

**INSIDE
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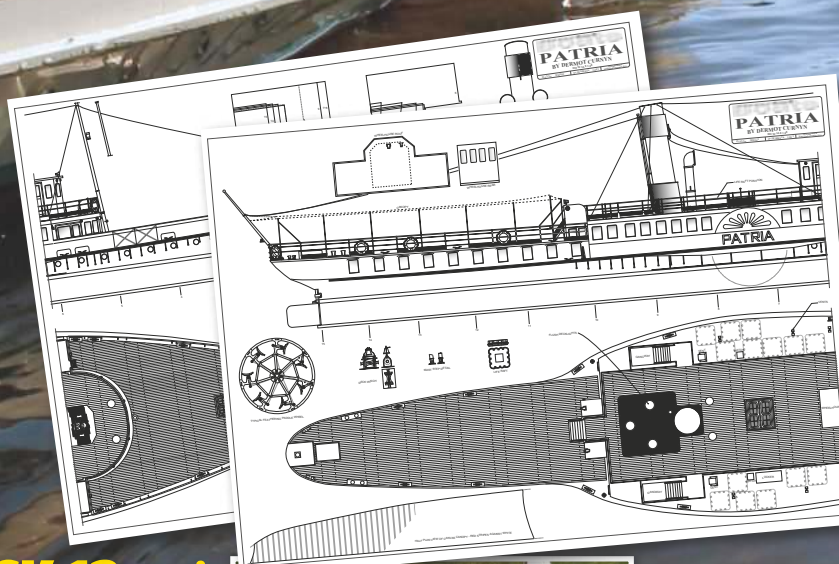
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November 2019
Vol.69 No.828

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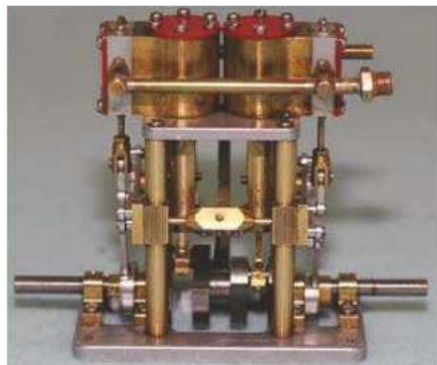
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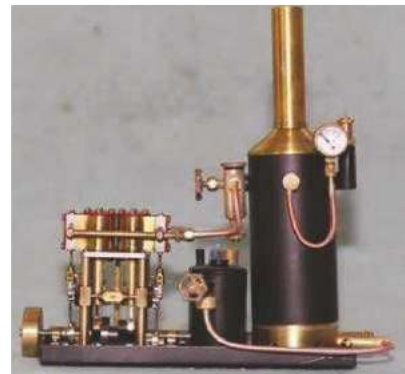
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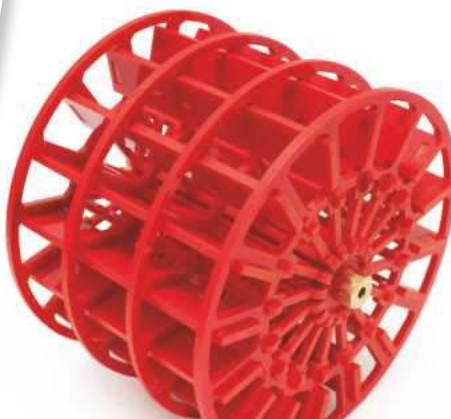


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another? This is the place to buy and sell!

Every now and then, a 'call to arms' actually works; not that it hasn't before for me, but in the past month I have gained more new contributors and commissioned more articles since taking over the helm! A number of these commissions are from people who have never written for the magazine before and had convinced themselves that they were not good enough to write, let alone build, while others have been motivated to rattle the keys once again after a break. This is great news as this magazine is yours and, while I do have some modicum of control over what goes in and what doesn't, I'm generally at the mercy of the material that is supplied to me. If you want to see more of a particular subject please don't hesitate to let me know, although be prepared for my standard reply of 'do you fancy writing an article yourself?'

Don't forget to visit your very own Forum at www.modelboats.co.uk. It's quieter than most, but the welcome is always friendly and you won't get torn apart if you ask a daft question – I ask them all the time, it's the only way to learn! The Facebook page is also worth a visit. Our page continues to grow and is updated almost daily with some great model boat features and stories, one of which received quite a lot of attention a couple of weeks ago. The story was about a boy with autism who built the largest replica of the Titanic out of Lego! It's incredible, he is incredible and the response from our Facebook viewers was impressive; there were more than 90 shares alone which I know is not huge in FB terms, but is massive in Model Boat Magazine terms.

In the meantime, enjoy your hobby and let's make sure we look out for each other.

Martyn Chorlton



Compass 360

Our news round-up from the model boating world

Editorial Contact: You can reach the Editor, Martyn Chorlton, via e-mail to editor@modelboats.co.uk. The editorial postal address is Martyn Chorlton, Model Boats, MyTimeMedia Ltd, Suite 25, Eden House, Enterprise Way, Edenbridge, Kent, TN8 6HF. Tel. 01689 869840.

Deans Marine



ABOVE: Many made good use of the test pond at Deans Marine; it was never quiet during my visit.
RIGHT: Peterborough Model Boat Club put on a good display at the Deans Marine Open Day.



The weather is always a lottery for this little island country (off the coast of France) and once again Ron

Dean was hedging his bets that the elements would be kind. Well they were the day I turned up (Saturday, 7 September) but

I know a rough time had been had on the Friday when at least one unforgiving storm tried to dismantle the site! I always get a

warm welcome at Deans Marine and as the time goes by I already feel like one of the family as one familiar face after another grabs you by the hand, chews the fat and leaves smiling. A great mix of people always descends on Ron's and with plenty to see, buy (and potentially sell) not to mention good food and drink, there is a little something for everyone, topped off by a good size pond to test a boat or two out on. Five hours for me disappeared in a heartbeat and every time I go, I feel like I should really make more time the next time I visit. Look out for next year's event; it is more than worth a ride out!

MC



The Spirit of Free Enterprise by Linkspan, which substantially depends on exquisite 3D printed parts, could be ready for the retail market by Christmas 2019 - no pressure Carl!

The late Harvey Middleton

My name is Elaine Middleton; I am the daughter of Harvey Middleton of Duplex Plastics and HFM Marine of Leicester. I am desperately seeking to buy one or more of my Dads Model Boats. I now work at a new Museum on Windermere and we have our own Model Boating Pond. Dad/Harvey died suddenly in January 2011 and I would love to have one of his models to sail on the pond. I would really like to get hold of any Duplex 575's or HFM Marine 590 or indeed anything made by my Dad. I was the class secretary for the 575 in the 70s, we raced all over the country. Thank you very much in advance for your help.

Elaine Middleton

Closure of Midway Models

It is with great regret that I have to announce my retirement and the closure of Midway Models Shop with effect from the end of October 2019. I have run the business since 1983 and have made many friends and customers during that time. Between now and then I will be reducing stock, particularly Graupner and Robbe fittings, so now is the time to stock up with those difficult to find small items. My thanks to all my customers, it has been a pleasure to know you all. Yours sincerely Ian Adcock, Midway Models, 157 St Leonards Rd, Leicester, LE2 3BZ, 0116 2701609.



ABOVE: New Medway Tool Vans. BELOW: New Medway Tool Vans 2019 Quayside.



Medway Queen wagons

New N gauge wagons have been commissioned in support of the Medway Queen, continuing the theme of wagons that might have been worked to Gillingham Pier had there been a rail link and honouring the small band of dedicated volunteers who give up their spare time to work on PS Medway Queen. The 108 models in this batch bring the total number of wagons produced, in many different designs, for 00 and N Gauges to over 3100 since we started the wagon project in 2003 and thousands of pounds have been raised by this means towards the rebuild and fitting out of the ship.

This model is a 'tool van' based on the Dapol GPV and is designed to complement the 7-plank open wagons commissioned last year. The vans are available in dark red and dark blue liveries, the same as the 2018 models. The colours are inspired by the background of the badges depicting the 'Invicta' white horse on Medway Queen's funnel. The price is £11-90 per wagon with UK P&P held at £3.30 per order. They are available from exhibition stands

run by 'Medway Queen - West' (formerly Reading Support Group) starting with 'The International N Gauge Show' in September and then at other events attended by the group. They can be bought in person at the ship and her Visitor Centre on Gillingham Pier (ME7 1RX) or you can order by post from Richard Halton. Please note that the contact details for Richard and for 'Medway Queen - West' are now: Email: richardhalton1502@gmail.com. Postal address: 2 Drury Close, Hook, Wootton Bassett, SN4 8EL.

An order form is available on www.medwayqueen.co.uk/railway-wagons---n-gauge or you can simply write to Richard at the above address. Cheques payable to 'R. Halton' please. All proceeds from sale of these models are passed to the Medway Queen Preservation Society to fund further fitting out of the ship.

Come down to Gillingham Pier and see what we are doing and buy your wagons in person! The ship and her Visitor Centre on Gillingham Pier are open on Saturdays from 11am to 4pm (last admissions 3pm). Look at www.medwayqueen.co.uk for details. ●



ABOVE: Boston Model Boat Club put on a nice display; a hard working club that supports many local events. BELOW: The host of the event at Leverington (nr Wisbech) village hall was the Moorhen Model Boat Club.



Moorhen MBC

Travelling the length and breadth of country is all part of the fun for an editor, however, when I was invited over to something very local, I jumped at the chance. A mere 25 minutes from my home is the village of Leverington whose Village Hall was the venue for an event hosted by the Moorhen Model Boat Club. The weather was glorious on Saturday 24, August for this pleasing little event which was also supported by the West Essex Model Truck Enthusiast and the largest local club, Boston MBC. On entering the hall my eyes were first drawn to the impressive R/C truck display followed by a good selection of boats covering a number of genres. I could not resist a go on the raffle and was pleased that one of my winning tickets bagged a couple of dumpy beers; all was good! A



An increasingly common sight at model boat and general model events is the presence of impressive trucks; eye candy to many model makers.

decent coffee complete with a scone was also enjoyed at this event which appeared to be well supported. Big or small, efforts are being made to keep this hobby alive; please support them whenever and wherever you can.

MC

DIARY DATES 2019

Sun, 17 November

Sleaford and District Model Railway Club, Charity Model Makers Show in aid of the Lincs and Notts Air Ambulance. Time: 10 am-4 pm at Ruskington Village Hall, Parkfield Road, Ruskington, Sleaford, Lincs, NG34 9HT. Model Railway layouts, 20 plus displays showcasing model aircraft, model boats, trucks, cars etc. Amenities: refreshments, parking, disabled access. Prices: Adults £3, Children £1.50, family (2+2) £6. Enquires: Tel - 07821618718

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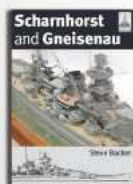


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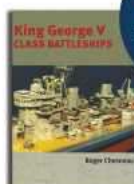
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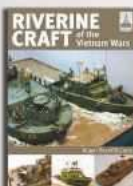
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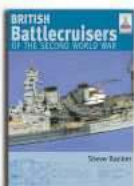
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No longer bringing up the rear!

Hotting-Up a Basic RG65 Kit by John Goodyear



I first saw this little RG65 compliant yacht as our esteemed Editor removed it from the boot of his car during a visit to our local lake. He'd been offered a kit to undertake a build and review and hadn't quite finished it but the chance to sail was too much of a

temptation to miss. I wasted no time at all in relieving him of the model to have a quick visual prior to helping him set everything up.

Three things immediately became apparent. First the hull appeared very well molded and was sleek and robust. Second, the keel looked to be a lovely piece of work and was well shaped and stiff. Thirdly, and finally, the sails were extremely soft and didn't appear to be fitted to the mast and boom correctly, of which more anon.

We fiddled around with things and in no time at all had Aura on the water and moving along in the light breeze prevailing on the day. Three other RG65's were also present and all of them proved eminently capable of showing the Aura a clean pair of heels. Only to be expected as all were highly developed machines with pattern cut sails operated by Skippers with some experience. I couldn't help but think, however, that this little yacht had some considerable potential. Indeed, the parting shot to the Editor was along the lines of, 'when that's sorted, and some proper sails fitted it should go well.'

The Editor subsequently took his Aura away to tidy up and complete the build and that was that until he contacted me some time later. He had obviously remembered my thoughts about

potential and asked if I would be interested in equipping his Aura with the necessary 'hot-up' goodies to get her sailing as fast and competitively as possible. (He'd been bitten by the racing bug you understand!) He also advised me that subsequent hotting-up had to be done as cost effectively as possible and be uncomplicated as well to the extent that beginners could also easily and inexpensively acquire a fast, little yacht. To make sure I didn't say 'No' he added that it was already in his boot and that he'd be bringing it along to our club open day at the weekend. The die was cast!

First impressions

The model I finished up bringing home was the Helion Aura, (Photo 1) an inexpensive RG65 design intended, I think, for beginners/improvers and coming complete with a nice little set of 2.4GHz radio gear.

The hull is made from some form of stiff and what appears to be quite robust plastic so it's probably ABS or Polypropylene, but don't quote me. Suffice to say it looks adequate for the job and should be capable of accommodating a few bumps and scrapes in the hands of the inexperienced. The shape is a little unusual by comparison to your average RG65 racer compared to a Dragon Force (Photo 2). This isn't meant as any form of criticism, merely an observation. The fin is extremely sturdy and made, I think, from a piece of extruded aluminium based alloy. This is perhaps one of the best components of the kit. The lump of lead on the bottom of the keel is a bit blunt at the leading edge but is nicely moulded.

Upstairs, however, things were not quite so rosy. The mast was somewhat flexible and arguably only just up to doing the intended job. Booms are hollow aluminium and perfectly adequate for the job they must do. Perhaps the most disappointing aspect of the whole model is the sails and the way in which they have been designed to fit the boom. Maybe they were OK 'out of the box' but those fitted to my model were in a bit of a state despite hardly having had any use. A quick peek at some of the pictures will clearly indicate what I mean witness all the creases which don't exactly encourage maximum power generation (Photo 3). The main gooseneck assembly doesn't exactly help here being completely un-adjustable, so it is impossible to make the main fit anything like properly (Photo 4). The reinforcement patches on the main clew had also become detached leaving things in a sorry state.

As for the radio gear, this is a neat installation if somewhat unusual in the way in which the sheeting mechanism operates, but it functions well, and I elected to leave it alone as nothing

5



I could do would enhance performance. I was tempted to remove the long and large battery box and replace it with a 700mah LiFe battery to save weight but that would have added cost. In the end I decided, albeit a bit reluctantly, to leave it alone (**Photo 5**).

One final point to mention is the overall weight of the model. Despite the somewhat narrow hull with little depth it weighed in at 1300gms which is well to the top side of what might be expected of an RG65 model.

Least any of the above be viewed as anything other than observations let's reflect for a moment on what the manufacturers have accomplished. What they have done is to produce a robust, cleverly designed ARTS yacht complete with radio at a competitive price ideally suited to the intended market. If anything, they are to be congratulated on helping introduce hobbyists to the world of model yachting.

Hotting up begins

So, I had the Aura on the workbench and decided to take a good, long look round it before attempting anything; always a good idea! Now the Editor had done a good job of putting everything together and there was no doubt that this little yacht sailed and was just about controllable apart from the fact that there was far too much rudder movement. (See later). Ideal, in fact, for the beginner to the hobby and this is no doubt exactly what the kit designers and manufacturers were aiming at when they brought it to market.

Being the easiest thing to tackle I first adjusted the throw on the rudder to sensible levels. i.e. about 35° each way. As bought the throw was approaching 80° which would certainly turn the hull but would also stall it; not what is wanted! Note that this was clearly not a builder's error. This was how the kit was delivered witness the attachment holes in the servo and the rudder arm only being drilled to accommodate the pushrod in one place. Unfortunately, the nice little transmitter that comes with the kit does not have electronic adjustment and at the price, I'm not at all surprised. It was an easy task, however, to drill out some more of holes and adjust things mechanically to achieve the desired movement.

6



I was tempted to alter the sheeting mechanism used completely but decided that the one deployed functioned adequately so left well alone. (OK, so the sheets do foul a little and can get trapped under the hatch cover but it's immediately apparent that this can happen so is easily avoided.) Talking of hatch covers, I invariably use a clear plastic 'sticky-backed-plastic' cover on all my models as it prevents any water ingress. This was not initially thought to be a practical proposition on the Aura, but the hatch and cover arrangement have been devised to help reduce water ingress to a minimum, so fingers crossed. (We'll return here later!)

Attention then turned to more important issues, like the mast foot assembly. Now the one fitted is a (very) simplified version of those employed of 'full-on' racing models. The mast can be moved fore and aft by loosening two screws and has enough play in the system to allow the mast to be canted to the bows or stern. Regrettably, this whole arrangement is spoiled and effectively prevented from functioning well using a solid and un-adjustable kicking strap. This in turn, of course, results in sails having to be made to exactly fit the angle of the main boom which they did, but only just and the resultant tension no doubt contributed to the finger patches at the clew becoming detached and

the sails being wrinkled and looking horrible. In addition, with a fixed kicking strap there is no potential to adjust the twist of the sail and gain maximum drive. It was clear that the whole rig including mast and fittings would have to go, but how best to replace them?

Now the mast as previously noted was a wee bit flexible and of an unusual diameter measuring 7.5mm OD. The "standard" hollow carbon fibre masts used generally on RG65 type yachts come in at 7mm. So that was a bit of an issue. After a bit of head scratching, I elected to use a complete Dragon Force mast foot kit to resolve all the issues noted. Now for those not in the know this consists of a 5mm piece of carbon fibre that slots into the hull and on which are mounted a ball-raced gooseneck and then the main mast. The gooseneck also carries a fully adjustable boom arrangement so sail twist can be dialled in. A lovely piece of kit and not at all expensive. The photos will make all this clear so if you're unsure have a good look. To allow this to fit I had to make an insert to allow the 7.5mm hole in the mast foot slider to accommodate the 5mm stub shaft noted above, but it wasn't exactly Rocket Science (Mercifully!). **Photo's 6, 7 & 8** will make clear all that was done and involved minor tasks well within the capabilities of your 'Average Modeller'. (Is there such a creature?)

7



8





the bits and pieces you will need which will no doubt prove to be of some help. For the record, there are some positively expert model yacht sailmakers out there who, I'm sure, would be able to make you a set of sails to your chosen dimensions. There would be a cost to this of course and as 'non-standard' items it wouldn't be inexpensive. It's an option, however, and one that could be explored if you wanted. Then again, there's nothing to beat making something yourself that functions well and will allow you to race competitively at club and even National level. You pay your money etc.

The sails I elected to make were of a reasonably low aspect ratio at 3.44:1 and maintaining roughly the same ratio of area of Main to Jib. I used three panels for the Main and two for the Jib this having proven to be a successful formula on several other RG65 type yachts recently constructed. The Main was attached to the mast with extra strong nylon thread via 1/32in holes drilled through the reinforced points built in - tidy and unobtrusive. For the Jib, however, there is considerable tension applied to the forward end of the sail and at the uphaul point so I eyeleted all three points to ensure longevity of life. The completed sail is shown in the photographs accompanying this article and I think they look rather well. The Editor liked them as well so that's that sorted! (Hope they perform, otherwise my name will be mud!)

Photo 9 shows the finished sails together with the originals.

We now must come to assembling everything and it's at this stage that I confess to my shortcomings. No matter how hard I try to rig all my yachts to the very best of my abilities there's always someone at the lakeside who, with the most minute of 'tweaks', will have my yacht running in superior fashion. What follows therefore, dear reader, should not be taken as gospel, only as my way of doing things which can indeed be improved.

Rigging

First task is to pop the 5mm OD stub mast into the mast foot moulding with the latter set at the midway point between the two adjustment maxima. Next up is the assembly of the Dragon Force mast foot kit including the two ball races. I anointed these with a liberal shot of WD40 to help prevent any water ingress and corrosion further down the line. Trust me, it works! Pop the mast foot unit onto the stub shaft and then slide on the mast. Now I have to say that every time I have used carbon fibre tube, I have had to do a bit of 'tweaking' to ensure a good but not overtight fit of the components. A gentle rub with 200 grade wet and dry paper used wet is usually all that is required to obtain a good sliding fit. Again, a shot of WD40 aids assembly no end.

At the head of the mast I was able to use the recovered crane from the original mast assembly but had to make a little insert to

As for the Jib, the provided kit boom worked OK but as I had to buy a length of 5mm OD carbon fibre tube anyway I elected to make a new one and use my own boom fittings. This would allow the boom to rotate effortlessly and be positioned close to the deck to enable maximum drive.

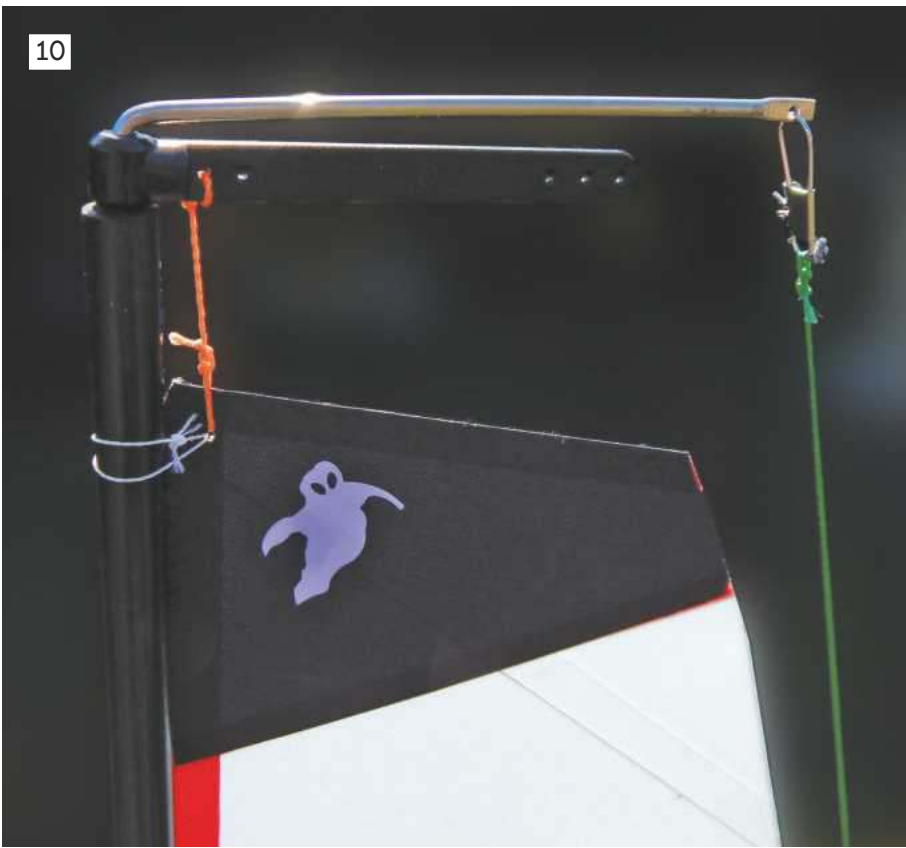
The power units

As soon as I took delivery of this little model, I just knew that improved sails were not a luxury but an absolute necessity if the performance potential had any chance of being realised. The only questions were what type of material to use, what sail area to deploy and the aspect ratio of the whole rig. After much consideration I decided on 50-micron mylar for both the Main and Jib. Why? Well, this stuff is readily available and very inexpensive although postage can inflate the coat/metre if you only buy in small quantities. My recommendation would be to go for 5M allowing for plenty of mistakes! As a bonus you will also finish up with plenty of spare stock to make more sails. This is a boon because once you realise how well most yachts can be improved by the deployment of good sails you will quickly want to start making some more. Reinforcement at various points was made using a product called 'Challenge Sailcloth'. This is a form of sticky-backed-plastic with a closely woven nylon coating. It's available in different colours and is incredibly strong.

Now the simplest thing to have done was to make a suit of sails identical to those provided in the kit. Not having any 'paperwork' I had to calculate the areas of both sails using MYA approved methods. Now I can't guarantee my 'sums' were correct, but I worked out a Jib at 705sq.cm. and a Main at 1215sq.cm. giving 1920sq.cm in total. This was pretty much in line with what I anticipated. i.e. a rig with total area falling midway between an 'A' and 'B' set with around 37% of the total area in the Jib. Clearly, the manufacturers did this to provide for a yacht capable of sailing in the widest possible range of average winds which is what most buyers would want. The Editor, however, planned to go club racing with his yacht so a new strategy was required. Given that I think it's always best to be a little overpowered than underpowered I decided to build an 'A' rig with a total sail area of around 2100sq.cm.

Given the decision-making process was now over it was time to dig out the building board and crack on. A slight digression first though for anyone new to sailmaking. I could fill another several pages all about this, but it isn't all that long ago that I wrote a piece for this very magazine explaining all. It seems a little unfair, therefore, to expect regular readers to have to plough through all this information again. I can only recommend you beg, steal or borrow the Feb & Mar 2018 editions of Model Boats, read up and then start. Just for information, contained within these editions are details of suppliers of all

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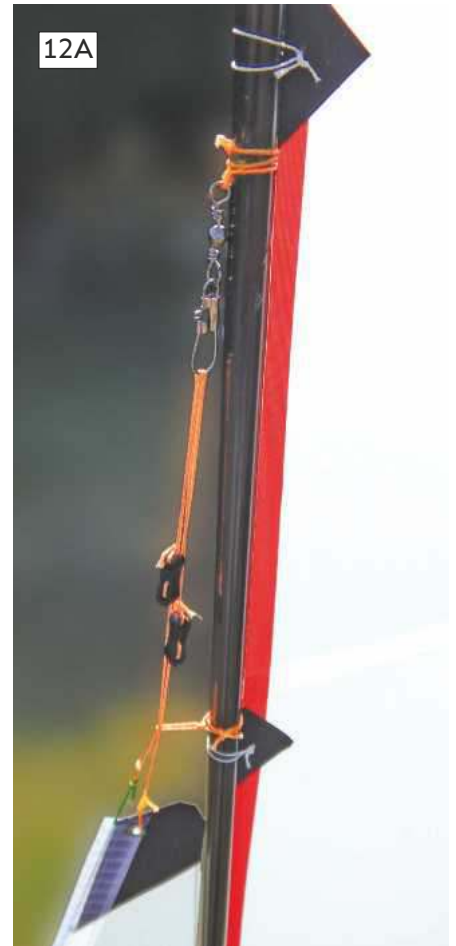
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12



12A



accommodate the differences in diameter of the crane and the mast tube (**Photo 10**).

To commence rigging the sails I first attached the head of the sail to the crane such that the foot of the sail when under light tension was around 15mm from the attachment point of the mast foot. Now is a good time to attach the back stay and apply just sufficient tension to bend the mast to conform with the leading edge of the sail. The sail can now be attached to the mast at all points along its length, but there's a trick to doing this. Start at the midway point of the sail and attach a matchstick to the mast with blue-tack or similar adjacent to the point where attachment is to be made. Thread some Dyneema or similar (I used nylon thread) through the drilled sail reinforcement point, round the mast AND the matchstick. Tie tightly and then remove the match. This will give you just the right degree of 'looseness' of

the sail around the mast and will also ensure that the sail is connected at the same distance all the way along. Time consuming, I know but it's worth the effort. If you do get things wrong, then cut out and start again. This is one aspect of rigging that you really do need to get right (**Photo 11**).

At this stage in proceedings adjust the position of the main boom and attach the clew of the sail to it to keep it out of the way. We'll return here later.

Time now to start playing with the jib. All current thoughts seem to revolve around getting the Jib boom as close to the deck as possible and the Skippers who do this seem to always be amongst the winners. It is thus perhaps a good thing to do but I can't really explain why.

We can make a start by attaching the foot of the Jib to the boom. (I used 5mm OD carbon fibre)

One picture is worth a thousand words so look at how it's done (**Photo 12 & 12A**). Not a bowsie in sight on the boom but only because I find them far too fiddly to adjust accurately when used in this application. They're fine at the head of the sail as shown. With everything fastened roughly in place we can attach the

13



14



front of the boom to the attachment point on the deck with Dyneema such that the boom is as low as possible without restricting movement. Now attach the forestay to the mast with bowsie adjustment in place and lightly tension. Note that this will, of course, upset the setting of the main, but more anon. Now do the same for the Jib uphaul and suddenly we have something looking like a rigged yacht. Oh Dear, if only it were all so simple!

Time now to attach the two sheeting lines and again Dyneema is as good as anything for this. Make the connections at both booms as shown in the photos and adjust carefully so that the sheeting servo is not straining madly when fully sheeted in (**Photo 13**). You need to have the clew end of the main boom pointing at the outside end of the transom at both sides when fully sheeted in. The end of the Jib boom should be about 2cm from the mast. i.e. more open than the main. When fully sheeted 'out' the main boom needs to be at about 80° to the centre line of the hull and the Jib boom at 90°. To achieve these measurements, you will need to adjust the pivot point of the sheets on each boom; fiddly, but relatively easy to accomplish.

