many years on the River Mersey and in her current preservation-mode has even visited the Isle of Man, but the low freeboard of the model does make it a calm water model as I have no inclination to ask for trouble and sail any of my small models in rough seas and equivalent gale force winds.

One obvious omission on the model are the aft wash ports, added to the prototype on the instructions of a Board of Trade inspector in the 1950's, which unfortunately resulted in the aft deck being quite wet in all but the calmest of weather. This is still a nuisance on the real tug, but with such a low freeboard it is frankly reckless on this 1:72 model, so it was deemed prudent not to include this feature.

A scratch built FCB (Ferro Concrete Barge) has also subsequently been built from balsa and plywood for the tug to tow, **Photo 19,** and plans exist to construct a 'Mersey Flat' in the future as the prototype was often photographed towing these two types of barge on the Mersey.

Conclusion

As a first attempt at scratch building a model boat, the end result is very pleasing with **Photo 20** showing S.T. Kerne on her way to another job. The model performs well on


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the water and looks good on a display shelf at home without, it has to be said, causing an upset with the domestic authority which may have occurred had a larger scale model been built on the dinner table and then later taking up residence on top of the living room cupboard. Andy, as was shown earlier, has since made further hulls from conventional styrene sheet so a version of the tug in her original 1913 condition may soon be built with a folding funnel and an open wheelhouse.

Acknowledgements

Thanks must go to Andy without whom the hull would not have been made and to the members of the **Steam Tug Kerne Preservation Society Ltd.,** who provided the drawings. My thanks also go to the members of the **Sefton Park MBC** (Liverpool) for making me welcome, giving advice and tolerating my sailing these small models amongst their bigger ones.

Enjoy your hobby - ***Matthew Jackson***

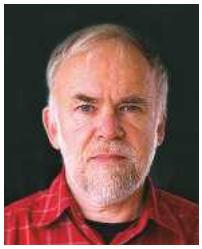
Kerne history

1912: Ordered as commercial tug Viking and constructed by Montrose Shipbuilding Co. Ltd.
1913: Launched and acquired by the Admiralty. Commissioned as H.M. Tug Terrier and used in and around the Medway.
1948: Sold out of Admiralty service to J.P. Knights and renamed Kerne.
1949: Sold to the Straights Steamship Co. (a subsidiary of the Liverpool Lighterage Co. Ltd) and steamed to Liverpool to work on the River Mersey, Manchester Ship Canal and the Weaver Navigation.
1971: Replaced by a diesel tug and due to be scrapped, but preserved by a group of enthusiasts and maintained in working order ever since.
2016: Back on the water following the most comprehensive dry docking and refit undertaken since preservation. Now recognised as the last surviving operational coal fired steam tug to see service with the Royal Navy through both 20th Century World Wars.

Principal particulars:

Gross Registered Tonnage:	62.71
Displacement:	153 Tonnes
Length:	75 feet 6 inches
Beam:	18 feet 4 inches
Draft:	9 feet 9 inches
Engine:	300bhp, three cylinder, triple expansion
Boiler:	Scotch coal fired wetback twin furnace
Propeller:	7 feet 10 inches diameter, three bladed, cast iron

Flotsam & Jetsam



John Parker delves into the archives

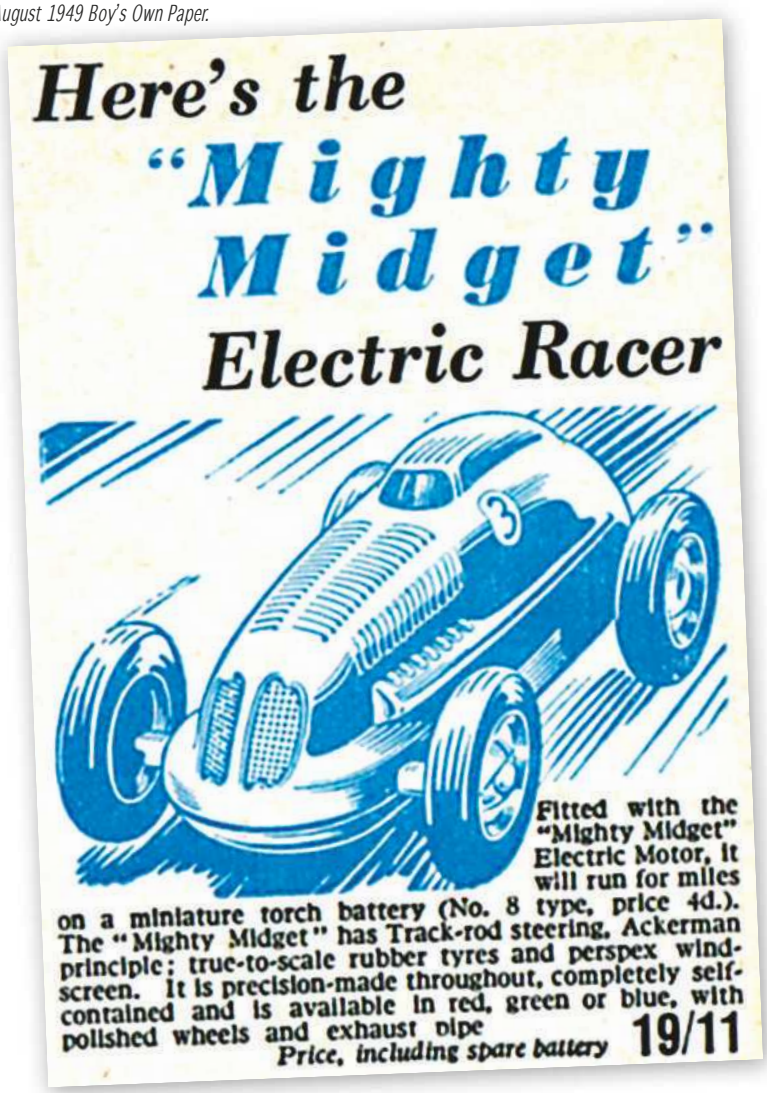
52: The Mighty Midget

Victory Industries Limited, named after an old coaching house that stood alongside The Hogs Back in Surrey, England, had made small items of electrical equipment for the Ministry of Supply during World War Two. With the return to peace, the founders, William Warren and Gerard Bergoyne, moved the company to a larger factory in Guildford and made preparations for a planned expansion into the toy market. This was to produce, almost as a by-product, one of the most enduring small electric motors of the post-war period, namely the Mighty Midget.

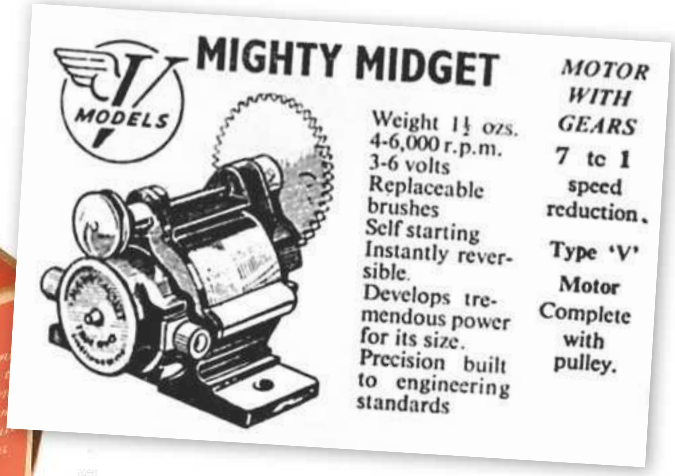
Victory Industries' first released product, the all-metal model speedboat 'Miss England', powered by a pulsating water or 'pop-pop' engine, soon led to an awkward situation as there already was an established company using 'Victory' as a registered trade mark. As a way out, Victory Industries came to an agreement with J & L Randall Ltd. to market the model under their own SEL brand (Flotsam and Jetsam No. 16, July 2014 issue). Thereafter the winged 'V-MODELS' logo was substituted as a trademark, and appeared on the box of their next product, the Mighty Midget Racing Car, that appeared in late-1948.

Its motive power source was the Mighty Midget electric motor, soon to be made available as a

Below: Advertisement for the Mighty Midget racing car, August 1949 Boy's Own Paper.



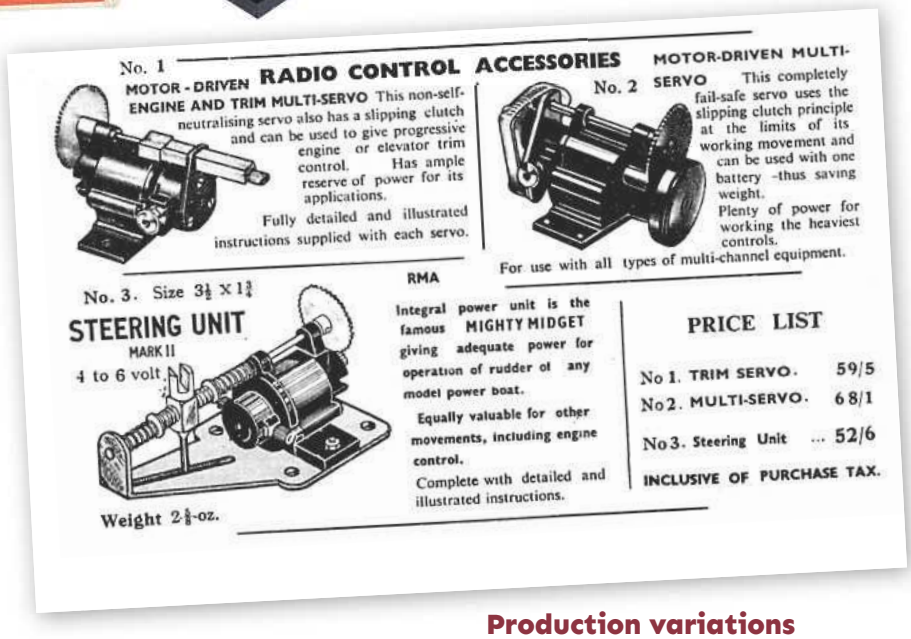
Above: 'Power at your Fingertips' advertisement for the Mighty Midget motor, July 1949 Practical Mechanics magazine.



Above: Typical model catalogue appearance.

Left: Mighty Midget motors and their packaging.

Below: Examples of commercial model servo applications.



separate item with its geared output shaft. An advertisement from July 1949 carries the slogan, 'Power at your fingertips', and claims the motor will 'run for several hours on an ordinary No. 8 battery'. A No. 8 battery which is now obsolete, consisted of two roughly 'C' size cells in series, packaged as a single 3 volt battery. The motor sold for 14 shillings and 8 pence (14s 8d) in 1955, the equivalent of about £18 today.

Mighty Midget described

The Mighty Midget was a very small motor for its time, intended for three to six volts battery operation, in a housing that was made of black Bakelite. This thermosetting plastic could be brittle (resulting in a mounting foot breaking off, for example) but was very rigid and hard enough to provide bearing journals for the motor's main distinguishing feature, a geared layshaft. This is what really set the motor apart, for gearing enabled the motor to run fast and thus keep the current consumption down, whilst ensuring there was enough torque for the application. Gearing could be applied to any motor of course, but left to the end user was likely to result in uneven, poorly matched gears and low efficiency; for a little extra, the optional geared motor took care of this.

The case enclosed a three-pole armature running in a ring magnet. The armature had the unusual feature of being cast, rather than built up, and the tiny brushes were replaceable. The motor was praised for its consistent running and reliable self-starting, something that could not necessarily be taken for granted at the time. The cast armature was said to be responsible for its high efficiency, but at just 20% as measured by Model Maker magazine in their motor test of August 1955, this was only about average for a small motor at that time. On six volts, the Mighty Midget ran at about 4200 to 5600 rpm whilst driving the 7:1 geared layshaft at 600 to 800 rpm and developed 0.00062 brake horsepower (0.46 Watts) at 5000 rpm according to the Model Maker test.

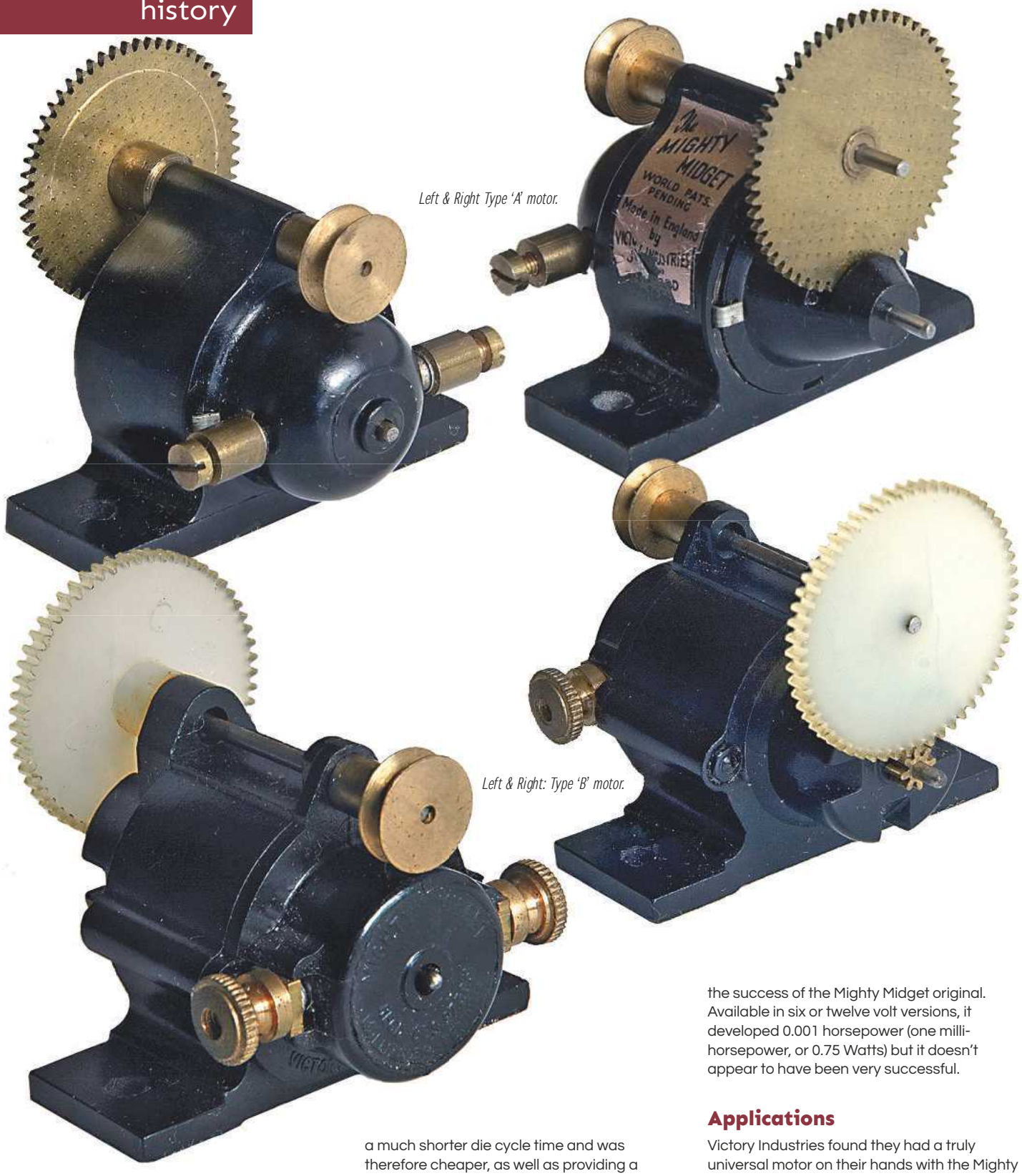
Model Maker did raise a bit of an issue with the tiny size of the brushes and estimated their life at only 1 to 1.5 hours of running at six volts under load, to which Victory Industries replied with their own estimate of 5.5 to 6 hours. Tellingly, the instructions that came with the motor included how to change the brushes, as well as details of a complete overhaul scheme that was available at a charge of five shillings upon return of the motor to the manufacturers. The brushes has to be fitted so that they lay flat on the tiny commutator, and the brush holders were later keyed square to ensure this. Always billed as 'World Patents Pending', it seems the Mighty Midget never actually gained a patent, though it was a Registered Design (No. 873831).

Production variations

The Mighty Midget was in production for over twenty years, and inevitably changes were made to the design over that time. The examples in my own collection appear to fall into three main production periods as follows, though minor variations are still to be found within each type.

Type A: The earliest production type (1948 to 1954).
Bakelite case of tri-lobular shape carrying Mighty Midget label and held together with bent tabs. Full width journal for layshaft, domed at brushes end and extended to semi-enclose pinion and provide outboard bearing at drive end. Large brass brush holders and brass layshaft gear.

Type B: Mid-production type (from about 1954).
Bakelite case modified for side screw fixing, flat at both ends, pinion no longer semi-enclosed, two separate layshaft journals. Label replaced by embossed inscription



Left & Right Type 'A' motor.

Left & Right: Type 'B' motor.

on end and under recessed base. Brush holders keyed to align brushes, knurled brass connectors, brass or nylon layshaft gear.

Type C: Late production type (from late 1950's to early 1960's onwards). Case completely re-tooled in black nylon, modified shape with tapered drive end and shorter side fixing, thinner (flexible) integral mounting foot, nylon layshaft gear. Plain brass nut connectors.

