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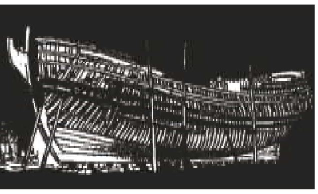

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Maestro

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Regular Features

FREE PLAN

Special Features

Bow piece

This issue includes a Full-Size Complimentary Free Plan worth £12.50 for a World War Two 61.5 foot Admiralty Motor Fishing Vessel, drawn by James Pottinger. In addition, we have an in-depth report with some super photographs from the 2015 Model Boat Convention and Ron Rees returns to these pages with an article about batteries and their applications in our model boats. You may remember the superb article on the steam driven QE2 model by Tim Henderson from September this year and he has now upgraded the steam plant to produce a true scale speed, all described with the technical calculations in a very neat piece of genre.

In Range Finder, Dave Wooley is continuing his Master Class for the Deans Marine HMS Skirmisher model, which incidentally attracted much interest and admiration at the 2015 Model Boat Convention, even in its uncompleted state. In Flotsam and Jetsam, John Parker is looking at model steam turbines and Readers' Models has a range of craft including Shrek, S. S. Gunnel and Monach, a paddle steamer based on a photo feature by Anthony Addams previously published in this magazine.

So, plenty of variety for this last issue for the 2015 year, and my designer Steve Stoner, Colin Bishop who looks after our website, and myself, all thank you for your support over the last twelve months and wish all readers the very best for Christmas 2015 and 2016.

***Paul Freshney** - Editor*

Compass 360

***Model Boats** notice board for your news*

Editorial Contact - **Paul Freshney**

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Clevedon & District MBC

At their AGM held on **Tuesday 22nd September** the following changes were approved my members present and took place with immediate effect:
Mike Lake appointed as club chairman, tel: 01275 859370 or mobile: 07514 081452.
Email: malake@sky.com or clevedonmbc@googlemail.com
Allan Durward appointed as Secretary & Treasurer, tel: 01934 510268.
Email: alland32@talktalk.net
Information supplied by Mike Lake

Beale Park Model Boat Show 2016

This is due to be held again on **28th and 29th May 2016** at Beale Park, Lower Basildon, Reading, Berkshire, RG8 9NW. This event has support from clubs, some traders and the Kent Model Boat Display Team. Further advance information from Barry Chapman by email: BarryChappers@Tiscali.co.uk
Tel: 07747 892761

Deans Marine Christmas Open Days - 2015

Once again these are being held on the **12th and 13th December 2015.** The shop, pond and showroom will be open as usual, together with the availability of light refreshments, but bring your own mince pies! Visitors are welcome to sail their models. Please use contact details in their advertisement within this magazine if you require more information.

Liskeard Model Society

Their 2016 Annual Exhibition will be held on the **5th & 6th March 2016** at the Liskeard Community College, Callington Road, Liskeard from 10.00am to 4.30pm on the Saturday and 10.00am to 4.00pm on the Sunday. As usual, the society will play host to modellers and clubs from all over Devon and Cornwall with a very wide range of models and especially a large number of boats. For more information please contact: David Brown, tel: 01579 343096.

Model Engineer Exhibition

Readers might be wondering why this has not been advertised for December of this year at its usual venue of Sandown Park. That is because, quite simply it is not being held, but it is now scheduled to be at the Brooklands Museum Complex in Weybridge, Surrey on **16, 17 and 18th September 2016** sponsored by MyTimeMedia, the publishers of this magazine and of course other leading hobby titles. This is an exciting new venue, steeped in history, and of course with lots of things to see and do apart from the model engineering in its various forms. More information will follow.

2015 BOTTLE Boat Championship

***Roger Stollery** reports from Waldringfield Sailing Club*

A warm break in the weather allowed another great radio sailing event on the 6th September, sponsored by 'Gone Sailing - Personalised Mugs from the Coast'. It was sailed in a very relaxed atmosphere by fourteen competitors from all over the country and provided a marvellous spectacle for their family supporters and friends that lined the banks of the beautiful River Deben.