To set the curvature of the sails slide the adjustment points such that the point of maximum sail camber on the Jib is about 15mm. For the Main, aim for 20mm. Now these aren't ideal settings but will put you in the right ballpark.

Having done all this and retired for a well-earned rest and a coffee you may notice that things just don't look right. There's a reason for this. When you attached the Jib lines to the mast and tensioned things up it displaced

15



To the water!

Now the person who should be writing this bit of this feature is, of course, our Editor. Having said that, there I was with a fully rigged little yacht in first class condition and race ready. Well, what would you have done? Correct, temptation would have overcome you so off to the lake we went. First trials were conducted in moderate winds with chop on the water and away Aura went tracking straight and true into the breeze. The new rig certainly provided some considerable improvement in both speed and handling over the original which was only to be expected. The reduced rudder movement also worked well with the model being able to turn without stalling out. A few runs up and down confirmed that this Aura was now capable of fun racing at club level and maybe just a little more advanced as well. Over the course of the day I sailed it against Dragon Force yachts with A rigs together with some other full-on RG65 yachts and another 'out-of-the-box' Aura. In the prevailing conditions my Aura not only managed to hold on to all other yachts but out sail most of them; pretty impressive for a first outing (**Photo 14, 15 & 16**). Those sails certainly did the business. (They were, after all, almost at the maximum allowed by the class rules and perfect for the conditions.) After about

the setting and curvature of the mast such that the Main now probably doesn't set right. You will now have to very carefully adjust the tension on all lines very, very slightly to bring things back into line.

We now need to turn our attention to setting the 'twist' in the Main sail using that lovely little mast foot adjuster. Now this is both a science and an art form, mixed with black magic and illusion which is to say that I'm not very good at it. For guidance I would suggest you proceed as follows: -

With the sails fully sheeted in, hold the yacht on its side and peek from the rear. Now adjust the nut on the adjuster such that the bottom one third of the Main leach is almost straight with the head of the sail progressively opening up such that the head is offset by about 3cm. Having set this you can tension up the Jib uphaul such that the leach of the jib matches the shape of the Main. Now all this is quite tricky but have a go and then request further guidance and assistance at the lakeside from one of the better Skippers. They will no doubt quickly demonstrate how things should be and set your sails up well.

Almost ready for a trip to the water now but before we do check, check and check again that the batteries are 100% and that the movement of the sails and rudder do what they're supposed to do when you twiddle the sticks.

So, there we are, a not very complicated yet inexpensive upgrade of a simple kit into full-on racing mode. Question now is, how does it perform? (And if it doesn't, what on Earth do I tell the Ed?).

16



17



ten minutes of fun, however, as the wind picked up my Aura began to sail slower which was a bit disconcerting. On return to shore I discovered she had shipped rather a lot of water. Whoops!

On checking, the other Aura present also had the same problem so there was clearly an issue here, and I had my suspicions where the fault might lie. Time to return to the modelling den for investigations to begin.

First port of call was the point at which the keel enters the hull. This was a nice, tight recess but I had my suspicions about water entering up via the holding bolt. This was easily fixed by reattaching the keel with the application of plenty of water-resistant grease all-round the top of the keel and in the recess. I still had my doubt about the hatch cover, however, so more thought was needed. After some deliberation I decided that the hatch and cover arrangement was just too suspect and difficult to modify successfully so I elected to fit a transparent sticky-back-plastic patch over the hatch opening. It worked, but access to the on/off switch was thus prevented. Rats! After more soul searching, I decided I had but two options: - Remove the entire radio tray, strip out the molded in switch, replace with new and make an external pushrod to activate, OR, do something else! Bearing in mind the Editors remit to make things easy and inexpensive I went for the 'something else' option. This consisted of a transparent hatch cover stuck to the hull with double-sided tape with a covered hole to enable access to the switch. OK you will have to remove the entire cover occasionally to change the batteries, but you can be sure of no water ingress which to my mind spells r-e-s-u-l-t (Photo 17-19). Off to the lake once more where the above modifications worked perfectly with zero water getting into the hull and performance maintained throughout the day.

18



19



So that's the quest fulfilled and I'm pretty sure the Editor will be pleased with the result; I certainly was but to quote a certain 1960's 'lady', 'I would say that wouldn't I?'

Now I'm pretty sure there is more to come speed wise without compromising

stability, but such is the lot of anyone sailing a yacht. All it needs is someone better than me to trim out the sails! I take comfort however in the fact that no matter what you do and how you rig, the wind will always remain capricious!

Conclusions

As bought, the Helion Aura will get you on the water with quite a nice little set of 2.4GHz radio and allow you to have fun at minimal cost. Beware, however, water ingress! With the modifications noted here you can convert her into a very good club racer at little expense which just has to be the way forward. I can only recommend anyone reading this to have a go with an Aura or any other kit. ●

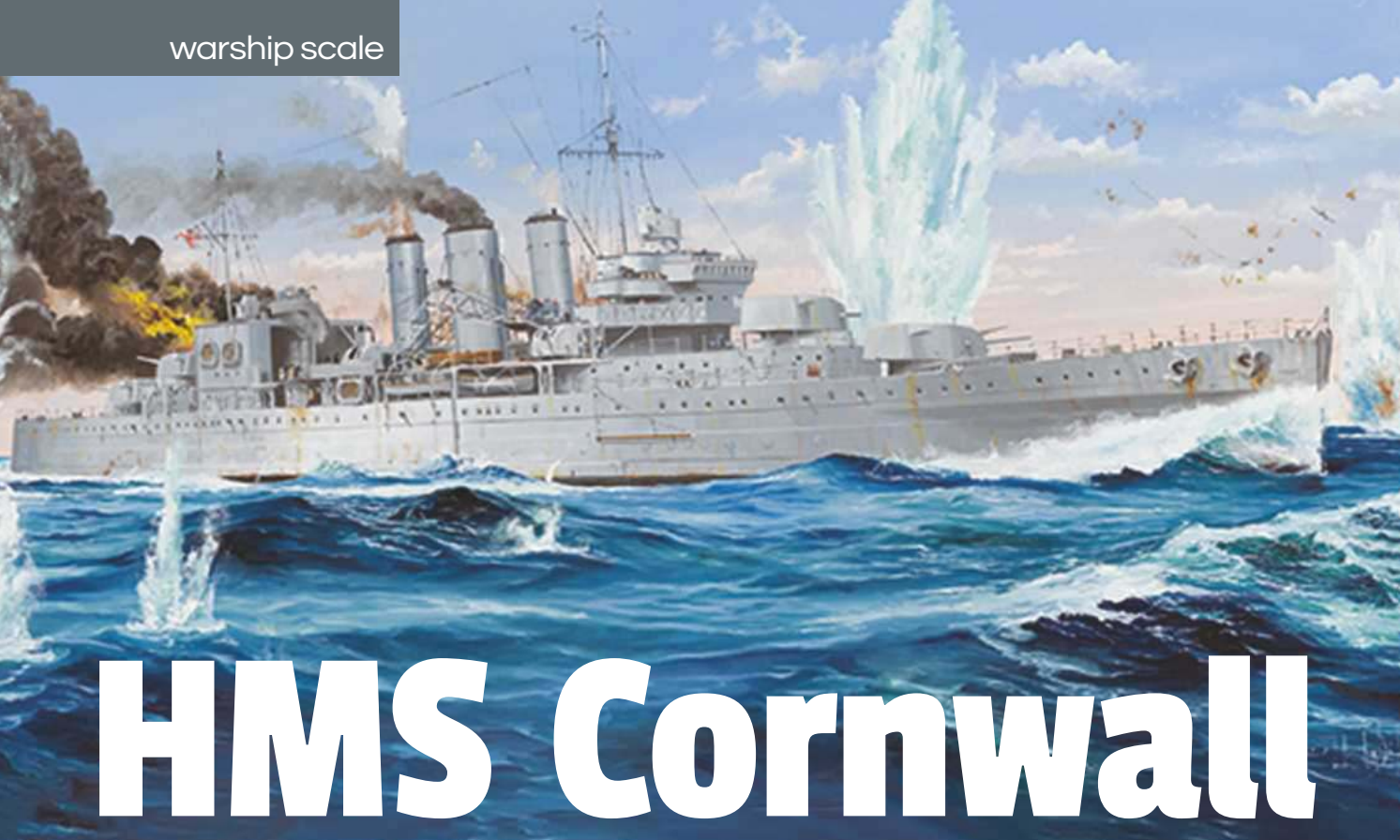
List of suppliers

Please note that I have no connection with these organisations other than as a (very) satisfied user of their products. For the carbon fibre tube try The Model Shop Leeds at 86-88 Crossgates Road, Leeds, LS15 7NL and at www.modelshopleeds.co.uk; Tel 0113 2646117. For the mast foot kit and many other goodies try Mike Weston at RC Yachts at 16, Charnock, Swanley Kent, BR8 8NL and at www.radiosailing.co.uk; Tel 01322 666363.

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The original 'out of the box' Aura on the left and the 'hotted-up' version on the right.





HMS Cornwall

Trumpeter's 1/350 Royal Navy County-class heavy cruiser By **Mike Williams**

Introduction

In reading into the fascinating history of the Royal Navy, sometimes the service of a particular vessel is successfully conveyed through an evocative account written by one who served on board her. When I read Ken Dimbleby's personal account of his time on board the heavy cruiser HMS Cornwall, in 'Turns of Fate', this was something that I never

TOP: Trumpeter's evocative box top artwork captures the final moments of HMS Cornwall.

forgot. Therefore when I heard that Trumpeter were actually going to include a 1/350 plastic model into their impressive naval collection, I was absolutely delighted, and upon hearing of this future release, I immediately was totally sold, there was never a doubt or hesitation about pre-ordering my example, and getting my hands on it as soon as possible.

HMS Cornwall (No.56) was a County-class heavy cruiser of the Kent sub-class, fitting the Royal Navy's requirement for a potent commerce protector for colonial trade route defence, with a good cruising range at speed and independent fighting power, seeing a long hull possessing four twin-gun turrets, with any remaining displacement invested in protection.

She was ordered from HM Dockyard Devonport on the 2 June, 1924, laid down on

9 October that year, launched on 11 March, 1926 and completed on 10 May, 1928 at a cost of £1,252,110, with her ship's motto 'One and All'. HMS Cornwall displaced 9,850 tons at a standard load and 14,150 tons under full load. In July 1936 she began a major refit, which was completed in December 1937, with her sister ships Berwick, Cumberland and Suffolk also undergoing similar extensive modifications.

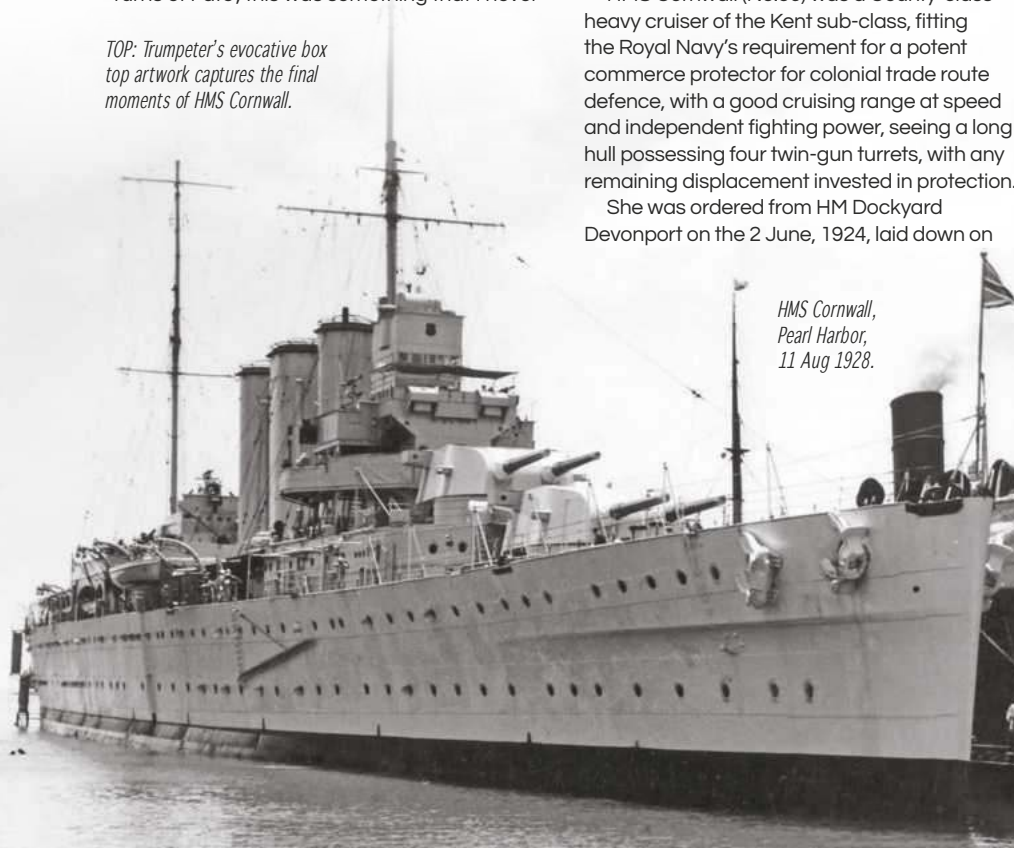
Model

Trumpeter's 1/350 HMS Cornwall (Ref: 05353) was released in the UK during late April 2019, and my example was obtained direct from eModel Ltd (Hobby Store) for £66.94, which I regarded as a very reasonable outlay.

Trumpeter's presentation and packaging is certainly one of care, with the robust top-opening box of heavy corrugated card, with internal subdivisions for the main hull sections and some superstructure levels, seeing the bulk of the part trees all securely contained within separate clear poly bags, with some delicate items further protected in foam strips; everything arrived safe and sound.

Altogether there are eleven principal part trees along with a couple of minor ones leaving the one-piece hull and main deck separate, totalling 319 light-grey and 20 clear quality plastic parts (only some 25 surplus minor parts were later consigned to my spares box), with my initial components check quickly establishing a high degree of integrally moulded detailing present with no extraneous flash or imperfections to contend with.

Certainly one of the highlights of this package has to be this inclusion of four all-encompassing etched frets carrying 54 fine items, which will greatly enhance every area of this already very detailed model. There



*HMS Cornwall,
Pearl Harbor,
11 Aug 1928.*

A superb portrait image of HMS Cornwall in her immaculate pre-war finish, returning to Portsmouth in July 1936 from the China Station.

Overall this 1/350 County class heavy cruiser captures all the fine lines and character of such a magnificent member of the Royal Navy.

is certainly no need to venture outside into the aftermarket field, everything you need is provided. Especially noticeable from any perspective must be the finely etched guardrails along every deck-edge and platform, with the likes of funnel grills, open ladders and stairs.

Finishing off this kit is a 22-item well-registered decal sheet and a 25.5cm length of fine chain. This is all-in-all a comprehensive multi-media proposition which thankfully Trumpeter's 16-page monochrome A4 size instruction booklet successfully conveys through it's clearly drawn out 23 stages.

Hull

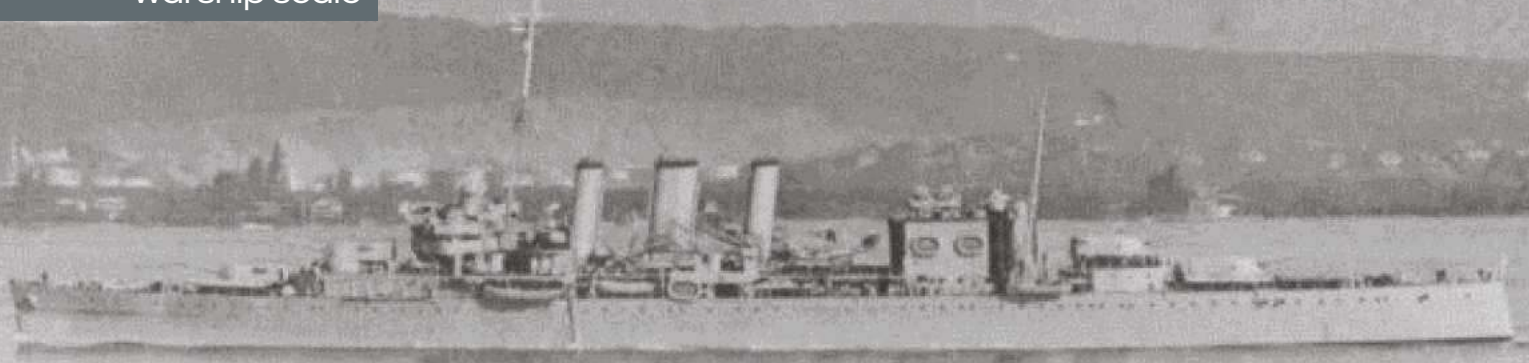
Regarding the crucial factor of actual dimensions to scale accuracy, here this subjects overall length of 192.0m, beam of 20.9m (over her bulges), equates perfectly with a length of 54.8cm length and beam of 6cm.

The pedantic purist might consider the over-scale indication of the side plating and lower sealed over portholes too much, but to the average modeller I actually found these raised features most pleasing and indeed invaluable in determining the waterline boot-topping.

From the 13 County-class heavy cruisers in four sub-types, four underwent modifications in the late thirties to be fitted with large hangers aft; Cumberland and Suffolk which also had their quarterdeck's cut down, differentiating them from Berwick and Cornwall which retained full hulls aft, so this will lend

ABOVE: A graphic indication of the high degree of integral detailing Trumpeter have worked into their 1/350 HMS Cornwall is gauged from their excellent breakdown of parts.

RIGHT: A close-up of her central section in 1938 after her major modernisation, note the neutrality bands applied to 'B' turret carried during the Spanish Civil War.



ABOVE: Although of a poor quality, this image captures HMS Cornwall in early 1942 in her final configuration and appearance.



The core hull structure was fabricated from a one-piece full hull and single deck section which went together perfectly without any problem.



The fundamental hull possessed a representation of the hull plating and covered over lower portholes, with the underwater detailing including bilge keels and propeller shafts.

itself very well to those interested in replicating Berwick, or with more extensive modifications Cumberland and Suffolk. Indeed, this completely new tooling of Cornwall can be seen as an ideal base upon which far more experienced and skilled naval modellers can now work on to fabricate superb 1/350 examples of any County.

The underwater portion of the hull has sharply replicated projecting external bulges to provide torpedo protection, integrally moulded bilge keels, along with four separate propeller shafts and individual 'A' brackets, with accurate right and left pitched screws, finished-off by a single rudder aft.

Superstructure

Following her late thirties modernisation, HMS Cornwall featured a new design of bridge structure integrating the navigating bridge, wheelhouse, signalling, and compass platform (with splinter plating), topped by the main gunnery director, all in a single compact and impressive looking layered block with a wealth of separate ship control and gunnery director components to add; all well provided by Trumpeter.

The principal full length one-piece forecastle deck possesses restrained planking with flush metal decking sections, complemented by well-replicated ground tackle, hatches and clean location points and holes for a wealth of separate deck fixtures and fittings, while above this, the one-piece shelter deck is equally detailed, with fine etched deck-edge braced supports linking the two.

Seeing as the County-class cruisers possessed the distinctive features of a high-sided hull with the provision of three conspicuous slightly slopped funnels, this gave them the overall aesthetically pleasing appearance of a contemporary ocean liner.

In detail, the gases from her four boiler rooms, housing eight Admiralty three-drum boilers, exhausted into four uptakes, the central pair being merged to form a combined large central funnel. High pressure steam from these powered her four Parsons geared



An initial application of the primary lower hull's red and upper superstructure light grey set the scene for a very nice stage by stage painting process.

turbines, developing 80,000 shaft horsepower which gave her a maximum speed of 31.5kts and, with a bunkering of 3,425 long tons of fuel oil, her range was 13,300 nautical miles at an economical 12kts.

So, the eminence of these funnels being representative of her propulsion installation is well replicated, with each coming in two halves, having separate upper hoods, lower rain covers and external steam pipes, topped off by two-part etched frames for the cages.

There was no need for a heavy tripod, just a light fore pole mast serving for signalling yards and spread of wireless antennae to the aft main mast. These lightly replicated towering features can give rise to the provision of fine rigging which, when combined with the etched features, can result in a museum quality piece.

A respectable outfit of ship's boats from this period in her career are provided. However, while there are integrally moulded deck crutches for the 27ft whalers aft, there are no corresponding ones (either moulded or etched) for the inboard stowage for her 32ft cutters and 42ft launches amidships, but the side davits are delicate plastic items.

It has to be emphasized that throughout every deck level the separate fixtures and fittings give them all a business-like clutter, with ready-use lockers and multitude of various deck mushroom vents abounding.

Aircraft

The aft structure is dominated by the large hanger which housed her two Supermarine Walrus I flying-boats, but while the overall external features of this dominating box structure are accurately captured, despite the presence of internal side framing, there is no central dividing bulkhead or optional open shutter doors, but such an 'exposed' hanger can be addressed through relatively moderate scratch-building.

Strange to relate given the high degree of detailing Trumpeter have incorporated into the two ten clear-plastic part amphibians and pair off mixed six plastic part and three etch (which I found quite tricky to bend into a one piece structure through their delicate fold lines) boat cranes. There are no deck handling rails or turntable between the hanger and transverse fixed DfH catapult. But I simply replicated these through plastic strips and card.

As this build proceeded, this impressive heavy cruiser's profile gradually took shape, with the perfect fit of all units throughout making this a thoroughly enjoyable build.

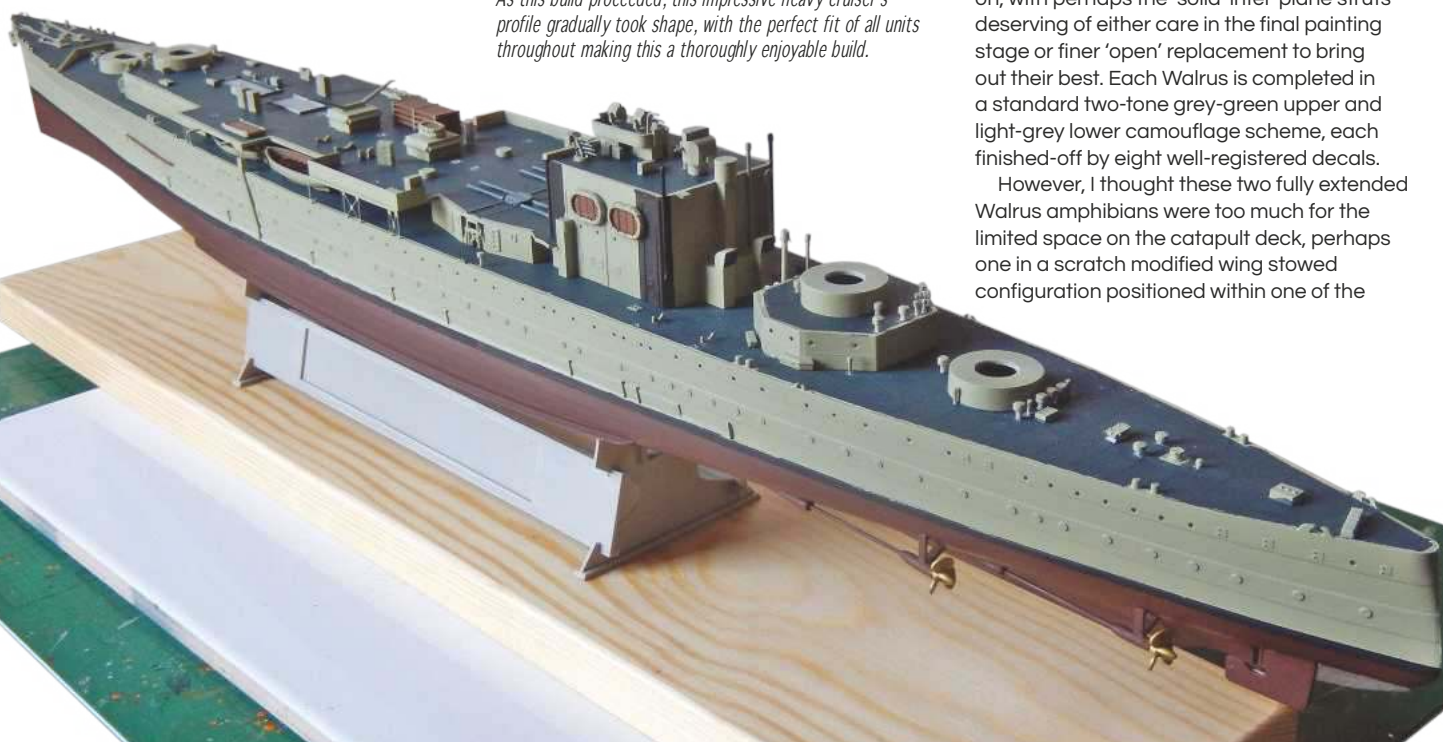
There is only one very delicate etch launch cradle provided, but no rail handling trolleys, so this could be another area for scratch building if you wished to position the two Walrus's on deck.

Regarding the two aircraft, each has a one-piece fuselage with detached wheels and tail plane, upper wing with separate radial engine and lower wing with two single outer floats, also seeing the 3.3cm long fuselage and 4cm wingspan mini models are dimensionally spot on, with perhaps the 'solid' inter-plane struts deserving of either care in the final painting stage or finer 'open' replacement to bring out their best. Each Walrus is completed in a standard two-tone grey-green upper and light-grey lower camouflage scheme, each finished-off by eight well-registered decals.

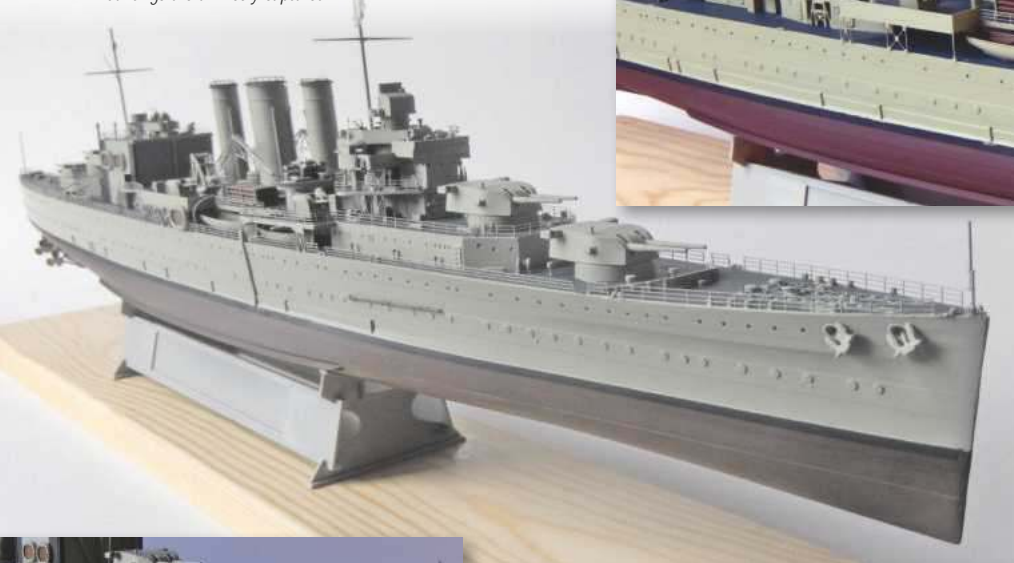
However, I thought these two fully extended Walrus amphibians were too much for the limited space on the catapult deck, perhaps one in a scratch modified wing stowed configuration positioned within one of the



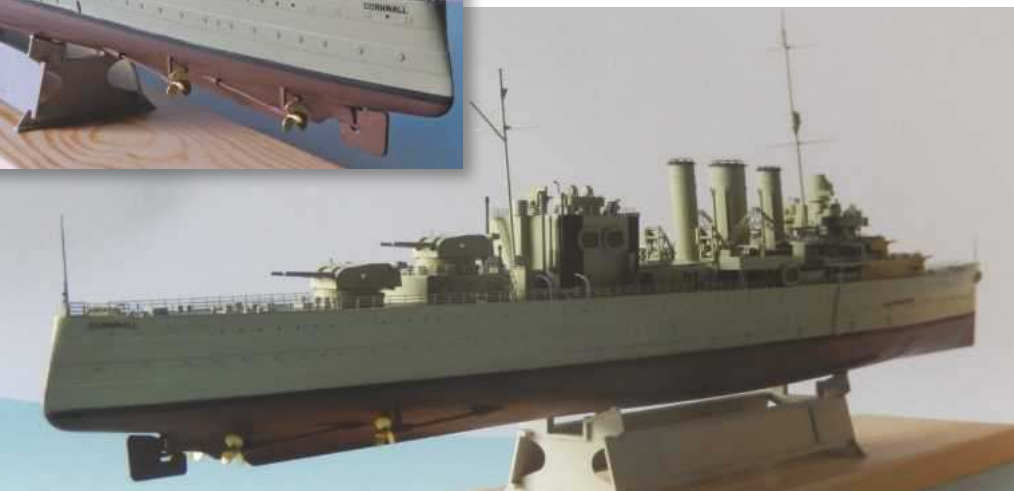
ABOVE: As with all models, this project was a merger of not only a wealth of individual parts but sub-assemblies into larger modules to build-up the structure. BELOW: Throughout fine masking and painting of the various sub-modules allowed for ease of access into every corner and a clean overall finish.