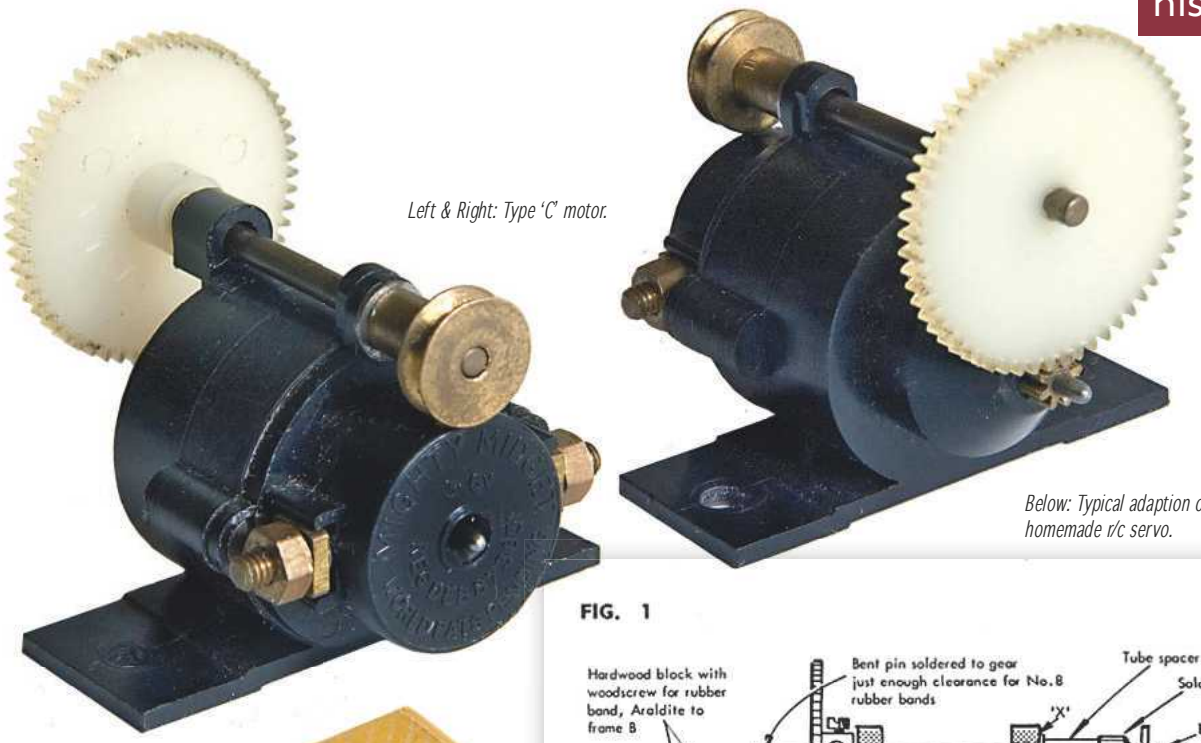
The main change was to the nylon case, which brought the motor up to current practice in plastic moulding, using a thermoplastic (nylon) which allowed a much shorter die cycle time and was therefore cheaper, as well as providing a self-lubricating property for the bearings. Unlike Bakelite though, nylon softens with heat and users were advised to remove the brush holders first if it was planned to solder connection wires to them. Older motors could be upgraded with the new case during overhaul - the throwaway society was yet to come! Motors sold with the new case for some time carried a sticker on their boxes that read 'Shatterproof Nylon Case'.

At some stage (late-1950's at a guess) Victory Industries produced a motor for the industrial market, the Mighty Midget Micro Motor. This had a more conventional appearance, with no gearing option, and no doubt was an attempt to cash in on the success of the Mighty Midget original. Available in six or twelve volt versions, it developed 0.001 horsepower (one milli-horsepower, or 0.75 Watts) but it doesn't appear to have been very successful.

Applications

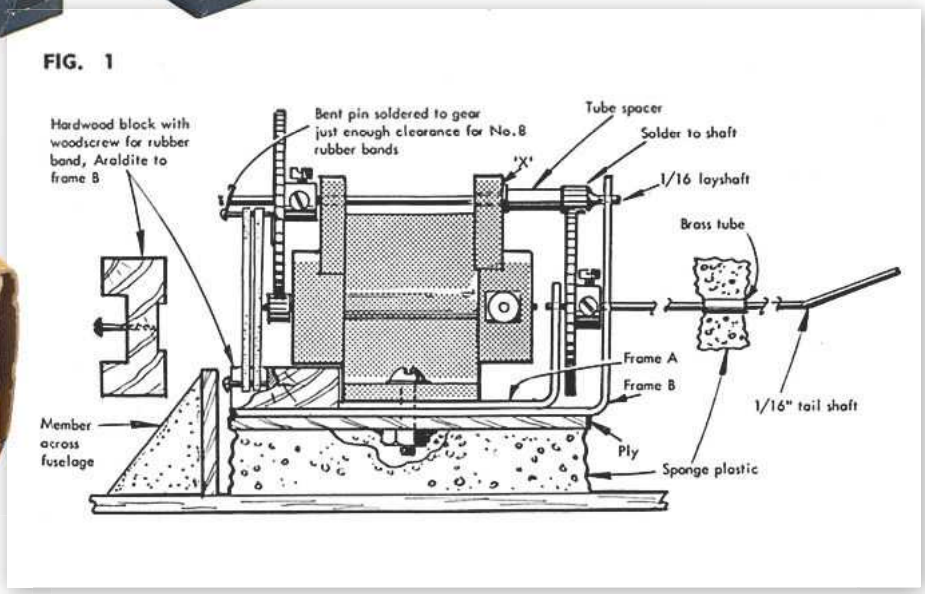
Victory Industries found they had a truly universal motor on their hands with the Mighty Midget and their whole business was built around it. Amongst their own products, it powered a range of model cars, a fork-lift truck, mobile cranes, an electric winch mechanism, a tracked tractor (using two motors), early slot cars (in adapted form) and the well-known Vosper RAF Crash Tender and lesser-known Vosper Turbine model boats. But that was just the beginning, as its reputation for reliable running and its gearing option meant that it found wide application in early r/c motorised servos on both sides of the Atlantic, by such well-known manufacturers as Electronic Developments (UK) and Citizen Ship (USA) for example.

In the modelling press, it was seized upon



Left & Right: Type 'C' motor.

Below: Typical adaption of the Mighty Midget for an early homemade r/c servo.



Above: Industrial type of Mighty Midget Micro Motor.

as being the ideal choice for powering light models, and it appeared on a great many model plans of the 1950's to 1960's, plus a multitude of home-brew designs for r/c steering units etc. I remember as a young lad in the 1960's discovering these designs in modelling books borrowed from the library, but my ambitions to build them were thwarted because my local Australian model shop did not stock the required Mighty Midget motor! I didn't know it at the time, but some of the vehicles of the Gerry Anderson's television series Thunderbirds, such as the earth-burrowing Mole that was a favourite of mine, had their motions provided by the adapted chassis of the Victory's Vickers Vigour tractor, with its two Mighty Midget motors. I am indebted to the website Mad Malc for this information: www.madmalc.screaming.net/victoryindex.htm

And the end?

Victory Industries did have competition in the form of the Frog Tornado, Eveready TG.18 and later Mabuchi and other miniature motors, but these did not come with a geared option until Frog belatedly produced a geared Tornado. In 1969 Victory Industries called in the receivers and closed due to over-saturation of the slot-car market. G & R Wrenn bought the remaining stocks of Mighty Midget motors and Vosper model boats, listing them for a few years in their catalogue, but I have yet to see a Wrenn-branded Mighty Midget.

Mighty Midget powered Vosper Crash Tender from the Wrenn catalogue.

Hong Kong Police Launch No. 2

Phil' Scales converts the Empire Ivy hull from Mountfleet Models

This was not so much a kit conversion as a complete rebuild on a commercial hull. For several years I was a Police Inspector in Hong Kong and spent some time with the Marine Police Department. Legendary in police lore were the two post war 'cruising launches' Police One and Police Two, which were actually modified Empire Hoedic Class tugs, namely Empire Josephine and Empire Sam, given to Hong Kong in 1946 to replace the police fleet that was almost entirely destroyed by the occupying Japanese in WW2.

All I had to work on were a few black and white photographs, including one very useful side view, and the razor sharp recollections of Assistant Commissioner Peter Clarke (Rtd) who had been the skipper for two three year spells in the 1960's. He was very useful with the colour schemes, detailed vessel knowledge and operational use. Fortunately the hull from Mountfleet Models of Empire Ivy to 1:32 scale fitted the bill exactly and I was able to persuade Adam Slater (of Mountfleet) to provide me with only the GRP parts and a chosen selection of white metal fittings from the kit, everything else being scratch built.

Construction

On to the Empire Ivy hull was installed a 3mm styrene (plastic) card deck and the standard kit supplied bulwark stanchions, rudder and anchors were used. The main GRP superstructure was dimensionally accurate and used after some modification. For example, the side stairways were cut out and steps added, and other Mountfleet kit parts used included the steam anchor windlass, main capstan and the towing hook.

The upper superstructure, bridge, engine room housing and rear tow hook area were scratch built from styrene card and plywood, using the photos. The normal kit supplied GRP funnel was discarded and replaced by a piece of plumbing tube of the correct height and diameter and made (by heating and cutting) into an oval shape. The davits are entirely scratch built using styrene card as they were of a different type to those in the Empire Ivy kit. The two ship's boats were also quite different in Police Service, and one is a Quaycraft rowing lifeboat moulding, while the other motorised workboat has been fully fitted and detailed on a bare plastic vac-formed hull.

To complete the conversion, the model was fitted with an Oerlikon platform and

gun above the fore deck and the bridge was fitted with awning stanchions and wires as was the stern deck area. At the time of writing, the stern awning remains to be fitted - sorry! Also fitted were two bridge mounted Bren guns with their pintles and two correctly uniformed European Inspectors as the captain and second in command. The remainder of the crew were Chinese (Hong Kong) police officers and so far, finding or converting suitable uniformed figures has rather eluded me.

The tripod foremast and wooden main mast are from styrene tube and wood dowel respectively and fitted-out as necessary. The bridge side logos have been printed by a colleague as water-slide transfers and read, 'Soy Ging' which translates as 'Water Police' - no great surprise there! The detailing of the ventilators, hatches and rigging etc. is all from the aforementioned photos, plus Peter Clarke's excellent memory, and he also confirmed the colour scheme.

His recollections also included such gems as the reason for having two tyre fenders amidships was not so much for fendering, but to provide a crew footstep during their frequent boarding operations and I am pleased to say the model passed his critical inspection. Perhaps equally important, it also sails well and looks impressive, but very different on the water to a normal tug.

My thanks to Adam Slater of Mountfleet Models for humouring me and supplying just some of the parts from one of his excellent kits.

Left: The boat deck, starboard side, with its scratch built Welin davits and a Quaycraft resin cast lifeboat, plus the correct narrower and oval funnel. The wheelhouse interior is fully detailed and can be viewed through its open doors.

Below: The fore deck with its gun platform with ready use ammunition lockers and the revised bridge section, new tripod mast, Welin davits and the motor driven workboat on the Port side.

Left: Police No.2 on the Southport MBC lake showing all its major features and colour scheme. It has a scratch built upper superstructure and most of the fittings, all on a Mountfleet Models GRP Empire Ivy hull.

Below: The rear towing deck with its new scratch built deckhouse, salvage hatch and hook area, oil filler and hatches. Please note the supports for the deck awning, which is still to be made at the time of writing.

Below left: The wheelhouse and bridge area with its open door so as to view the detailed interior. The Chinese characters read, 'Soy Ging', which means 'Water Police'. Also, please note the Welin davits, inset steps and galley stove pipe.

Below: Close-up of the largely scratch built motor workboat with its rope fender and interior detail, including an anchor and quick release lashings.

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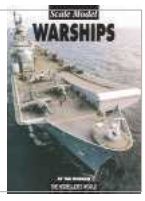

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This plan is for a practical and simple R/C scale single chine long keel sloop designed by Ray Wood, with the hull being easily built from plywood. Wild Duck is 21.75 inches (553mm) long and 7.625 inches (194mm) beam. Fully illustrated and detailed constructional notes are available in this issue of Model Boats magazine.

Plan MAR2127 is on a single sheet and is available from the Traplet Shop (www.trapletshop.com), Currently on sale at £11.88 + p&p, normally priced at £12.50 + p&p.

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HMCS Snowberry

Francis Macnaughton converts the Revell 1:144 scale Flower Class corvette to radio control

There can be few who aren't aware of the Matchbox 1:72 scale Flower Class corvette kit and I was one of those that bought it when it first came out in 1979 and converted it to radio control in the 1980's as my first project for multi-channel r/c. It gave many hours of satisfaction although it gradually acquired a rather battered appearance as more and more of the small plastic bits became broken and eventually it was scrapped after an unfortunate accident involving the garage floor! However, this was not the end of the story as Revell were about to release their 1:144 scale version, so I was now intent on getting a replacement on the water as soon as possible, but this time in a much more compact size.

The Flower Class

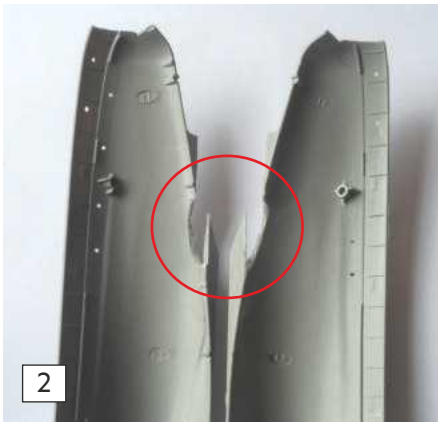
This class of warship was designed to meet a gap in Royal Navy requirements as World War Two loomed to provide protection to merchant vessels in coastal convoys. With little time available and no spare capacity at naval shipbuilding yards, it was decided in early-1939 that this class should be constructed to merchant ship standards using a design based on the commercial whale catcher Southern Pride. By the end of 1944 over 260 of this class had been built before larger and more capable escorts such as the Castle, Loch and River Classes took over the anti-submarine defence of convoys. There was a continuous process of improvement of the design with additional weapons, sensors and accommodation being added as the role of the Flower's expanded into ocean escorting and as U-boat capabilities also increased. Existing ships were retro-fitted with the additional improvements whenever there was an opportunity in their very busy operational programmes. As a result, no two warships were absolutely identical in layout and some careful research will be needed if you are interested in a different 'Flower' to Revell's offering of HMCS Snowberry. One of the best sources of information currently available is the Shipcraft Special by Les' Brown and the late (and much missed) John Lambert whose detailed plans are provided throughout the book. Model Boats regulars may already have to hand the 'Flower Fest' in the MB Winter Special 2016 issue with two good articles on a 1:72nd HMS Poppy diorama and a Gallery of the sole survivor HMCS Sackville, to give some extra background information.

The kit

Originally described as 'Early war version' the 1:144 scale model actually depicts HMCS Snowberry as she was in 1943, **Photo 1,** after having all the improvements and alterations incorporated and so is virtually identical to the larger Matchbox version and it should be quite simple to alter it to the HMS Bluebell and USS Saucy options that were offered by Matchbox. Conversion to a true early WW2 configuration however would involve quite a lot of work scratch-building a new bridge structure, altering the size of the forecastle and repositioning the mast. There are over 500 parts in the kit, giving a high level of overall detail and most are quite delicately moulded, which avoids the rather clunky way that some areas of the Matchbox model are portrayed. One exception is the thickness of the railings, presumably because of moulding limitations and I will cover this in more detail later. Unlike Revell's other 1:144th ships, there are no unused parts on the sprues to suggest future issues of other versions. The hull is in two main pieces with a separate stern section. The supplied kit had some warping requiring careful gluing and clamping to ensure a satisfactory join. The deck pieces and central bulkhead are a good fit which was very helpful for the r/c conversion, and in fact the quarterdeck clips so well into place that it has not been glued, allowing access to the steering linkages if, and when, needed.

Fitting the driveline and rudder control

A quick calculation showed that this 1:144th model should weigh about 320 grams to match the scale standard displacement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which would allow perhaps 60 to 100 grams of batteries and r/c gear, a luxury when compared to some small scale kits I have recently converted. The kit propeller is 22mm dia. and looks a bit too fine pitched to provide adequate 'push', so a Graupner 2307.25 (25mm dia., M2 thread) which has a similar style to the original was chosen as an alternative. An RE260 type motor has been used as it is about the same diameter as the propeller and fits in the area aft of the bulkhead. The propshaft tube for the 2mm shaft is a standard commercial item cut down to 95mm length. As the hull plastic is too thick to allow the propshaft tube to fit correctly, the equivalent section on each hull half was cut away. Once the hull had been glued together, the tube was then epoxied into place, packing plasticard pieces above and below the tube as needed to fill any gaps. **Photo 2** shows the hull halves after being 'butchered' and **Photos 3 and 4** show how the tube was held in place while the glue set with the centre bulkhead clipped in position and a piece of card taped to it to hold the inboard end of the shaft at the right height for the motor and on the centreline. Once this had set, the 'affected' area was filled with Milliput putty and smoothed while still workable, and then sanded once fully cured until the original hull lines were restored. The propshaft itself was then reduced to about 120mm total length and a piece of poly tubing used to connect it to the motor which was bedded into position on a small blob of silicone sealant, allowing time to adjust the motor position for smooth running before the sealant permanently set, **Photos 5 and 6** showing this, inside and out.