The venue

Twenty races were run in front of Waldringfield Sailing Club in ideal conditions that were unusually warm and sunny with a NNW wind blowing 3 to 8 mph, initially with the tide, but in the afternoon against it. The course was parallel to the shore in front of the clubhouse, which gave the opportunity for these colourful one designs to use the strong tide in the middle of the river for easy 'beating' on the 120 metre sausage course, sharing the water with the full-size yachts that were cruising nearby.

RIGHT: Wayfarer sailor, Mike Pert (No. 24) makes good start

The competitors for the BOTTLE Boat Championship 2015.

Solent Radio Controlled Model Boat Club

***Peter Taylor** with their September 2015 Charity Exhibition*

With all the sponsorship and entrance fee contributions received, our 2015 Charity Exhibition proved to be the most successful yet. This was the club's third annual show at All Saints' Church Hall in Milford on Sea, with attendance increasing year on year. Both the main hall and the smaller refreshment room were buzzing with visitors throughout Saturday 5th September.

Sea shanties playing on an antique fairground organ welcomed visitors to a display of over 100 scale models. The display of warships ranged from an ancient rowed trireme to a recreation of an entire naval dockyard. Sailing vessels from tea clippers to small cruising yachts, merchant ships, lifeboats, hovercraft, cabin cruisers, and even a rowing donkey, all fascinated the many visitors.

To emphasise that these radio controlled models are actually capable of going to sea, slide shows and videos featured the models sailing on the club's main home water of Setley Pond in the New Forest, Hampshire, and particularly popular was footage from onboard cameras.

A model of MV Cenred, a Wightlink ferry, attracted visitor's attention to the raffle for Isle of Wight travel vouchers, all generously provided by the Wightlink operator. Generous sponsorship was also received from the Lymington Branch of the HSBC bank. In total over £1000 was raised in support of the RNLI and the Hampshire & Isle of Wight Air Ambulance, with the dedicated RNLI stall raising an additional £400.

The club's Scale Section sail regularly at Setley Pond in the New Forest and the Section Captain is David McNairTaylor. If you are interested in joining the Solent Radio Controlled MBC, it can best be contacted via its website and the links within it: www.srcmbc.org.uk

RIGHT: More of the public came than ever before on 5th September, and more than £1000 was raised for deserving charities.

The morning's racing

Racing against tide and wind was tricky to start with because of the strength of the tide, and many kept going aground as they hugged the shoreline to keep in the slackest tide. The reigning champion Rob Vice looked set to do well by winning the first two races. Alan Viney won the third and young Brilly Vice won the fourth, but Rob had technical difficulties in Races 6 and 7 so that the leaderboard at lunchtime was headed by Bernard Kufluk, who won those two races to score 15 points, followed by Graham Viney with 17 and C J Vice with 18.

A relaxed lunch and BBQ was then enjoyed by 79 competitors, their families and new Waldringfield SC members thanks to the efforts of Jo McArdle, Rani Pert, Mick and Margaret Lake.

The afternoon's racing

As the tide turned, the pace of racing speeded-up as it was much easier to beat with the tide and run against it. Rob continued to dominate with five more wins, but Graham was very consistent with four wins, as was C J Vice with three and Alan picking up another win in Race 18. It was good to see the youngest competitors really enjoying the event and improving their skills by the end of the day.

RIGHT: Rob Vice (right) receives his prize mug & Championship Trophy.

LEFT: Young Nathan inspects the fleet!

Prize giving

The two championship trophies and the prizes, in the form of mugs with a BOTTLE boat image, sponsored by 'Gone Sailing' and made in Waldringfield, were presented by the club's Commodore, David Copp. PRO Roger Stollery thanked Margaret Lake and the BBQ team and his family for making up the race team with John Smith doing some boat rescue and mark moving. Rob thanked the organisers for making such a good job of this very special event.