BELOW: HMS Cornwall's main eight 8in guns in four twin turrets and secondary outfit of eight dual-purpose 4in guns in four twin mountings are all nicely captured.



LEFT: Once painted, the over-scale hull plating strakes and covered over lower portholes were seemingly emphasised, but I found such features pleasing on final display.



ABOVE: I only concentrated upon the basic build without any consideration towards additional rigging believing what had been presented was a fine unadorned model.

hangers (roller shutter raised) might be considered. I therefore did not fix them to my final model, leaving them separate for optional positioning later.

Armament

For her principal offensive outfit, she mounted eight 8in (203mm) guns in four twin turrets, arranged in superimposed pairs fore and aft. It



ABOVE LEFT: There is a very impressive degree of modelling detail incorporated into every aspect of this model, none more so that amidships. ABOVE RIGHT: Again, the inclusion of transport rails on the catapult deck is worthy of note, my principal addition to this otherwise superb model.



ABOVE: Nearing completion, it was obvious that Trumpeter's merger of quality injection moulded plastic and fine etch would result in a first class model.

had been intended that these mounts should have an anti-aircraft capability and were thus provided with a maximum elevation of 70°, although their fire control system was not up to tracking fast aerial targets.

Each eight-part turret (gunhouse) is a nice representation of the lightly splinter protected (1in) structures, with the multi-facet sided and flat crown core structure sharply executed, having the protruding rangefinders detached pieces on each mounting. The individual gun barrels located within their trunnions can be elevated to a high anti-aircraft angle for those desiring to replicate this novel feature; however no sealing blast-bags at the embrasures are provided.

The secondary armament consisted of eight quick-firing dual-purpose 4in (102mm) guns in four twin-mounting's, these each involve five plastic pieces, here the protective shields are commendable thin on the open rear sides, also seeing the exposed breech mechanism well replicated along with finely tapered barrels, all finished off by ready-use lockers near each mounting.

Her tertiary anti-aircraft outfit comprised of two eight barrel quick-firing 2-pounder 'pom-pom' (40mm) mountings on raised platforms abreast the fore funnel, two five-part plastic and two resin pieces which capture the concentrated mass of potent ordnance seen in such a complex mounting. Finally, two single piece four 0.5in (12.7mm) barrel machine guns are located on the hanger roof. It is purported that possibly up to seven single 20mm Oerlikon cannons were fitted in 1941, but no such pieces of ordnance are present in this model.

It must be pointed out that initially, like her sisters, she carried two quadruple 21in (533mm)



ABOVE: The completed model captures the well-balanced and aesthetically pleasing lines of such a County-class heavy cruiser.



ABOVE LEFT: Although I never included rigging on my model, the high degree of integrally moulded plastic detail supported by fine etched parts was enough for me. ABOVE RIGHT: The provision of fine deck edge guardrails at every level really enhanced this overall model.

torpedo tube above-water mounts one each side amidships, but these were removed during her major 1936-37 refit.

Finish

The single most 'pleasurable' aspect of this undertaking then the masking and painting process was my highlight here. Regarding her overall appearance, everything rendered here by Trumpeter is dedicated towards replicating her final configuration as she looked in April 1942 while serving with the Fast Division (Force A) of the Eastern Fleet, and in this we have the prospect of a very striking final display piece.

I like to use the Tamiya range of acrylic paints these days, and thankfully in Trumpeter's guidance notes they list the appropriate colours from this range amongst the six noted. Here this structure possesses light-grey (XF-14/JA grey) predominating the upper hull and superstructure, with the extensive areas of painted-over dark sea grey decking (XF-50/field blue). This light/dark upper scheme is counterpoised by the cocoa brown (XF-9/hull-red) lower structure with its matt black (XF-1) boot topping. This relatively simple masking and painting process certainly produced a contrasting scheme of considerable character.

Obviously, there are specific features and fittings demanding fine painting along the lines of her ship's boats and Walrus, which added a bit of 'colour' to this base. While another nice aspect of Trumpeter's presentation was the well-registered decal sheet with items for her Walrus, ship's name, along with elective naval jack and ensign in two versions.

Close

My own build was approached virtually 'straight from the box', simply because upon my usual contents appraisal I was extremely pleased with the high degree of integrally moulded sharply executed detailing which was greatly enhanced by a comprehensive etched involvement.

While I had to scratch-build some missing features, in general this model can be considered as a faithfully rendered and dimensionally accurate piece, which can be seen by those so gifted as the perfect foundation for super-detailing or indeed conversion into another County.

As is quite obvious throughout my description of this model and my build above, I thoroughly enjoyed this entire modelling experience, from re-reading the book which originally introduced me to the captivating service and crew of this heavy cruiser, further research upon hearing of this model's release, all in preparation to approach this superb model.

Upon my final appraisal, I am more than pleased to say that my initial desire to include a faithful rendition of HMS Cornwall in her final 5 April, 1942 configuration, when she along with HMS Dorsetshire succumbed to an overwhelming onslaught by waves of Japanese Aichi D3A1 dive bombers some 200 miles south-west of Ceylon, receiving some nine 250kg to 500kg direct bomb hits, sinking in just 12mins, has now been fully achieved through this superlative model from Trumpeter in their impressive 1/350 range, a comprehensive all-inclusive quality package.

Easy reference

Model Boats is first and foremost a hobby publication and not an historical naval journal, therefore I have concentrated on the physical aspect of this release. However, for anyone wishing to read further into this subject, especially the events which finally overwhelmed her, then this can be derived from two books covering both the British and Japanese perspective of her sinking.

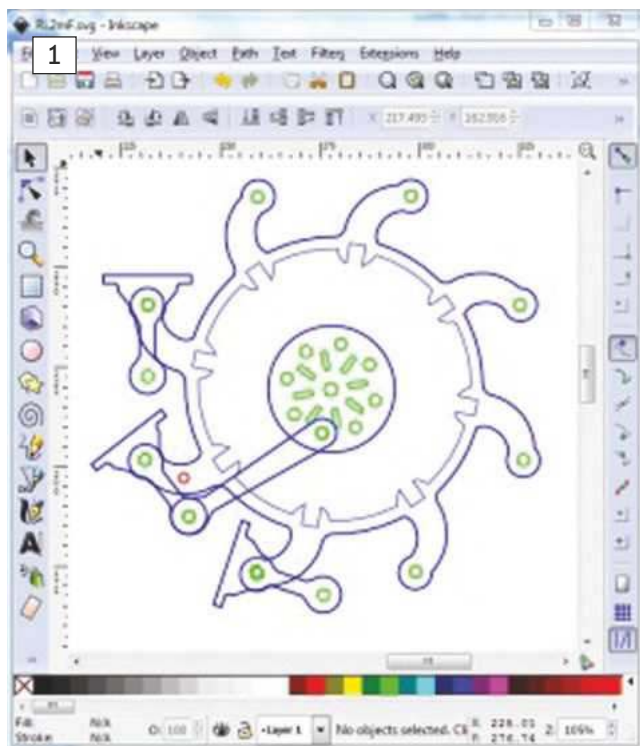
For the definitive Royal Navy account of this particular cruisers story from a personal perspective, refer to: 'Turns of Fate - The Drama of HMS Cornwall' by Ken Dimpleby from William Kimber & Co Ltd, London, 1984.

To cover the Japanese viewpoint of the execution of her end, read: 'Fist from the Sky - Japan's Dive-Bomber Ace of WWII', by Peter Smith, from Stackpole Books, Mechanicsburg, Pennsylvania, 2006.

Finally, an excellent modelling overview of this entire group of British Empire capital ships can be derived from: 'County-class cruisers', By Les Brown, Ship Craft No.19, Seaforth Publishing, Barnsley, 2011.

Addendum

Trumpeter have done the obvious, in October 2019 they will release a follow-on 1/350 scale County, namely HMS Kent and from what I can perceive she will be in her late 1942 configuration carrying a striking First Admiralty type camouflage pattern, resulting in a display piece markedly different from their initial HMS Cornwall; naval modellers have never been so blessed.



Re-inventing the wheel

By **Dermot Curnyn**

The origins of this project have their roots firmly in my past. As a child growing up on the River Clyde, I was fascinated by the sight of the last few regular paddlers in service; the Jeanie Deans, The Caledonia and the Waverley. My interest and enthusiasm were further cemented by the summer visits of the Clyde Model Steamer club with their radio-controlled displays of ships that had plied the waters of the Clyde in years gone by. I have had a notion to build a paddle steamer ever since, but I've always been put off by the tricky prospect of constructing effective paddle wheels. There are precious few suppliers of affordable, ready-made 'kit of parts' paddle-wheels out there, but in recent years, Laser cutting, my favourite 'new'

technology, has opened up the possibility of making my own. Before choosing a paddle ship to model, I needed to perfect the wheel.

Basic principles

As paddle steamer technology developed, a variety of paddle designs emerged with six, seven or eight float versions, some with rims, some without. As the propulsion method evolved, the feathering mechanism was devised and developed to further increase the efficiency of the wheels, ensuring the paddles entered the water at the optimum angle reducing splashing and giving greater thrust and control.

My initial paddle wheel designs were developed around 1/48 – a scale commonly used for many Clyde model paddle steamers. I chose 3mm Acrylic (Perspex) as the material for the construction of the prototypes. The

drawings were worked up in the 'Inkscape' drawing program (free on the internet), selecting different colours of line for the various laser cutting power and speed settings.

First cuts

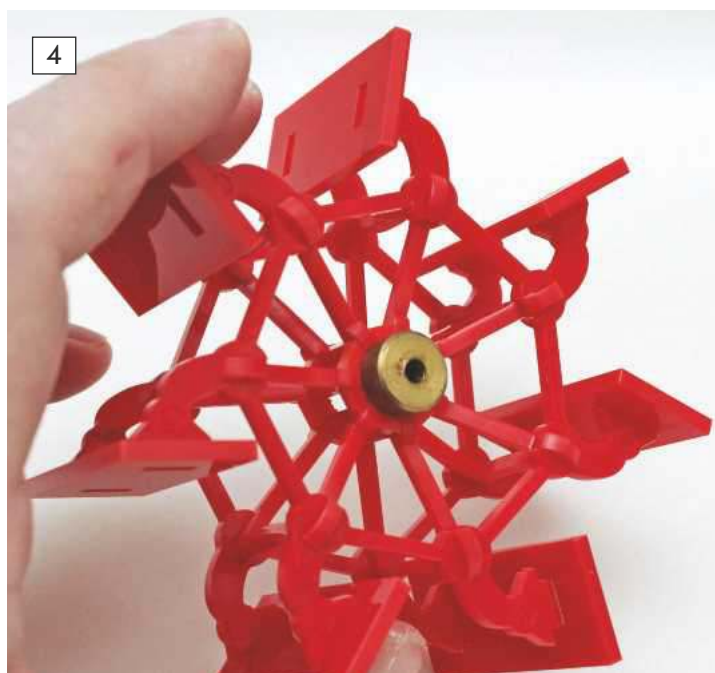
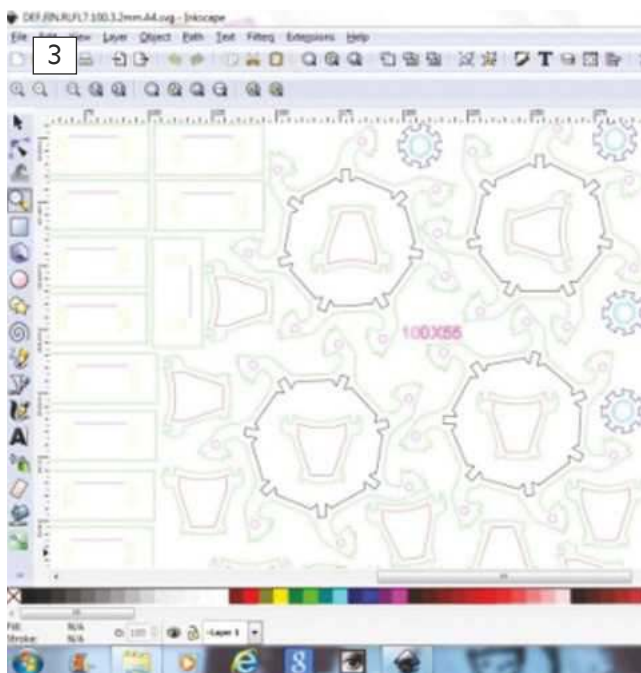
My first wheels were designed with eight floats and a feathering mechanism; however, problems arose with the first assembled prototype (**Photo 1 & 2**). Acrylic is by nature not a flexible plastic and the laser cutting can further add to the brittleness, so a compromise had to be reached between the thickness of parts and the integrity of the material. In short, these first designs were a bit too complex for the small scale. The stresses resulting from the feathering action led to some early test bed versions cracking and falling to bits, so I decided to leave the feathering option aside and focused on designing and building a wheel which would simply 'do-the-job'. This also drastically reduced the number of components making the assembly process much easier and reduced the cutting time and subsequent costs.

You may be familiar with the feathering paddle wheels produced by Graupner in the past which had a functioning feathering mechanism. These were injection moulded in styrene, I believe, and as such, were quite sturdy and able to take the stresses of a feathering mechanism. My first proven versions at 125mm diameter, had seven paddles without external rims (**Photo 3 & 4**).

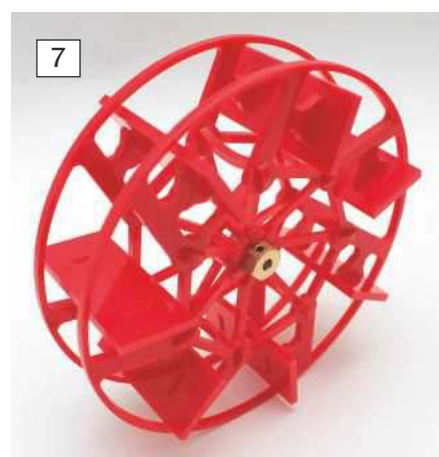
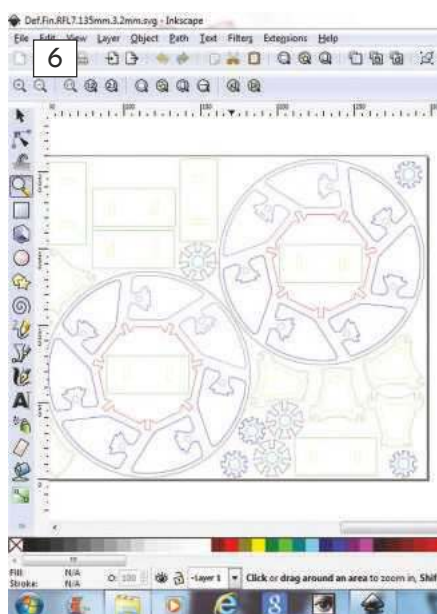
A brief description of how laser cutters work

The laser cutter works very much in the same fashion as an inkjet printer. However, whereas the inkjet head only has a lateral, left-right movement, the laser cutter has a second track, allowing additional simultaneous movement of the cutting head in a forwards and backwards direction. So, the laser is capable of traversing the entire cutting surface, cutting simple or very complex shapes. Different power and speed settings

can be set to control how deep the laser cuts, dependant on the material being used and whether laser-etched surface detail or a full cut-through is required. The cutting drawing is prepared using a 'Vector' programme such as Autocad or Adobe Illustrator, Inkscape or Corel Draw, using different colours of line to guide the laser cutter to cut lines in the correct sequence and at the correct power setting. There are several online sites willing to cut your components at varying and often inflated fees, but the real costs are dropping all the time.



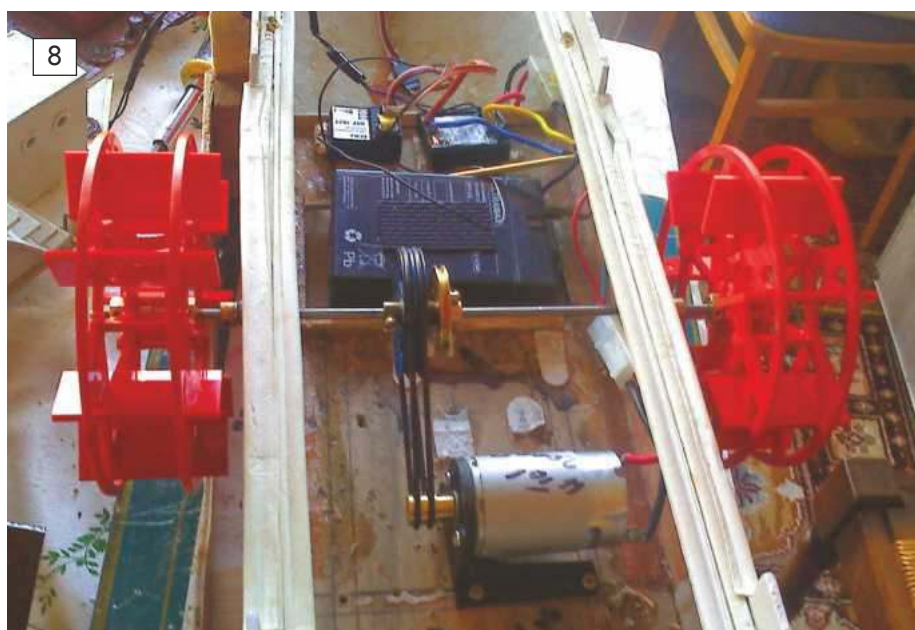
The circular internal rims from the first design were dropped in favour of straight sections spanning between paddle spokes; this feature was more in keeping with common paddle wheel designs.



First outing

Photo 5 shows my original design of seven float wheels on David Waller's 'Linzi Ann', a 37in glass-fibre hulled paddle tug. This early version of the wheel had no rims and stray flotsam jamming under a paddle box on one of the first outings, cracked a spoke; this was relatively easily repaired with some epoxy. Flotsam is a danger for full size, side paddle driven ships as well; the Waverley has suffered paddle float damage on several occasions over the years.

Armed with this info, I returned to the drawing board (screen) and developed a new design with outer rims increasing the diameter to 135mm. No solution would be perfect, but this stronger, more cage-like structure, would help to divert flotsam and better protect the paddle floats from damage (**Photo 6 & 7**). **Photo 8** shows the initial testbed run in 'Linzi Ann'. A belt and pulley drive reduction set-up were used to power the model with a 540-type motor. Gearing down the motor like this is much more efficient, draining the battery more slowly and giving longer running times while putting less stress on the paddle wheels themselves. It also reduces the surface splashing effect of the non-feathering paddles and the piling up of



9



water in the paddle boxes which can choke the efficiency of thrust.

On the water trials were very effective, with the new wheels giving a good rate of knots

(Photo 9). The 3mm acrylic wheels are quite heavy so despite the 13½in beam across the paddle boxes, the boat tended to lean giddily on tight turns with the inner wheel floats

lifting out of the water; some ballasting was required to alleviate this.

I'm indebted to David for his swift and skilful building abilities. I could rely on him to test-bed my early attempts promptly and efficiently. I concluded from David's efforts with these prototypes, that wheels made from heavy acrylic would work well with larger scale models where the boat might be better balanced by the additional displacement inherent of larger models. Producing these paddle wheels in plastic by laser cut is an easier, less time-consuming and much cheaper alternative to working with brass sheet but can never be as durable as brass or other light metals. With either type of material the only way to reduce the likelihood of damage from flotsam would be the incorporation of a slipping clutch mechanism or belt drive as opposed to chain transmission, especially where a reduction geared motor is used.

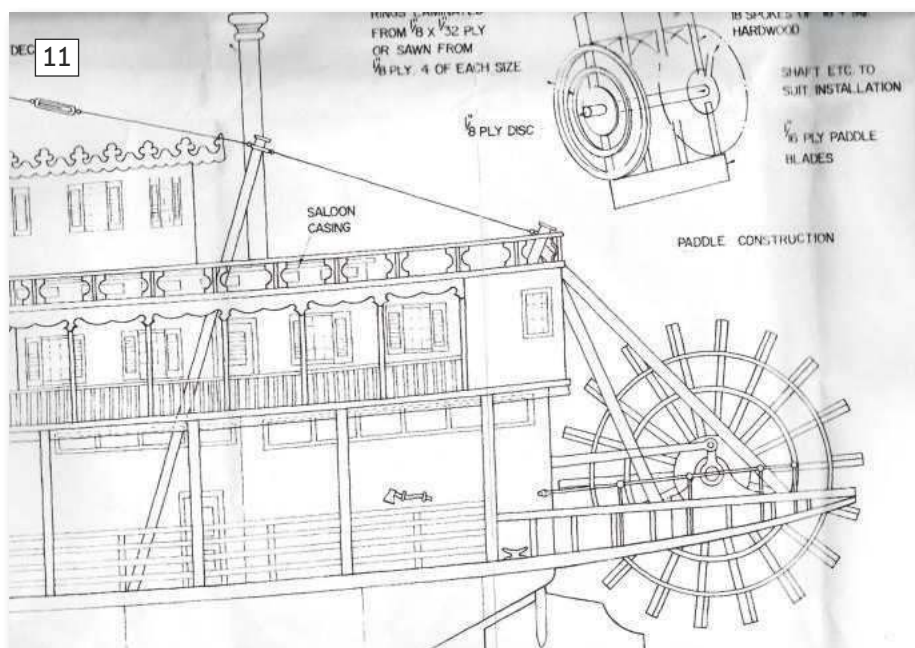
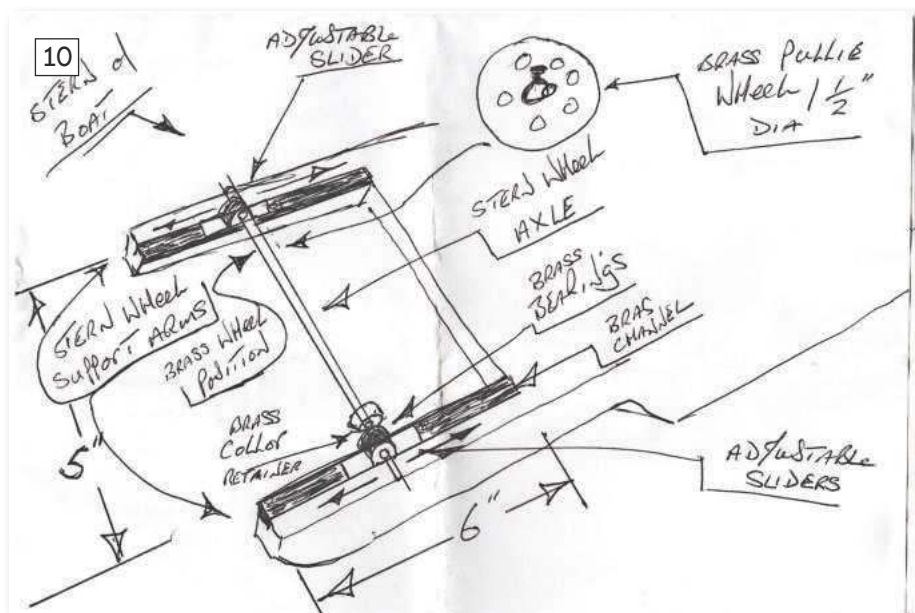
Stern-wheeler

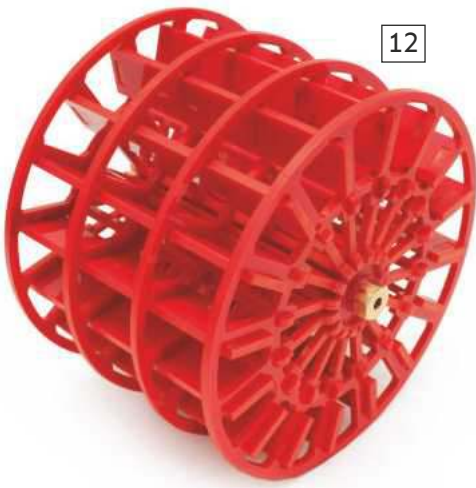
Correspondence with David Waller highlighted his interest in building a stern-wheeler for his next project. Some sketches were provided, the challenge was set, and I got to work researching and prototyping a 'Mississippi-type' stern-wheel assembly (Photo 10). David had sourced a plan and hull from The Model Dockyard for a typical Mississippi river boat at 33in in length (Photo 11). This included some rudimentary drawings of a paddle wheel and the upper works were to be constructed from balsa and lightweight plywood.

My preferred material for constructing the paddle wheel would have been 2mm styrene sheet, however cutting this design from a lighter plastic like styrene sheet was not really an option. It is such a complex design that many of the finer details would have melted from the laser heat. You can laser cut acrylic with a very clean edge, whereas styrene tends to melt, so cutting styrene with enough tolerance to afford a good fit between parts is quite tricky.

A weighty issue

My research showed that some of the US stern-wheelers had 24 separate floats. I simplified this to 18 floats set into four circular rims. The first version was cut from 3mm Acrylic with 44 separate components in all (Photo 12). I realised immediately after cutting the parts that weight would be an issue. At this scale the hull would need to be quite deep relative to length and beam to give sufficient displacement and not cause the boat to dip at the stern. Fibreglass hulls have limited buoyancy and David's boat only has a 2in draft. Placing the battery and motor reasonably far forward in the hull compensated to some degree for this buoyancy issue, however the first flotation trial proved my concern to be correct; the tail end sat too low in the water to give any effective thrust (Photo 13).