A suitable rudder was made by drawing round the kit item on to a piece of plasticard (styrene) so that the same general shape was kept, but enlarged by about 10% in its total area to improve the steering control. A slot was cut in this shape just large enough to take the rudder shaft made from 2mm brass rod with a small bend at the lower end to prevent slipping. The brass rod was also filed flat on each side to allow thinner plasticard

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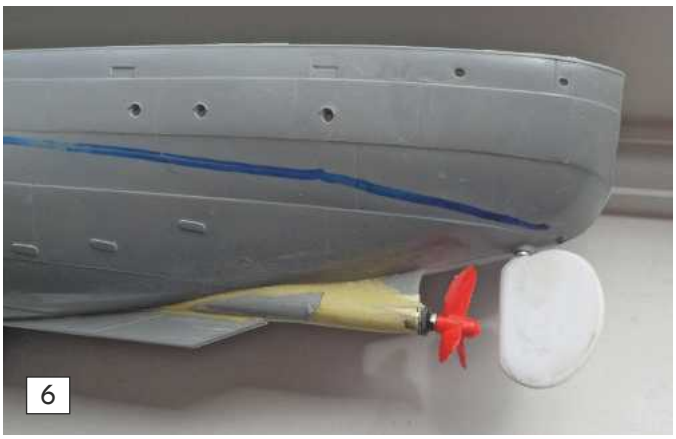
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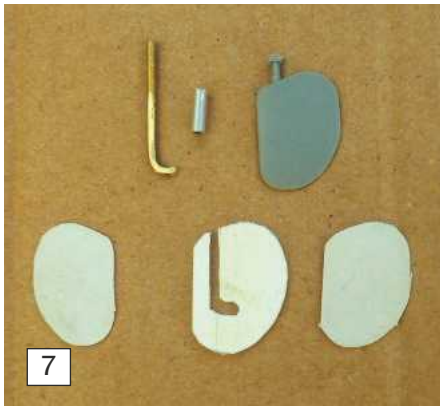
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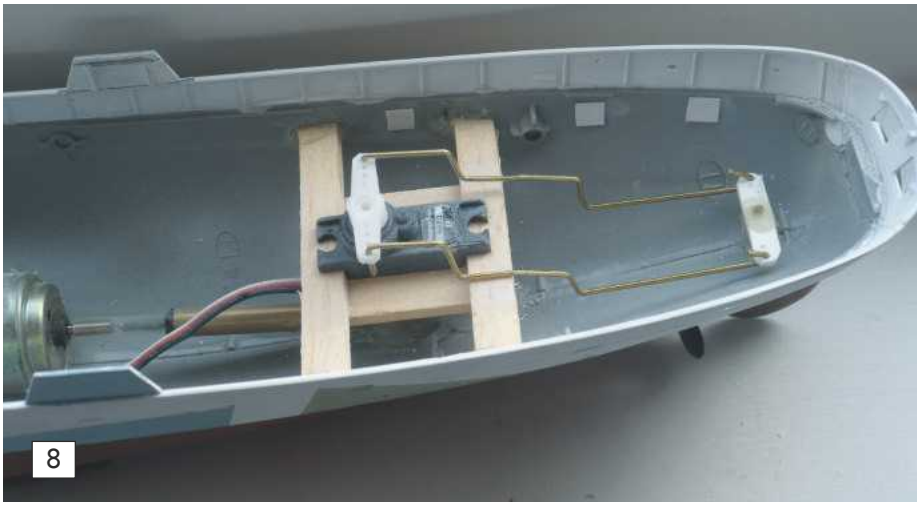
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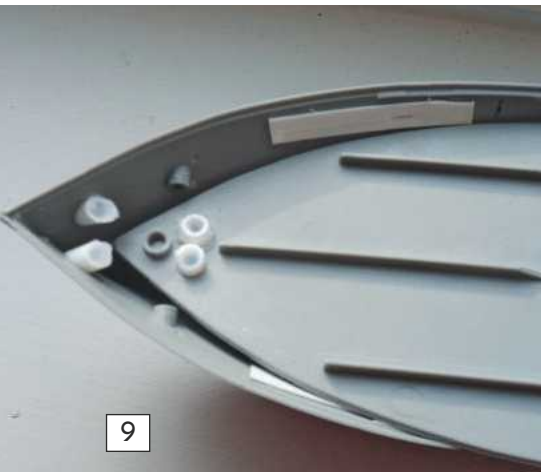
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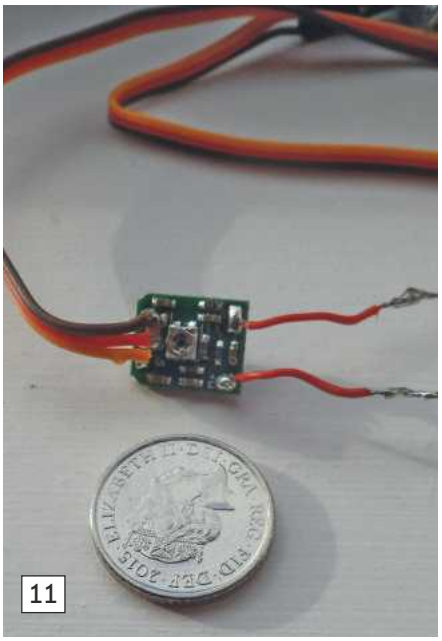
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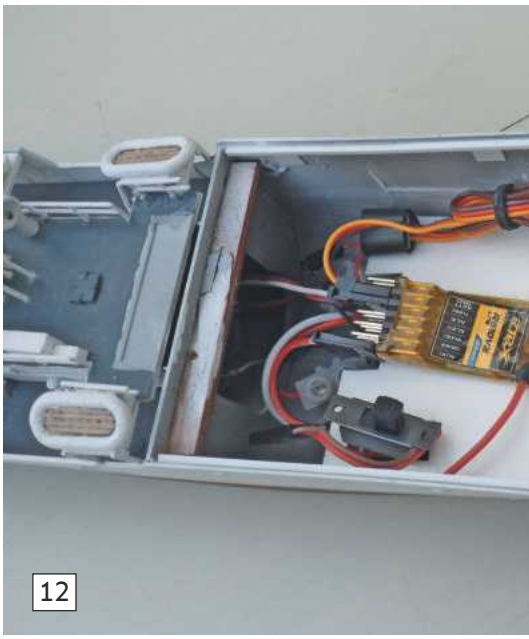
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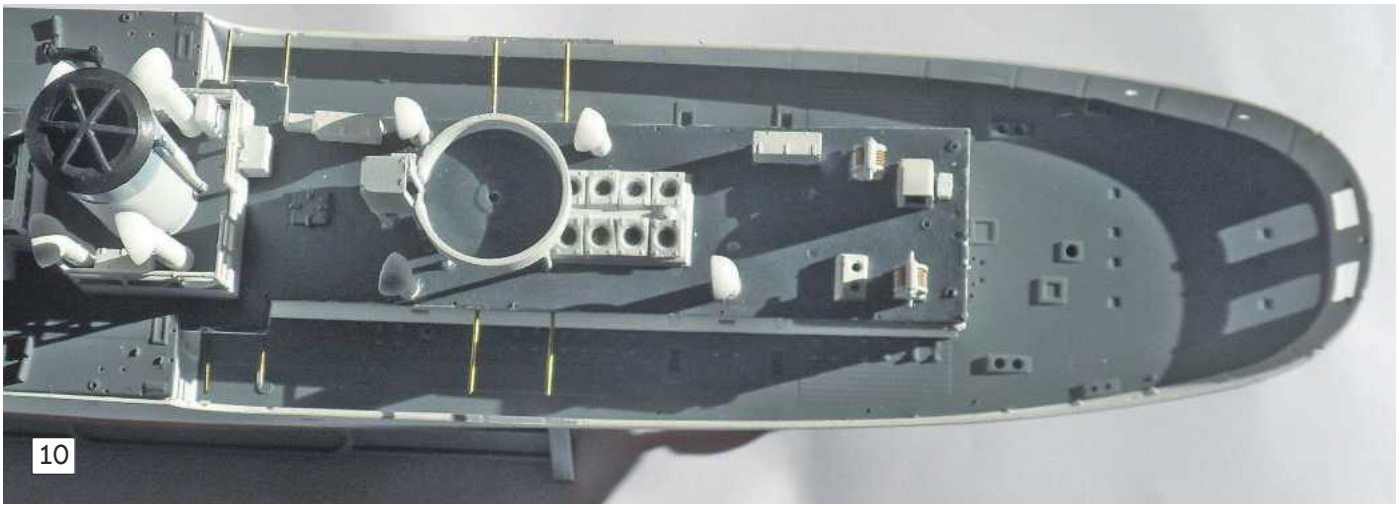
shapes laminated either side to trap the rod in place without any bulge. Once the glue had set, the rudder edges could be sanded to give a streamlined shape and **Photo 7** shows all these parts before gluing. The hole in the hull for the rudder was enlarged to take a 9mm length of aluminium tube that was a snug fit on the rudder stock and this tube was epoxied in place taking care to ensure it sat truly vertical. A tiller arm was made of 1mm plasticard with holes drilled to match the arm supplied with the servo and then epoxied to the rudder stock. The rudder servo is a standard mini type weighing about 9gm. A SuperTec sub-micro Naro servo was used here, but there are plenty of alternatives in the marketplace. The servo mount consists of two stripwood beams running across the hull astern of the motor and two short bits of balsawood strip lengthwise either side of the servo to hold it in place. The servo is central and protrudes into the engine room cover area. Two servo rods of 0.8mm brass were carefully bent to fit, care being taken to allow for the various edges when the quarterdeck is put back and **Photo 8** shows the final arrangement.

Main deck

Attention now turned to fitting the main deck piece so that adequate access is available to the internals while allowing as many of the fittings and other detail parts as possible to be installed and not be at risk of being knocked off when switching the power On/Off and charging the batteries etc. Fortunately, the layout of the kit offers a natural break-line underneath the breakwater if the deck is cut there. After this was done, some strips of plasticard were glued under the forward edge of the larger part, so that the removable deck section can be slid in place securely at its bow end. The remaining small bow section of the deck was carefully glued into place having blanked off each end of the two anchor hawse pipes with a small bit of plastic tube and a blob of silicone sealant and **Photo 9** shows this (upside down) ready for gluing. All the portholes were also blanked off on the inside of the hull using strips of plasticard. Plastic strip was used to make the deck edge overlap a bit more substantial and hopefully waterproof.

A high power neodymium magnet has been used to hold down the aft end of the main deck piece. This was epoxied to the underside of the deck on the centre line and just clear of the central bulkhead. A piece of stripwood was epoxied along the forward side of the bulkhead about 1mm below the top edge. This allows enough clearance for a piece of iron (I used a piece of a broken scalpel blade) to be glued to the wood whilst leaving a small gap so that the magnet doesn't actually touch the iron when the deck is in place, as otherwise too much force is likely to be needed to pull the deck off for access. Once happy with these arrangements, the bulkhead was glued in place after cutting out the area above the oval hole to improve access to the motor and servo leads.

The parts for the engine room cover section were all assembled as indicated in Stage 7 of the instructions. Once glued, these proved be a firm and close fit over the coaming on the quarterdeck, so the foredeck could clip down snugly in position forward of the engine room cover, and all in line, so that the funnel superstructure section could fit over the top holding everything together. A small plasticard piece was added at the aft end of the engine room just make sure things stayed where intended. Later on, before any delicate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bits were added, the Carley float supports featured in Stages 33 to 36 needed some additional reinforcement to enable this whole section to be removable, so it was advisable to drill 0.8mm holes close underneath for brass rod supports and **Photo 10** shows how these are positioned.

Remaining radio control installation

This centred on positioning the main battery pack, switch harness, receiver and speed controller so that HMCS Snowberry floated level once completed. A 950mAh 4.8v NiMH battery pack weighing about 50gm; Orange R610 6Ch 2.4GHz receiver and the speed control board, **Photo 11,** taken from a Feetech FS90R continuous rotation servo is the r/c gear used. The speed control board was described in the May 2017 issue of MB and weighs about 1gm. An Action Electronics P68a controller has a similar performance and is light enough at 9gm and the Mtroniks Micro-Viper esc is probably in the right weight range as well, but does require a 6v supply. A holder for the battery was made from plasticard glued to the hull and a 950mAh pack was about right, as there is a 40 mm gap between it and the central bulkhead. Over this, a plasticard shelf was cut to fit reasonably tightly and placed on top of the battery enclosure to hold the Rx and esc in convenient positions and clear of any water that might accumulate in the bilges and **Photo 12** is of that installation.


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First trial

A few bits of superstructure were now added and HMCS Snowberry could undergo its first afloat trials. These proved there was adequate power and steering control and plenty of buoyancy left for the remaining 480+ parts still to be fitted, **Photo 13.**

Finishing-off

The instructions have a rigid sequence for assembly, starting at the stern and working forward to the bow before rigging the guard rails and flags. This might suit some, but I much prefer to have maximum access to the fiddliest parts first and work outwards in all directions afterwards. This meant starting with the bridge and funnel area (actually Stages 37 to 65). The vast majority of the parts will need painting white to follow HMCS Snowberry's Western Approaches camouflage scheme. A spray can or two, were used when most of the parts were still on their sprues to speed-up the painting process, but also gluing as many parts together early on, such as the doors on lockers to minimise the amount of cleaning paint from mating surfaces that otherwise would need to be done. If using spray paint, I would recommend masking off the areas that will be directly glued together for the bridge base and the radar tower support (Stages 53, 56 and 65) as the parts need to fit closely for a good final result. The waterline is not etched on the hull parts, so I would also suggest at an early stage after the hull has been assembled that it is turned upside down on a table, levelled using suitable blocks and a waterline marked using a fine marker pen mounted on another block of the right height.

There are a fair number of transparencies provided with the kit, but many of them are too thick or unwieldy to be worth fitting and


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either best left off or Micro Crystal Clear PVA solution used instead, sealing with gloss varnish on both sides once those transparencies have fully dried. The main exception is part H431, the radar lantern central section which will need careful painting to represent the supports. Thin acetate sheet was used to replace the bridge windscreen, Parts H433 and H434.

The railings around the forward four inch gun are much more easily added before the whole platform is glued in place at Stage 83. The kit stanchions, Part Nos. 1451, were not used as they are far too thick and equivalent lengths of 0.5mm piano wire were used with the existing holes in the deck drilled to accept them. **Photo 14** shows the gun platform railings using this method with a smooth finish thread for the hand rails rather than the rather coarse cotton supplied with the kit. The same process applied for the forecastle and side railings under the bridge wings. The other moulded railings provided for much of the superstructure are rather over-scale, also being about 1mm thick. One option would be to replace them with an aftermarket photo etched set, but these would be more fragile and are quite expensive. Otherwise, 0.5mm piano wire stanchions and brass wire rails could be glued together in a similar way to the gun and forecastle railings, but this would be very time consuming, so the kit items were, somewhat reluctantly, used.

As many fittings as possible were glued in place having been painted and **Photo 15** is of the aft deck section without its superstructure and please note how the rudder linkages have been bent to clear the deck, and **Photo 16** is of the same, but with the removable superstructure unit in place and it is a tight fit.

The rigging scheme is included right at the end of the instructions, but is likely to cause some problems if followed faithfully. In particular, and although not shown in the instructions, the mast should have a number of stays and shrouds to support it and these run from several points on both the deck and superstructure, possibly making the latter difficult to remove. The mast's rigging can be deduced from the references already mentioned, or even from the larger 1:72 scale kit instructions which can be downloaded from the Revell Germany website.

Photos 17 and 18 are of the completed HMCS Snowberry. The yardarm supplied in the kit for the mast, Part No. D163, is much longer than the version seen in pictures of HMCS Snowberry available via the Internet. The best estimate of the correct length is about 26mm and a piece of 0.8mm brass rod has been used as a replacement.

The four inch gun looks fine, but there were some reservations about the two 20mm Oerlikons which don't have the right shoulder rests and some parts of the 2pdr Pom-Pom are too heavily moulded and rather vague in definition. The 20mm guns have been replaced with scratch built alternatives representing them with canvas covers, using plasticard (styrene) and Milliput. Otherwise, there is the White Ensign Set available from Atlantic Models, but the photo etched parts used would probably be too delicate for this r/c sailing (sea-going?) model.

The plan is to replace the 2pdr guns with 3D printed versions from Shapeways designed by 3D Boats. Some Graham Farish N Gauge 1960's station staff provide the bridge with a navigation team, these being of roughly the same scale.

Completion and adjustments

Checking the weight of the removable bridge and funnel section, this came out at 65gm, which is quite a lot to be so high on the model, so I was particularly careful about stability when the next floatation test was performed with virtually everything now onboard. This did show that HMCS Snowberry had only a

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slim margin of stability, so some ballast would obviously be needed. About 40gm (1.25oz) of sheet lead was inserted in the area under the propshaft and forward of the battery to achieve a desired safe margin of stability. Not much it is true, but enough, and fortunately this actually brought the hull almost exactly down to its painted water line, so no need to use a lighter battery pack or motor.
Photo 19 shows HMCS Snowberry at rest on the water, its final weight being 375gms.

Once on the water and with room for proper speed and handling trials, HMCS Snowberry proved to be as good at manoeuvring as it larger predecessor and turns very tightly. Top speed is estimated at about 2.6 feet per second which equates to a full size 18 knots, **Photo20** hopefully giving some idea of this performance. Astern handling is enough to be able to steer a straight line if the wind is light. The 950mAh battery showed no sign of weakening after 30 minutes of high speed running, so the combination of components seemed to be about right. Because of the small size, it would be inadvisable to sail in much other than fairly calm conditions, but I have cut out the lowest of the moulded freeing ports on each side of the quarterdeck to allow any water that does manage to get there to drain away rather than be allowed to accumulate and reduce stability.