Results - top ten

1st	Rob Vice (Guildford)
2nd	C J Vice (Guildford)
3rd	Graham Viney (Guildford)
4th	Bernard Kufluk (WSC)
5th	Alan Viney (Guildford)
6th	Noel Fraser (WSC)
7th	Mike Pert (WSC)
8th	Matthew Lake (WSC)
9th	Brilly Vice (Guildford)
10th	Simon Kernthaler

Junior Championship

1st	C J Vice
2nd	Brilly Vice
3rd	Oliver Stollery
4th	Henry Kernthaler

Model Boats January 2016 issue is on sale on the 18th December 2015

Fairey Huntsman

FEATURE PLAN

3D printing

Next month in Model Boats

This includes a new model plan from Dave Milbourn for the classic Fairey Huntsman and Ron Rees returns with an article about his foray into 3D printing. In addition, Phil Button has a cautionary tale about his new model, Mullogh.

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

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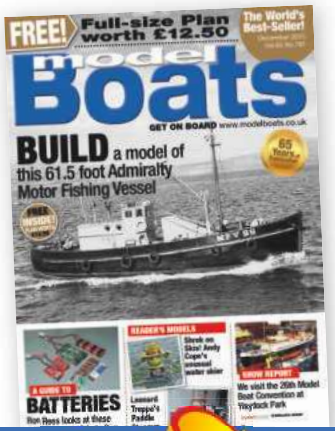

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Contents may be subject to change.

FREE PLAN

MFV 96, built by Mashford Bros., Cremyll, Cornwall, ran trials in August 1944 with a Kelvin engine, but was re-engined with a Gardner in November 1954.

61.5 foot Admiralty Motor Fishing Vessel

***Jim Pottinger** presents this month's Free Plan*

The original purpose and development for these vessels was fully covered in August 2013 MB, so just a summary of that appears here.

History

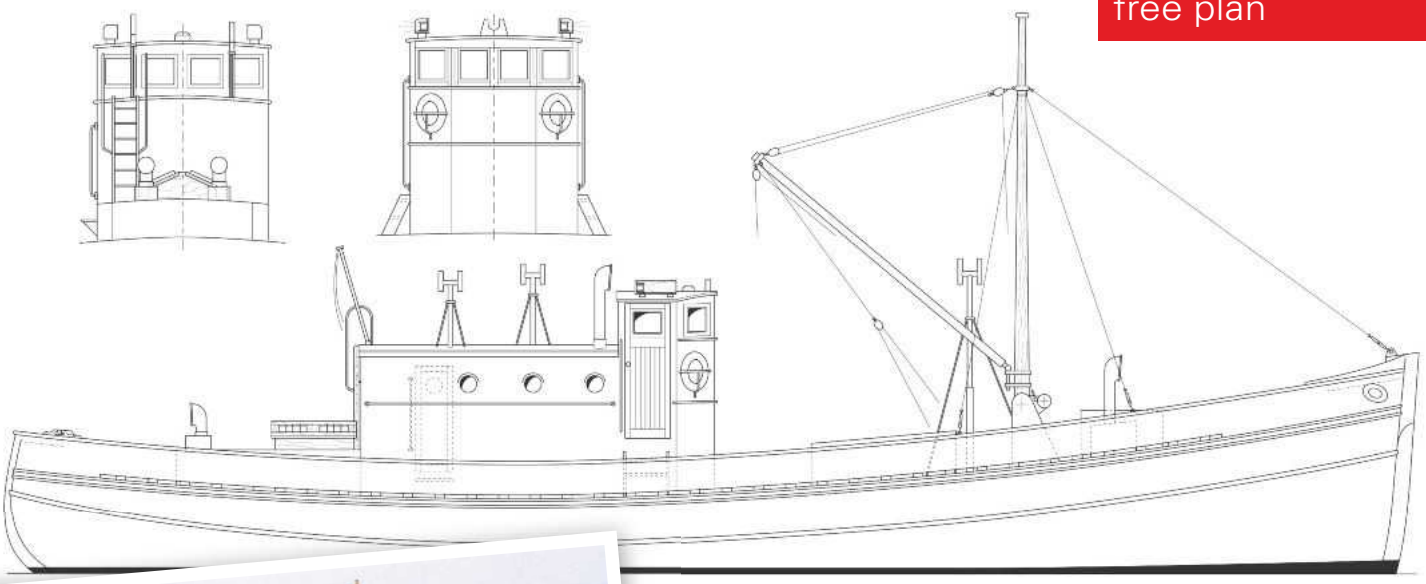
It will be appreciated that a great number of various types of small auxiliary vessels of all kinds were required to provide the service necessary to sustain the needs of major warships in the UK and abroad during WW2. The situation in the early days of that war was such that almost all seaworthy, and some not so seaworthy, craft had been requisitioned by the Admiralty and in this context were included pleasure craft, yachts, small ferries and steam or motor drifters. By mid-1940 almost all the craft which could function had been allocated duties of some kind or another within the armed forces.