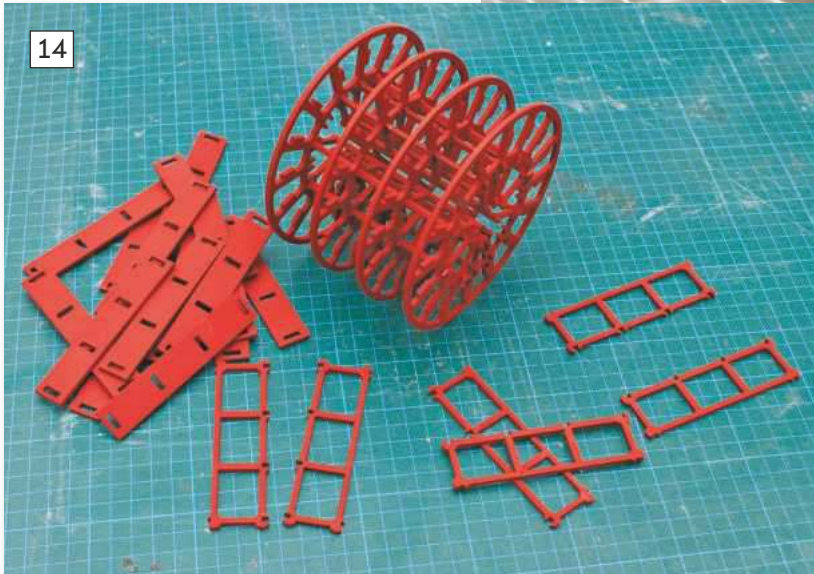




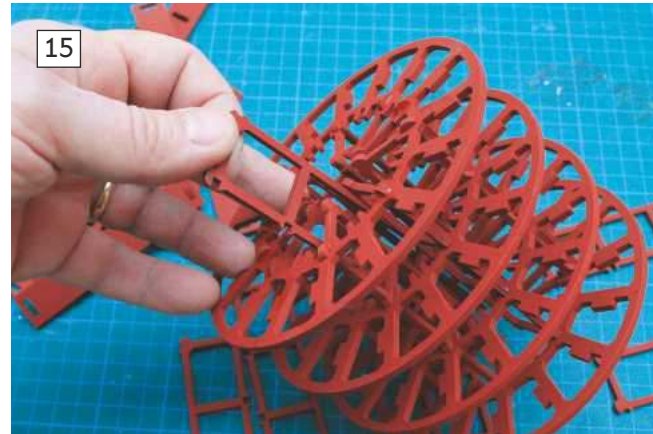
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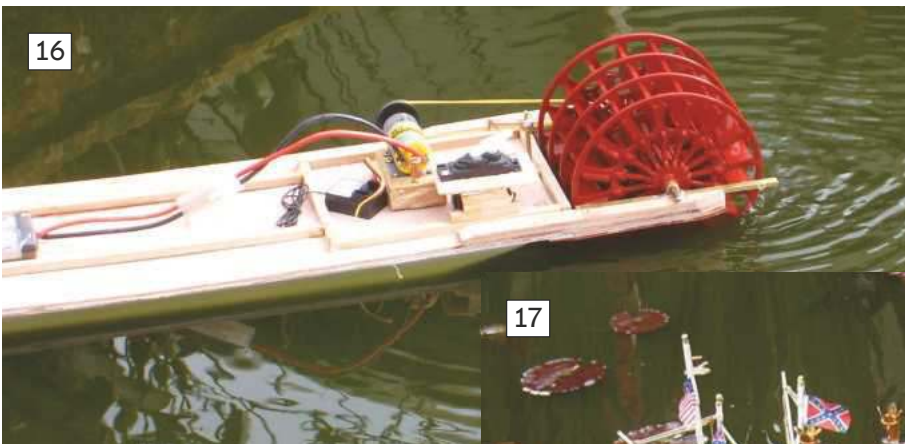
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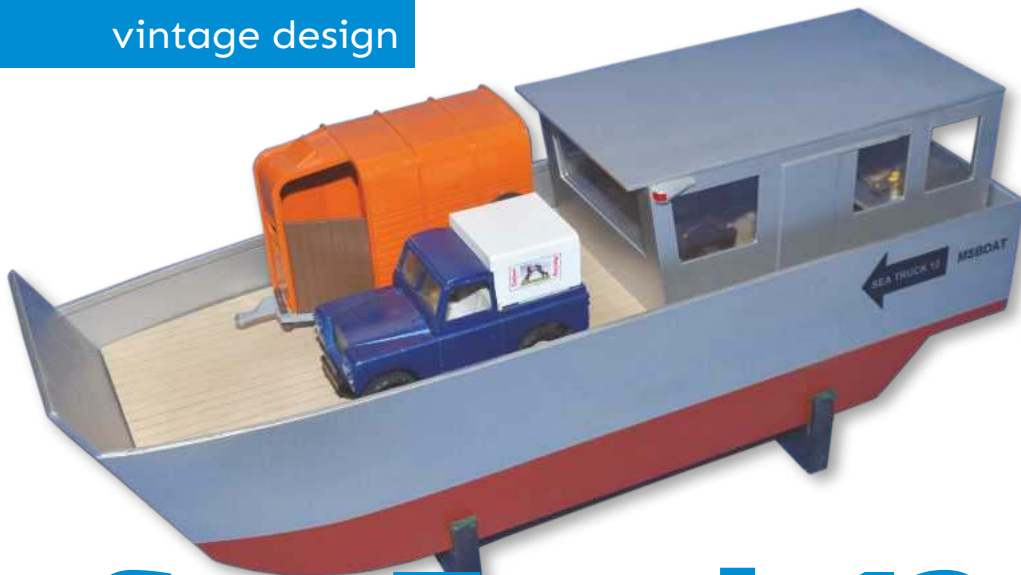
transmission set-up. The problems with flotsam that were encountered with the side wheeler are not an issue with Stern-wheelers, the hull diverting any hazard clear of the stern. Steering can be an issue because the rudder is placed forward of the rear paddle wheel. David found that ballasting the boat to ensure that the paddle floats just barely entered the water gave better control and manoeuvrability. ●

Cutting the parts from thinner 2mm acrylic was considered, but I didn't think this would be light enough. To resolve the weight issue, I re-cut the parts in 3mm marine plywood. This cut well and was in many ways easier to assemble and join with superglue. However, the structure required several coats of car primer followed with a finish of more coats of lacquer to waterproof it. This added again to the weight, but not by too much (**Photo 14 & 15**). I passed this new version on to David and the resulting performance was far superior in terms of balance and propulsion (**Photo 16**).

Photo 17 shows David's impressive, finished and detailed stern-wheeler, 'Jamie Lee' on the water. The model is powered by a 6-12v motor geared down to 9:1 with a Mecanno chain and sprocket wheel

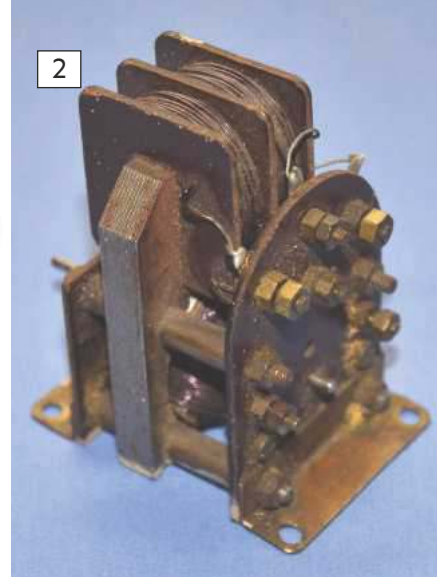


17



Sea Truck 12

Old RC technology in a Modern Craft by **Tony Dalton**



Control equipment. The single channel radio that I was given operates at a frequency of 27.120MHz and both the Transmitter (TA-1) and the Receiver (RA-1) (Photo 1) are powered by 9v PP9 batteries.

To test the Radio system the antenna was assembled (it is supplied in sections) and each of the 9v batteries connected to the transmitter and receiver. The transmitter and receiver were switched on and the transmit button pressed. To my amazement the receiver relay clicked on, the system was still in good working order almost 60 years after it was originally manufactured.

The two supply batteries were then removed as was the antenna. It was noted that the receiver housing cover was a very loose fit on its base, so some Plasticard guides were bonded to the sides of the base to provide a more secure fit for the cover.

The motor restoration

The Taycol 'Target' motor was manufactured by a small engineering company on the south coast of England, run by Messrs Taylor and Collis, hence the name 'Taycol'. They were very popular for use in model boats between about 1950-1970. Because of the poor performance of permanent magnets of the time these motors had powered field windings in order to generate the necessary magnetic field. The Target motor before any refurbishment work had taken place; very dirty (Photo 2).

According to the instruction, downloaded from the internet, the motor was designed to work from a supply of 6-12v DC. I therefore carried out an initial test by applying 7.2v across its terminals and found it to work satisfactory. It was then stripped down and all parts inspected (Photo 3). The bearing holes in the end plates (made of Bakelite) were worn and in need



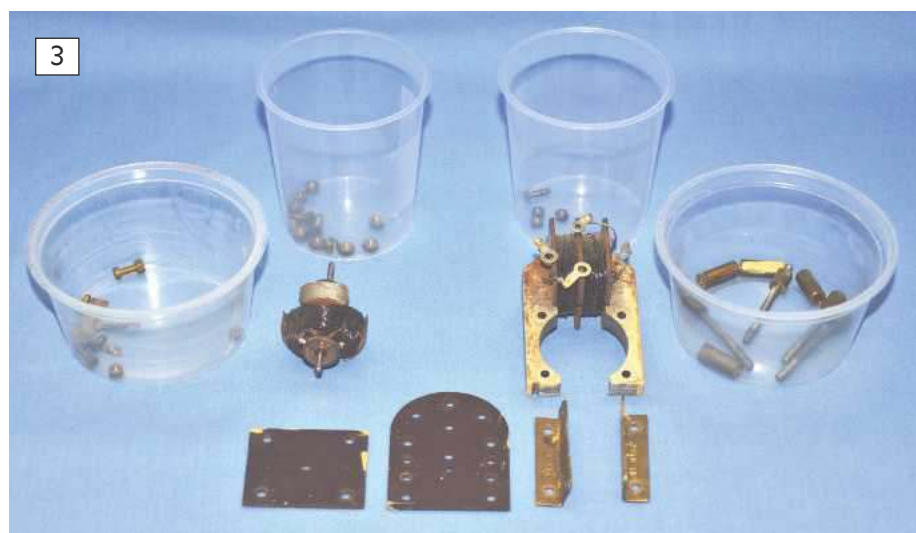
Restoring the radio control system

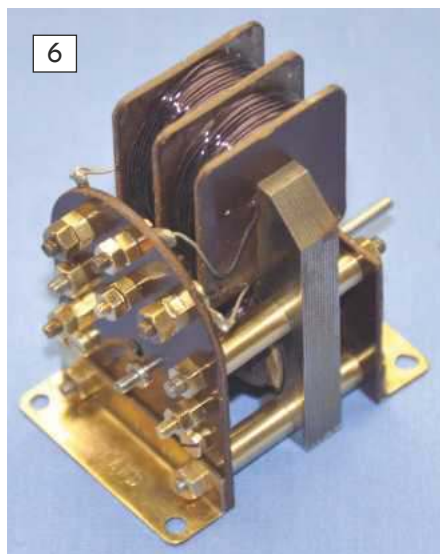
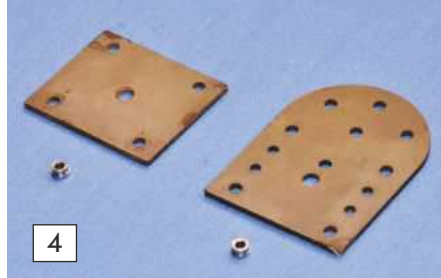
Some time ago I was given a number of escapements to play with by Tom Chapman, a senior member of the Luton and District Model Boat Club of which I am a member. Two of these were used in a Police Launch 'Telectra' (MB Mar 2013) the others were put aside for safe keeping. More recently the Club Secretary gave me a single channel 'OS' radio control set, followed shortly afterwards with two Taycol Motors all these items being manufactured c1950s.

I began to think about the items that I had acquired and started to consider what it would be like to control a craft with only one radio channel. Most of us by now have got accustomed to proportional control with a minimum of four channels, thus to be faced with only one channel for left, right, ahead and stop all controlled in sequence would come as a bit of a shock? Thus my new project was born.

The radio system

The single channel 'Pixie' radio was manufactured by the OGAWA Manufacturing Co., Osaka, Japan, more commonly known as 'OS'. This company was started in 1936 by Mr Shigeo Ogawa and made model IC engines. Later in 1954 they commenced making Radio





of some attention as was one of the copper brushes. The bearing holes were drilled out and replaced with some stainless steel bushes (Photo 4). The worn end of the faulty brush had a piece of copper shim soldered to it which was then formed into the correct shape.

All brass nuts, bolts and spacers were polished, the end plates and windings cleaned of all the dust and debris (Photo 5). The motor was then re-assembled and tested (Photo 6).

The escapement restoration

Perhaps I should explain the function of an escapement relating to radio control, for those younger readers not aware of how such devices operated. The idea was that every time the transmitter key was pressed, the escapement control relay was energised by the receiver and this moved a locking pawl allowing an arm on the escapement to rotate 90°. It would then remain in this position providing that the transmit button was held depressed. As soon as the transmit button was released and the transmitter ceased transmission, the control relay and locking pawl would be released, allowing the rotating arm to move another 90°. Thus if the rudder tiller arm was coupled to the escapement arm, when the transmitter was activated, the escapement arm would move the rudder to, say port. Release the transmit button and the rudder would return to neutral. Activate the transmitter again and the escapement arm would move the rudder to starboard. Release the transmit button and the rudder returns to neutral once again. This sequence could be repeated over and over again in order to control the model's direction. One further thing I should mention is that the escapement's ability to rotate was dependent on being powered by either a clockwork motor or a wind-up rubber band device (Photo 7). The one on the left is the clockwork version.

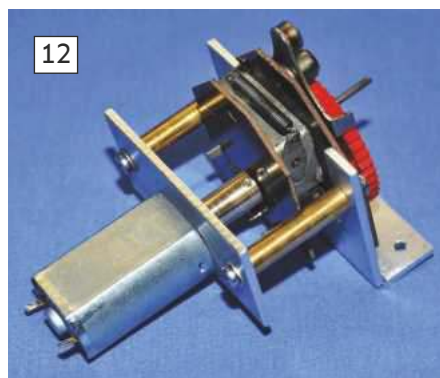
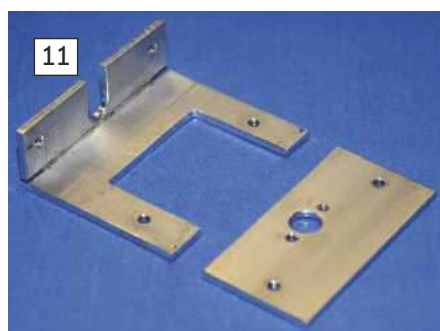
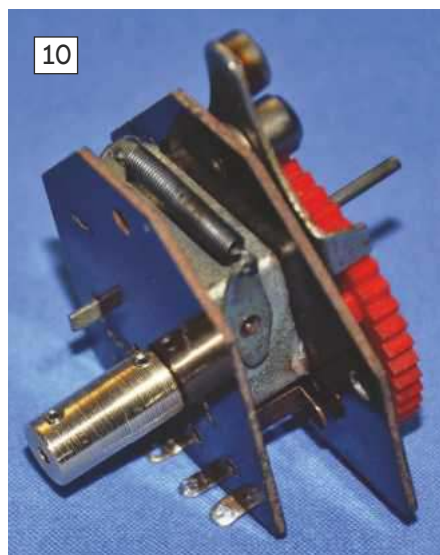


The escapement that I had selected to use was an Elmic Commander four position, elastic band driven type, and was manufacture by Elmic Ltd., of Romford (Photo 8). Like the motor, the escapement was stripped down and cleaned (Photo 9). I had no intention of using an elastic band to drive the escapement so the 'Hook' coupling was unsoldered from the main shaft and discarded. On further inspection it was noted that one of the solenoid leads was broken and a stop on the escapement wheel was damaged/missing.

The broken wire was spliced using some fine gauge tin/copper wire and re-connected

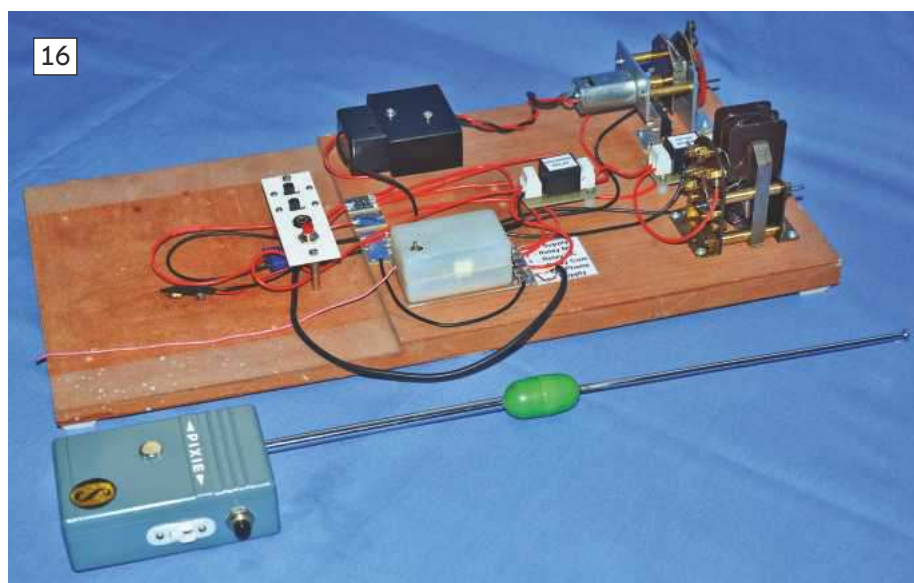
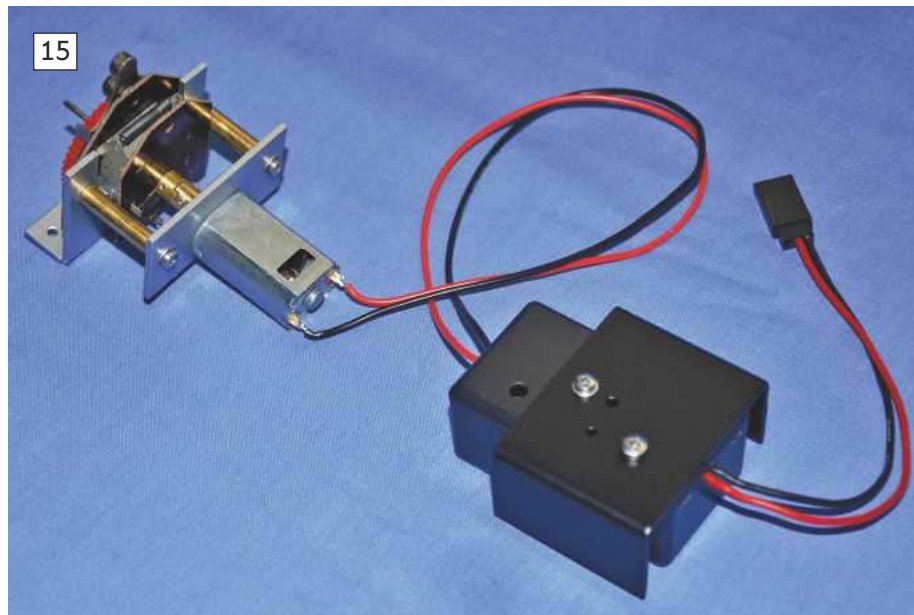
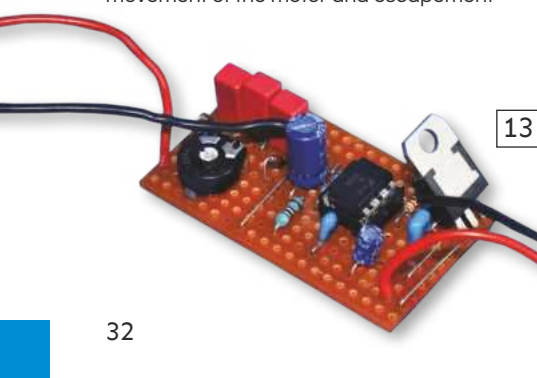
to its appropriate solder tag on the end plate, but in order to replace the missing stop, a hole was drilled into the escapement wheel where the stop was missing and a new stop, made from hard plastic, inserted and bonded into the hole in the escapement wheel. The drive for the escapement would be provided by a





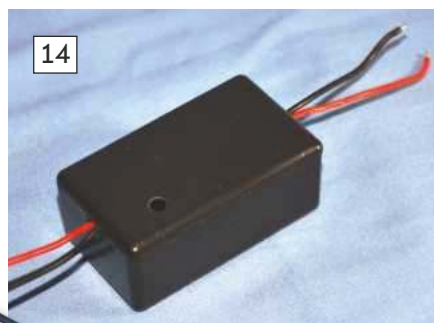
small electric motor controlled by a simple electronic speed controller. In order to couple the escapement shaft to the motor a small brass coupling was made and fitted to the escapement shaft (**Photo 10**).

Next step was to make two brackets in order to couple both the escapement and motor together (**Photo 11**). Using these brackets both the Motor and the escapement were assembled together (**Photo 12**) and tested only to find that it was not possible to obtain good alignment and therefore free movement of the motor and escapement



for satisfactory operation. The coupling was modified into a dog tooth coupling. With this completed the assembly worked satisfactory.

The drive for the escapement motor was to be provided from a simple electronic speed controller ESC (home built). All the necessary components were mounted on a piece of copper strip board (**Photo 13**) and the complete assembly then placed into a plastic housing (**Photo 14**). The ESC was coupled to the motor with a 4.5v supply. The pulse rate was adjusted to as low a rate as possible, whilst still producing enough power to turn the escapement. After



running the system for a number of minutes it was noted that the drive transistor of the ESC was getting hot so a heat sink was added to assist with its cooling (**Photo 15**).

The RC system

All the items were then mounted on a small MDF test board and wired together in order to carry out system tests. During the testing process it was found that the switched contacts on the escapement were totally unreliable, these were being used to switch the motor power on and off in one of the neutral positions. I decide to replace these contacts by using a separate relay which would be activated by a cam on the escapement drive coupling. I also decided to safeguard the relay contacts of the receiver by adding a separate relay to operate the escapement. A control panel was also added to the assembly which included two power switches, an audio socket for receiver tuning and a push button (for manual operation) which completes the construction of the Radio Control system (**Photo 16**).



Building the model boat with its cargo

Having built the control system my mind now needed to focus on what type of model to build, something not too fast and very stable was the order of the day. Scanning the internet I came across a type of landing craft called a 'Work Boat' which was twelve metres long, all aluminium construction and built in Poland by 'MS Boat' (**Photo 17**). Using a scale of 1/26 would give me a final vessel size of about 18in (46cm) long. I decided to create a small scale drawing on the computer using Microsoft Word at a scale of 52:1 (see supplied plan).

More thought processes followed and I decided that a couple of small toy vehicles on the deck area would look good, so I searched the internet and came across an old 1/32 Britain Land Rover complete with its Horse Box for £5.

The Land Rover & Horse Box restoration

Removing one screw from the bottom of the chassis allowed the vehicle to be taken apart separating the chassis, wheels and steering column from the body. The front bumper was broken on one side, so I machined both sides to look the same. I carefully removed all the self-adhesive labels, putting them to one side for later use. All the paint was then stripped from the body, chassis and steering column die cast parts, this revealed that the cab roof had been broken at one time because it fell off with the help of the Nitromors paint stripper, however this did aid access to inside the cab for removing the paint. When all the paint had been removed the Cab roof was glued back into position.

All the items were painted with Halfords grey primer (Spray Can) the chassis and steering column were painted gloss black and the body a metallic blue as I had these coloured spray paints available. The head and side lights were hand painted silver and the indicators orange. I also made a Plasticard cover for the rear truck section of the land rover. New transfers were made for the number plates, radiator grill and instrument panel, after placing these into position they were painted with clear varnish to seal them

18



19



to the body work. In addition I created a new label consisting of two stallions and the name 'Dalton Racing' which was placed on the rear cabin sides. With all these individual parts completed the vehicle was re-assembled.

The Horse Box had its doors missing, so I immediately set about making replacement ones from Plasticard sheet. I scribed wood planking into the three quarter height side door and the full height plain rear door had rear lights and indicator lights fitted made from short lengths of 1mm diameter Plasticard rod. Both doors were then painted brown and the rear/indicator lights painted red/orange respectively. The 'Dalton Racing' logo label was also placed on the rear door (**Photo 18**).

The vessels hull

Using the computer generated scale drawing (52:1) as a guide I created a hand drawn, full size drawing (scale approx. 26:1). This enabled me to make templates for the bulkheads, deck and hull base etc. The templates for bulkheads, Receiver Mounting, Rudder Mounting, deck, Transom and Forward Ramp were scanned, printed and temporarily attached to some 3mm thick plywood. The plywood parts were then cut out and trimmed to their correct profile. A deck hatch aperture was then machined out of the Main Deck using a 1mm diameter end mill (the resulting hatch cut-out being put aside for later use) (**Photo 19**).

With all the basic parts created some assembly could now take place. The No. 1

20



bulkhead was glued to the three curved bow pieces making sure that they all were kept at right angles to the bulkhead. When the adhesive was set the assembly was glued to the underside of the Main Deck. No.2 bulkhead was then glued into position up against the aft end of the curved bow pieces and the Receiver Mounting Platform glued into the nest formed by the Curved Bow pieces and No.2 bulkhead. Bulkhead No.3 was next to being glued in position at right angles on the back of the Main Deck. Bulkhead No.4 and the Rudder Base were glued together at right angles. The Transom was then glued to the end of the rudder base, at right angles before being attached and glued to the end of the Main Deck (**Photo 20**).

In order to create the base of the hull which is curved in two directions towards the bow, I made a card template. This was trial fitted to the assembly before placing it on some 3mm thick plywood and cutting it to size. The bow section of the plywood required to be curved and so I used the nozzle of a steam cleaner I

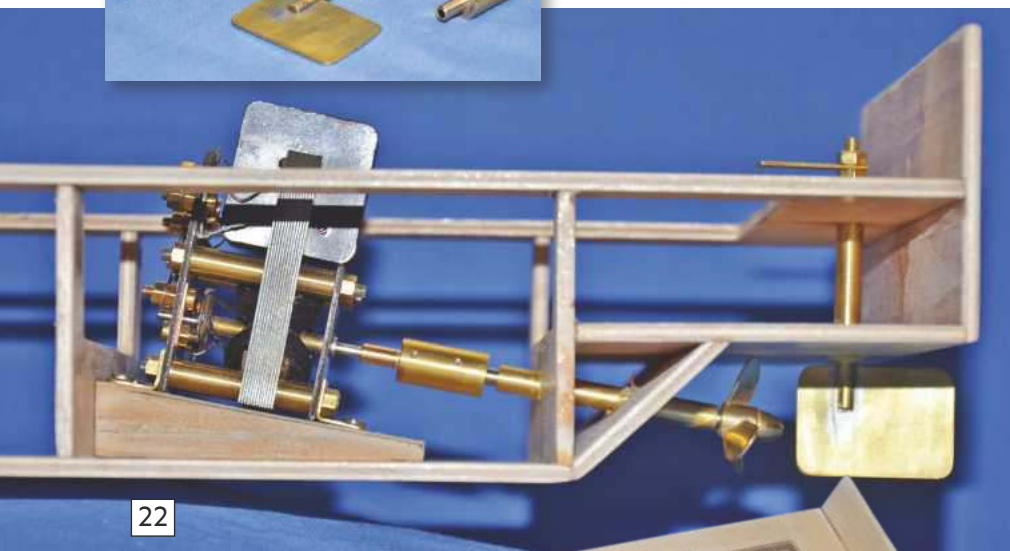
had recently purchased to clean the kitchen floor. The bulk of the sheet plywood base was placed onto the work bench leaving only the bow section overlapping the edge. I applied a continuous flow of hot steam to the front section of the wood whilst exerting pressure to the plywood base until the required curve was achieved (wearing thick protective gloves). The hull base was then allowed to dry and then glued into place on the bottom of the hull frame. Next the propeller shaft angled support plate was cut to size and glued into position followed by the Bow Ramp. The edges of the completed frame were then trimmed as required to complete the hull frame construction. The hull surfaces both inside and out were then given two coats of clear resin varnish and then lightly sanded down.

To cover the large hatch cut-out a removable deck was made using 1.5mm thick plywood. The plywood sheet was cut to the required size and then trimmed to the same profile as the Main deck. After sanding the top of the deck smooth, planking lines were marked on to its top surface using a 4H pencil. It was then given two coats of clear resin varnish. The plywood hatch, previously cut from the Main deck was retrieved and bonded to the underside of the removable deck such that it located the sub deck exactly in line with the Main deck.

21



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The running tube for the propeller shaft (50mm long) was cut from a piece of 6mm diameter brass tubing as was the down tube for the rudder (40mm long). Pairs of shaft bearings to suit the 4mm diameter shafts were made from brass and soldered into the ends of the tubes. The stainless steel propeller shaft was cut to length and tapped M4 at one end to suit the purchased three-bladed brass propeller. The Rudder shaft was made from brass as was the rudder blade, these being soldered together at the non-threaded end of the shaft. A Tiller Arm was made from brass sheet and a brass coupling for connecting the Motor to the Propeller shaft (**Photo 21**).

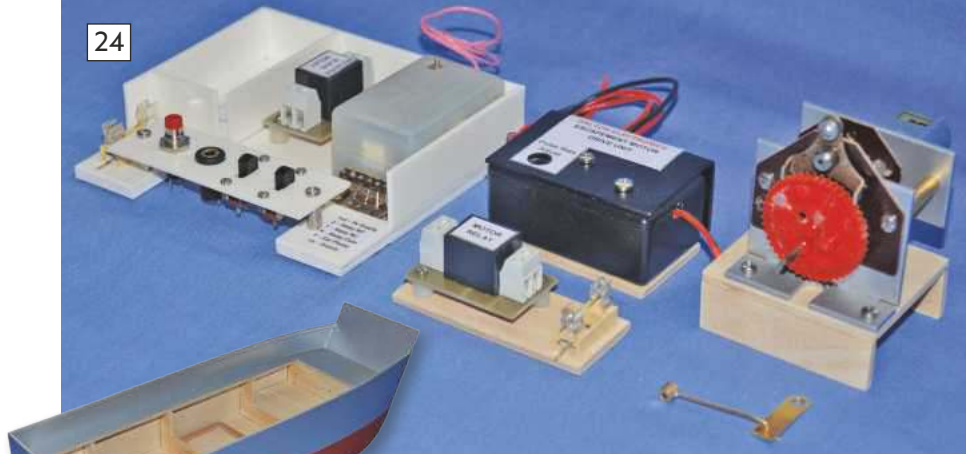
A block of MDF was machined to size with a mounting angle of 11° for the Taycol electric motor which also included four M2.5 fixing holes. Next 6mm diameter holes were drilled into the hull for the Propeller Shaft. The motor was screwed to the mounting block and together with the propeller shaft, running tube and coupling, assembled into the hull frame. After trimming the 6mm diameter shaft holes in the hull such that everything was free to rotate, the motor base was glued into position. This was followed by some drops of cyanoacrylate being applied to the joints between the propeller shaft and the hull. When all the glue was firmly set the propeller shaft was sealed to the hull using Milliput epoxy putty.

The 6mm holes for the Rudder Tube were drilled into the deck and down into the hull bottom allowing the down tube to be inserted and glued into position. When the glue was set the joint at the bottom of the hull was sealed using Milliput epoxy putty. The Rudder Shaft was inserted into the bottom of the tube and the tiller arm secured into position on top of the shaft using two M4 brass nuts. The assembled Motor, Propeller Shaft and Rudder are shown in **Photo 22**.