Conclusion

The saying goes that small things are beautiful and this model definitely has a lot of charm. It packs a lot of detail into a small model and the result certainly captures the busy look of this type of vessel. It is large enough for radio control without one having to be too careful about weight, although attention will have to be paid to its operational stability. It certainly handles well and looks convincing on the water and it will be interesting to see if over time this kit becomes as popular as its much larger predecessor.
Enjoy your hobby - ***Francis***

Supplier Data

Revell 1:144 Flower Class HMCS Snowberry kit	
(From Antics Online)	£33.25
950mAh AAA 4.8V NiMH battery pack	
(From Component Shop)	£ 5.40
Orange R610 6 Chl. 2.4GHz receiver (eBay, Digitalcure)	£ 8.99
Feetech FS90R continuous rotation servo	£ 4.88
(for control board esc and leads) from Rapid Online	£ 4.99

All other items standard, available from many model suppliers

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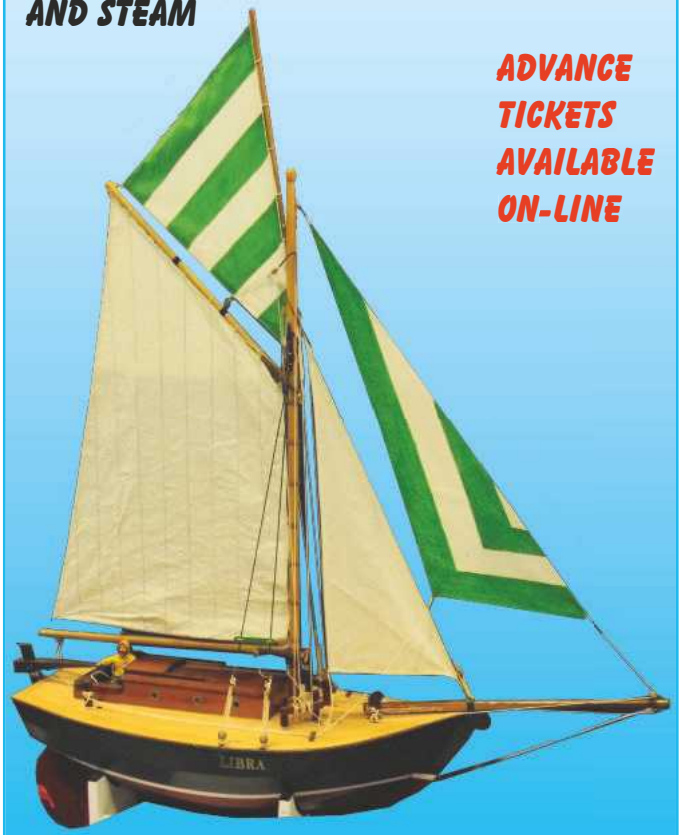

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Richard Simpson's series on model steam plants

Boiler Room Affordable Steam

PART Seventy Nine: PART 3

Having now discussed the ideas behind the 'Affordable Steam' boat and had a look at the main components so far received, I think it is about time we started its construction. So after setting up a building board, scattered a few tools around in a convincingly 'busy' arrangement, it was time to start work.

The stand

As with many kits, such as this Krick Anna, the first task is to build a stand so you have somewhere to place the hull to prevent it rolling around the workbench during the rest of the project. Krick supply a stand in the kit, which is not always the case with other manufacturers, so that is a 'plus' for them. One of the first things to note with pre-cut plywood is not only does the laser cutting seal the edge of the cut, but there are always tiny little tabs left holding the parts in place in the carrier sheet until required. You can get away with pressing the individual parts out, but you will almost certainly tear the surface wood at the tab, which will leave unsightly marks on the final surface finish of the part. It is far better to go around each part with a sharp knife and simply cut into each tab from both sides to ensure that when you press them out they do not tear the grain at the surface,

Photo 1. Just taking a moment to cut through the surface of the tabs on both sides will ensure that the surface of the plywood does not end up with an unsightly tear in it. Most parts simply drop out anyway when you cut the tabs without any pressure being required.

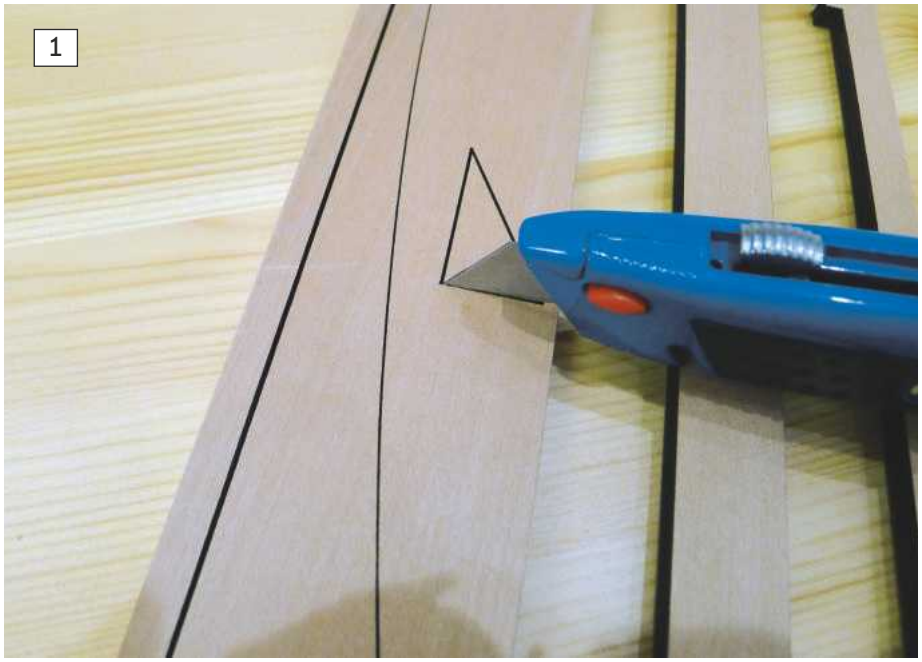


Photo 2. Laser cutting burns the edge of the wood and effectively burns the resin in the wood to a hard glaze. If this isn't removed, glue will not be able to soak into the surface of the wood and the joint will be weak. A few strokes across an abrasive pad should remove this glaze.

Photo 1. When the parts are dropped out of the plywood sheet, the next job is to dress them on a flat abrasive surface to break-up the glazed finish of their edges so as allow glue to soak in, **Photo 2.** With the supplied stand however, its test assembly proved to be such a struggle that rather than remove the parts again for cleaning, I decided to leave them together, make sure they were square and finally squeeze them further totally together (gently!) in a vice, safe in the knowledge that they should never come apart again. A varnish application would ensure a permanent bond and the dark edges of the glazed laser cuts contrasted nicely with the light wood surface, **Photo 3.** So yes, no glue and this goes to show how accurately cut are the stand parts and their slots.

Trimming the hull

I have to admit here and now that I do not liking working with vac-formed plastic. I find it flimsy and difficult to hold, but the real fear is that if you cut it incorrectly you have messed

it up completely, and it always seems to be so vague as to where exactly you are supposed to cut to the final size. In the case of this hull, you are supposed to trim it just above the recess where the deck sits, and you have to cut in the bottom of a curved recess. As it so happens this is all taken into account, as the cut leaves enough excess to sand down the extra waste material to deck level after that is fitted, so perhaps there really isn't too much to worry about. The real secret of success is that the vac-formed plastic only needs a light scoring to be able to break it by hand, as you can control your knife much more effectively if you are not pressing down hard with it. With this in mind, the Stanley knife blade was run around the root of the recess all around the top of the hull and then the cut was bent open by hand, **Photo 4.** At first, not much happened, but then it did break away and perfectly follow the scored cut all around the hull and hey presto, a nice neatly trimmed hull, **Photo 5.**

The lower (inner) deck

The next job was to simply remove the parts for the lower deck (or floor) with its longitudinal and transverse supports. Its three pieces were suitably 'dressed' and glued together with normal wood glue. A decent wood glue soaks into the wood surface (no surprise there) and this usually creates a bond stronger than the wood itself, something Glynn Guest has frequently commented about. The parts for the gas tank base were also glued together, even though a gas tank was not going to be used, as this would give additional rigidity at the front end and might even prove useful for mounting something else later in the project. The undersides of these two assemblies were then varnished, prior to gluing them into the hull.

The instructions advise you to chamfer the edge of this lower deck unit to match the angles of the hull, but I much preferred the idea of leaving it square, which would then provide a nice deep triangular void for the glue when it was in place. The instructions advise using a silicone sealant to secure this lower deck unit along its edges, which as regards long term security of the joint might be questionable, but anyway that is what they suggest so that is what was done, at least in part. The first task was to put a generous bead of silicone around the undersides of the frames and the deck, **Photo 6**, and place it all in the hull. A substantial weight was then put on top of it all and a generous bead of epoxy resin glue was then run around the nice deep triangular fillet that the vertical edge of the deck unit had left, **Photo 7.** After being left for a couple of days to thoroughly cure,

Photo 5. You can gently work your way around the cut opening it up as you go along until the top of the hull falls away cleanly and neatly. The top of the hull is still to be 'dressed' (sanded) anyway, so there is plenty of leeway for any inaccuracy.

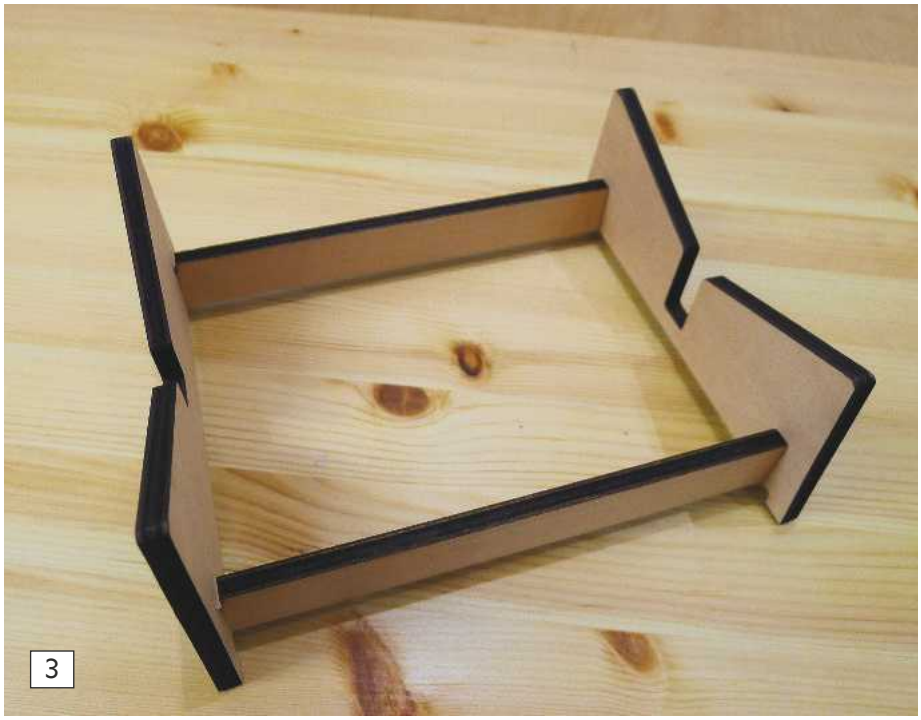


Photo 3. The stand was so tight to assemble that I decided not to risk damaging it by taking it apart again and just allowed varnish to secure the joints. The glazed edges of the ply look quite attractive when varnished, so were left as they were in this instance.

Photo 4. A surprisingly light cut is all that is required to part vacformed pieces. The cut should then open up cleanly and easily when you bend the two sides of the cut.

Photo 6. The instructions call for silicone to hold the lower deck (hull floor) unit into the hull, but I'm not convinced that would be strong enough. I went for silicone inside and built-up a very heavy bead which would ensure that the recess inside the bottom area was completely sealed.

Photo 7. A heavy weight to keep it in place and a good bead of epoxy around the deep fillet at the edge of the deck seemed to be a much stronger arrangement and which could be easily applied once this internal lower (inner) deck unit was in place.

Photo 8. Ensuring the keel is aligned with the hull isn't easy, so braces either side were arranged to create guide pieces while the glue sets. These were covered with cling film to ensure they did not become part of the final structure!

the gas tank base was also glued to the top of this deck with a generous bead of wood glue. So perhaps a bit of 'belt and braces', but the silicone should, together with the glue, prevent any water getting into the void beneath this lower deck unit.

The wood keel

This extends, running aft, from about halfway along the outer bottom of the hull. It is important that this is fitted next and it is in two parts to fit around the propshaft tube, so it also determines the precise location of the driveline. It simply glues to the base of the hull, which being vac-formed is not exactly sharp-edged. To align the forward part of the keel, it has to be held perfectly square by a couple of side braces made from scrap plywood with cling film wrapped around them. A generous bead of epoxy glue was run along the edge of the keel and it was placed in its moulded recess on the bottom of the hull, before being clamped squarely in position with the temporary braces. The fillets around the keel and the joint between the front of the keel and the hull would all be dressed with filler later. I decided not to fit the remaining aft section of the keel until the propshaft tube was in place, as any misalignment could make fitting that item more difficult, **Photo 8.**

The propshaft

The thinking at this stage was that the lower (inner) deck unit and the propshaft were pretty much fixed as regards their location. Moving them would mean completely redesigning the model and that wasn't going to happen, but once they were in place the location and relationship of the engine to boiler could be assessed and adjustments made as necessary, so I was comfortable with installing the propshaft tube according to the drawing. The hull was marked according to the plan and a hole drilled for the propshaft tube where the keel met the hull at the stern. The tube is actually aligned for you by the fitting of a support bracket on its inside end as well as resting it (the tube) on the surface of the keel, so as long as that is fitted at the correct point, there is no reason why the tube cannot be bonded into the hull with generous amounts of epoxy adhesive, ensuring the correct amount of tube remains clear at the rear of the hull, without worrying about the location of the steam engine just yet. The propshaft tube was duly glued to the surface of the keel and the assembly given a couple of days to thoroughly cure.

After that the remaining piece of the wood

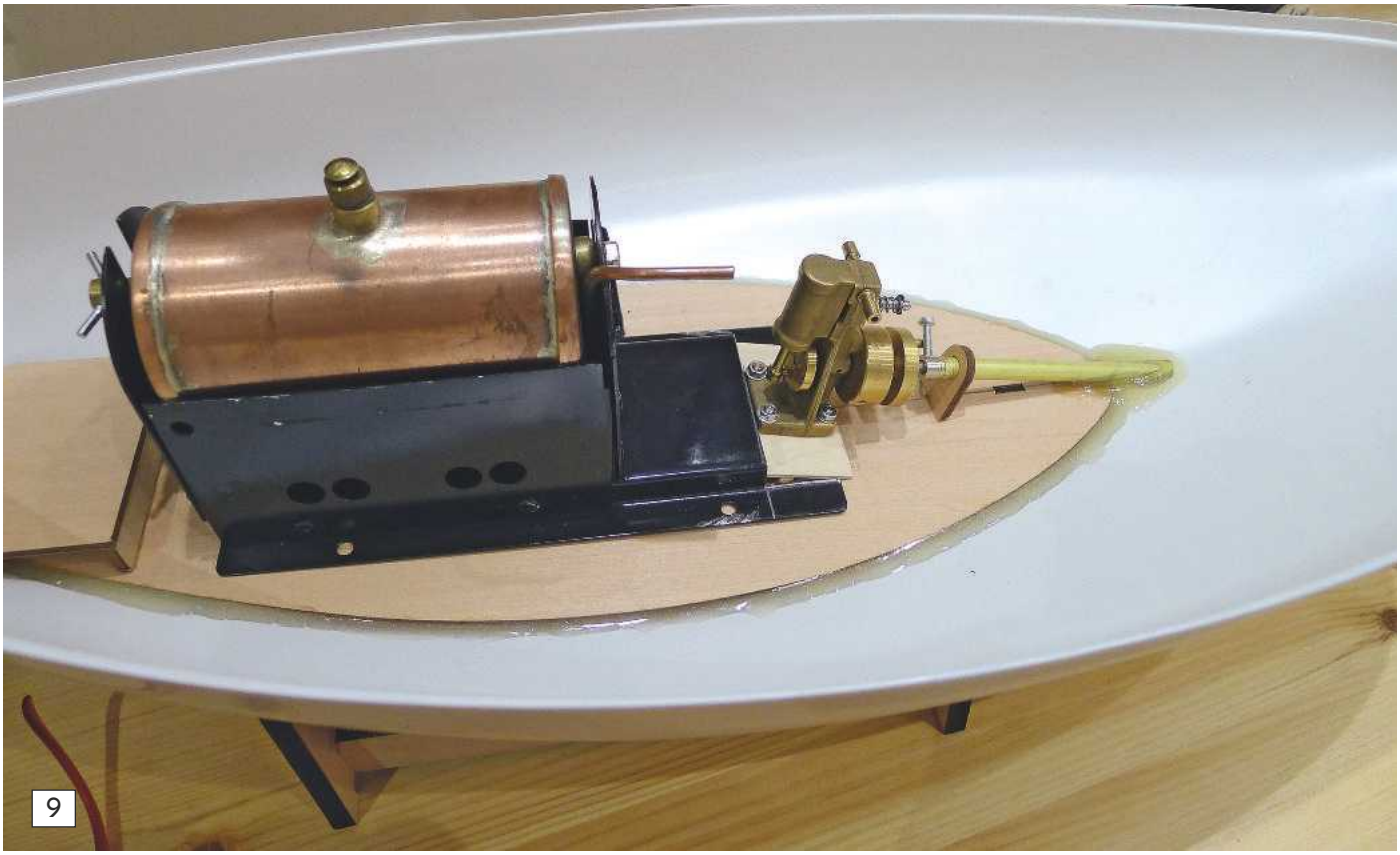


Photo 9. The first play with the boiler, engine and propshaft. The engine position is pretty much determined by the propshaft, so it was mounted on a sloping pedestal and the boiler base was cut to straddle it. This would be finalised once the main (top) deck unit was secured in place.