After two years or so, it was realised that the wastage associated with hard usage was becoming serious, leading to the total loss or virtually irreparable damage to many boats, including numerous fishing boats which never returned to their home ports.

It was noted that many of the fishing boats which had been requisitioned, had shown excellent seaworthiness during military service, which indicated that their designs could profitably be used as the basis for the much needed replacements and that new build craft could form the nucleus of a UK fishing fleet after WW2. So their design and construction was framed around specifications which would hopefully ensure their ready adoption by fishermen after the war, with a minimum of modification.

As a result of the initial considerations, a design

BELOW: MFV 174 was built by Frank Curtis Ltd. of Looe, running trials in August 1945 with a Blackstone engine. Sold out of service in August 1968.



ABOVE: MFV 15, built by Mashford Bros of Cremyll, Cornwall, first ran trials in November 1942, but is pictured here later when out of military service.

RIGHT: A former 61.5 MFV ashore at Cruden Bay, possibly intended to be restored but later demolished. Note thicker planking on topside and at bilge level.

was created for a 61.5ft boat and construction was subsequently authorised for a relatively large number of these wooden craft. Subsequently, 45ft, 75ft and 90ft (actually 97ft) craft were also built, but here we are concerned with the 61.5ft boats, which were built by a wide variety of small boatyards with more than 70 being engaged on their construction in the UK, including many yacht and traditional fishing boat builders.

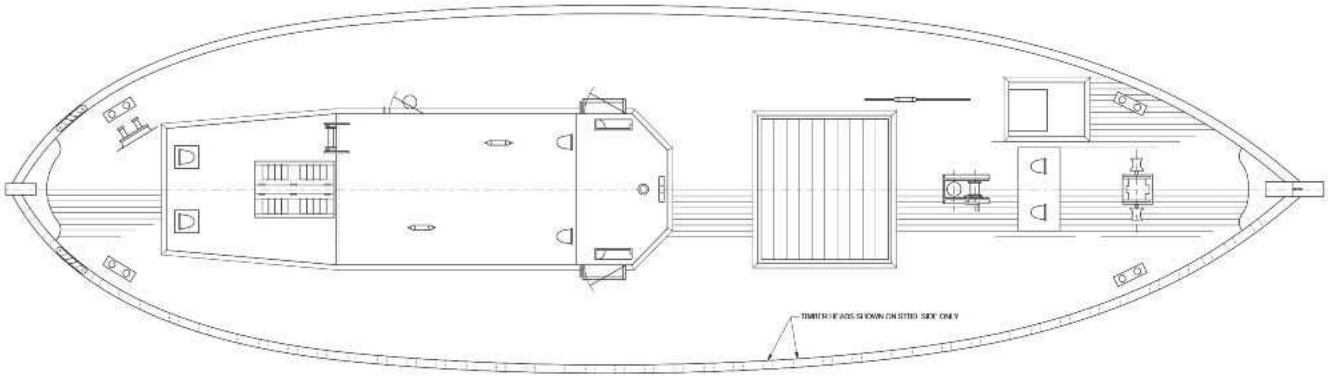
61.5 foot Admiralty MFV - a model

As can be seen from the lines, the hull is very much a fishing boat type, with ample beam, freeboard and displacement to withstand the often rough conditions in the North Sea where they would primarily be operating. Planking the model hull should not present any great difficulty given some experience of this mode of construction with the only possible difficulty at the stern, with tighter curves in plan and profile.

I have included a section through amidships which will show the various thickness of hull planking, as notably the four planks immediately below the deck line and another at the turn of the bilge are thicker than the rest of the hull planks and these are quite prominent in some of the photos. Some of the boats also have prominent rubbing strakes as shown on the profile view.