I intended to operate the system from four 1.2v 8000mAh 'D' Size NiMH batteries housed in four interlocking battery holders. In order to stop the batteries from sliding around in the bottom of the hull a low level partition was created using 1/4in square wood strip (**Photo 23**).

Now it was time to complete the build of the hull by fitting the sides. To do this the Rudder, Propeller Shaft and Motor were removed in order to prevent them from getting damaged. Two lengths of 1.5mm thick plywood were cut to size for the hull sides ensuring that one of the long edges of each piece of plywood was clean and straight as this was destined to become the top deck hand rail. Each piece of plywood was placed into position on the side of the hull, ensuring that the 'hand rail' edge was located in its correct position. Once this was verified a pencil was used to mark around the edges of the hull to indicate the cutting line. The plywood pieces were then cut to size such there would be a small amount of overlap around the edges. The sides were then glued one at a time to the frame and weighed down firmly into position on the hull frame. With both sides fitted and the glue

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thoroughly set, the sides were trimmed back to the hull frame. Some Plasticard strips were added to the inside of the handrail edges to stiffen the thin plywood.

Now it was time to trial fit all the radio equipment that had previously been mounted on the MDF test board. First the escapement was offered up towards the rudder and found it was necessary to make a small pedestal in order to ensure that the escapement wheel was central to the tiller. With this done and the escapement in position, it was possible

to measure between the escapement and the tiller arm in order to determine the design/dimensions in order to make a coupling link. The motor drive for the escapement and its relay/fuse unit were both fitted on wood plinths and a holding cell was created using Plasticard to house the Receiver, Fuse, Relay, Receiver Battery and Control Panel (**Photo 24**).

With the R/C parts all prepared it was time to paint the hull. The large open hatch in the deck was masked to prevent any paint getting inside the hull and the complete hull painted with Halfords grey primer, followed by a light sanding down. This process was repeated a couple of times until all blemishes had been removed. The upper part of the hull was then

masked just above the water line and the lower half of the hull painted with two coats of Halfords Red Oxide primer. The masking of the upper hull was then removed and when the hull painting was thoroughly dry the lower hull was masked at the waterline. The upper hull was then painted silver to represent aluminium which is the material that the actual boat is manufactured from. All the masking was then removed and the entire boat spray painted with clear gloss varnish (**Photo 25**).

With the hull now painted it was time to consider making a stand for protection purposes. The stand was basically made from wood scraps. Two strips of 1/2in thick softwood cut to match the width of the hull with two strips of plywood glued to their ends. Both assemblies were then joined together using lengths of 3/8in dowel. The complete assembly was then painted black and the hull supporting surfaces lined with green beige. Finally a name plate was added to each end containing a description of the vessel.

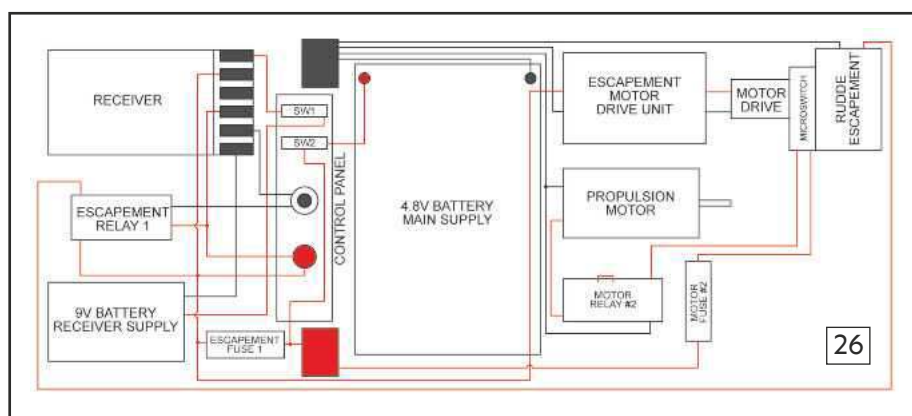
With the hull now painted and safely secured in its stand it was time to fit and wire all the control gear into the hull. First the Motor was screwed onto its mounting and the Propeller shaft and coupling assembled and secured to the motor. The escapement mounted on its pedestal, was glued into position in the aft section of the hull followed by the rudder assembly and its coupling link. The escapement Motor Drive and Relay/Fuse Units were bonded into position either side of the main motor. All the items were then wired together in accordance with the schematic diagram (**Photo 26**).

The Receiver Holding Cell was placed into position in the forward part of the vessel together with the main battery pack which allowed the remaining interconnection wiring to be completed (**Photo 27**). A 9v PP9 battery was inserted into the receiver compartment, the system switched 'ON' and all was found to work satisfactory.

The hatchway area on the removable deck was marked and machined out then the edges were re-enforced with 1/4in square hard wood beading which also formed the combing for the Cabin Base (**Photo 28**).

Photo 29 shows the modified removable deck fitted in position.

Next job was to make the Cabin. Strips of 1.5mm Plasticard sheet were cut and machined to the cabins height. Then four pieces were cut to length (two for the Sides and two for the Front/Back). The windows were pencil marked on the created blanks and then machined out using a 1mm diameter

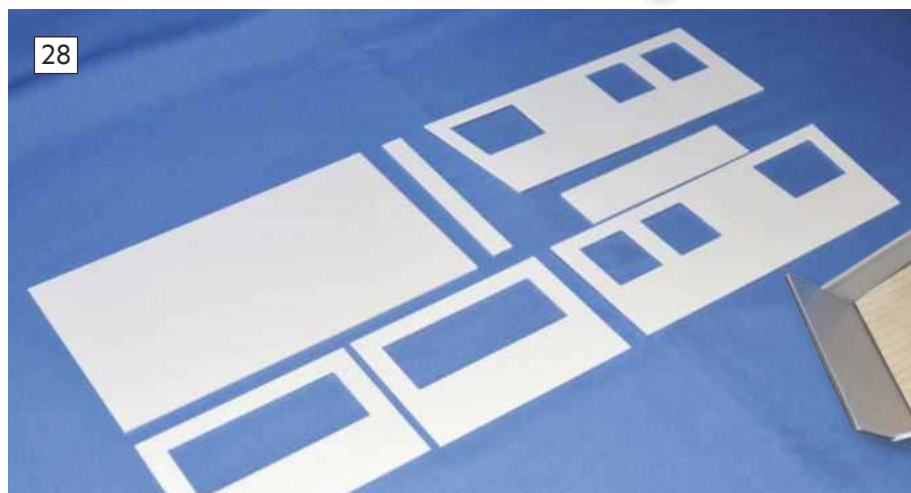


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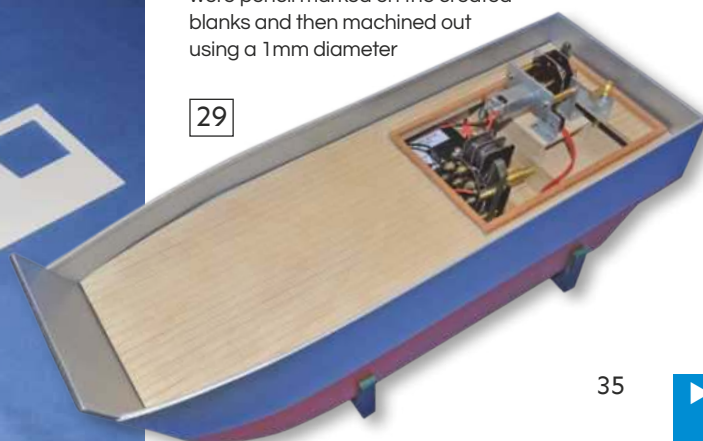
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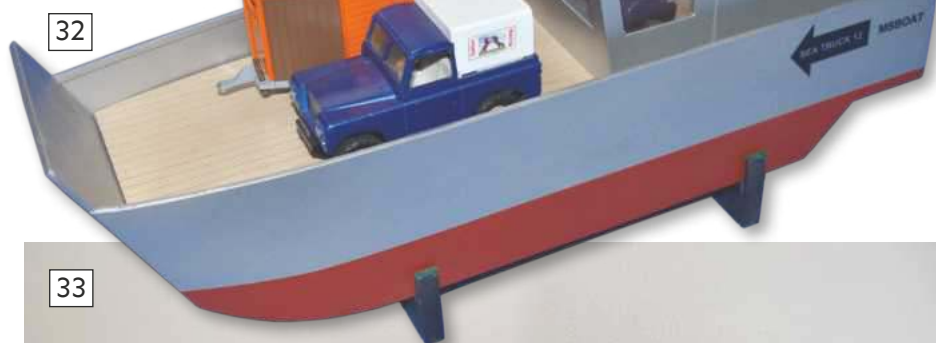
milling cutter. The Roof was cut to its required size as was the strips for the control desk including a hole for the ship's wheel (**Photo 30**).

Two cabin doors were cut from 1mm thick Plasticard sheet and glued into position on the sides of the Cabin together with short lengths of 1.5mm Plasticard square bar to mimic their sliding mechanisms. With this completed the sides and ends were glued together ensuring they were square to each other. The cabin was then re-enforced by gluing $\frac{1}{4}$ in square section Plasticard strips along the top edges of the inside of the cabin walls. Next the control desk was glued into position inside the front of the cabin. The structure was then lightly sanded down to remove all glue lines which completes the initially assembly.

The assembled cabin including its roof was painted all over using Halfords grey primer followed by a couple of coats of the same silver paint as used for the hull. When the paint was dry, the roof was glued to the top of the cabin structure. Cabin windows were cut from some clear acrylic sheet and attached to the inside of the cabin using double sided tape. The control console panel was computer generated and printed on paper and attached to the control panel using double sided tape. I found two plastic navigation lights in my box of bits, which, after being painted silver with the lenses Red/Green and when attached to the cabin sides look the part.

Next job was to attach the restored Land Rover and its Horse Box to the cargo deck using wire links around their axles. The deck area was covered with masking tape and the vehicles put into place. The position of the axle just behind the wheels were marked on the masking tape, the vehicles were then removed. Two 1mm holes were drilled 10mm apart either side of each axle. 22swg wire loops were passed over each wheel and into the holes in the deck. The ends of the wires below the deck were then twisted together to secure the vehicles into position.

With the vehicles now secured into position the cabin was fitted to the deck and secured using 12BA brass screws (**Photo 31**).



The final step to complete the model build was to add some decals to the sides of the hull. Namely the vessel type 'Sea Truck 12' and the manufacturer 'MSBOAT'. Using a computer and printer, the decals were printed onto 'Clear Decal Transfer Paper' which was then sprayed with clear acrylic varnish to seal in the water based ink. When dry the decals were cut to the required size placed into a basin of water and after a short time slide off onto the model's hull (**Photo 32**).

As with most of my models I make a box to protect them during transportation and also to keep out the dust. Cardboard box to the ready cut down to required size, line it with

foam, add some Velcro straps, add model pictures for identification purposes, then place the model in the box.

With the vessel's construction completed it was time to do a buoyancy test in the bath. Initially the hull showed a small list to Starboard probably due to the ergonomic layout of the Radio Control system. This was corrected by adding a small lead weight into the bottom of the hull on the Port side. **Photo 33** shows the vessel in the bath, after the list had been corrected.

Finally on a nice sunny day I took a trip to the lake in my local park for the sea trials, ensuring beforehand that the batteries were fully charged including those for the Transmitter/Receiver. Verifying that the radio system was fully functional I placed the model in the water and set sail. As can be seen from the following photographs it is definitely not a speed boat, but chugs along sedately allowing me plenty of time to control the vessel using the single channel radio system (**Photo 34**).

I do hope you have found this article regarding the use of a 60-year old radio control system interesting. I find it very difficult to throw away old model making items and try whenever possible to put them to good use. Happy and successful modelling. ●



REMOVABLE DECK
1.5mm PLY

CUT OUT TO THIS LINE

BULKHEAD 1
3mm PLY

1/4" SQUARE HARDWOOD COAMING

CUT OUT TO THIS LINE (RETAIN PIECE REMOVED)

HULL REAR BOTTOM
3mm PLY

MAIN DECK
3mm PLY

BOW PIECES
MAKE 3
3mm PLY

DESIGNED BY
TONY DALTON

DRILL Ø6mm HOLE
FOR PROP TUBE IN
BULKHEAD 4 ONLY

BULKHEADS
3mm PLY

1.5mm PLY HULL SIDES TO HERE

WL

1

PIXIE 27MHz RECEIVER

2

1/4" SQ. STRIP TO
RETAIN BATTERY

MAIN

NOTE: FOR FULL SIZE
ENLARGE PLAN BY 125%

PIXIE 27MHz RECEIVER

1

RECEIVER
RELAY

2

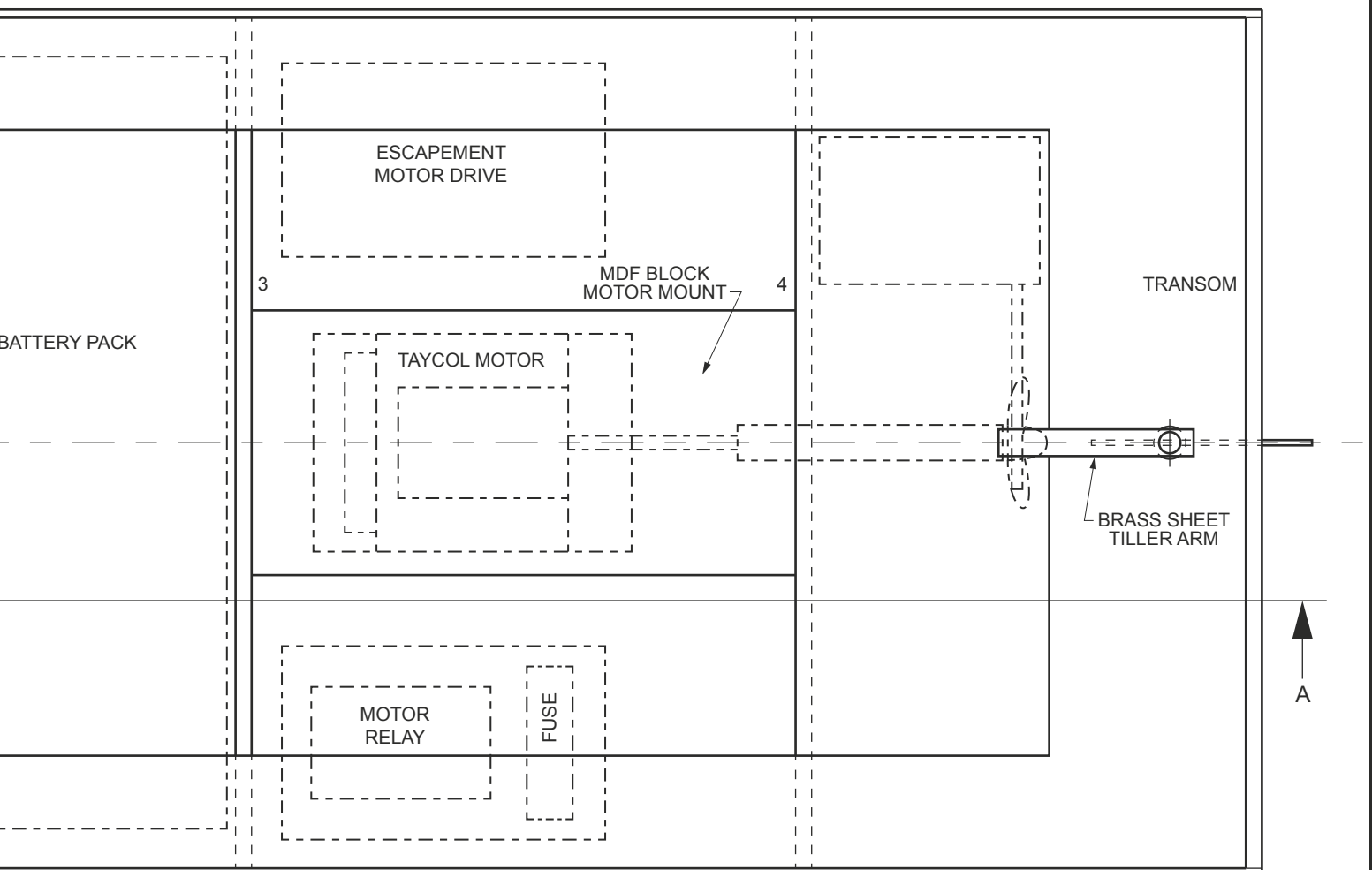
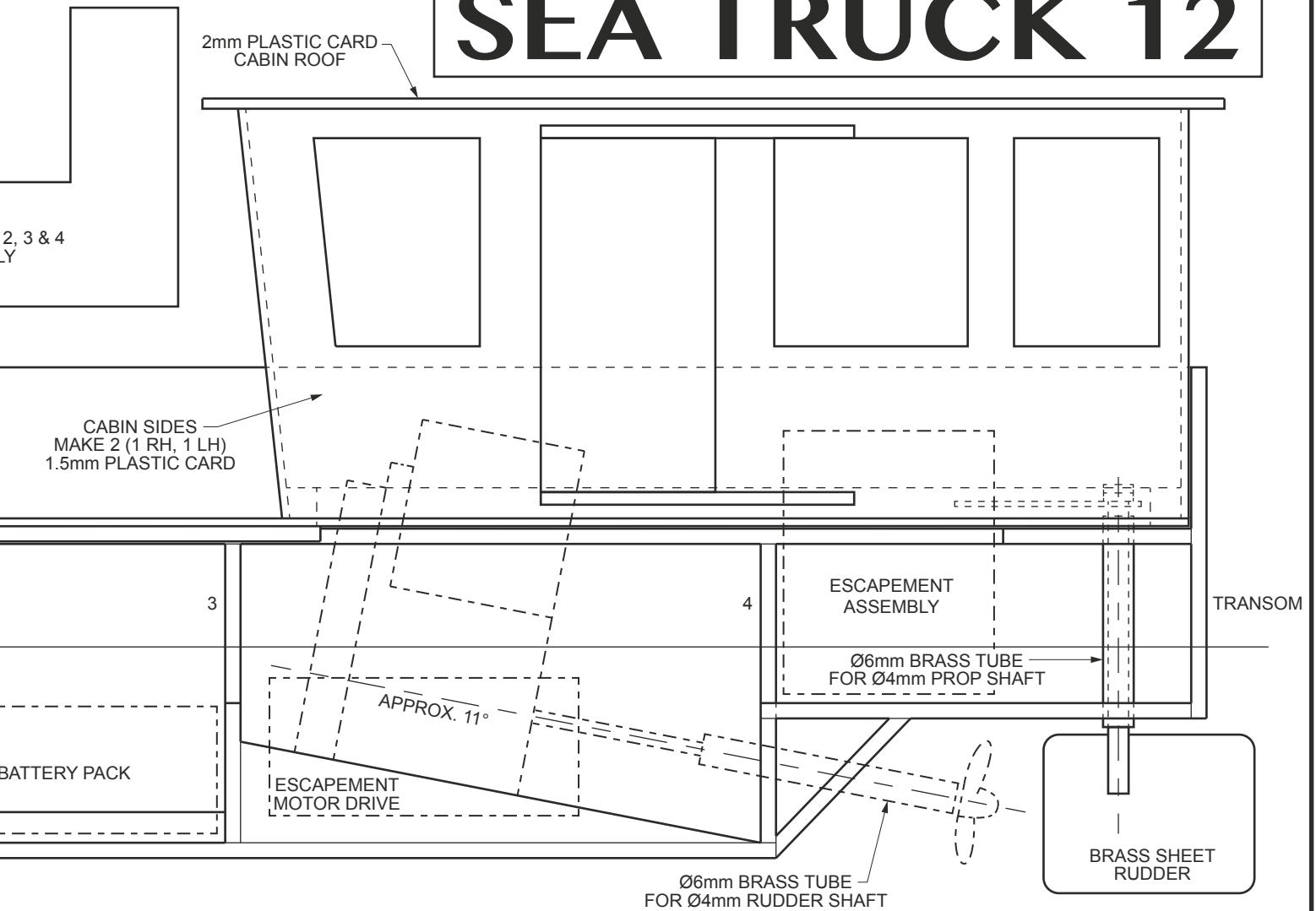
CONTROL
PANEL

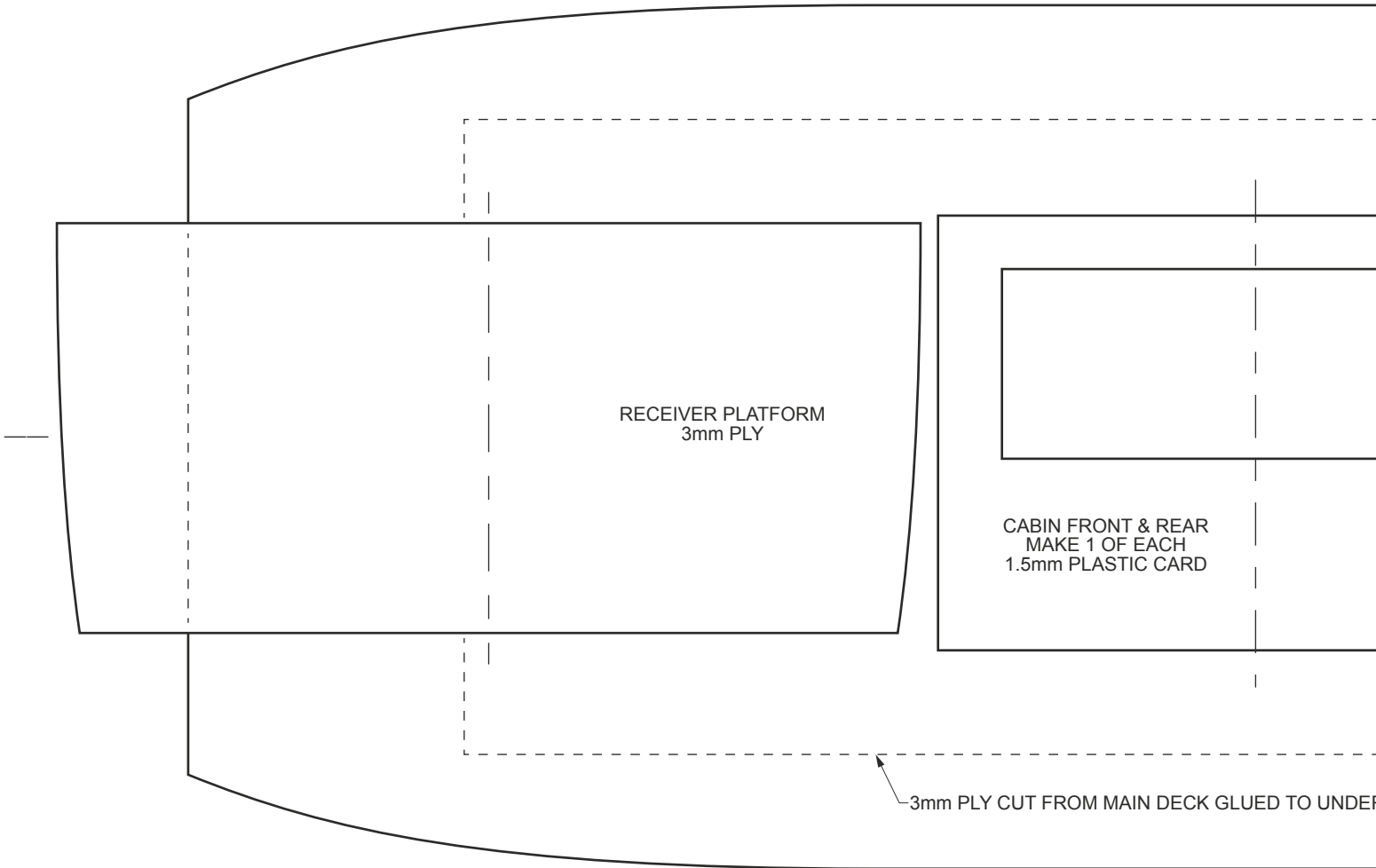
RECEIVER BATTERY

MAIN

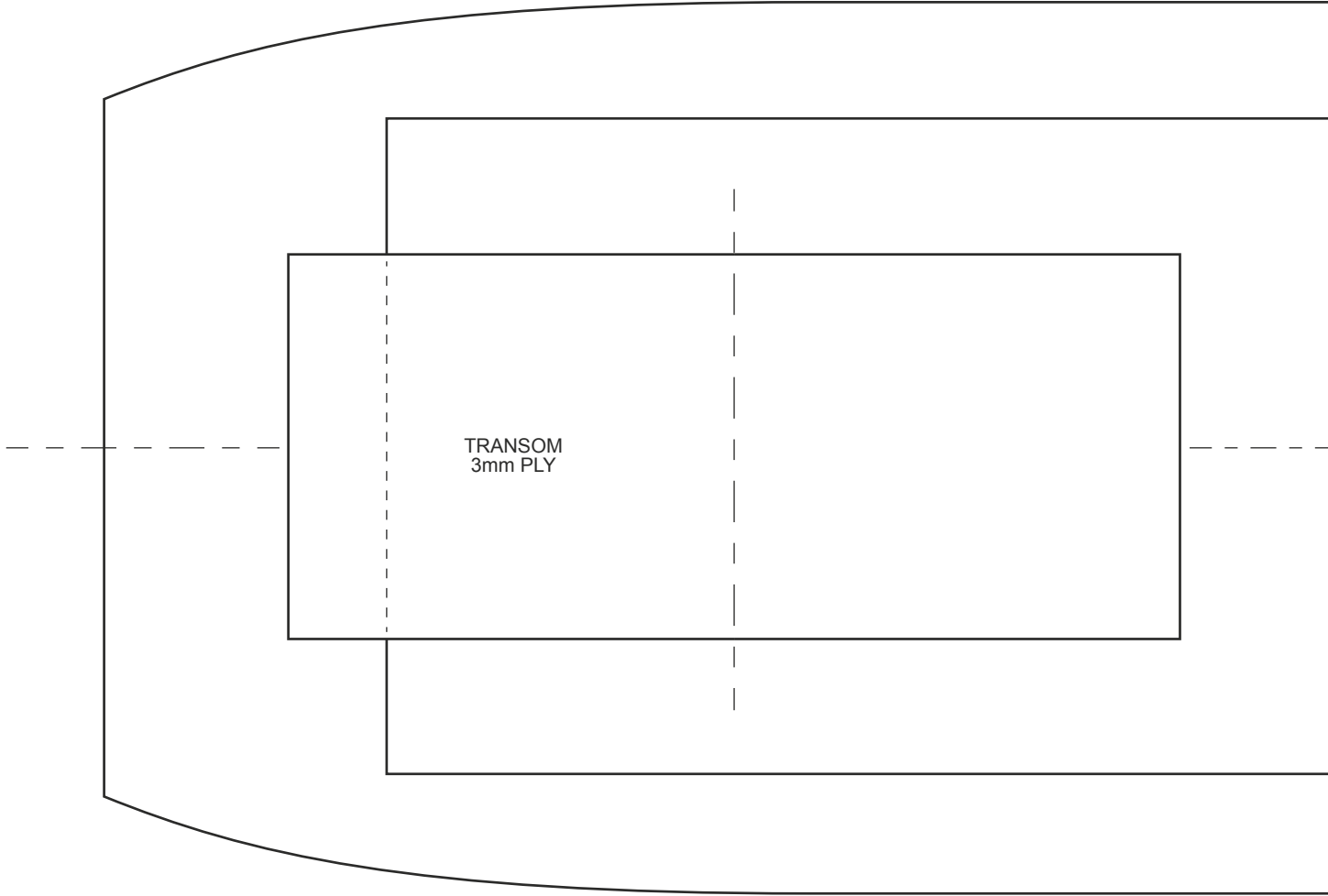
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SEA TRUCK 12





NOTE: FOR FULL SIZE
ENLARGE PLAN BY 125%





Patria

A classic European lake paddle steamer by
Dermot Curnyn

Now that I had a proven design for the paddles, I wanted to construct my own paddle ship to fully test and evolve my prototypes. I had decided to model one of the European inland lake paddle steamers and after trawling the internet for a suitable project, I settled on the Patria, one of two paddlers serving the tourist cruise trade on Lake Como; the other being the Concordia. Although there are quite a few paddle steamers on the waters of the European lakes, the Patria proved to be the one which turned up the greatest number of visual references to work from.