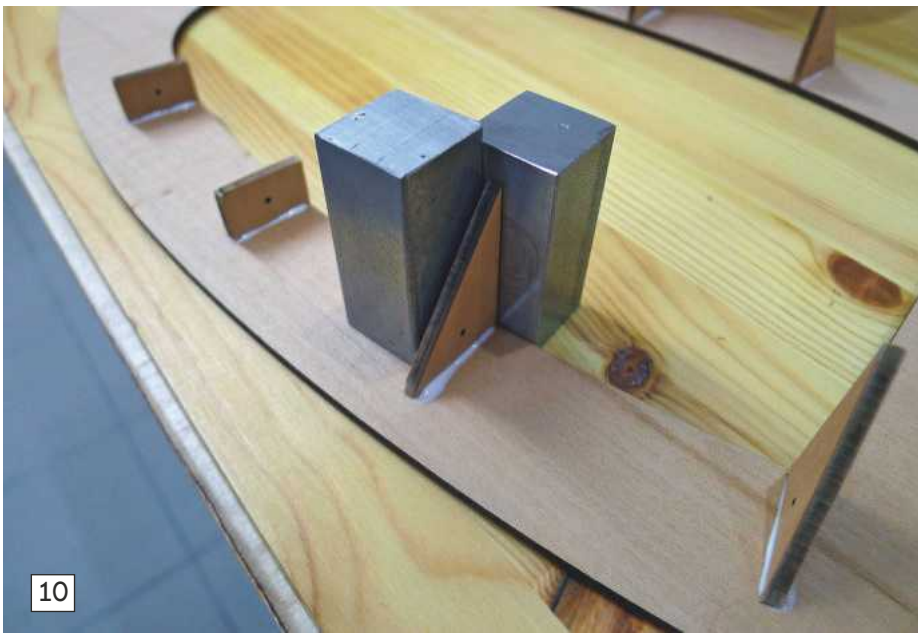


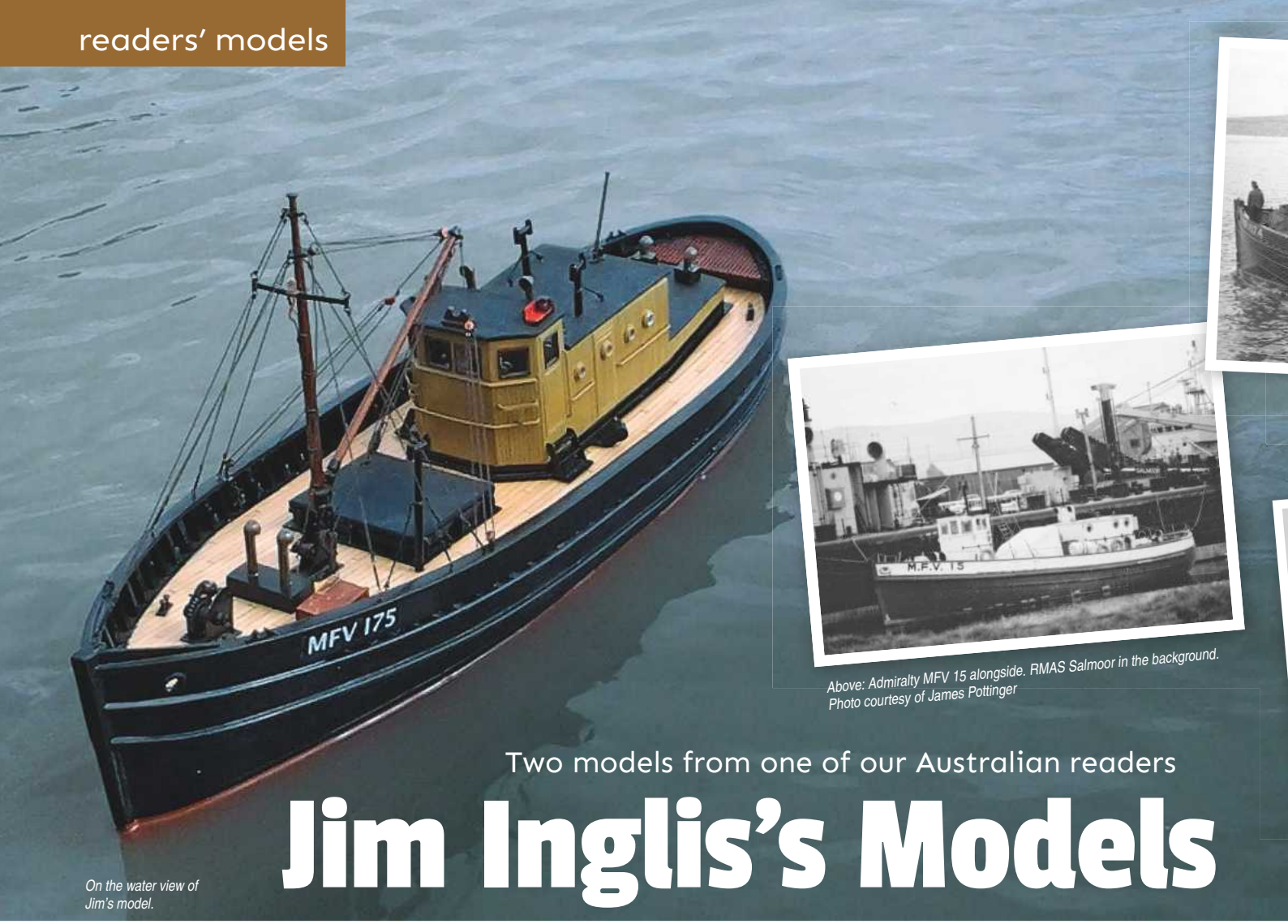
Photo 10. Gluing the brackets below the deck is straightforward and made much easier with square-sided metal blocks to keep everything symmetrical. These metal blocks are actually scraps of square steel bar, but anything similar is a useful addition to your tool box.

keel was glued in place as were the two thin plywood side plates that then hold the propshaft tube firmly in place. For a beginner this arrangement gives plenty of flexibility and is very forgiving, but the glued-on side plates might be seen as a bit cumbersome and unsightly. Careful fairing with filler will blend them, to some extent, into the hull and the keel.

First 'play' with the boiler and the engine

Having now got the lower deck unit and the propshaft in place, it was time to start having a play with the boiler and engine positions. There really wasn't a great deal of point in worrying about the engine, as the coupling has to engage with the coupling on the end of the propshaft, so basically the engine position is pretty much fixed. What did need doing though was to angle the engine to bring the pins of the coupling into a better and 'more comfortable' relationship, which would reduce any friction. This then meant the engine needed to be on an angled base, so one could either modify the boiler's base plate to suit, or make a mounting out of plywood. The latter was a simpler option and somewhat easier than trying to bend the boiler's baseplate, **Photo 9.**

What I really also wanted to do at this stage was see how the main top deck ended up in relation to the boiler and engine, so the braces were glued to the underside of it, **Photo 10,** and the deck was then introduced to the hull. This highlighted what is probably the biggest challenge with the kit and that is the difficulty of fitting the main deck. The big problem is the fact that the deck as fitted should have a significant sheer to it, forward to aft, and the relatively thick plywood deck is 100% flat. No amount of struggling could get the deck anywhere near the hull's top edge sheer, so it was obviously time for a break, a think about the problem and next month I'll let you know how I beat the errant deck into submission!



On the water view of Jim's model.

Above: Admiralty MFV 15 alongside. RMAS Salmoor in the background. Photo courtesy of James Pottinger

Two models from one of our Australian readers

Jim Inglis's Models

Jim lives in an outer suburb of Melbourne Australia, the family having emigrated from Scotland in 1955. He is currently employed on a casual and seasonal basis with the Victorian Ports Corporation Melbourne (VPCM), which was formerly the Port of Melbourne Corporation, as a Transport Safety Officer. Their main function is to ensure that recreational boaters do not encroach on the shipping channels that make up the local waters of the Port of Melbourne, which is the busiest container port in Australasia with about 2.5 million TEU's (20ft Equivalent Units) and about 3500 vessel movements per year. His job entails patrolling the shipping channels in one of VPCM's two 38ft long Steber patrol vessels, engaging with recreational boaters to educate them to the dangers of hindering the commercial vessels. If necessary, he can issue Penalty Infringement Notices (on the spot fines) for around AU$305 per offence.

He was born on the Isle of Bute in Scotland in 1945 and his father had been at sea since he was 16 years old, including during WW2 in the Royal Navy. After the war, being married, he looked for more local employment, and around 1951 he gained civilian employment on the RN's Torpedo Recovery Vessel Dwarf supporting the Third Submarine Flotilla which was based in Rothesay. This led to him being transferred (as a skipper) to the Flotilla's 75ft Motor Fishing Vessel (MFV) 1077, tender to the depot ship HMS Montclare, and subsequently HMS Adamant. Jim was fortunate to spend most weekends and public holidays with him on the tender and it was during this time, around 1954, that the 75ft boat suffered a major engine failure and for about three months the smaller 61.5ft reserve vessel MFV 175 was drafted in to replace it. Needless to say, Jim was extremely interested when he saw James Pottinger's Free Plan for a 1:25 scale model of a 61.5ft MFV (MM2110) in December 2015 Model Boats, and as he was looking for a new project, promptly set about building the model.

Left: Inside Jim's MFV 175 model.

Admiralty 61.5ft MFV

The model was built using marine grade plywood for the frames with a local hardwood, Tasmanian Oak (which isn't actually an oak, but a eucalyptus which grows straight and relatively knot free), for the stringers and planking. Jim found the plans extremely clear, and although there were no building instructions as such, very easy to follow.

For ease of alignment, he installed the propshaft and motor early in the construction sequence. This being his first 'plank-on-frame' model, 'Mr. Google' was consulted and this rapidly produced several, and some

Above: Admiralty MFV 174, very similar to MFV 175. Photo courtesy of James Pottinger

Below: Admiralty MFV 96 going about her duties. Photo courtesy of James Pottinger

confusing, YouTube clips dealing with the subject. Despite his lack of experience, Jim was pleased with the outcome and an old steam iron (that had a bend in its 'nose' through falling off the ironing board), to be ideal for bending the planks. The deck planks were laid on a thin plywood sub-deck with black tissue paper glued to their edges to simulate caulking. The deckhouse is removable to provide access to the motor and control equipment. The hatch cover is also removable and provides access to the 6v battery which sits in a tray at about waterline level and faces towards the bow.

The 'sea trials' were extremely pleasing as the model handled well and did not require any ballast or trimming. However, the reduction geared motor propels it a somewhat greater than scale speed, which is not a major problem as full throttle does NOT have to be used!

Steber 38 foot long Patrol Boat

This is an earlier model of the patrol boat used by Jim. It is to 1:15 scale and has twin propshafts and was scratch built using line drawings supplied by the manufacturer. Bearing in mind that Jim was in in regular operational contact with the prototype, he was able to include a great deal of detail and made all the external and cabin fittings, including lights and decals etc., with the exception of the cruciform mooring cleats and air horns. This model took roughly 15 months to build.

(Jim has been corresponding with Jim Pottinger about his MFV model and looks forward to Model Boats magazine arriving each month in Australia. He was also kind enough to send us some notes and these accompanying pictures of his models – Editor)

Left: Full size Steber boat and the model, Little and Large! Jim's model and the full-size version.

Below: Tim Muir 1:15 scale model on its stand.

Below: Excellent cabin detail on Jim's model of the Steber patrol boat.

Above: CG-38242 looking good.

Picket Boat

Chris Ladel's model from the John Parker Model Boats MM2098 design

Chris lives in Germany near Frankfurt and has been building model boats since 1997 when he was given a Graupner Carina kit by a neighbour, and since then several different craft have been built and sailed. He has no particular preference for a type of craft, having now built a wide range of model boats.

The U.S. Coastguard Picket boat, designed by John Parker and featured in the 2014 Model Boats Winter Special Edition, caught his attention and the plan was duly purchased. Chris says this CAD plan is excellent and coupled with John's construction article, it was a straightforward model to build. Balsawood strips and planks were used for the hull, but some modifications were also made.

1. Different hull sealing - epoxy resin with glassfibre matting to make the hull more rigid.

2. The motor is a brushless Roxxy 3535-12, turning a 50mm propeller.

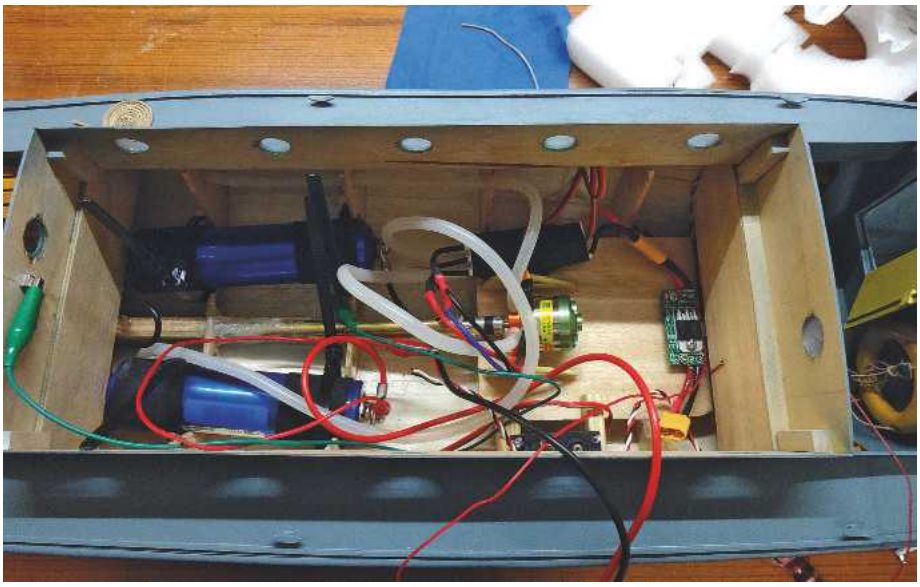
3. Two Headway LiFe PO4 power-pack cells with 15Ah capacity for power have been installed.

4. The crew have a relaxed style(!) and there is also a dog on board.

This Picket Boat has a revised pennant number of CG-38242 and performs well on the local club water. The model is also featured (in German) as a step by step project on: www.schiffsmodell.net/index.php?/topic/14048-38ft-picketboat-die-42/?hl=picket

Below: A view into the wheelhouse.

Below: The motor looks tiny, but has more than adequate power to drive this 38 inch model at decent speeds.



CG-38242 At speed!

PLAN FOR

US Coast Guard 38 Foot Picket Boat

The detailed full size plan **MM2098** is available from the Traplet Shop which now incorporates the MyHobbyStore Plans Service. Plans may be purchased online at: **www.trapletshop.com** or during normal working hours by **telephone: 01684 588599.**

Mooring Post

Bobby is a Vic Smeed design that was a Free Plan in Model Boats back in 1977 and built at the time from ply and balsawood which is now fitted with a brushless motor, forwards only esc and switch as described here.

Barry Martin explains how he does it

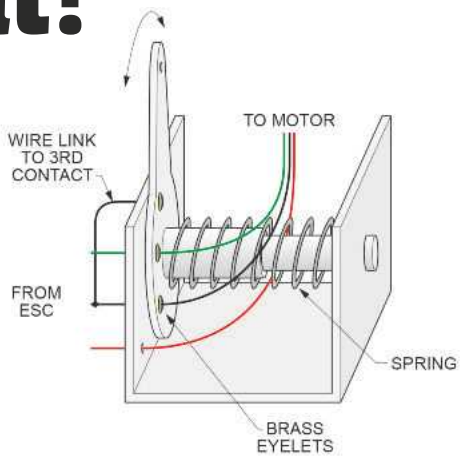
Reverse an Aircraft Brushless ESC for a Model Boat?

Have you taken to model boats after years of flying aircraft? Have you still got a stock of electric flight brushless motors and speed controllers in storage? Are you shocked by the price and complexity of a marine brushless esc with reverse? If you are okay with a soldering iron and like experimenting a bit, then this is what I did with one from my stock, and it works.

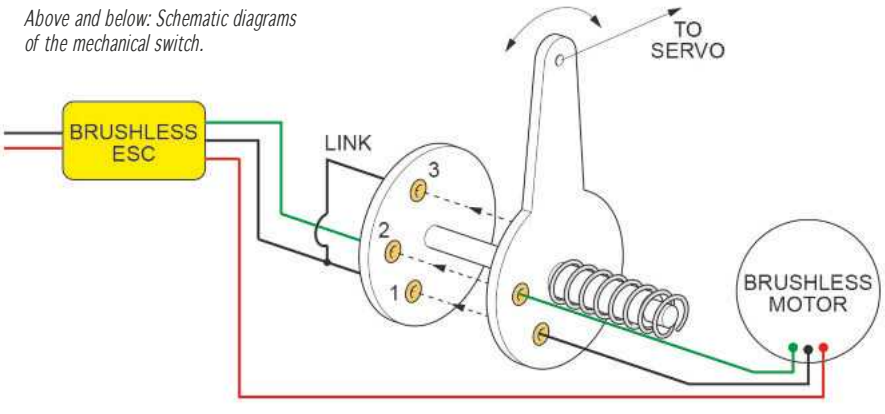
How's it done?

To change the rotation of a brushless motor, we all know that changing any two of the three wires connecting the motor to the esc will do the trick. Using styrene (plasticard), a small housing was fabricated in which were mounted two plastic tubes which fitted loosely together to slide and turn electrical contacts to swap two of the wires to the motor. Only two wires are swapped and the third wire is in constant connection. The contacts used were the smallest brass eyelet available which can be obtained from haberdashery and sewing suppliers.