A steel protective capping is fitted on the forward stem post, suitably shaped at the top to co-coincide with the chamfer on the sides of stem. As can be

ABOVE: MFV 140 was built by Kris Cruisers Ltd of Isleworth in Middlesex.



RIGHT: One of the many 61.5ft MFV wrecks once strewn around Bowling Harbour on the northern bank of the Clyde.

BELOW: Built as MFV 327 by the Sittingbourne Shipbuilding Co. in Kent, 1946. Sold out of service in 1948 and eventually ending up in Shetland in 1953 as Responsive LK 37 in 1953, before going to Northern Ireland in 1972.

BELOW: The Former MFV 326 built by Brooke Marine, Oulton Broad, East Anglia in 1945 was sold in October 1946 and took the name Attain INS 136, later renamed Marguerita, registered at Lossiemouth.

ABOVE: MFV 138, built by Kris Cruisers Ltd of Isleworth, Middlesex. Sold out of service in 1955 and later converted to the ferry Granny Kempock owned by Roy Ritchie of Gourock, Scotland.

seen in the accompanying illustrations, there is a great variety in deck arrangements and fittings, even to the extent of the wheelhouse being moved forward. Model makers can therefore complete the deck arrangement as preferred, having noted the various options available.

It should be easy to make the whole wheelhouse and accompanying deckhouse to be lifted off as a single unit to enable access inside the hull to the driveline and additionally the main hatch cover can be removable. Notably , the wheelhouse and deckhouse are usually planked vertically, although I have seen some with diagonal planking.

The spars are wooden, and there is a small hand operated winch mounted on the mast, and a deck mounted windlass. These could be hydraulically or electrically powered. As regards the colour scheme, the common practice in peacetime was to have a black hull and grey for everything else, but in WW2 of course, the MFV would normally be wholly grey.

BELOW: MFV 248, was built by Misplon & Co. (later Louw Halverson) of Cape Town, South Africa. Sold out of service in December 1963 and seen here at Cape Town with a full set of spars and sails.

Conclusion

On a personal note, my late father during WW2 served on MFV 85 and MFV 625 for a short period based at Algiers and Oran, and being a fisherman that must have seemed like a busman's holiday for him.

The first (MFV 85), a 61.5 boat, was completed in December 1943 by Frank Curtis at Looe and the second (MFV 625) was one of the 45ft class completed in February 1944 by J. & J. Lawrence at Leith.

All the Admiralty MFV's gave outstanding service during WW2 and went on to be the basis of the post-war fishing fleet, many giving excellent service into the later decades of the 20th Century. One or two of the various types still exist today in the current 21st Century, albeit converted to leisure use, their longevity being testament to the quality of their wood construction.

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Range Finder

***Dave Wooley** with his Worldwide Review of Warships and Warship Modelling*

Welcome once again to our regular sortie into the world of fighting ships and this month we take a brief look at the USS Vicksburg, an American Aegis equipped cruiser and continue with Part 14 of our Deans Marine HMS Skirmisher project plus the usual Mystery Picture teaser.

USS Vicksburg CG69

In May 2015 the opportunity arose to see firsthand a US Navy Ticonderoga class cruiser when on an official visit to the City of Liverpool after participating in the NATO Joint Warrior exercise. Access to the vessel was restricted, but the pictures will be useful for potential model projects.

The concept of the USN Ticonderoga class goes back to the 1970's, when it was envisaged that there would be a conventionally powered anti-aircraft warfare cruiser to complement the projected strike cruiser program of nuclear powered Aegis cruisers. The latter never made it to the shipbuilders, but the conventionally powered guided missile cruiser (CG) in the form of an improved Spruance type, known as the Ticonderoga class did, and the first entered service on 22nd January 1983. The purpose of these Aegis radar equipped cruisers was (and is) to provide air and missile defence for carrier battle groups and the ships were originally designed with a displacement of 9530 tons full load in a hull 161.3m long by 16.8m beam. Originally Nos. 47 to 51 were fitted with the Mk. 26 twin arm missile launcher fore and aft, but from No. 52 onwards this was amended to the Mk. 41 Vertical Launch System (VLS). The lead ship, USS Ticonderoga with its Mk. 26 launchers was decommissioned on the 3rd August 2004 and stricken from the active list in May 2013. Although

ABOVE: The Ticonderoga class cruiser USS Vicksburg arriving at Liverpool for an official visit.