History

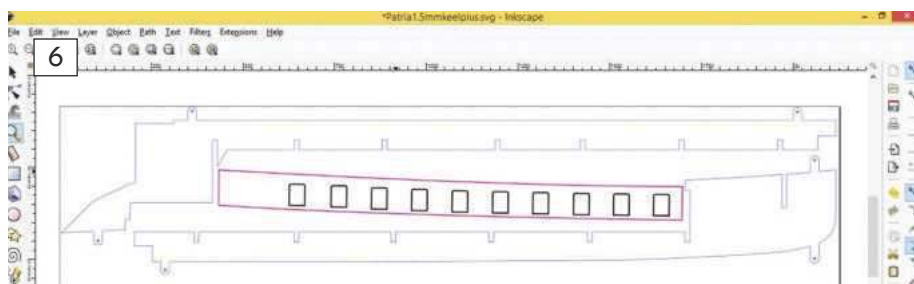
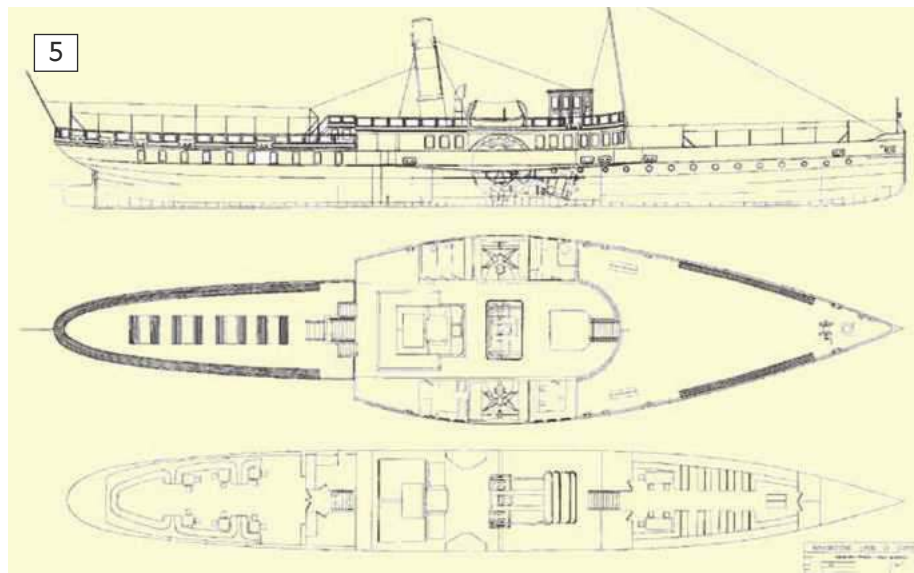
The Patria and Concordia both entered service on Lake Como in the mid-1920's and have enjoyed a chequered history of service, lay-up and refit ever since.

The Patria, originally launched as the Savioia in 1926, was in service until a refit in the 1970's followed by a continuing busy career until she was withdrawn from service in 1990. Enthusiasts pushed for her conservation and restoration until, in 2004, she was officially handed over to the ownership of the local 'Provincia di Como' for a nominal one Euro. The ship was dry-docked on the shores of Lake Como at Dervio for inspection and initial hull restoration and a new management company, 'AVE Navigazione' was formed to oversee the work

and guide the ship back into service (**Photo 1 & 2**). Several more years of hard slog and fund raising followed, including a grant of 1,300,000 Euros. By May of 2013 the Patria had been re-boilered and passed her first steam powered sailing tests.

In July 2013 Patria sailed to the town of Como for the first time in 23 years where the formal speeches and celebrations took place to welcome her back into service (**Photo 3**). Since then sailings have been limited. Patria is currently moored outside the Villa Olmo and is open to the public and often used for events



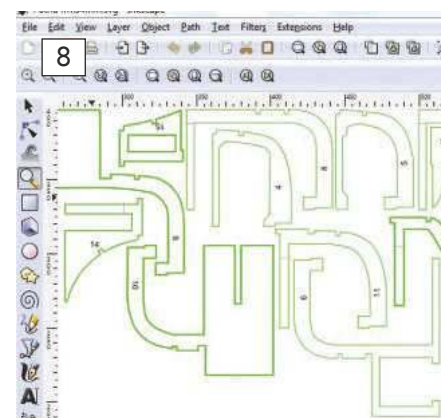


(Photo 4). In March 2018 the Italian press reported that the ship was to be transformed into a luxury 'Dolce & Gabbana' store for the duration of a fashion event at the neighbouring villa in return for a 10,000 Euro donation. Substantially more funding is still needed to fully equip and crew the Patria. The Concordia is currently the only paddler in regular service on Lake Como.

Plan hunting

The internet has become the greatest and most immediate source of imagery and information for model making. I managed to find a lot of photos of the Patria from virtually every angle, giving detailed and abundant

building references, but it proved difficult to source a plan which was reasonably accurate. The closest plan image I found was of the Lake Como Paddle steamer Milano (Photo 5). Strangely, it was converted in 1926



from a paddle steamer to screw propulsion. The paddle boxes were retained, and I understand the ship still operates on Lake Como. It is identical in hull design and paddle box and superstructure layout to the Patria.

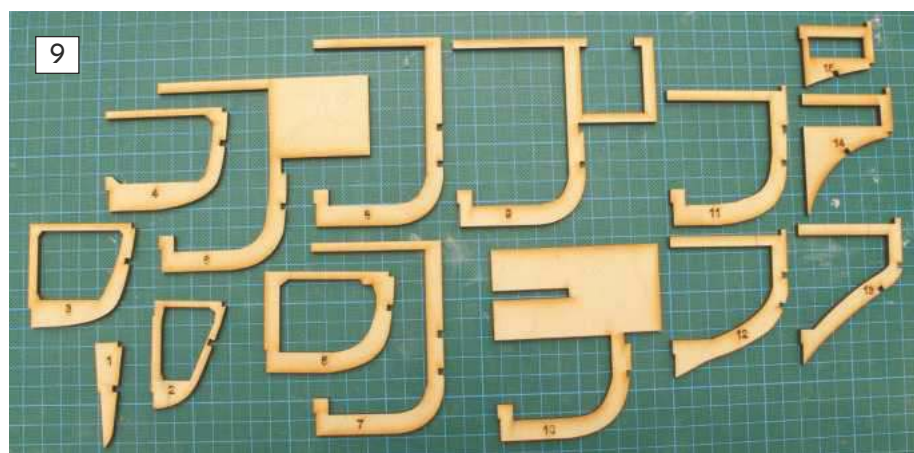
I downloaded and opened the plan of Milano in the Inkscape drawing program, scaling it to 1/48, which gave a length OA of around 1120mm. Although the image was of quite low resolution and pixelated when magnified to 1/48, it was clear enough to give a good guide to draw over the outlines of frames and keel components ready to cut in mainly 1.5 and 4mm ply. I completed a full set of working plans showing as much detail as I could glean from the images I had downloaded. I produced a second set of drawings in Inkscape which could be used to cut the various model components on the laser cutter; frames, keel and decking.

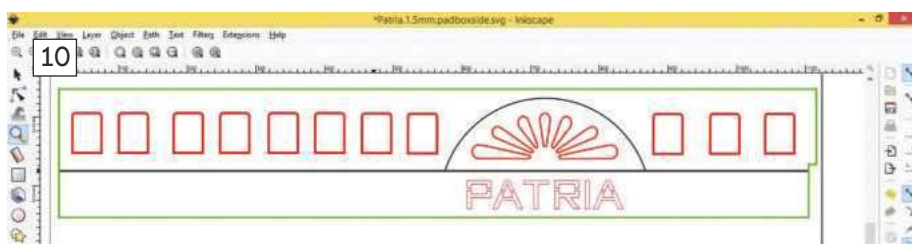
Laser cutting the frames

The keel components and rear saloon window surrounds were cut from a sheet of 600x500mm, 1.0mm birch ply. The different line colours dictate the order in which the lines are cut. In this screen capture detail, (Photo 6), the black lines are cut first allowing the window centres to fall away, then the purple line is cut, separating the saloon window surround from the ply sheet. Finally, the blue line is cut separating the two keel pieces which will be joined together on the building board (Photo 7).

I cut the hull frames from 600x500mm sheets of 4mm ply. The different frame drawings were arranged on the screen in a layout which made the most economic use of the plywood (Photo 8 & 9). A laser quality ply was used, anything else doesn't cut as cleanly and small detail will not resolve well.

I like to use a building method derived from model aircraft construction, building the hull in two halves divided along the keel. By using





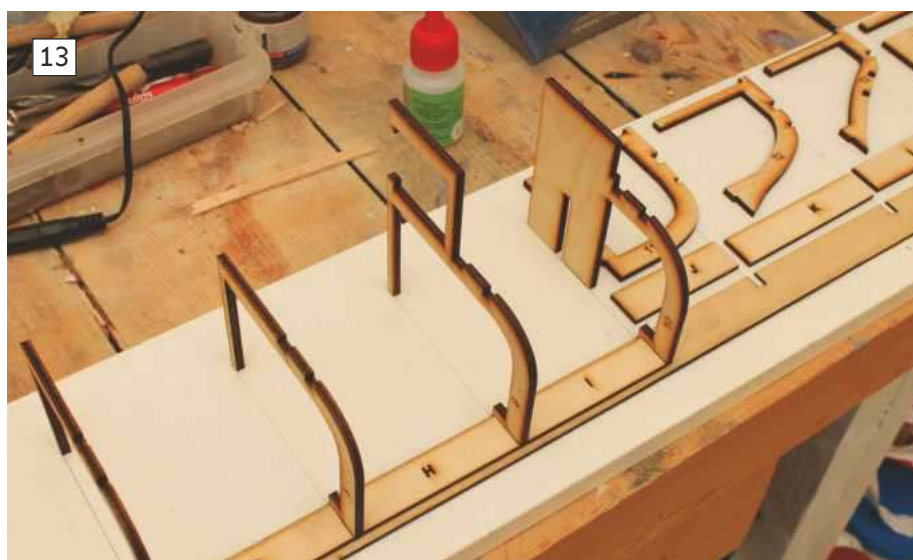
this split hull type of construction rather than the more traditional inverted full-hull frame method, it is easier to re-produce the deck sheer. The bonus with this technique is it is only necessary to produce the drawings for one half of the model on the computer and use the laser cutter to cut them twice, producing a perfect mirror set of frames. The paddle box sides were cut from 1mm styrene sheet. I could not have reproduced the Patria name or side vents with the same degree of sharpness at this scale in thin Plywood (**Photo 10 & 11**).

I was very conscious that the paddle boxes and wheels would be the main issue in terms of stability and weight. For the model to be accurate it should have quite a shallow draft; this being one of the principle reasons for using paddle propulsion on full-size ships, allowing closer access to shore and doing away with the need for long piers.

The paddle boxes on Patria are integrated into the hull design, joining into the sweep of the forward saloon deck, so the paddle boxes on the model were not separate structures attached to the hull but rather extensions of the central frames, boxed in. This helped to keep the weight of each paddle box down. It will become clear later in this description of the build that the choice of motor, battery and radio were also critical in limiting weight.

Hull frame assembly

The two halves of the keel were brought together on a conti (melamine veneered) shelf board. They were not glued in place, but tabs had been drawn and cut with small diameter



holes to take small wood screws holding the keel pieces securely in place on the board (**Photo 12**). The plastic-coated shelf board is easy to clean if any glue is spilt and it takes pencil well. I drew pencil lines across the board at the frame positions to ensure the frames lined up correctly with the sub-deck pieces when they were added.

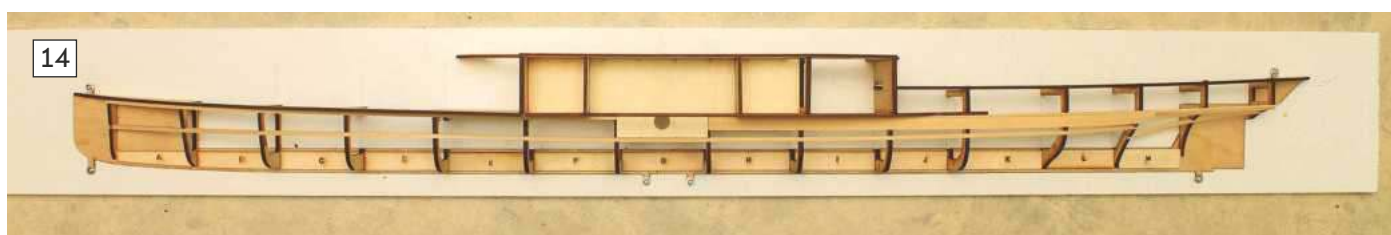
After cleaning off the burnt edges of the frames with sandpaper to ensure a good bond, the frames were glued in place on the keel with thick cyano, taking care not to stick them to the building board (**Photo 13**). I had also cut rectangular filler pieces from life ply to glue between the frames strengthening the joint between the two keel pieces and ensuring that the frames sat perfectly at right-angles to the keel. The four separate sub-deck components were glued in place against the frames, gently following the curve of the deck sheer. This and the integration of the paddle boxes into the general hull structure are clearly illustrated in **Photo 14**.

Some gentle sanding was required to give the framework the correct contour towards bow and stern. Additional stringers were added to firm up the whole structure and

complete the framework ready for planking. I was very pleased with the snug fit of most components and the hull shape appeared true. If there had been any discrepancies, these could have been remedied on the computer before cutting out the second half set of hull components.

Planking the hull

Planking commenced using 3mm and 10mm wide by 1mm thick lime strip. The thinner strips ensured accurate curvature around the bilges and towards the bow and stern. These were super-glued to the frames and firmly pressed up against each other. The second layer of strips had cyano applied along their entire length and edges to give absolute rigidity to the hull. This second layer of lime strip was joggled with the first to allow an overlap over the joints. I usually applied a bit of pressure with the back end of a Bic biro while the glue set. The polythene stopper on the end of the biro pen does not stick with cyano. The completed hull has a solidly laminated shell. It only required light sanding to remove any flat faces from the planked hull.





The hole for the paddle drive shaft can be seen in **Photo 15**; this was also laser cut to ensure both holes would be perfectly aligned.

Photo 16 show the overlapping planking. I did manage to superglue my fingers to the boat on more than one occasion. A damp cloth squeezed out between plank and finger usually did the job to release the digit and a soaking in warm water at the end of sessions removed the extra layer of 'cyano skin' that I had acquired. With the planking complete, bow and stern blocks were formed from soft balsa sheet then roughly cut to shape, laminated together and glued in place before sanding to shape (**Photo 18**).

Photo 19, 20 & 21 show the two completed hull halves. I had begun to paint the inside of the paddle boxes and gave the hull halves an initial coat of dope to begin the sealing process. Because the hull halves were secured to the building boards by just a few wood screws, they came away easily. The

hull halves showed no sign of distortion or warping as they were disconnected from the board. It was important nevertheless to bond the two halves together quickly. The cyano and epoxy adhesives used would continue to



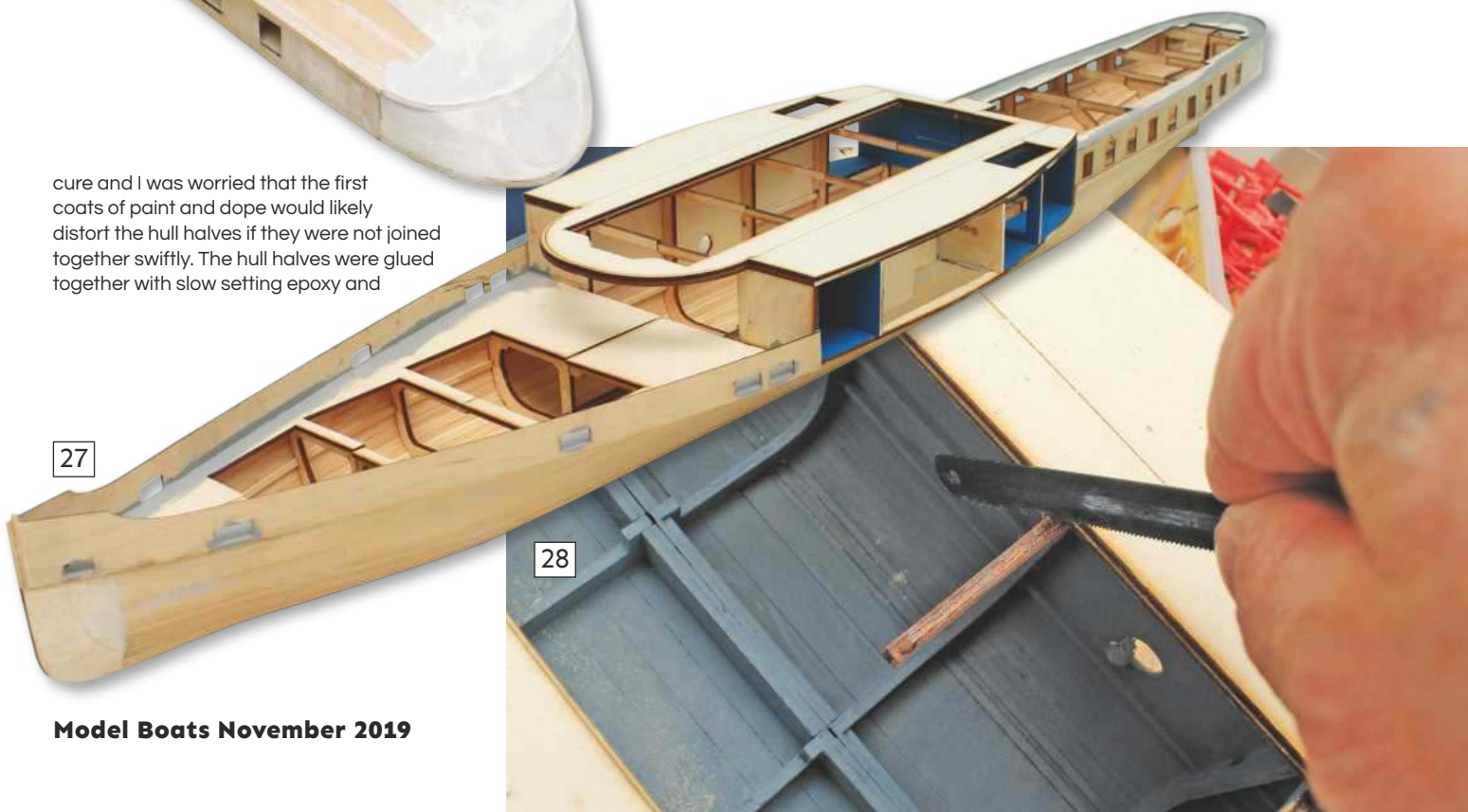
26 held in position with clamps and bull clips until cured, **(Photo 22-24)**. Blocks of soft balsa were glued in the spaces left at the stern then sanded to shape before filling and sanding to the correct contour **(Photo 25 & 26)**.

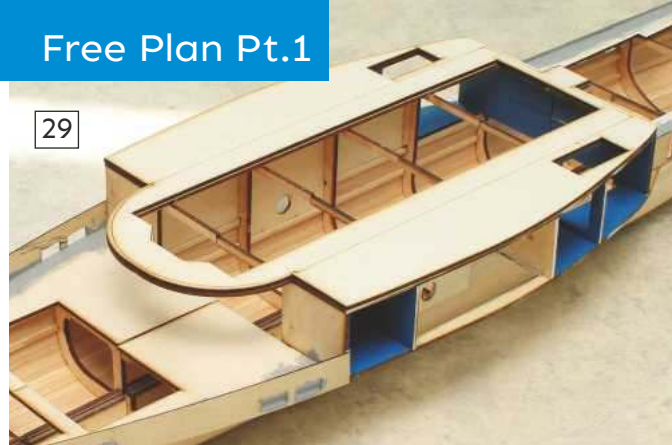
With all clamps removed and the glue fully set, the hull was further sealed with a coat of tissue and

dope. A few more coats of dope gave a good surface to finely sand before spraying with white primer **(Photo 27)**. I cut away the redundant parts of the framing over the top deck hatch so I could begin the drive train installation **(Photo 28)**.

I added another top sub-deck to give a deeper lip for the hatch and to bridge the joint

cure and I was worried that the first coats of paint and dope would likely distort the hull halves if they were not joined together swiftly. The hull halves were glued together with slow setting epoxy and





seal it and the exterior with white primer before sanding to a smooth surface with 'wet and dry' paper (**Photo 31 & 32**).

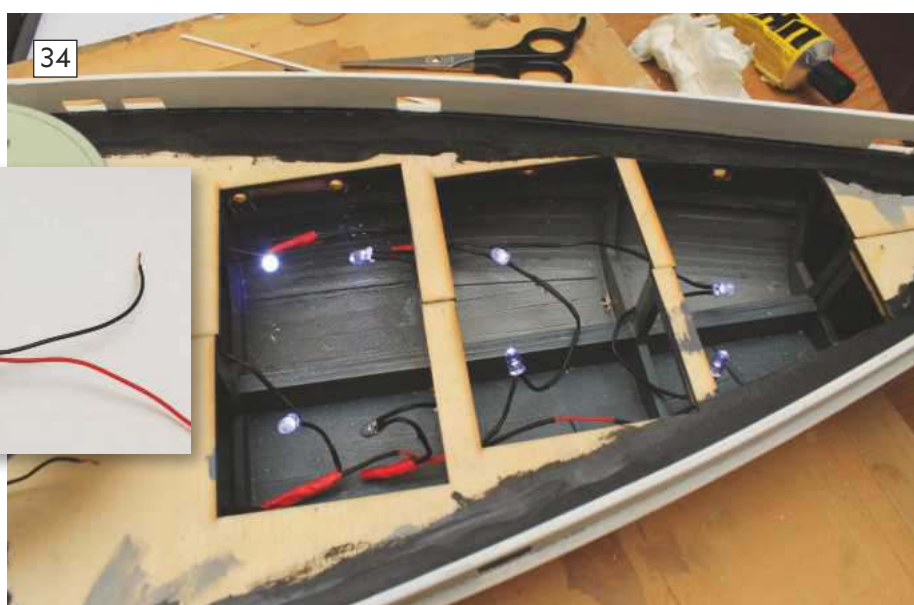
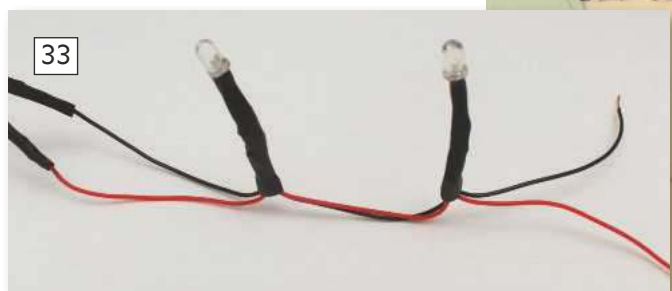
Interior lighting

The next step was to glue the deck overlays in place but the 'below deck' interior area towards the bow would become inaccessible once this was done, so I took a break from hull finishing to look at adding interior lighting in this area.

LED's were soldered together in parallel pairs which were then series connected to distribute an even 3v from the small battery box which would be installed at a later stage (**Photo 33 & 34**).

In part two (MB69-830 January 2020), I'll cover the drive train including the laser cut paddle wheels, upper works and deck detailing ready to sail.

between the two hull halves, (**Photo 29**). Strips of beech wood were glued to the inside edge of the upper deck hatch to form a coaming for the removable section (**Photo 30**). The interior of the hull was liberally coated with grey primer to



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Identification

The model required identification; first I had to give it a name, I decided on 'Serenity'. This name suited this craft, because it means slow or graceful.

The company name, 'Perry Oceanographic' was applied to the model using rub-on letters, but the name, 'Serenity' was a challenge due to the introduction of computers. Rub-on letters were, at the time, disappearing - now they have!

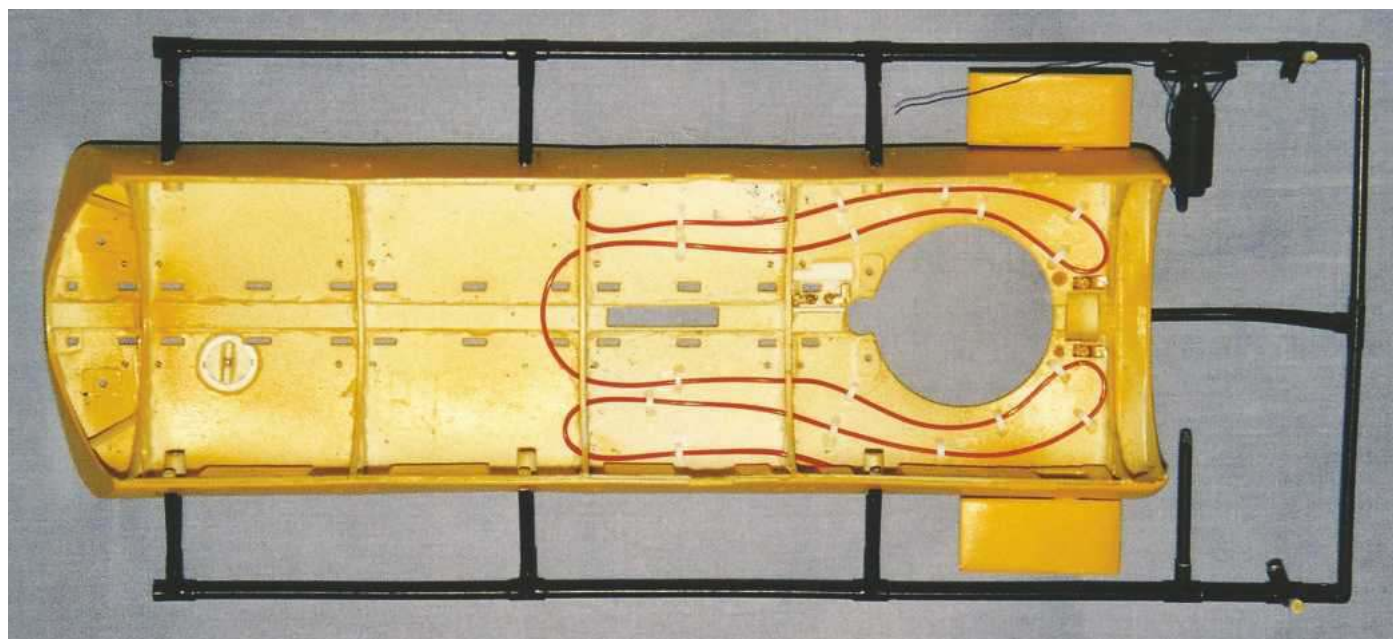
To over-come this problem, I had to make my own transfers. The name was typed out on some gummed paper (really going back in time here). The gummed paper was sprayed in polyurethane, and once dry, the name was cut out and placed in water. Eventually, after approximately 15mins, the name simply separated from the gummed paper, and like a transfer, slid onto the model middle canopy and stern section. Now days a photo is taken of the original craft; scaled in Photoshop, then printed off onto transfer sheet.

Weathering

Weathering is a make or break issue on most models, but with a submersible, they are made from high quality materials, such as stainless steel and glass fibre, they don't go rusty! Even old submersibles look clean; therefore, the only option I had, was to lose that pristine look. I took some brown and black dirty thinners and placed very small amounts of this solution

Perry Submersible

By Roger Suitters



The inner canopy detail; the receiver red aerial wire can be seen plus all the small clips to secure the lead in place.



ABOVE: The model on the surface: note the emergency buoy at the rear of the model. RIGHT: A close up of spot light and thruster fitting. Note 16 BA stud fitting on frame fitting to canopy.

and coated the handrails and the view ports studs and hatch hinge etc. The model was finally sprayed using Satin polyurethane for a protective coating.

Trimming trials

With the model placed in the normal type test tank, it was found to be 136gms too heavy. This was rectified by placing small segments of high-density foam on the model's hull, but placed out of view, under the canopy, with double sided sticky; this was a temporary measure. The segments were moved until the model was level on the surface.

The transmitter stick was operated slowly, so the model took on a very slow controlled dive. The bow started to slightly dip. The water slowly lapped up the hull's length, until the stern lost its grip with buoyancy; with the model under water, it levelled off nicely.

With the transmitter stick moved quickly to full travel position, the bow took on a deeper angle and the model slipped under the surface within 7.2secs. If the transmitter stick is placed in such a position; where the deck is floating level with the surface, then the dive time is 4.18 seconds.

The model was tested in warm water at my local swimming pool and very cold water at my local club. The model seems to function with no diving problems but there did seem a signal problem, so the aerial was moved from the inner hull a laid inside the canopy. I phoned the pool staff, explained the situation and they allowed me to return; this time everything was 100%. There is a trim weight in the hull, near the propulsion motor operated by the transmitter, however, I only found two occasions where it was useful. One was when the model was placed at the bottom of the ocean, and the ground under the model was not level, then the transmitter stick could be moved, so the model took on an angle equal to the bottom. This gave the model a nice landing and less chance of the model receiving any damage.

Whilst trimming a scratch-built model questions are raised; will the model float? Will it dive? etc. On that note, I would like to offer two tips for beginners; 1) the ballast tank should be approximately a third of the size of the pressure hull; 2) I came up with this simple formula many years ago, if you obtain an approximate volume of the ballast tank in square inches and times it by 0.36127, the answer is the amount of weight in pounds that the ballast tank will support in fresh water; it's that simple.

Moisture control

As most model submariners know, moisture can be a problem, presenting dampness within the hull, especially in confined spaces. When I first removed the model from the cold water, the acrylic dome was covered in moisture; I could not see the pilot. The real unseen problem is the moisture over the electronic equipment. The acrylic dome was removed and cleaned, and the model left to air.