These were soldered to the appropriate wire and fitted in holes drilled in the fixed styrene housing and the moveable contact, and then superglued in place and dressed on their contact surfaces with fine emery. What is important is:



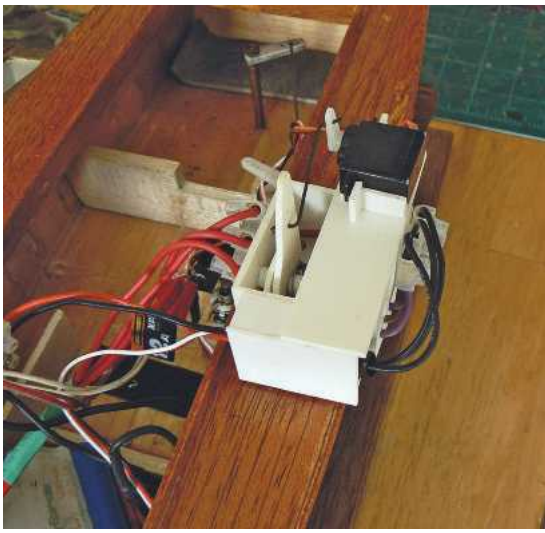
Above and below: Schematic diagrams of the mechanical switch.



1) To allow sufficient spacing between the contacts to ensure that two contacts do not touch and bridge when moving from one wire feed to another.
2) The spacing is not so wide that the moveable contacts have to be rotated more than a servo can accommodate.
3) The coil spring keeps the contacts together.

A Planet T5 system, still popular with boat modellers although no longer commercially available, has an extra switch for the fifth channel, and this slowly moves a servo across its full travel, to move the contacts and swap the two motor wires. Other r/c systems can be used and perhaps even one of the unused horizontal and vertical axes of the normal main dual axis stick channels, but a full-travel switch is easiest. Anyway, any Tx with an aircraft wheel retract or flap control will also be suitable.

Reversing is not as instant as with a purchased 'proper' reversing brushless esc, and it is necessary to stop the motor, wait as long as the servo takes which is usually about 5 seconds with the Planet T5, and then power the motor again. If you have



Above: Top view of completed mechanical switch.

Left: Side view of completed mechanical switch.

arranged the contacts to indeed contact, and the servo moves through the necessary arc, then off you go.

The prototype using brass eyelets did require some 'fiddling with' to ensure the eyelets made good contact, and perhaps a more reliable mechanism could use the sliding copper contacts from the Bob's Board mechanical controllers we all used to use before electronic speed controllers appeared? Anyway, this works for me and makes use of my redundant stock of forward's only brushless controllers and spare servos.

Enjoy your hobby - ***Barry Martin***

(Barry is pleased to be a member of the North West Scale MBC, Horwich, website: www.northwestscalemodelboatclub.com)

Useful Accidents?

Glynn Guest with advice and tips for modellers

Before submitting a plan to the Editor I feel obliged to test the model thoroughly. This usually involves measuring its performance and checking the handling in less than perfect conditions. If need be, an attempt is made to provoke it into doing something naughty is also always tried.

To be honest, a model may misbehave without any provocation and I've had a few that displayed distinctly odd responses to rudder commands at first. Luckily, modifications could be made to overcome these problems and then be incorporated into the model's design before submitting them, but with most models it is simply a case of pointing out things like the model will noticeably heel in tight fast turns or has marginal rudder control when moving astern.

As for the strength and durability of a model design, these are something that one can only be positive about after a lot of sailing time. Luckily, model boats tend to be 'over-built' to a greater or lesser degree, and ought to be more than strong enough for the rigours of sailing. This extra strength is however perhaps a good thing to cope with the abuse that a modeller can apply to it, both in and out of the water?

Many of my models have been built using balsawood sheet for the bulk of their construction. This may offend the opinions of some, but it has always produced a strong and usually, most usefully, a lightweight hull. With careful sealing of the outer surfaces it is tough enough for all but the worst an averagely skilled modeller could expect when sailing. They can even survive a collision from someone else's creation when that careers wildly out of control into the side of your model. The balsawood hull may be damaged, but the inclusion of bulkheads and possibly buoyancy materials, will keep it afloat to enable recovery without sinking.

Perhaps the most vulnerable part of a balsawood hull is the stem. If you are going to hit something, then unless you back into it, the bows are likely to be the point of impact. For this reason, I try to add a strip of hardwood to the stem which can then be carved and sanded to blend into the hull shape. This could be a single strip or, more commonly especially if the stem is curved, it is laminated from thinner strips. Any wood that is to hand in the workshop tends to get used, but many models have had their stems reinforced with laminated lollypop sticks.

Over the years, these stem strips have been subjected to the occasional bump which rarely required more than a spot of paint to repair. That is until recently when I was testing a model destroyer in the local canal. It was admittedly grossly overpowered as I wanted to see how it would perform with a different motor. 'Silly fast' was the answer, but still safe until a moment's inattention allowed it to sail at speed into the stone side of the canal.

The almighty crack of the impact was worrying and created visions of a crumpled bow and split balsawood sheets. Amazingly when the model was recovered, under its own power no less, the damage was seen to be limited to the top of the stem. The laminated strips had clearly done their job and absorbed the energy of the impact. Even more surprising was that it only took a few repeated applications of balsa cement, followed by sanding to restore the original bow shape. A lick of paint and no one would be any the wiser now, except me!

Whilst not an intended part of my testing program, it is nice to know that the method of reinforcing the bows of model hulls built from sheet balsawood does actually work. As a bonus, it means I can keep on buying lollypops because their sticks are needed for the next model……..

Leisure Boat Hulls

Anthony Addams inspects a French boatyard

In France, whilst at Mortagne-sur-Gironde, I was wandering about a boatyard on a Sunday afternoon and started thinking that readers might appreciate seeing some small craft pictures to help with their model making as many British boatyards are often fenced and access is not as casual as in France. This town and its harbour used to be a major port in medieval times, but still has some fishing boats and a marina for pleasure craft. It is a most attractive setting and well worth a visit, conveniently situated one hour's drive north of Bordeaux.

As you can see, there were a variety of boats in the yard and of particular interest were the escape hatches on some catamarans and the hull shapes of others. If a catamaran heels over beyond a certain point it will not right itself, but capsize and may then float completely upside down, probably breaking its mast in the process. The crew must therefore have a means of escape. Wearing a life jacket, it must be a squeeze to exit through such small openings particularly as the sea would probably be very rough. In other respects the photos speak for themselves, but perhaps help with your model making.

Enjoy your hobby - ***Anthony Addams***

Above: Somewhat dilapidated is this old single keel GRP hulled yacht. It looks like the paint was being removed before work stopped.

Left: A conventional hard chine hull. Although actually a fishing boat, the hull could almost be that of a speedboat.

Right: A catamaran escape hatch - you would need to be agile to use it though

Above: A planked fishing boat that has seen better days.

Above: A twin-keeled yacht, the benefit being that no hull supports are required when ashore or aground.

Right: A traditional deep-hulled motor sailing cruiser.

Right: A very large catamaran - doubling as a car port!

Below: A crew escape hatch on a catamaran for use in the event of a capsize and turning completely upside down.

Left: Wilton Park is the home of the Kirklees MBC and this is a fantastic venue for the club's Open Days, Steam Conventions and other events.

Above: The thrills of Club 500 fast electric racing!

Below: It was not all steam on the day. The late Keith Hayes was an exceptional modeller as the individually plated hull of his Moorcock model revealed.

Kirklees Model Boat Club Steam Convention

Richard Simpson reports

Held on the 23rd April 2017, this was the eight such event, the first being held in 2010.

A few of the regular modellers were unable to attend and two of the vendors, Mountfleet Models and Tony Green Steam Models, were absent, their being booked at alternative model engineering events on the same day. As usual for such events, the day commenced with a large group of committed helpers coming early to assist with the erection of gazebos, tea tent and the steam testing enclosure, with for 2017 an additional gazebo over the latter, just for me! This enclosure is a feature of this event and a total of thirteen steam tests and a pressure test were performed during the day.

The event

What became apparent was the fact that although there were a number of regulars unable to attend, we did see a number of newcomers. A quick count in the morning and there were a total of 19 model steam boats on display and a similar number of other models, probably the largest number we have had in recent years. The event does now seem to attract more and more steam modellers from clubs where steam testing has for some reason or another stopped, and it is always good to attract new visitors and share some steam related conversations. New models always bring with them fresh ideas and build processes, and provide plenty of topics for discussion, as well as the opportunity for newcomers to ask questions and see just what is involved in building and operating a steam model. It also gives us a chance to look inside other models and pick up one or two ideas regarding just how things can be done, an example being the MSC Archer steam tug. This year though, the most memorable model was a very old steam powered tug, purchased as a part of a deceased estate, and which incorporated a large home built boiler, a home built twin slide valve engine with two water pumps and electrically driven reversing gear, as well as a petrol burner to drive it all. On top of that we had some of our regulars such as Raymond Binns and his beautiful scratch built launch, as well as other beautiful examples of the open launch type, plus a lovely steam powered raised quarter deck cargo ship. In addition, there were also examples of electric powered steamer vessels such as that of the late Keith Hayes.

Boiler testing

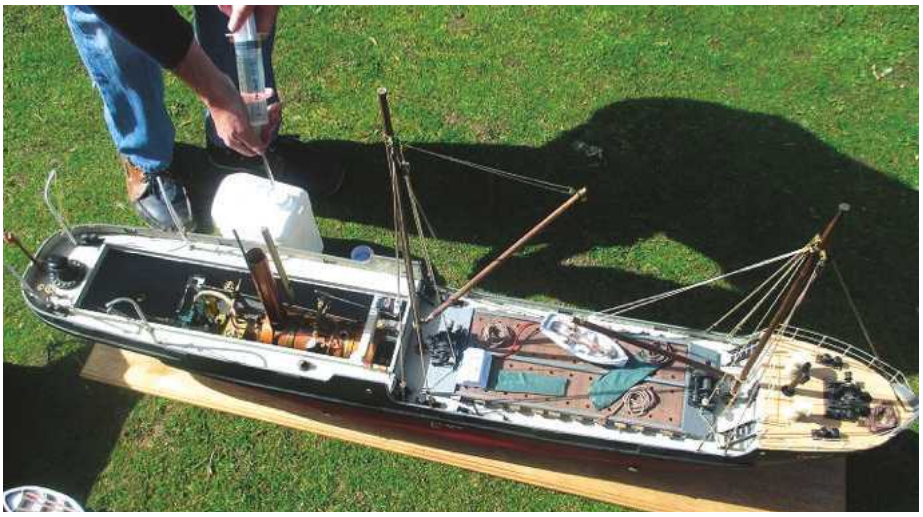
The philosophy at Kirklees MBC regarding its Steam Convention has not only been to provide an event to be a focus for model steam enthusiasts, but to provide the testing service that these modellers require. This ensures an attraction to get them all together and gives the club the opportunity to showcase its facilities as well as its positive attitude towards 'steam', something which seems to be slowly disappearing in other clubs as their current steam test officials retire or simply stop providing this service. Maybe this will also happen at the Kirklees MBC when I eventually call it a day, or perhaps not?

Above left: Pendle Steam Boilers brought along some examples of their product range.

Above: Raymond Binns' beautiful scratch built model captures the atmosphere of the old steam lake launches perfectly, and it looks simply beautiful in the sunlight.

Above: Here in the 2pm 'steam past' are two of the fine models seen at Kirklees MBC this year.

Below: The enclosed hull of a cargo ship is never going to be quite as easy to build or operate when steam powered, so is all the more appreciated when we do get to see one.



Meanwhile, we get to enjoy days such as this with a great gathering of steam enthusiasts sharing ideas, conversation and stories, as well as providing an opportunity for traders to tempt those with a less than secure grip on their funds.

On the water

A calendar conflict required the club to run its monthly Club 500 fast electric heats on the same day, temporarily stopping steam activity, but this was actually a huge benefit as the general public saw two distinct sides to the hobby on this day. It was only a short break in proceedings though, and at 2pm as in previous events, as many steam models as possible were made ready and put on to the water for a sail past, always a nice spectacle.

Conclusion

After the sail past, the award ceremony was held and the Steam Queen Trophy was awarded to the ST Sloyne owned and operated by Tony Middleton of York MBC. The innovative build and the fact that this model is kept operational after all these years is testament to its engineering excellence and quality construction. It was great to have the model attend the event.

We were very pleased to have visitors from a number of well-known model boat clubs including those of: York; The Potteries; Crewe; Balne Moor; St. Helens; Runcorn and Sheffield. The Tyneside Society of Model & Experimental Engineers were also present. Pendle Steam Boilers also came along to show their products, and very good they are too. As usual, the tea tent run by the ladies provided an excellent service of light refreshments as well as some additional income for the club. The weather was perfect (yes, it really was!) and it was super gathering of like-minded souls on this April day.

Kirklees MBC

The club welcomes new members and they are normally at their lake on Wednesday afternoons and Sunday mornings.
Venue is: Wilton Park, Bradford Road, Batley, WF17 8JH
Website is:
www.kirkleesmodelboatclub.org.uk

Below: This MSC Archer steam tug is a beautiful model incorporating all that is best in a model with accompanying lovely detail work.

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!

Steam Tug Kerne/HMT Terrier

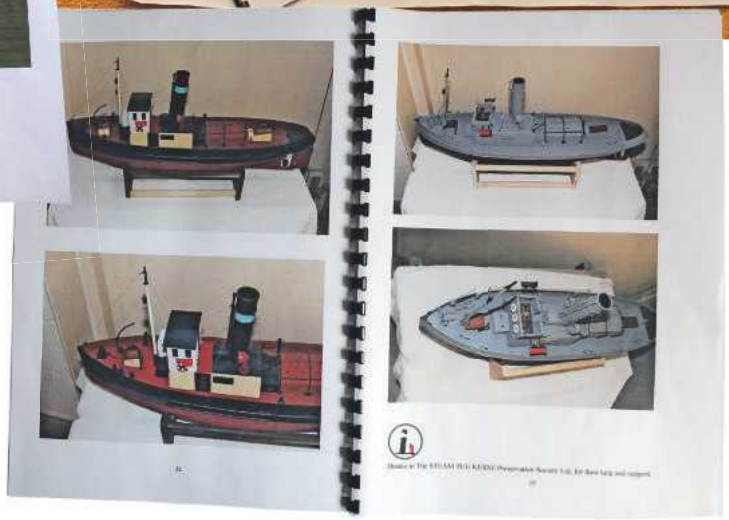
Mountfleet Models new 1:32 scale kit

This is the latest kit from Mountfleet Models and has been made in association with The Steam Tug Kerne Preservation Society. The kit can be made as two different versions of the same tug, namely:

Steam Tug Kerne as she is today, or HMT Terrier when in Royal Navy service.

The kit contents.

Above: The instruction manual is comprehensive.



Right: There are plenty of useful colour pictures in the instruction manual.

Contents include a full size plan, GRP hull measuring 780mm (28.375ins) in length with a beam of 190mm (7.5ins), GRP superstructure moulding, plastic funnel, printed wood for the deck and cabin, a selection of wood sheet and sections, plastic strip and tube in both metal and plastic. There are nine bags of metal and resin fittings containing over 200 parts, with one for a crew member. Also included with the kit is a propshaft and 65mm three bladed good quality brass propeller.

The building manual is comprehensive and includes many coloured pictures. It also has the parts listed with reference links to the plan, so checking the parts when you get the kit is straightforward. Included is membership to the Friends Association of the Steam Tug Kerne Preservation Society for one year and as a 'friend' you will be able to visit the tug which is normally around the Liverpool area, which could prove useful if you want to gain more information before you start building. Glues, paints, motor, battery, r/c equipment, and of course your time(!), will as usual be needed to complete this kit.

The kit will be the subject of a full build review article published in due course in this magazine.

*Review by **John Elliott***

Steam Tug Kerne/ HMT Terrier

Price is £295 plus p/p.
Mountfleet Models
Rock House
Bankwood Road
Womersley
Doncaster
DN6 9AX
United Kingdom
Tel: +44(0) 1977 620386
Website:
www.mountfleetmodels.co.uk

News from Deans Marine

New rudders

Recently received is a press release from this long established UK manufacturer listing some new, and very nice, rudders that are now on sale in June 2017. These have moulded blades in a hard nylon, with a steel shaft of 60mm length, a brass rudder tube 50mm long with turned bearings (which can be removed and the tube cut to any length desired), and the bearings easily re-fitted. All four different styles of rudder come complete with a three arm tiller and lock bolt. Full details and sizes are on the website in the Chandlers Section of the Deans Marine website, but prices range from approx. £6.50 to £7.50 per rudder.

Deans Marine, Conquest Drove, Farcet Fen, Peterborough, PE7 3DH, England.
Tel: +44 (0)1733 244166
Website: www.deansmarine.co.uk.
*Review by **Paul Freshney***

Right: Examples of the new rudders and what you get for your money

Miniature Steam Models

Upgrade of the Mildura steam engine

This is a design dating back 20 years, and it has recently been substantially upgraded. It is a powerful twin cylinder slide valve model steam engine, still as resistant to corrosion as it was at its birth, but with improvements made following customer feedback. Also, major improvements in component quality have occurred through Miniature Steam Models (MSM's) adoption of CNC technology for component production and the continuing improvements that have occurred with manufacturing precision products today. In addition, because of the popularity of this engine, MSM is now offering an increased number of variations of the Mildura.

The Mildura steam engine fitted with a marine flywheel and Stephenson's Reversing Gear.

1) Assembled engine with a marine flywheel, with or without Stephenson's Reversing Gear for a traditional marine look and easy installation into a model boat.
2) Reversing versions also have optional r/c control or manual control features.
3) A cast spoked flywheel is also offered, with or without Stephenson's Reversing Gear, for a more traditional look and where installation space is not a problem.