Photo 1. The forecastle deck of USS Vicksburg and please note the pronounced sweep and curvature of the bulwark.

based on the Spruance destroyer hull, the bulwark to the bow was increased so reducing the wetted area forward, but the design lacks the habitability of more modern warships and has no fin stabilization.

USS Vicksburg underwent modernisation, commencing in 2008, to have a vertical launch system installed, allowing for a more adaptable weapon platform capable of launching SM-2 (now SM-3) and Tomahawk missiles, and anti-submarine rockets. Addition improvements include better sensors, communications, computer software, decoys, uprated guns, fire control and improvements to the Aegis system. The warship is powered by four General Electric gas turbines developing 80000shp to two shafts producing a maximum speed of 32.5 knots.

When USS Vicksburg was first commissioned in November 1992 at Northrop Grumman Ship Systems Shipyard in Pascagoula, there was little or no emphasis on reducing a warship's radar cross section. However, because of the class design and ability to absorb improvements, a number of them have been successfully used as trials ships for the new SM-3 anti-ballistic missile. This Photo Tour is relatively limited, and I am sorry about that, but there will in due course be a further more in-depth tour of the USS San Jacinto CG56, also of the same class of cruiser.

Ship's tour

Commencing forward, we have a view of the various fittings associated with the forecastle, **Photo 1** emphasising the sweep and curvature of the bulwarks. Nowadays, more modern major warships have their cable holders, anchor cables and associated winching equipment hidden from view beneath this deck.

Weapons

Moving aft is the 127mm (5 inch) Mod 2 Mk. 45 54 calibre naval gun, **Photo 2.** Interestingly, the newer Mod 4 Mk. 62 calibre version of gun, which is fitted to the Flight 11A Arleigh Burke class, now has an increased range, exceeding 36km.
Immediately forward of the bridge superstructure are the 61 silos for the forward vertical launch system, capable of launching a combination of missiles for attack and defence. These now include the RIM 161 standard SM-3 missile and the Extended Range Active Missile (ERAM) for defence against cruise missiles and helicopters etc., **Photo 3.**

Aegis

The core of this warship's defence technology is the Aegis SPY-1 360 degree coverage phased array radar. This radar is designed to track not only outgoing missiles from its own ship, but those of other friendly warships as well as incoming multiple targets. The system was first conceived over 50 years ago and tested at sea in 1974 aboard the USS Norton Sound and even now it still remains incredibly versatile, **Photo 4.**
By contrast on the bridge wing pictured, **Photo 5,** you have older forms of communication and missile detection, namely binoculars and a signal lamp! Part of the Aegis system is the SPG 62 radar which works in tandem as a second radar providing illumination for the surface to air missiles directed towards target by the SPY-1 tracking radar, **Photo 6.**

Photo 2. USS Vicksburg has two 127mm Mk. 45 dual purpose guns, one forward and one aft.

Photo 3. Immediately forward of the bridge on the forecastle is the Mk. 41 VLS with its tubes containing a selection of missiles for air and anti-submarine warfare or anti-ballistic missile defence.

Photo 4. Fitted to the starboard and front faces of the bridge superstructure are two of the fixed array panels for the SPY-1 Aegis radar system - please see text.

Photo 5. Although USS Vicksburg is a sophisticated modern warship, binoculars and searchlights remain as part of the ship's equipment.

Photo 6. Mounted on top of the bridge is the SPG-62 radar illuminator.

Photo 7. Viewing the port side of the bridge, it's worth noting the absence of the SPY-1 panel. That particular panel is aft on the port side of the hangar.

Photo 8. Stowage for the refuelling at sea nozzles and equipment.

Photo 9. Liferaft containers on their racks with a stowed ship's side companionway in the foreground.

Photo 10. Two Mk. 15 Phalanx CIWS with the Nulka launch boxes circled in red - please see text.