Once assembled, the model was filled with an inert gas, but this became difficult to obtain as time went on. The next choice to remove moisture was 'Silica-gel'; this proved to work very well and the system I still use to this very day, if the model is opened up. The one big problem, the model was too small to put the 'silica-gel' in; therefore 'Silica-gel' was placed in a plastic container. Tubes leading from the container, attached to a low-pressure air pump; the type used for fish tanks, would lead to the pressure hull on the model. With the pump running, air would be drawn from within the hull via the pump, into the container, where the gel would remove any moisture, the dry air being circulated into the hull.

The other problem on the same theme is that the propeller motor is outside of the pressure hull, and being smaller in volume, creates a greater amount of moisture, so much in fact, as I discovered, the motor seizes up. To over-come this problem, two small vents at the rear/bottom of the motor housing are accessible. Unscrewing the two small

The model diving.



The model submersible resting on the bottom.

screws the same procedure can be followed by attaching tubes and removing the moisture; this unfortunately is the downfall of building small.

While sailing on an open day; the model was diving and surfacing to keep a lady's grandson entertained. After about six dives and five surfacing, then, to my dismay, the model did not surface. I sat there, pondering the fact that I had to make an announcement to another club member; I have lost my model submersible. The lady has now lost interest and walked off. I stood up to make my embarrassing announcement, when suddenly; the submersible stuck its conning tower out of the water. It was back in its case so fast and did not see water again for a few days. Inspecting the model, no fault could be found, so what happened? I concluded that the model either got stuck in mud or trapped in weed? This got the grey matter working overtime, my thoughts being that this can't happen again. I had to make a

safety device, so an emergency buoy had to be fitted.

As previously mentioned, drop weights have been implemented, but if the model has been caught up in weed these will not help. Many sub modellers use a small battery relying on the fact that when the battery voltage gets low a float is released. The problem for me, however, is that the buoy mechanism would be too large for this model.

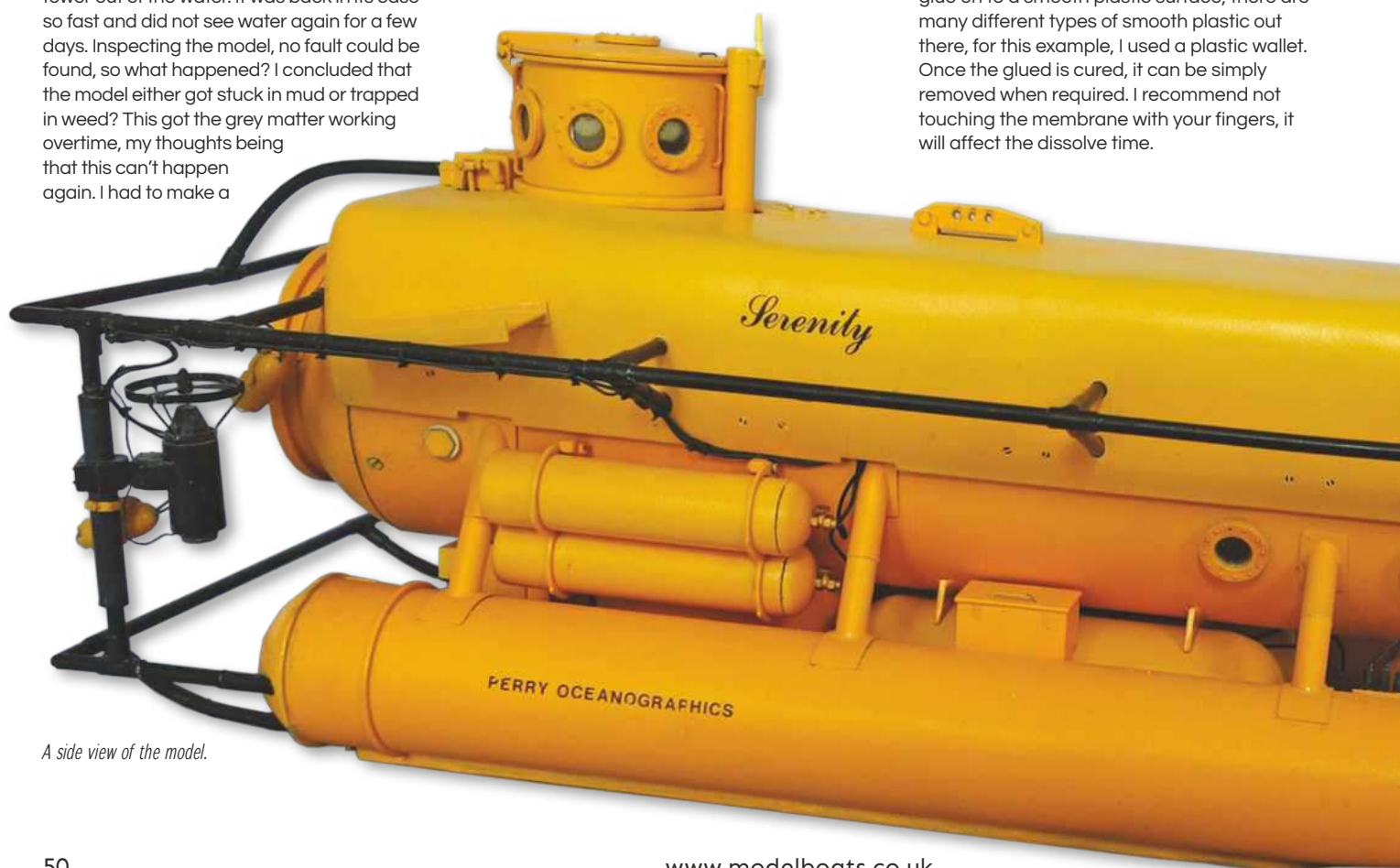
Various medical tablets were tried but after several experiments, I found the best solution, was glue. Manufacturers spend a lot of money developing glues, luckily for us, in

this particular instance, water is corrosive, and many types of glue break down in water. Eventually, I found, the glue best suited for this application was the good old-fashioned liquid paper glue. Once this glue has cured it will dissolve after a couple of hours in water.

Experiments confirmed that paper glue dissolved in 15mins, so I had to find a way of getting water to this glue but in a controlled manner. The answer came in a form of a membrane.

Making the membrane

The first process was to paint the liquid paper glue on to a smooth plastic surface; there are many different types of smooth plastic out there, for this example, I used a plastic wallet. Once the glue is cured, it can be simply removed when required. I recommend not touching the membrane with your fingers, it will affect the dissolve time.

*A side view of the model.*



ABOVE: The model in its launch frame with its carrying case in the back ground. BELOW: The model being placed inside its carrying case.



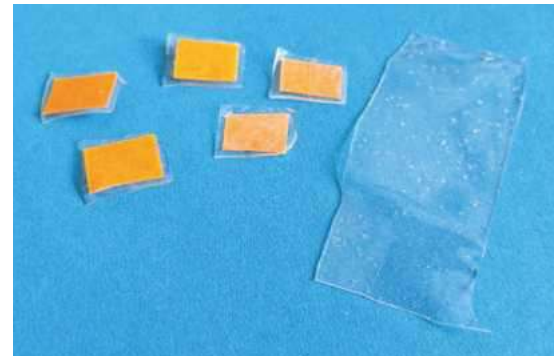
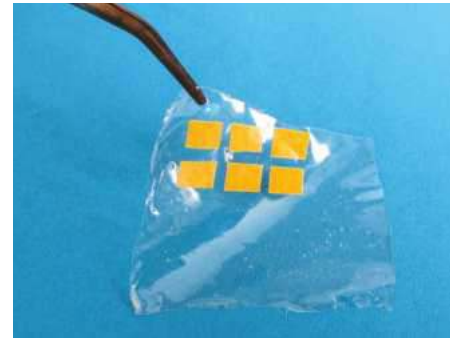
Next, small sections of good quality double-sided sticky were cut out. To suit my requirements, I cut out small oblong sections measuring approximately 5x4mm. One side

of the sticky tape was removed on these sections and placed on to the membrane.

Once this is complete, more sections of the same size, of double-sided sticky tape were cut out and placed carefully on the opposite side of the membrane, exactly opposite the previous fitted sections.



ABOVE: The membrane being lifted off the plastic sheet. BELOW: The double-sided applied to both sides of the membrane.



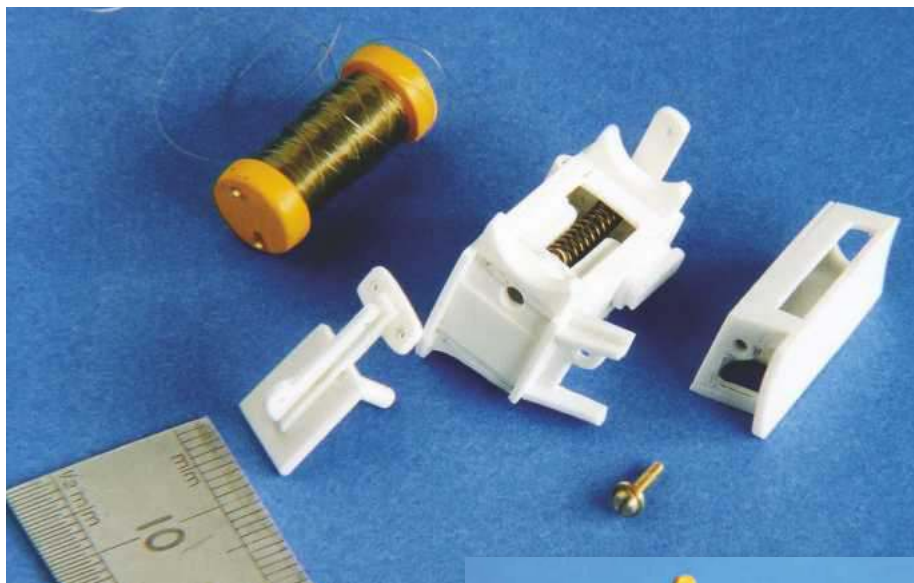
ABOVE: The membrane has been cut away, close, but not to the tapes edge. BELOW: The float for the emergency buoy: note the small gold pin and hole to take the fishing line.



The final stage is to cut out these sections with a fine pair of scissors but it's most important that the membrane is cut a short distance (approx 0.5mm) from the double-sided sticky tapes edge. Cutting the membrane, literary on the edge of the double-sided sticky tape, will change the dissolve time, maybe from hours to days, of course, it's down to experiments, what times you personally require? With the membranes complete, I next made the device to employ the use of this membrane.



ABOVE: The buoy's winding jig made from plastic card. The two larger white pads hold the buoy in place, while the fishing line is wound on. BELOW: The completed emergency buoy assembly.



Emergency buoy construction

I started with some expanded polystyrene roughly shaped with a wire cutter, then placed in a drill chuck and filed to a round shape, approximately 5mm in diameter and 20mm in length. Another, but wider diameter expanded polystyrene section was rounded off in a similar way. A hole was drilled in the centre, and then opened up with a round file to the required diameter so it could be



ABOVE: The assembly with the modified trip weight arm fitted; also the membrane can be seen fitted to the main body.

LEFT: The emergency buoy unit now holding the float in place, with the aid of the membrane.

BELOW: The emergency buoy fitted to the stern of the model. Note: under the trip weight an additional lever can be seen.



slid over the smaller diameter polystyrene rod. Once this fit was satisfactory, this larger polystyrene rod was parted off with a scalpel blade, producing two round discs. These then slid and glued in place producing the buoy.

At one end, a small hole was drilled to take a 0.5mm brass pin. At the other end, this procedure was repeated, but two brass pins were inserted, all three brass pins were glued in place. When this buoy is held in place, the two brass pins stop the buoy from rotating. The single pin secures the buoy in place until it is released. Next, a very small hole was drilled in the smaller polystyrene rod at one end, to secure some fishing line. The buoy was then coated in resin glue, then wiped off leaving a thin protective coat.

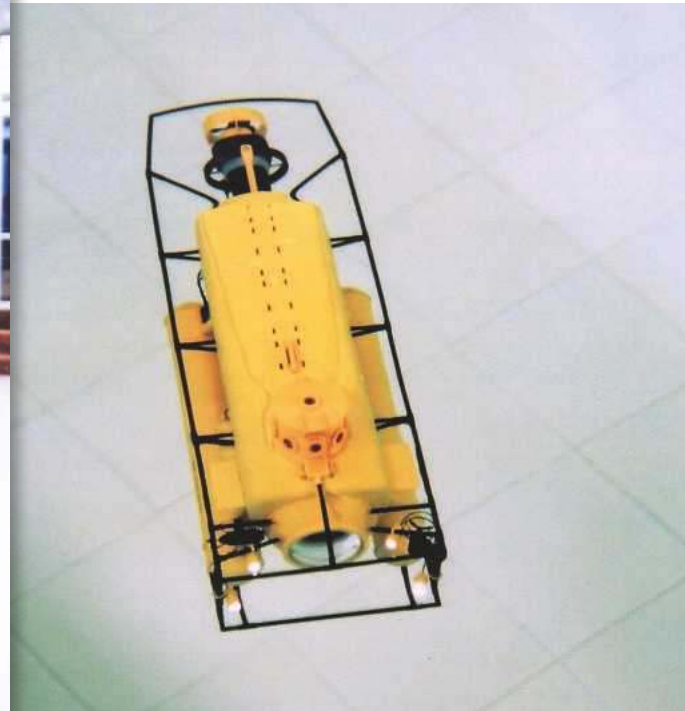
Attaching the line

I used 2lb fishing line to wind on to the drum, bearing in mind the model is not heavy while in water, therefore, this line would pull the model from the waters bottom, assuming nothing heavy has fallen on top of the submersible. Once the line has been passed through the drum hole and secured, it was wound onto the drum. I wanted a neat wind, so a winding jig was made to accomplish this.

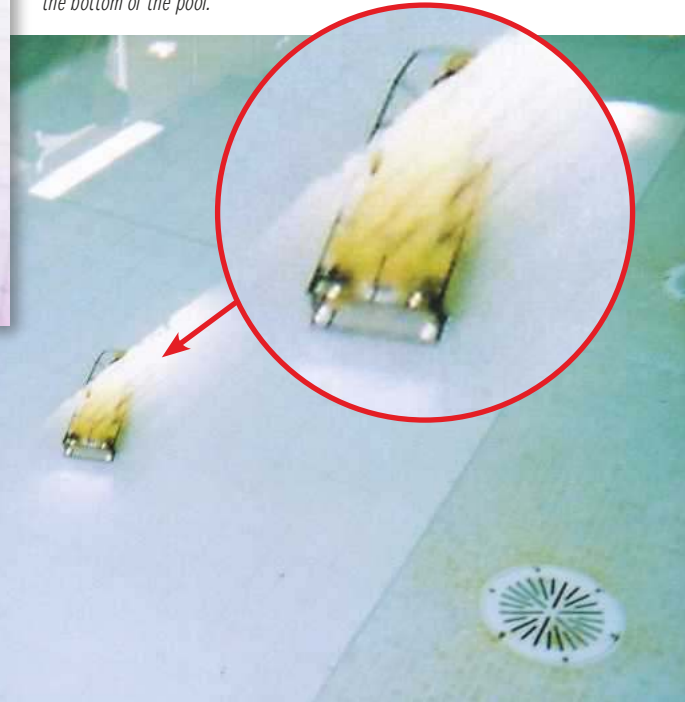
The buoy frame

The frame again was made from plastic card. Far left of this photo is the buoy drum, with the 2lb line trying to unwind itself. Working your way to the right is the pad with two small holes; these holes accept the two brass pins on the drum, securing the drum. The long plastic rod protruding from this pad will mate with a copper spring which is fitted in the main structure. This spring is copper so it does not corrode; a steel spring obviously will rust. This spring applies a small pressure between the main frame and the outer pad ensuring the two sections will part company, when the membrane dissolves. In the real-world things do not go to plan. Even though the spring functioned perfectly, water retention would some-times allow the float to remain in position, therefore a small pivoted lever, which curved under the float, but also had a very small weight at the other end, would give the float that final kick.

The effort of making the emergency buoy proved justified. I was navigating the model under water, took it over a large weed and as the model got halfway through; it was almost like the weed could sense lunch. The large tentacles seem to rise and head towards the submersible and wrapping itself around. Looking back at the situation, as the model slowly moved between the weeds, the surrounding water was being drawn in by the propeller, the weed naturally following the flow of the water; so, a lesson was learnt there! The model was well and truly trapped. The guys at Bluewater MBC were more than helpful; they sprang into action, the clubs dingy was bought out and with poles, tried to release the model. Unfortunately, silt was stirred



ABOVE: The model starting to dive a local pool. BELOW: The submersible on the bottom of the pool.



ABOVE: The author with his submersible, taken at the time when he was not a happy person. A senior citizen had crept in with his old wind-up paddle boat and drove straight across its canopy damaging the models name. It's still like it to this day!



up and the model could not be seen. I came back at night, with Peter Washbrook and some binoculars and eventually found the submersibles four spotlights; two of the lights were facing a different direction. We left the model there over-night and the following day. We both returned in the evening after working hours and there, floating on the water was

the emergency buoy. Peter had some long poles, which enabled us to bring the buoy close so we could grab it. With the aid of the poles and a slight tug on the buoy, the model surfaced (I always bring a very small fishing rod for such occasions).

It appeared the lights were facing different directions due to the fact that while trying to dig the model out from the weeds, the main frame securing the lights got broken. I don't why I did it, but after lifting the model from the water, it went straight back in again and dived perfectly. Once home, the frame was re-glued and painted and the model is now back in action.



3: Evergreen strip an ideal material for building some of the framework for the two quad launchers.

terminal phase altitude would be reduced to around 4m above the sea surface up to sea state six. The Kh-35 has a range of 130km with the radar seeker head having a range of about 20km. The batch 2 variant, project 20385 Gremyashchiy is fitted with a vertically launched anti-ship missile system.

Constructing the launcher framework and supports

The Uran launcher consists of four tubes about 5m in length x 70cm in diameter and fixed to a vertical frame mounted on a horizontal box section inclined to 35° supported by four pedestals with each tube pre-loaded when in harbour (Photo 2).

Referencing the images, a general list of parts and material (Photo 3).

The tube frame is cut to size as per the drawing and using a compass cutter four circular openings are made; care needs to be taken to ensure symmetry. Here each tube is

Soobrazitelnyy- Russian Corvette

Building the new Russian multi-purpose corvette RFS Soobrazitelnyy by Dave Wooley

This month, scratch building the Uran Kh-35 SSM launcher

Before going into the build sequence of the SSM launcher a few background notes to this anti-ship missile system known as the Kh-35 Uran. The earlier batch 1s of the Steregushchiy-class including Soobrazitelnyy have two quad amidships mounted launch tubes for the Kh-35 which are directed athwartships and have concealed panels in the sides of the superstructure for exhausting spent gasses downwards into the sea. The Kh-35 has its origins in the Soviet period with development as far back as the 1970s and is now considered obsolescent. It was originally given the name of Bal or Whale and known by NATO as the SS-N-25 and was a replacement for the SS-N-2 Styx missile as fitted on the OSA 1-2 fast missile boats. Eventually entering service with the Russian navy in 2003 but prior to that date was offered only for

export. The Uran was configured in both air and land variants with the Indian Navy fitting the E variant on their Delhi-class destroyers such as IN Mumbai (Photo 1).

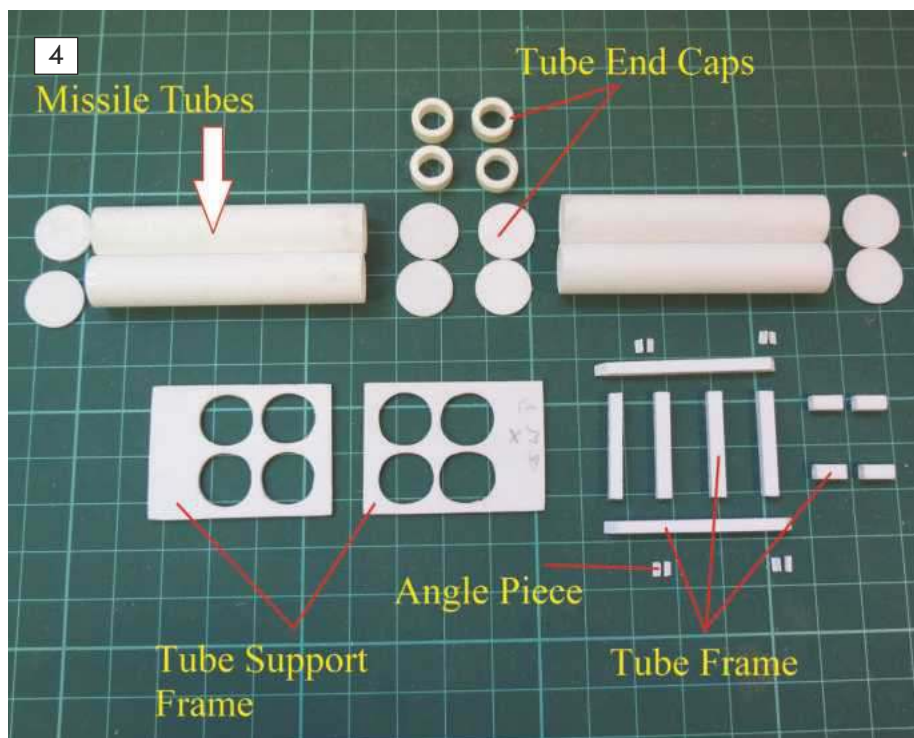
Performance has similarities to the Exocet M38 and the Harpoon, essentially subsonic missiles fitted with an inertial navigation system and active radar homing in the terminal phase of flight. Like the Exocet the missile would cruise between 10-15m above the surface and in the

Part	Material	
Missile tubes	Evergreen 234	11.1mm dia.
Tube launcher support frame	1mm styrene sheet	
Launcher frame	Evergreen 252	3.2x3.2mm
Cover strips on launcher frame	Evergreen 8212	0.56x3.39mm
Stool pedestal	Evergreen 224	3.2mm dia. 1mm styrene
Flange Pieces	1mm styrene strip	
Flange pieces capping	Evergreen 113	0.38x1.5mm
Tube support joint pieces	Evergreen 113	0.38x1.5mm
Angle frame supports	Evergreen 291	1.5mm

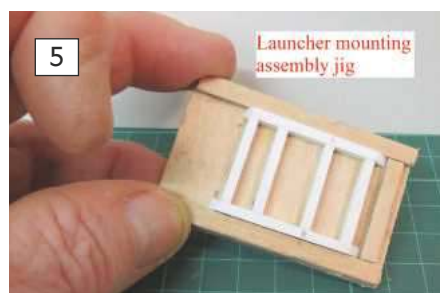


1: One of four quad Launch tubes and support frame designated Kh35E a lightweight export variant of the KE35 SSM aboard the Delhi-class DDG IN Mumbai. 2: The launch system as fitted to the IN Mumbai in the late 1990s is similar in many respects to that fitted to Soobrazitelnyy in 2004.

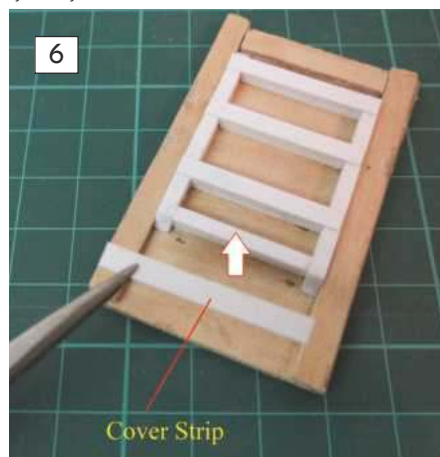




4: Identifying the parts that will form the basic construction of one of two quad SSM launchers.

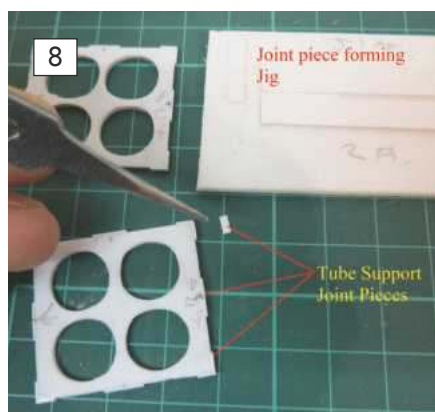
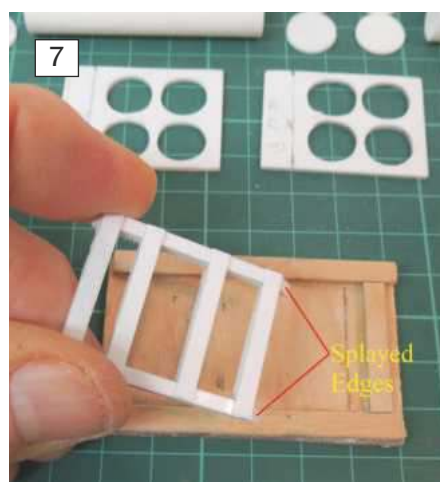


5: Using a jig to help form the launcher frame to ensure symmetry of construction.



6: Adding cover strips adds strength to the launcher frame.

7: Both ends of the longitudinal spars are splayed.

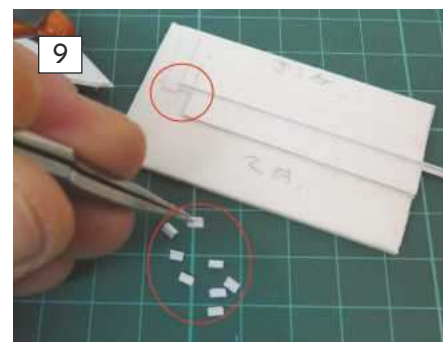


8: Joint pieces added to the sides of the tube frame using Evergreen strip.

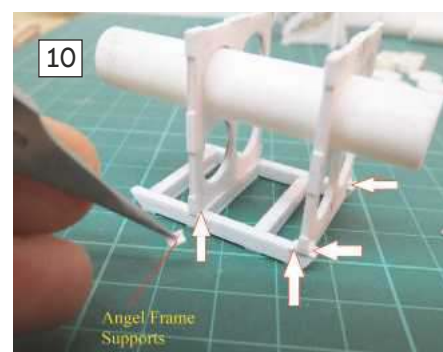
cut to size 59mm in length as per the drawing and eight tube end caps are prepared. Each of the component parts of the launcher mounting frame are carefully measured and cut to size. Using the simple jig, the Evergreen angle pieces for added support to the tube frame are also prepared (**Photo 4**).

The follow-on stage of construction is to assemble the Launcher frame. In order to maintain symmetry and hold the frame in place until the styrene was firmly bonded a timber jig was made as in **Photo 5**. Whilst in the jig, cover strips were added to the underside of the cross members (**Photo 6**). When fully bonded, the launcher frame can be lifted clear of the jig; note the splayed forward and rear ends of the side members (**Photo 7**).

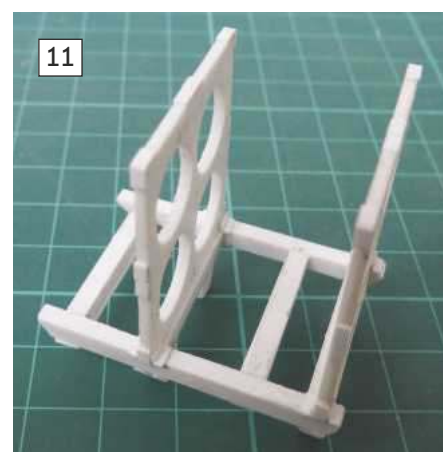
Around the edge of the tube support frame are joint pieces, these are simulated using 1.5mm Evergreen strip. Once again, to maintain consistency, my default position is to make a jig (**Photo 8**). With launcher frame prepared, the tube supports can be fixed into position as per the drawing and using the jig angle frame supports, are cut to size (**Photo 9**). These are then fitted either side of the support frame as in **Photo 10**.



9: Using the Jig the angle frame supports are cut to size.



10: Evergreen angle pieces are added to the joint of the tube and launcher frames.

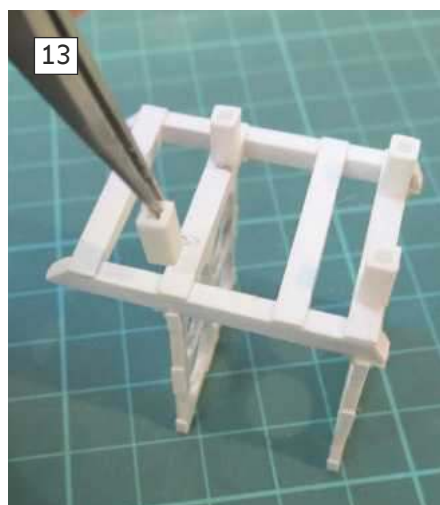


11: With the angle pieces in place giving a sturdier construction.