The Mildura steam engine has a 3/4 inch bore and stroke and when coupled with the MSM four inch centre flue marine boiler, is capable of powering model boats up to two metres in length. The engine is made from stainless steel and bronze alloys and is known for its corrosion resistance and as a result, it requires minimal maintenance compared to similar engines made using cast iron.

Typical price at the time of publication: £710 + p/p for the engine pictured here, although that can vary depending on the options selected.

There is a special deal price for freight from Australia for international orders.
*Review by **Paul Freshney***

Please order directly from the factory via the
website: www.miniaturesteammodels.com
Enquiries: info@miniaturesteammodels.com

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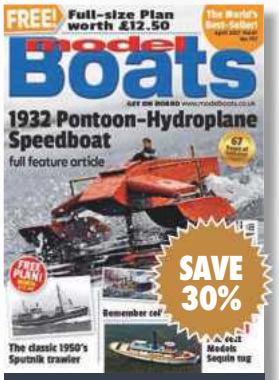

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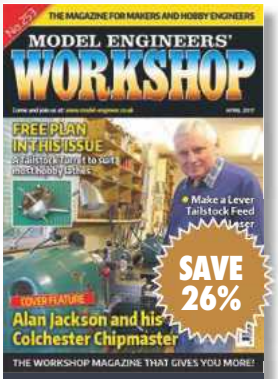

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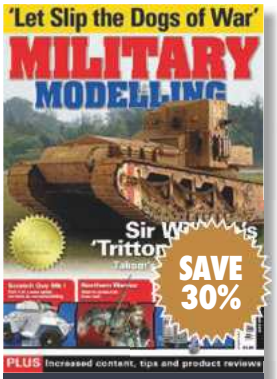

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Glow (Nitro) Engine

Craig Dickson has a look at some of these on BMPRS boats

I recently got the opportunity to take a few photos to show some examples of the different types of Glow (Nitro) fuelled engine layouts seen in some of the boats that race with the BMPRS. Let's consider what aspects stand out and some of the differences, because often the same hull and engine can be very different, depending upon the set up or installation chosen.

Photo 1

This shows an example of a very simple set up. It features a **Front Induction & Side Exhaust** West 28 glow fuelled engine, with direct drive to the submerged propeller via a solid steel propshaft and a flexible rubber coupling. By front induction, that means that the carburettor is mounted at the front of the engine secured in a housing that is part of the crankcase. In terms of timing of the delivery of the fuel & air mixture, this is controlled mechanically by way of a slot in the crankshaft which carries the charge once each time it rotates, supplying this to the internal part of the crankcase. The orange silicone tube from the tuned pipe to the fuel tank blows exhaust gases into the fuel tank to pressurise it, and the second tube from the fuel tank takes the fuel to the carburettor under a little pressure. A key aspect of such an engine configuration, is that there are relatively very few parts to go wrong, wear out, or break.

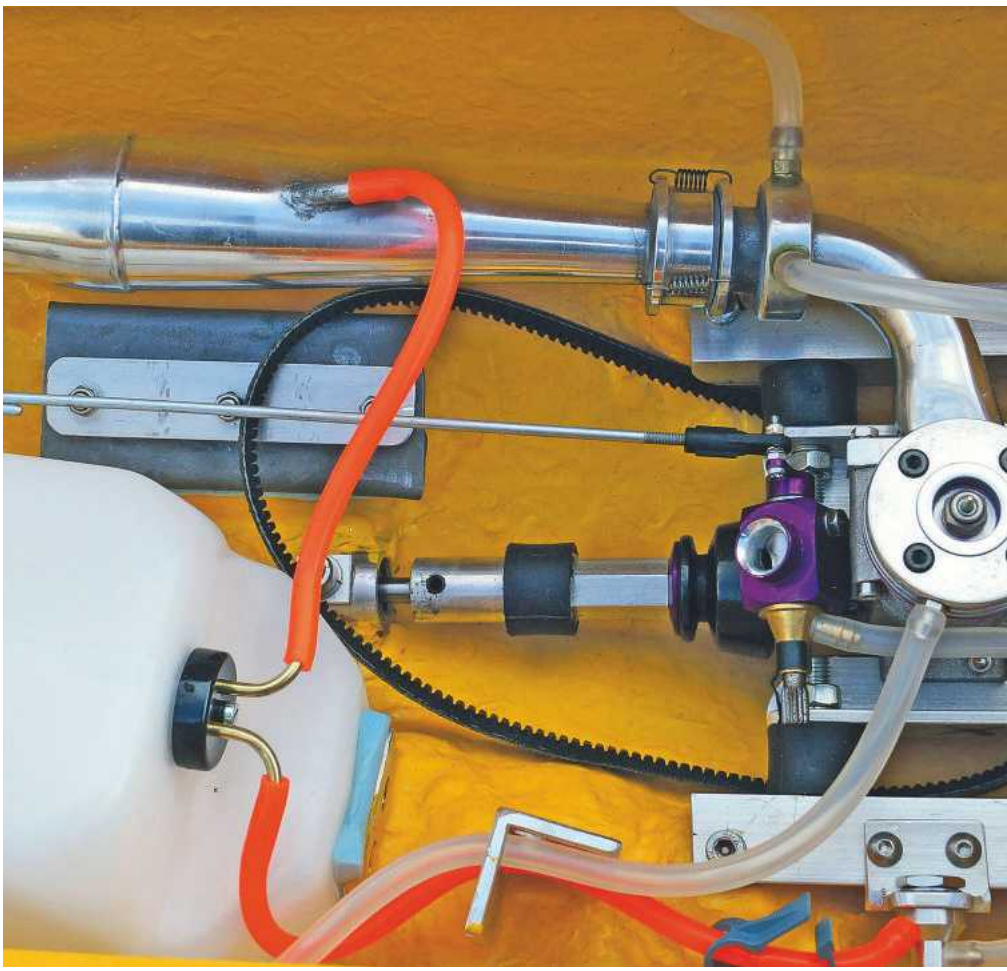
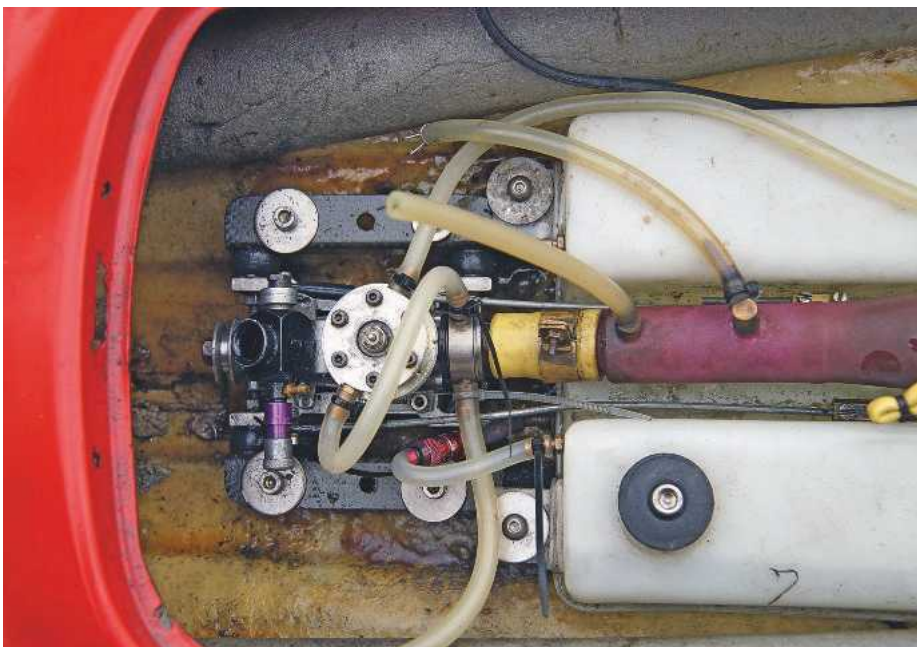


Photo 2

This is an OPS 21 engine, front induction with a rear exhaust, all mounted on a 2:1 reduction gearbox. This engine has the exhaust port exiting from the rear of the engine, but still with the carburettor mounted on the front crankcase housing, thus it has a **Front Induction & Rear Exhaust** configuration. This engine is ideally suited to sitting on a gearbox and has been installed that way, but notice how it is facing the opposite way round to the engine seen earlier in Photo 1. The flywheel of this motor has a toothed gearwheel (not visible in the photo) which connects to a lower gearwheel and driveshaft (beneath the engine), coupled to propshaft and propeller, and why use a gearbox?

This version has a gear ratio of a 2:1, meaning that for every two revolutions of the engine's crankshaft, the propeller only turns once. This enables the engine to spin a bigger propeller than otherwise, but at half the revolutions per minute. Bigger propellers in model boat are intrinsically much more efficient, meaning that a bigger percentage of the engine's power is converted to forward thrust from the propeller. Model boat propeller theory is very complex and requires an extensive knowledge of physics and mathematics, however in terms of the efficiency aspect, think of an extreme example such as considering a ridiculously tiny propeller of just 1mm diameter. Even a 10hp engine spinning such a propeller at ridiculous speeds, would simply not generate much thrust, so clearly size matters!



Configurations

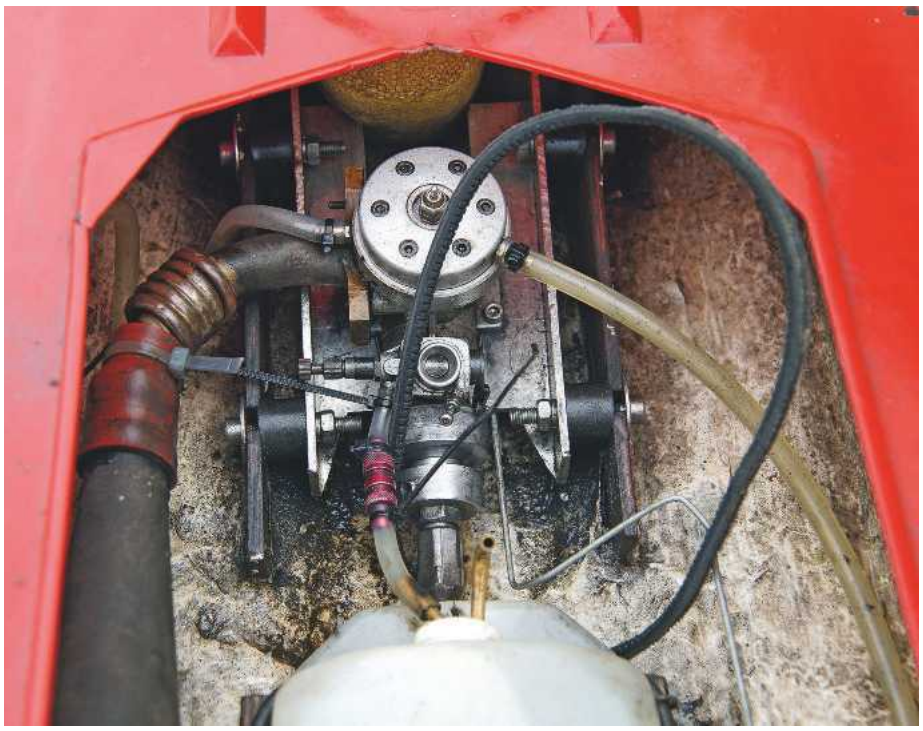


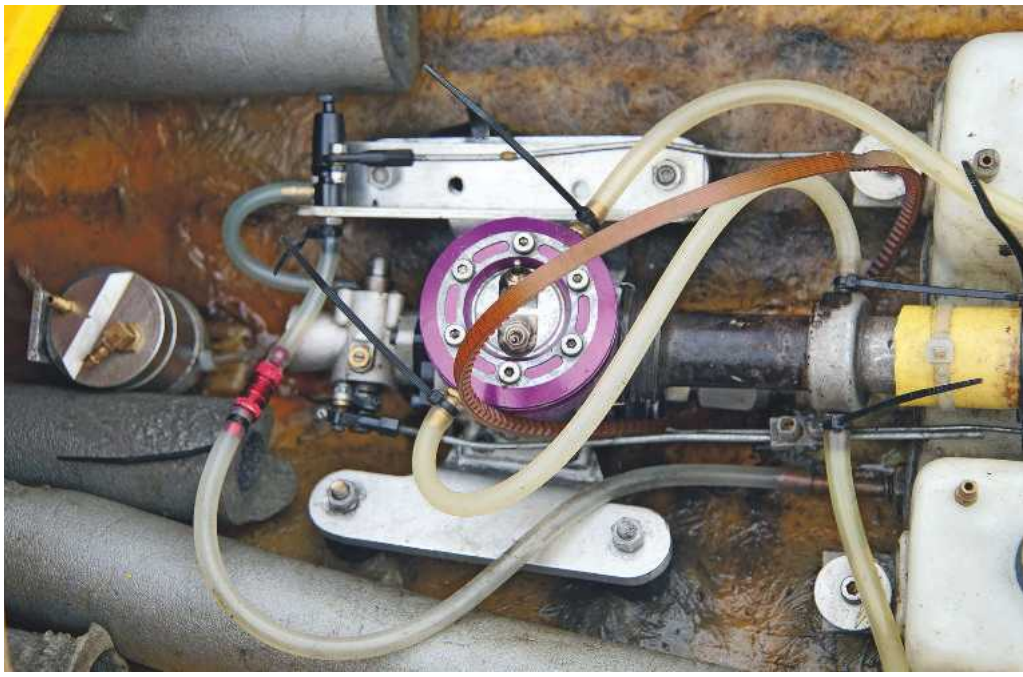
Photo 3

This is an ASP 46 engine **(Front Induction & Side Exhaust),** seated on rubber mounts connected with a solid coupling to a flexible driveshaft to a submerged propeller. This is a relatively simple installation (and the boat has enjoyed plenty of races), but note the single tube going from the fuel tank to the carburettor and a second upturned brass pipe is the air vent to the fuel tank. This tank is vented and not pressurised, so the fuel supply is sucked in by the venturi effect of the carburettor. In non-pressurised arrangements like this, the main fuel needle on the carburettor has to be screwed much further out to allow sufficient fuel to flow through.

Photo 4

This shows a **Rear Induction** CMB 90 engine with direct drive to a flexible surface driveshaft and a solid coupling. The carburettor on this engine is mounted on the back plate of the engine (seen to the left of the cylinder head and low in the boat), and this powerplant relies upon a Zimmerman rotor disc for the induction timing. This disc sits inside the engine next to the backplate. It has a hole inside it and rotates at high speed, driven by the crankshaft. Have you noticed the two servo operated push rods going to the engine?

The one in the lower part of the picture controls the throttle arm for engine speed and the upper rod connects to a remote fuel needle to facilitate fine fuel setting adjustments by radio control whilst the boat is on the water. To the left is an alloy float chamber, which though installed is not actually connected for use. A float chamber is a device for automatically regulating the supply of a liquid to a system. It is most typically found in the carburettor of an internal combustion engine, where it automatically meters the fuel supply to the engine.



Photos 5, 6 & 7

These pictures show a set-up with a CMB 91Evo engine mounted on a gearbox and in case you are wondering what the empty plastic drink bottles are at the back end for in **Photo 5,** they are for buoyancy, a cheap and simple way of doing just that. One striking aspect of this engine arrangement is the substantial amount of tubing and piping present and the relatively large fuel tanks in the boat. **Photo 6** shows a close-up of the engine from the port side of the boat and despite this being a big hull, the amount of equipment packed inside leaves little space for anything else. In **Photo 7,** from the starboard side, we can just see to the lower left of cylinder head, the top gearwheel and grooved flywheel with the starter belt in-situ. The gearbox is practically hidden from view, sitting underneath the engine. In this last photo you can also see one of the two high tensile steel springs, wrapped below the cylinder head which hold the exhaust manifold to the engine with just enough pressure to provide a good seal, without overstressing the cylinder casting, as over-tightened bolt type clamps might do.


5


6


7

Photo 8

A rather unique set up as it is the only boat currently within the BMPRS that utilises what I would class as a genuine model i.c. outboard motor. This OS 21 outboard motor is a remarkably ingenious bit of kit, supplied pretty much as a bolt-on unit. The engine has two servo operated push rods to control the throttle for engine speed and to rotate the unit bodily for steering the boat.

Watercooling is simplicity in itself, as the water is picked up just behind the propeller and fed through the cylinder head jacket and ejected the other side with no need for any plumbing inside the boat. The drive from the engine to the propeller is by means of a short enclosed flexi-shaft connected to the rear of the engine within the housing, and so is not visible in this picture. The carburettor faces aft and as the boat is usually going forwards(!), water spray is not a problem.

Conclusion

These few examples hopefully demonstrate the varied possibilities for different types of glow (nitro) fuelled engine boat set-ups. They can be as simple or as complex as the individual racer desires, although some would say that KIS (Keep It Simple) is perhaps best. There are of course also spark ignition (petrol) engine powered boats and in due course I may do a mini-feature on them.

Cheers for now - ***Craig***

1:700 SCALE NAVAL DIORAMAS PART 4

Chris Drage explains how to build these miniatures

Right: Operation Halberd 1942 featured the British cruisers Sheffield, Edinburgh and Kenya. These are 1:700 scale models and show what can be achieved just by working on a kitchen table.

HMS Penelope 7th May 1940

In the May issue of MB we discussed a diorama depicting HMS Eskimo in a Norwegian fjord with her bow mostly destroyed, and I was now keen to improve on this theme. As far as available model and reference materials were concerned, apart from modelling KM Tirpitz, the only other subjects available were the destroyers involved in the First and Second Battles of Narvik. However, White Ensign Models came to the rescue as they had just released a remastered model of HMS Penelope as in 1940. With decent reference material to hand, a second 'fiord based' diorama was now very much on the cards. HMS Penelope was affectionately known as 'HMS Pepperpot', particularly following her experiences when attacked at Malta, her hull and superstructure having received numerous shell and bullet holes and hence the Pepperpot/Penelope connection.