Photo 11. The Nulka launch boxes with the Mk. 137 130mm bore decoy launch tubes on either side. These are known as SRBOC (Super Rapid Bloom Off Board Countermeasures)!

Sensors and other fittings

Remaining within the bridge area, but moving to port, **Photo 7** shows:
Ringed in yellow the radome of the SPQ 9A surface gun fire control radar and moving slightly further along the superstructure, ringed in red, is the SLQ-32 Electronic Counter Measure or ECM. Moving further down is the port Replenishment at Sea (RAS) station, **Photo 8,** whilst moving further along the main deck is liferaft canister stowage and it's worth noting the shape and style of the handrail stanchions as in **Photo 9.** Moving to a position amidships just aft of the first funnel uptake are the port (and starboard) Phalanx close-in-weapon systems in **Photo 10** and highlighted are the box launchers for Nulka, an Australian & US anti-ship missile decoy system, with the its box-like launch box more visible in detail in **Photo 11.** Within the launch boxes are the Winnin hovering rockets which carry an active jammer and infra red decoy. They can move sideways to simulate a ship and are controlled by the SLQ-32 ECM device.

General view

Photo 12 gives a general overview to starboard which shows the mast arrangement and superstructure. Ringed in yellow are the dual SPG-62 radar illuminators, whilst that in red is the starboard RIB with its handling crane and ringed in

Photo 12. A general picture to starboard highlighting certain fittings - please see text.

Photo 13. This is a similar RIB (Rigid Inflatable Boat) to the Halmatic 22 carried aboard RN warships, but this type uses a conventional outboard motor drive.

Photo 14. A detail picture of the SPS-49 2D air search radar.

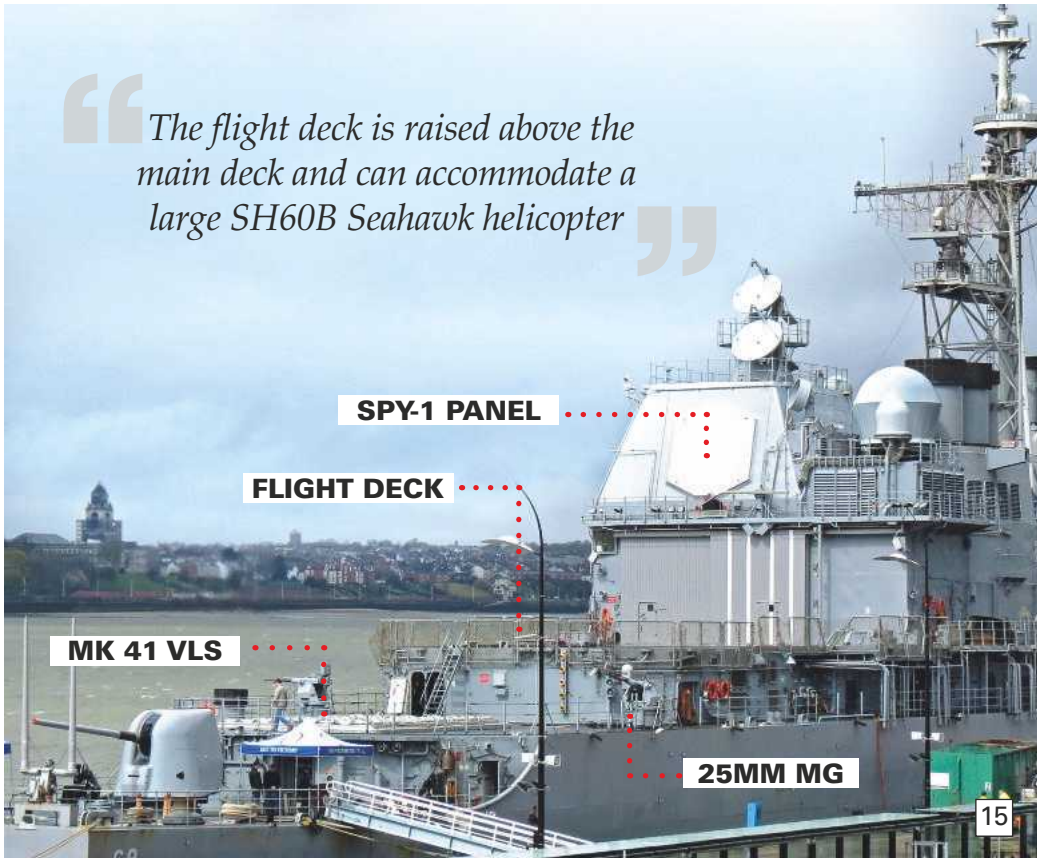


Photo 15. The flight deck is one level above the main deck.