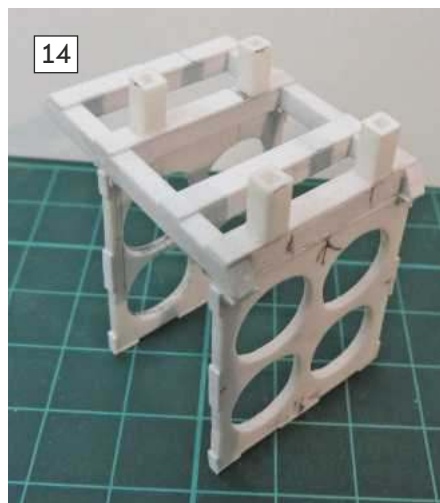


12: Testing symmetry of construction or to be more candid hoping it all fits.

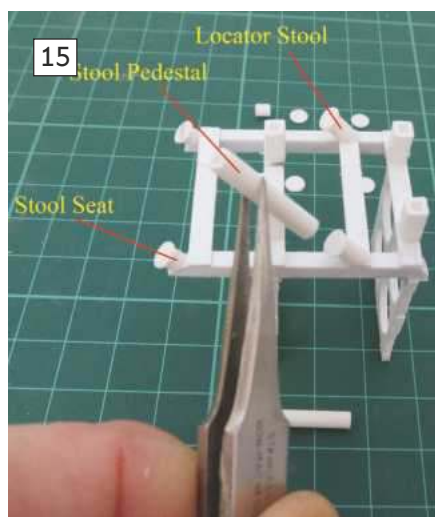
The real test of the general alignment will be judged only when the tubes are inserted into each frame. Thankfully the attention to ensure symmetry paid off and all four tubes located well. It is at this stage that one of the tubes is marked as to its exact location within the support frame. All the tubes can be removed for further detail work but later when the frame is fully completed, the pre-marked tube will be permanently fixed and the remaining three adjusted to suit (**Photo 11 & 12**). With the launcher frame and tube support frame now as



13: Adding four vertical pieces to the launcher frame.



14: All four vertical pieces fixed into position. 18: The Uran launcher tube arrangement aboard Stoiky.

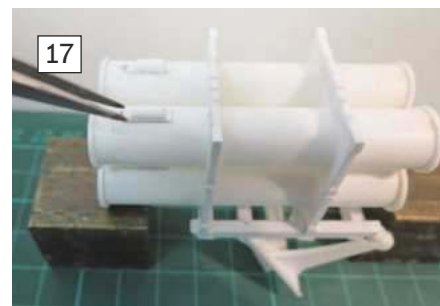


15: Installing the stool pedestal and locator stool.



16: Locating the tube end caps (not fixed).

one, the combination can be inverted to fix into place four square posts which are the same size (Evergreen 165) as the launcher frame (**Photo 13 & 14**). With the Launch frame inverted, the locator stool, pedestal and stool seat can be added. This is a combination of punched circular discs and the Evergreen 224 3.2mm styrene tube. These ensure that the angle of the entire launcher is set to 35° and will locate into the missile bay on either beam (**Photo 15**).



17: Tube door lock housing.

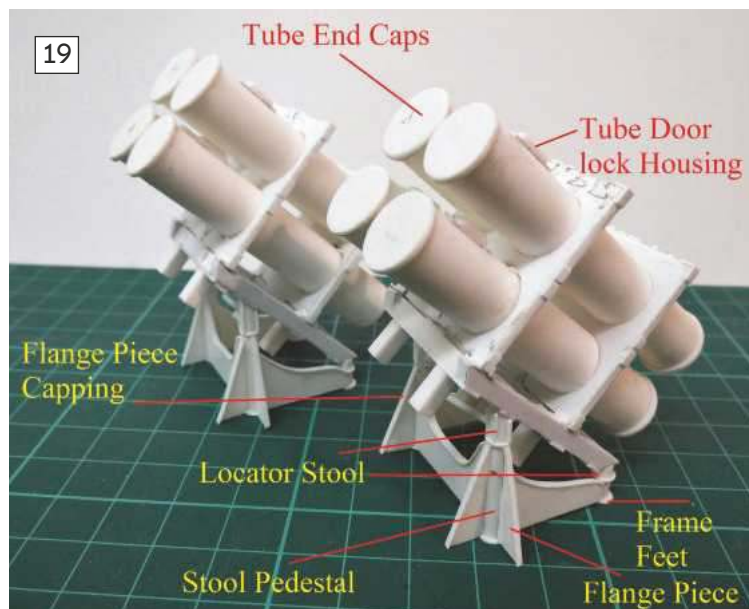
Fixing the tube end covers

Prior to fixing the raised door lock housing, as fitted to both ends of the upper surfaces of the tubes, all four tubes are added to the tube frame with only the inboard caps fixed (**Photo 16**). It's worth noting that only one of the tubes is permanently fitted, as the others need to be free for adjustment to ensure that all the tubes and the raised door lock housing are in the same relative position to each other. It is easy to miss align these features and if all the tubes are fixed there is no room for fine adjustment (**Photo 17**). As a point of reference, the after-door lock housing can only be fitted when satisfied that all the tubes are correctly aligned.

SSM bay

Shown in the original series of images (Range Finder MB817 Dec 2018), the Kh-35 launch tubes are mounted amidships and are arranged as in this superb official image of Stoiky soon after commissioning. The tubes are arranged at the critical 35° angle directed athwartships to clear the raised sides. This arrangement enables the launcher to remain concealed dissipating any missile exhaust gasses through side flaps downwards into the sea thus reducing the IR signature (**Photo 18**). The assembled launchers (**Photo 19**) can be located into position within the missile bay (**Photo 20**).





19: Launcher almost completed. 20: In position at last. 21: A superb image exposing plenty of detail in and around the launch tube door covers.



Tube door covers

The final stage of assembly is to form the tube door covers. A good example of how the doors are fitted is illustrated here in detail and unusually an open door showing the Uran missile within the tube (**Photo 21**). This quality image shows a considerable amount of detail, some of which will be invisible at 1/72 scale. As there are 16 door covers, making each one from scratch and maintain consistency is a tall order for any modeller. So, the logical course of action was to make just one as the master and mould all 16 in resin. The original was formed from styrene and Evergreen strip with the convex top from P38, carefully rubbed down until the desired shape was achieved (**Photo 22**). The method used for forming the rubber



24: A full complement of tube door covers, ready to be fitted.

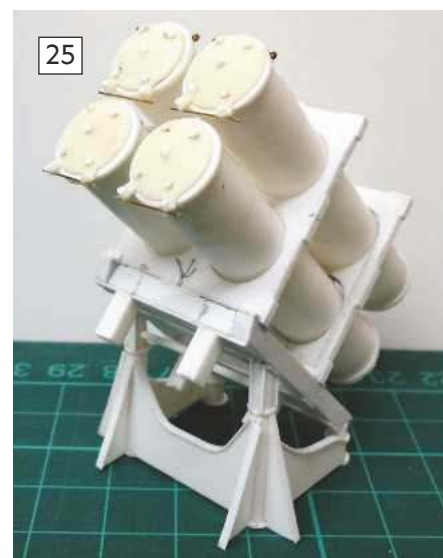
mould was described in Issue 826 and with the mould prepared, all 16 covers were cast in resin with the result shown in (**Photo 23 & 24**). Each of the tube door covers were carefully



22: The master from which all door covers are cast in resin from a rubber mould.



23: Fresh from the rubber mould one of 16 resin tube door covers.



25: The almost-completed Uran missile launcher.

fixed to the end caps using two-part epoxy resin (this gives time for any minor adjustment) both top and bottom. With the door covers in place, work could begin fixing the various fittings, these included nuts around the face of the door cover, cover operating arms the latter made from .33 brass wire and fixed to the top of the tube two lifting eyes.

Next month, construction of the AK 630 close-in weapons system (CIWS) and a start on the various cranes, hoists and davits. ●

References and acknowledgements

Ref - Severnaya Verf, St Petersburg, Russian; Almaz central marine Design Bureau Project 80382 Tiger; Kh-35 Uran - World Naval Weapons Systems, Pg.244 and www.militarytoday.com.

Thanks to Mark Findler for the use of his images of the Soobrazitelnyy; Kurt Grainer Warships Underway USA and to Peter Brown former naval architect Vosper Thorneycroft for his help and assistance.

A GRP hull is available from Fleetscale, www.fleetscale.com. Detailed plans are also available from Jecobin www.jecobinplans.com; Albion Alloys www.albionhobbies.com and Sylmasta mould making and casting materials, www.sylmasta.com.

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Scale: 1:48

L.O.A. 39.75" (1010 mm)

Beam: 6.25" (160mm)

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Please note the pictures show assembled and painted models.
Due to the use of sharp knives, these kits are not suitable for young children.

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Black Park Model Boat Club

By Jeff Carter



The club has been in existence for at least 35 years and is a friendly non-competitive club whose members cover many aspects of model boating. Yachts, lifeboats, warships, rowing boats, submarines and various other craft can regularly be seen on the lake. Anything other than IC engines and fast electrics, which are not allowed by the local Council, who run the park. The club sails at the Black Park Lake near Slough in Buckinghamshire, SL3 6DS and is signposted from the A412 between Slough and Iwer Heath. The 500-acre park has a large pay and display car park with season tickets available, cafes and toilets. The car park is a short walk from the lakeside.



Members sail on a Thursday afternoon from about 12 noon as well as Sunday mornings. In addition, every other month the club has an evening meeting in the Harvey Memorial Hall in George Green, a short distance from the lake.



The lake is deep and keeps at a constant depth due to being fed by underground springs. On those rare occasions when a boat sinks the club has an arrangement with a local sub aqua group who will come and search for the missing boat.

Once a year the club hosts an open day where other clubs are invited, and any money raised is donated to charity. This year, as last, the RNLI will be the chosen charity.

In addition, the club normally displays at the Warwick International Boat Show, The Kempton Steam Museum, Beale Park, Headcorn and Blackpool.

The club always welcomes new members who want to come and sail their boats in a friendly atmosphere and the modest membership fee of £12, (£18 for families) includes third party insurance. Anyone wanting more information please contact the club secretary, email: secretary@blackparkmodelboatclub.org.uk. The club's website is www.blackparkmodelboatclub.org.uk.

H.M. Cutter Alert 1777

Scale - 1:64
Length overall - 637mm
Width overall - 256mm
Height overall - 517mm

Laser cut materials
Double planked hull in lime wood and pear wood
Deck planking in boxwood
3 photo-etched brass sheets
Fittings in wood, cast metal and resin
Full colour instruction manual with photographs and line drawings including full sail plans



Alert kit price is £180 for the pear and boxwood version and £160 for the Tanganika version and can be ordered from:
www.vanguardmodels.com

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UK

Tel - 01594 824610
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Available now

Cast (unpainted) resin figure of Lord Nelson in both 1:72 and 1:64th scale, priced at £12 for 1:72 scale and £12.50 for 1:64 scale.



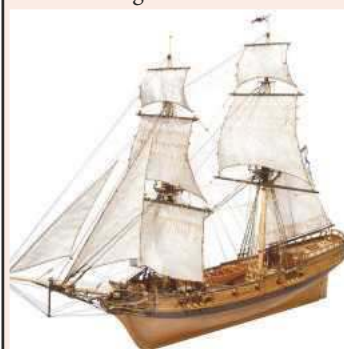
Vanguard Models is a brand new company set up by Chris Watton, the designer of the Amati Victory Models range, and many kits before those. Alert is the very first of a new range developed entirely in the UK. The next kit will be the 14 gun brig-sloop Speedy (1782). Speedy will be 1:64 scale and include copper plating, laser engraved main deck, a very detailed 18 foot cutter and cast resin main and swivel guns. Also included will be a finely sculpted resin cast 1:64 scale figure of Lord Cochrane himself. This kit will be ready for release in October.



Lord Cochrane figure (cast resin, unpainted) can be purchased separately now via the website



Vanguard Models is now the UK distributor of Master-Korabel kits and fittings, a relatively new manufacture based in Russia. The kits are 1:72 scale and are very pre-fabricated, with some kits, even the hull planking is laser cut and trenail holes etched into each plank, including the decks and inner bulwarks. We also stock the very realistic looking machined pear wood blocks and deadeyes. Visit our website at www.vanguardmodels.com to see the full range of kits and fittings.



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1787, wooden kit
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Height: 440 mm,
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Included Lifeboat MK0101
All hull planking and details are laser cut.
Price - £225



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Width: 150 mm.
All hull planking and details are laser cut.
Price - £130



Shooner POLOTSK 1788, wooden kit
Length: 580 mm.
Height: 456 mm,
Width: 175 mm.
Included Lifeboat MK0102
All hull planking and details are laser cut.
Price - £188



Tender AVOS 1806, wooden kit
Length: 420 mm.
Height: 420 mm,
Width: 175 mm.
Included: Lifeboat MK0103
All hull planking and details are laser cut.
Price - £149 without sails and £194 for the pear wood planking and pre-sewn sails version



2019 MPBA

Ian Williams reports on the 2019 MPBA National Fast Electric Championship



TOP: Airborne mini mono. ABOVE: A peek inside Robert Foss's immaculate black Gazebo; almost everything is black except the Tiffany Blue boats. BELOW: Part of the outside pit area.

It's Friday the 28 June and competitors are starting to arrive at the Bridlington MBC for the 2019 MPBA Fast Electric championship. This is a two-day event, (Saturday and Sunday) with the Friday being for battery checking and as a practice and testing day.

The MPBA Fast Electric Section, (www.mpba-fes.org.uk) apart from its connection to fast electric clubs in the UK, hosts two main events a year. The first is the fast-electric championship, hence this article and the second is the UK SAWS. This is a speed records event and a piece explaining this and detailing the 2019 event will be featured soon. As I haven't got all that much space here, I won't be able to go into the full details of all the classes that are run, battery rules etc. I suggest that if you are interested to look at the section website where all is explained. Two other web sites which are worth a look at are: The Northern Amp Draggers site, (www.ampdraggers.co.uk) and the Electra site (www.electrafying.com).





LEFT: An early morning (6.30 am) view of the covered pit area.

RIGHT: As far as I know the only drivers' rostrum and control booth in the country.



ABOVE: Gary Westwood's Rasch Mono 2 just about to go under the timing wires.



ABOVE LEFT: Father and son team; Keith Mallam's boat (left) and son Liam's championship winning boat (right). ABOVE RIGHT: Liam Mallam's, David Baker-designed Hydro 2.

Having said I haven't got the space for too much detail; I can give you a broad idea what it's all about. First, I should say that the MPBA is affiliated to the equivalent Europe wide organisation NAVIGA and so the rules of the UK championships largely follow the NAVIGA ones with one or two modifications. Once again check out the MPBA website for complete details of rules and regulations.

Now a little bit about the classes. Although there are both submerged and surface drive classes on the books, the championship has, over the years evolved into an almost exclusively surface drive competition with all classes running clockwise around an oval course, although this year we did run one submerged drive class, ECO Expert. The submerged drive classes would run anti-clockwise on an M shaped course (as this year) or a triangular one if the current NAVIGA rules were to be strictly adhered to. Here is a brief rundown of the classes generally run. As mentioned, full rules applying to hulls battery rules etc. etc. are available on the MPBA-FES website.

First off, we have the mini classes: mini mono and mini hydro. Both have a maximum hull length of 450mm (excluding outdrive system) and use 2 or 3 (Lipo) cells. Next comes Mono1 and Hydro 1. No hull restrictions but 3 or 4 cell packs only. Finally, the fast ones, Mono 2 and Hydro 2 no hull restrictions 4 to 6 cell packs. There is also a Cat class which as of now is strictly a UK class. This is also for 4 or 6 cell packs.

The racing for the surface drive classes is conducted clockwise around the NAVIGA 75x15m oval and have a 6-minute run time. Race starting and end times and the lap counting are done electronically with the boats being fitted with transponders.

As mentioned, we hold the NATS at the Bridlington club's lake. The reasons for this are simple. It has just the best facilities! There is room for camping, the food available over the weekend is great and it has one feature which I don't think is available at any other club. A drivers' rostrum! (See photos) This gives a great view of the course which makes driving a lot easier. Now I'm not going to give a commentary on each and every heat, who did what etc. I haven't got the space and it can be boring for people who weren't there. So, I'm just going to say that the results were very close in many of the classes and give you the 1, 2, 3 in each class at the end of the article

I have to say that as usual, we all had a great time at Bridlington which everyone loves going to as the facilities are so good. The weather was kind to us, the racing was good and so was the food. The event ran very smoothly with no major hiccups, but I have to say that that the entry was a bit down this year compared with previous years. Having said that, there were 58 entries, which is still a pretty decent attendance. There were several reasons for the lower than normal entry. Several of the guys from the south and south west areas

who have attended in the past didn't come. That is partly due to the previous demise of SWAMBC and SWARM in the south west and the shrinking of the ELECTRA membership and the fact that some of the ex-members have moved on to other hobbies. It is also true to say that life sometimes gets in the way and of course travel costs come into it as well, however, it is only ONCE a year and it is a great weekend! So, if you are reading this, put it into your diary. Dates will be published on the MPBA-FES website and we are always on the lookout for new competitors and future champions!

The results (winners only):

Cat	1) Liam Mallam (Jnr.)
Eco Expert	1) Stephen Hart
Hydro 1	1) Peter Barrow
Hydro 2	1) George McDonald
Mini Hydro	1) Martin Marriott
Mini Mono	1) Tom Watson
Mono 1	1) George McDonald
Mono 2	1) Paul Heaton
Team Mini Mono	Team T&T Racing
Team Mono 1	Team T&T Racing

The top three in each of these events are by and large the best drivers and tend to be the ones who go to the World Championships. This year these are being held at Treviso in Italy from 1 August for ten days. Full results of the UK Nationals are on the MPBA-FES webs. ●



Test Bench

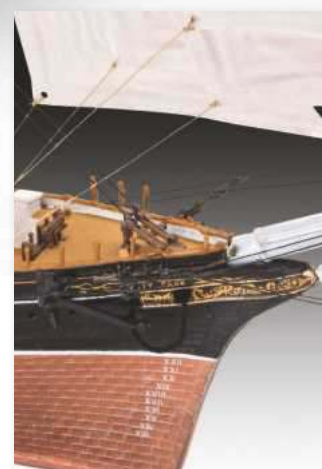
A round-up of all the latest kits, books and blingy bits

Test Bench is a service that we provide free of charge to manufacturers, distributors and retailers of model boat-related products. Covering all disciplines, anything from books to balsa is accepted for these pages. To submit material, e-mail the editor via editor@modelboats.co.uk with the relevant information or send samples direct to the editorial address in the front of the magazine.

Revell Cutty Sark

2019 sees the 150th Anniversary of the launch of the most famous British Clipper, Cutty Sark on the River Leven, Dunbarton on 22 November, 1869. Revell are no strangers to this ship, which it first produced in 1/220 scale back in 1979 to celebrate the 110th Anniversary. The core kit has remained the same ever since, a few parts have been upgraded over the years and the box art has progressively improved. This

2019 version, includes six paints, a brush, glue, plenty of yarn for the busy rigging, a poster and the now traditional full-colour, A4 instruction booklet covering an 85-stage build across 36 pages. The same old vac-formed sails are still there, so the more ambitious modeller will either make sure they are furled or replace them completely with some nice cloth ones. The box is a little too large for the kit but it really is hard to be too critical because you will



not have to pay a lot of money for it. Good discounts can already be sought across the net and by Christmas you will most likely be hard pressed to part with little more than a £20 note for it. So, as always, good value for me,

and potentially a good route into plastic static ship modelling.

Revell model kits are available from all good toy and model retailers. For details visit www.revell.de/en.

MC

Product: Construction kit

Ref: 05430

Scale: 1/220

Size: L, 406mm; H, 260mm

Parts: 164

Price: RRP €29.99 (approx. £26.84)

Manufacturer: Revell

Website: www.revell.de

Revell HMS Revenge & Santa Maria

Here we have a couple of new easy-click system kits from Revell which are ideal for introducing a youngster to this vast hobby of hours or for the more serious modeller who needs a breather from a more challenging project.

The first is HMS Revenge, Sir Francis Drake's Flagship and a key player in the defeat of the Spanish Armada in 1588. Inside the box you will find the 67 parts on three sprues coloured black, brown and white, an A4 full-colour instruction booklet and two sheets of very detailed and eye-catching decals. The model features wood structured decking, structured sails, canon, a rowing boat, shrouds and a display stand. Painting is optional and thanks to the easy click, no



glue is needed, so no mess and no fuss.

The smaller Santa Maria, Christopher Columbus' Flagship, also has its parts

contained on three coloured sprues, a full colour instructions and a couple of decal sheets and the same features as HMS Revenge. The only tool you will need is a decent knife to remove the parts cleanly from the sprues and then just click them together. It is a stress

free, no hassle way of building a model over an evening and you'll only need a tea tray to build them on.

Revell model kits are available from all good toy and model retailers. For details visit www.revell.de/en.

MC



Product: Construction kit

Ref: 05661 (Revenge); 05660 (Santa Maria)

Scale: 1/350

Size: L, 163mm (Revenge); L, 80mm (Santa Maria)

Parts: 67 (Revenge); 38 (Santa Maria)

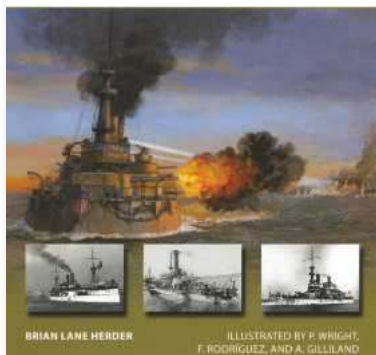
Price: RRP; HMS Revenge, €17.99 (approx. £16.12), Santa Maria €12.99 (approx. £11.64)

Manufacturer: Revell

Website: www.revell.de

US NAVY BATTLESHIPS 1886-98

The pre-dreadnoughts and monitors that fought the Spanish-American War



US Navy Battleships 1886-1898

Following the end of the American Civil War in 1865, the US Navy was at a low ebb and new battleships were certainly not on the agenda. However, with the expansion of the Brazilian and Spanish fleets, the US Navy responded by commissioning a new series of battleships which had their roots in the large Monitors, USS Puritan, Monterey and the Amphitrite and Arkansas classes.

This New Vanguard (No.271) by Brian Lane Herder takes a close look at the US Navy's

early battleships, focusing on USS Maine, Texas and Iowa which entered service during the late 19th Century. These pre-dreadnoughts and monitors would go on to fight in the Spanish-American war and their design ethos of armament and armour at the expense of speed remained through to the monsters of the mid-20th Century. Very well illustrated

with black and white photos, drawings and lovely colour artwork by P Wright, F Rodriguez and A Gilliland, this book will fill in a number of gaps in US Navy history for many.

Thanks very much to Osprey Publishing for our review copy. Please visit www.ospreypublishing.com to view these and many other titles.

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ISBN: 978-1-4728-3502-4

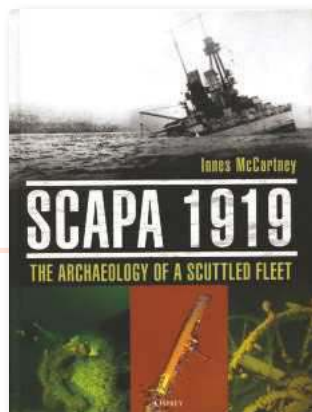
Pages: 48

Price: £11.99 (RRP)

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SCAPA 1919 by Innes McCartney

Subtitled 'The Archaeology of a Scuttled Fleet', which sets the tone immediately for marine archaeologist and historian Innes McCartney to present us with a hefty tome about what remains on the sea bed in Scapa Flow today. Broken down into four main parts, the lavishly illustrated book covers The Grand Scuttle 1919; The industrial salvage years, 1924-1939; The surviving wrecks (SMS König, Markgraf, Kronprinz

Wilhelm, Brummer, Karlsruhe, Köln, Dresden and S54 and V83) and The Grand Scuttle 100 years on. For me, the most fascinating sections of the book which feature throughout, are the multi-beam models in full colour and from several angles of each of the surviving wrecks. These digital models are also backed up by images taken underwater

in the more traditional way; each one giving us an enticing glimpse of the past. Without exception, 100 years under the water has not been kind to these ships but thanks to great books like this one, we at least get to see good images of these once proud warships before they were

scuttled as well. An excellent book, very highly recommended to all with an interest in history.

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Owen Cooper

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Revell Graf Zeppelin

The first of a two-ship class of aircraft carrier ordered by the Kriegsmarine, the Graf Zeppelin was launched on the 8 December, 1938. She was destined never

to be finished thanks to the outbreak of the Second World War which saw resources diverted elsewhere, which was good news for the Allies. She spent the entire war tucked away on the edge of Baltic only to be scuttled by

a skeleton crew as the Russian forces approached in March 1945. Raised by the Russians twelve months later, the Graf Zeppelin was used as a target ship and was sunk in August 1947.

This Revell kit is a rebox of the 1996 original, but is still remains as good representation of the Graf Zeppelin, in a small scale, of what she would have looked like with a full complement of Naval Bf109s and Ju87, should she have become operational. Once again, apart from the very nice upgraded artwork on the box the main difference are much improved full-colour instructions. That said, again, you will not have to part

with a lot of cash for this 'what could have been' piece of Second World War history which never came close to its full potential.

Revell model kits are available from all good toy and model retailers. For details visit www.revell.de/en.

MC

Product: Construction kit

Ref: 05164

Scale: 1/720

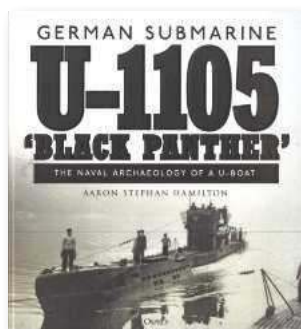
Size: L, 362mm

Parts: 161

Price: RRP €19.99 (approx. £17.89)

Manufacturer: Revell

Website: www.revell.de



U-1105 'Black Panther' by Aaron Stephan Hamilton

A Type VII-C/41 U-Boat, U-1105, named the 'Black Panther', was one of only a few which was equipped with the very latest technology available

to the Germans during the final stages of the Second World War. This new kit included an airmast (snorkel) which gave the boat a capability to stay submerged for considerably longer than a standard boat, plus a passive sonar called Balkongerät ('Balcony apparatus') and a rubberized acoustic camouflage which significantly reduced the U-boats sonar signature. U-1105 survived the war (having only carried out one war patrol) and after being captured by the British was gifted to the US as a war prize. Because of her unusual and advanced attachments, U-1105 was the most extensively tested U-boat captured at that time.

This fascinating book covers the history of U-1105, from its early days, detailing its one and only war patrol and continues through to its demise. Initially tested by the Royal Navy, the US Navy continued this work. She is a well-documented and photographed boat and the author has done well to put together her fascinating story which culminated in her sinking by a single 250lb depth charge in September 1949. The wreck of U-1105 was re-discovered in

1985 and large proportion of this book presents some very nice dive photography of what she looks like today. A great read for all who like naval history, but especially if you like U-boats, as this particular boat was one of the most advanced of the war.

Thanks very much to Osprey Publishing for supplying this excellent book – please visit www.ospreypublishing.com to view these and many other titles.

David H Smith

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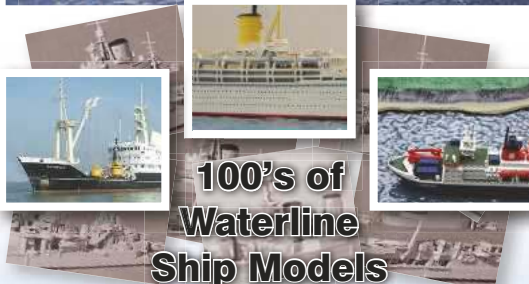
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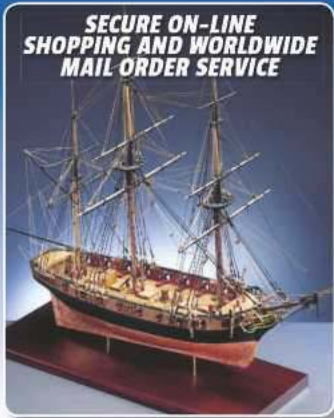
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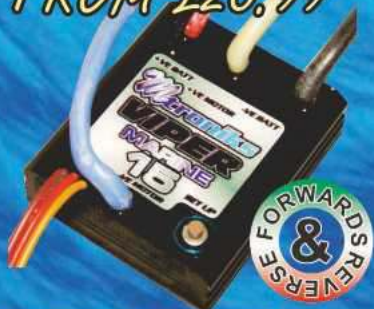


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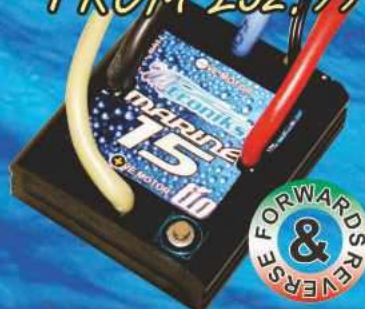


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