Background

HMS Penelope did not make the Second Battle of Narvik in April 1940 as she struck an uncharted rock in Vestfjord and it took eight hours, plus a lot of sweat and nail biting to get her into the sheltered and remote Skjelfjord in the Lofoten Islands. Here she would have surely sunk and her crew taken prisoner had it not been for the local Norwegians who not only provided shelter and sustenance for the crew, but also organised assistance with pumping out, repairs and supplies. The 1920's vintage salvage vessel Skaerkodder provided much needed equipment and expertise to make good temporary repairs, whilst essential supplies, information and transport was provided by the local fishermen in their Puffer style 60 feet long fishing boats, and the young Norwegian Hartvig Sverdrup was above all responsible for the success of this operation. Other damaged Royal Navy ships came and went during that April, among them HMS Cossack, HMS Eskimo (the subject of Part Three in this mini-series), HMS Punjabi and HMS Jupiter arriving from the UK with much needed pumping equipment. HMS Penelope was forced to stay throughout most of April until early-May 1940 whilst self-repairing. To aid maintaining the secrecy of her location, her crew painted her in a unique brown and white camouflage scheme to match the surrounding snow covered slopes of the mountains and this had to be repeatedly

Left: An aerial view of HMS Penelope being replenished by the Norwegian local craft.

Left: A close-up view of amidships. The water barrels on the fishing boat deck are styrene (plastic) rod and the just visible crew figures are of 1:700 etched brass. The fishing boat is from a redundant 1:600 scale Airfix kit.

altered with more brown replacing the areas of white as the Spring thaw took hold. Hence this slightly unusual warship diorama showing her in this paint scheme in the Norwegian fjord.

Diorama - HMS Penelope as at 7th May 1940

The diorama scene depicts HMS Penelope getting ready to leave Skjelfjord. A fishing boat can be seen unloading the last of the 300 barrels of fresh water for HMS Penelope's boilers and another leaves for the jetty. Just 24 hours later, the Germans discovered HMS Penelope and Luftwaffe JU 88's attacked her for the next two days. HMS Penelope and the other ships hiding in Skjelfjord all slipped away on the 10th May 1940, having received many near misses, but none fatal to the warships.

The baseboard and fiord side

The baseboard is the now familiar piece of MDF and the seascape of crumpled baking foil, glued and partially smoothed out. However, a seascape on its own does little to add a sense of scale to a model, but as soon as some land, trees and buildings are added, the scale simply leaps out at you. Roughly cut and shaped, polystyrene ceiling tiles were glued in layers like a large sandwich to a height of about 12cms for the fiord side. Using a knife, the polystyrene was shaped into an approximation of the steep side and adjacent mountain. This shaped polystyrene was then covered with Polyfilla and when set, PVA glue was applied liberally to the dried plaster and coal dust and small fragments scattered over it all. Larger pieces were put on the shore line to represent landslips and the whole thing was sealed and set by applying a mixture of thinned PVA glue, using drops of washing up liquid and water and model railway folk will recognise this as track ballast 'mix'. Coal makes for the most excellent scale 'rock' in any size as it shatters in a most realistic manner. The mountain was sprayed with a dark matt grey and Halford's grey primer in patches to provide a background 'rocky-look' to the whole thing. Snow was added by another lighter watered-down coat of Polyfilla. To obtain the effect of the thaw with patches of snow lying in hollows and crevasses etc. is nothing short of an art. A lot of trial and error resulted in eventually using a white acrylic paint and adding water to the fallen bits to help it settle into the natural hollows and then to wash off the paint, which had got on to the tops of rocky outcrops which are normally the first places to thaw. Alternating between adding grey and black paint on the rocks and adding more or less imitation snow, we arrived at what you see here. Including HMS Jupiter (to be adapted from an HMS Kashmir kit) in the diorama was an aim, but by trying the cruiser and destroyer hulls in different positions on the baseboard it rapidly became obvious that the scene would be over-crowded with ships and could lose the 'lonely' feel I wanted this diorama to portray.

Right: The foreshore and the boulders at the water's edge are of crushed coal - please see text for how the thawing snow was created.

Sea condition?

The one depicted in the fiord at the time was to be a light chop with small wavelets. To achieve this required giving the baseboard a light covering of Polyfilla applied with a 'wodge' of kitchen paper and this gave a stippled effect not unlike that of an artex ceiling. This was covered with crumpled baking foil, making sure to fold it over the baseboard edges, and carefully rubbing out any trapped air bubbles. Leaving this overnight to completely dry, the next step was to draw an outline of the cruiser's hull and then hollow out a small void in the seascape in order to recess HMS Penelope's hull and likewise for the attendant small craft. Artist's acrylic paints have been used once again, some of which are called sculpture paints, they having an even greater viscosity and won't flatten-out when applied. Having made one fiord scene (please see Part Three last month), some experience had been gained as to the desirable water shades, bearing in mind the depth of the water. The bow wave and wake of the moving fishing boat have been modelled with artist's fine acrylic gel.

HMS Penelope

The model of HMS Penelope is a much improved resin casting compared with the original from White Ensign Models as the details are crisp and there was virtually no cleaning-up apart from the runners (where the resin is poured into the mould). The hawse

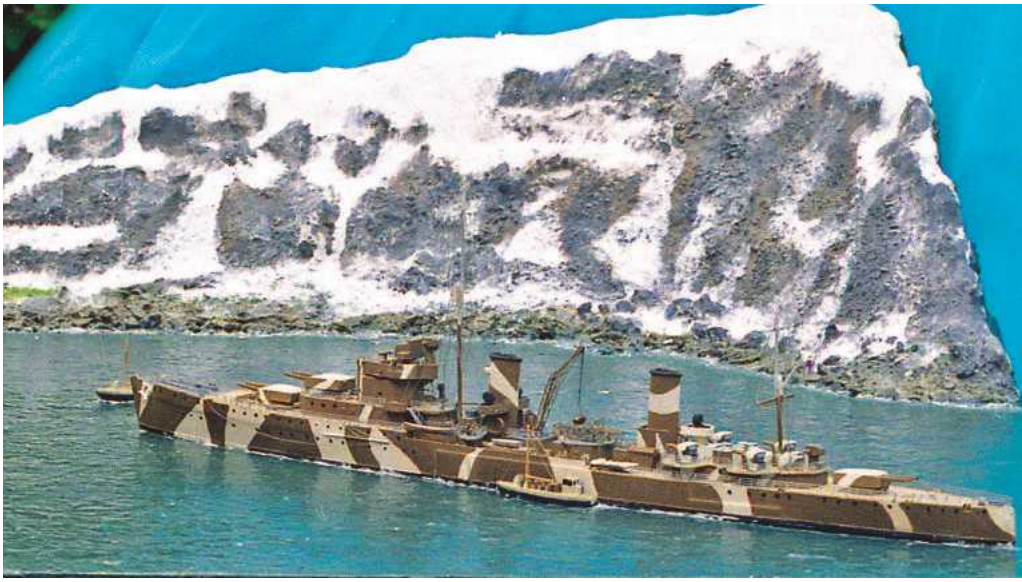
holes were drilled for the anchors and these were constructed together with their chains. There is no photo evidence as to the position of the anchors, so in absence of this it was decided to have them in the raised position. However, in hindsight at least one should perhaps have been lowered as presumably the cruiser was at anchor whilst being re-supplied which goes to show that before you start any diorama which is to have any degree of historical accuracy, it is important to get as many original photos of the scene being depicted as possible. It is also important to be able to gauge the elevation of the guns, positions of the radars, directors and cranes etc. Only a few exist of HMS Penelope at this time in 1940 and they are all in the book noted in the references. However, it was definitely certain that the crane was in constant use, but other equipment was idle.

The next step was to paint all the decking. For the wood decks, a mixture of Humbrol Nos. 94, 122 and 147 give that slightly cream-light-grey look of bleached teak. At this time, HMS Penelope's aircraft had been landed, but the catapult and cradle were still in place and again, photo references are vital to get it right. The crane jib was placed in the fully elevated position as per the researched photograph.

Painting the ship's boats prior to installing them is also vital. The masts and booms are entirely from brass rod and you will need a variety of sizes, but 0.006, 0.008 and 0.015 inch are what have been used here.
At anchor, you would expect a warship to have the boarding ladders down and the booms out. However, there is no photo evidence of HMS Penelope doing so in Skjelfjord and so I did not depict these items. However, the boat booms are made from 0.01 inch diameter plastic rod and rigged in a typical fashion with 0.004 inch wire for the topes.

Skaerkodder and the fishing boat

Although the aim was to scratch build this small salvage vessel and a fishing boat, reference material for them was poor. The solution was to base their hulls on an existing model launch, or open pinnace, but nothing in 1:700 scale approached the dimensions required. However, 1:600 scale launches from an Airfix HMS Belfast kit fitted the bill perfectly and after much filing and shaping, reasonable hull shapes resulted. Their cuboid-like bridges and hatches were constructed using various plastic sections and the masts made from 0.012 inch brass rod with 0.008 inch for the booms. The two craft produced (which are basically the same) were painted with black and white hulls, white topsides and stained, wood decking. The white hulls are in fact painted in Humbrol No. 147 to produce a weathered white appearance. The water barrels are from plastic rod and placed on the deck of the fishing boat alongside and on HMS Penelope's deck. Using a small square etched brass 'net', a sling was made containing two barrels hung from the crane to give the impression of loading in progress. Similarly, although I don't normally include crew members, it looked a bit odd not having any crew around this busy loading area and several from GMM's 1:700 photo etched crew set were added. As you can see in the photo, if you look closely, they are wearing duffle coats and seaman's boots. The fact that they are 'flat' figures at this scale makes no difference as it the overall impression that is important.



Above: A general view of the 1:700 scale diorama, the baseboard measuring less than 30cms square.

Painting HMS Penelope

This was quite straightforward, although the colour scheme is highly unusual, remembering that the cruiser was hiding and endeavouring to merge with her surroundings. A pure white was avoided and a mix of Humbrol No's 34 and 147 used instead, which offers a slightly weathered appearance. The brown colour is Humbrol No. 29, but as the paint scheme varied as the Spring thaw took hold, there is room for interpretation, and the paint guide depicts the ship as she would have been prior to departure in early-May. After the final coat had dried, the scuttles (portholes) were added using a 0.25mm Rotring pen which is an easy and very effective means of adding scuttles, these drawing instruments being 100% excellent.

Finishing-off

Once the model was glued on the seascape, toothpaste was stippled along the shore line to depict breaking wavelets. Toothpaste was also added round each hull at their waterlines to represent 'slop' and for the wake of the fishing boat in the fiord, but it is important not to overdo the white water effect. Nothing beats good observation and photographs, and all the acrylic paints and the toothpaste were given a final coat of gloss varnish to seal them. Attempts at making seagulls, so characteristic of the fiords and fishing boats in particular, were a dismal failure using White–Tack, but might be more practical in 1:350 or larger scales.

Conclusion

After completion, a photo was sent to White Ensign Models, who published it in monochrome on their website adding the caption; 'Is this photo real, or of a model'? So, I guess that was a compliment and this was to date, my best diorama made so far.

References:

Atlantic Models
Website: www.atlanticmodels.net
Soon to be recasting the ex-White Ensign Models 1:700 scale HMS Penelope.
Scalemates
Website: www.scalemates.com
Etched brass detailing for White Ensign Models (WEM), Ref: PE 707.
Hannants
Website: www.hannants.co.uk
Gold Medal Models Ref: GM35008 Naval Figures.
Primer Coat
Halford's Grey Plastic Spray Primer.
Acrylic Paints
Artist's acrylics, available from most art retailers.
Varnish is Tamiya Gloss Varnish.
Enamel Paints
Humbrol and WEM Colour Coat.
Historical Reference
HMS Pepperpot - The Penelope in World War Two by Ed' Gordon, 1985, Robert Hale Ltd., ISBN: 9780709023517.

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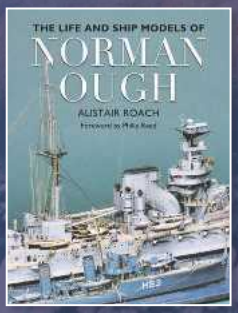

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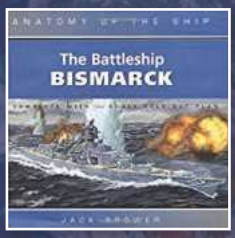

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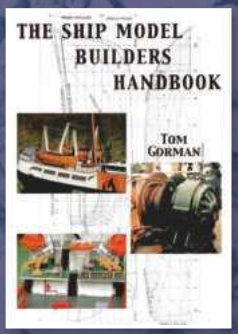

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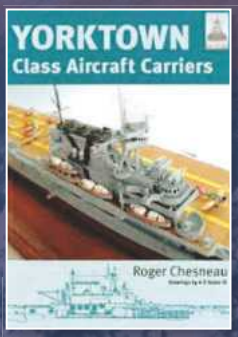

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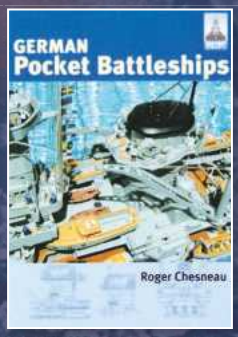

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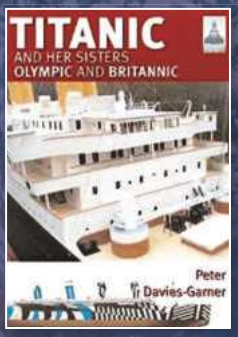

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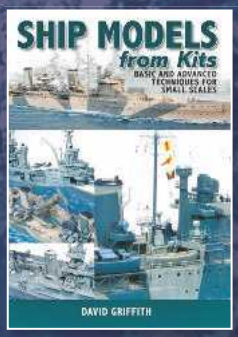

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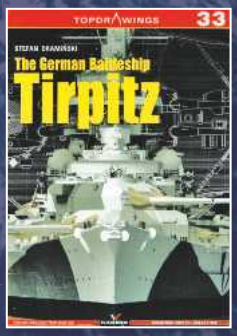

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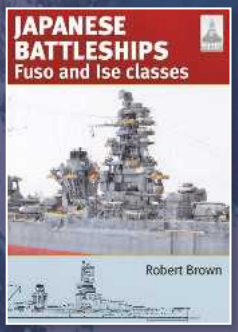

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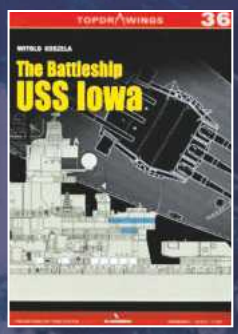

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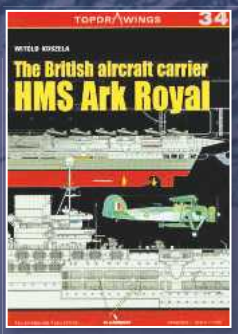

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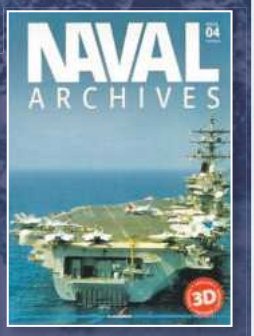

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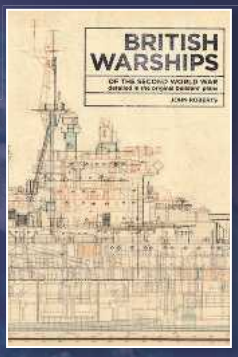

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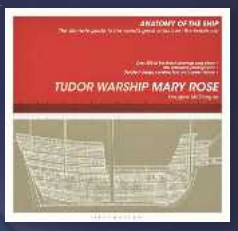

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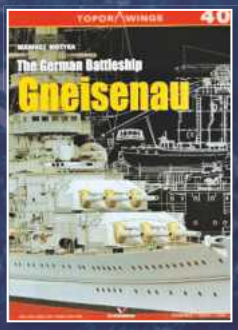

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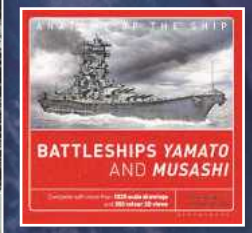

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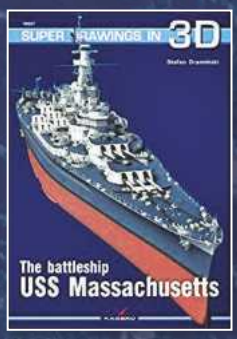

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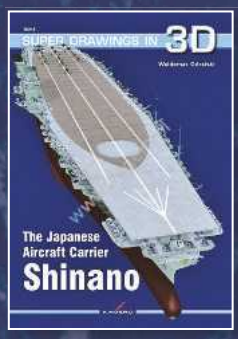

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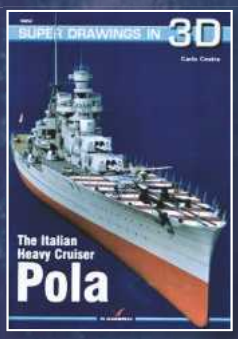

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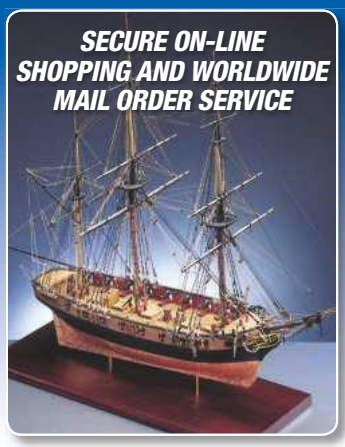

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