Photo 16. A ladder leading from the flight deck to the lower aft deck and its VLS silo.

blue is the SPS-49 radar. For modelling purposes, here in **Photo 13,** is a reasonable close-up view of the RIB and surrounding fittings,.

To the rear of the main mast on an upper platform is the SPS-49 long range, two dimensional, air search radar. The prototype was tested aboard the USS Gyatt, the WW2 Gearing class destroyer, in 1964 and 1965, **Photo 14.**

Aft

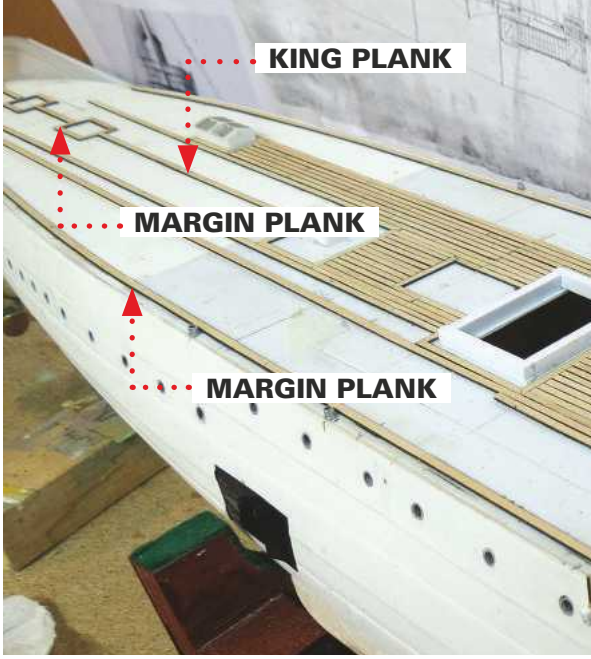
Aft of the hangar there are two SPY-1 panels, one above the hangar and one to port, **Photo 15.** Unlike RN warships, the flight deck is raised above the main deck and can accommodate a large SH60B Seahawk helicopter. Moving aft from the hangar to the rear main deck is the location of the after Mk.41 Vertical Launch System, **Photo 16.**

Photo 17. One of the two Mk. 38 MOD 2 remotely operated 25mm machine guns.

Photo 18. Used cartridges are expelled from the tube mounted above the barrel and the weapon is capable of firing 180 rounds per minute.

Photo 19.With flags flying, USS Vicksburg is seen leaving the River Mersey after her successful courtesy visit.

Remaining in the same area we also have a detailed view of the Mk. 38 Bushmaster Mod-2 chain gun with its 180 rounds per minute capability. It is designed for defence against small and agile threats in all weather, day and night, using its electro-optical fire control system. Operation of the gun is remote from a fire control console located in the main combat information centre, **Photos 17 and 18.** Our final picture for this mini Photo File, has USS Vicksburg leaving the River Mersey. It's worth noting that mounted right aft, as if an afterthought, are the two x 4 launcher tubes for Harpoon anti-ship missiles, **Photo 19.**



HMS Skirmisher - Part Fourteen

Laying a timber deck is a satisfying job and if done reasonably well adds considerably to a model's overall appearance. Modellers perhaps can be deterred by difficulties understanding where to start and how to accommodate deck fittings or even what timber to use and where to source it. So, rather obviously, before commencing the job, choose the type and size of planks. As it so happens, in the past I have made use of Lime, Boxwood and Pine depending on the model in hand.

For HMS Skirmisher the choice was Lime as it is light in colour, has a fine grain and is user friendly, although nowadays when working with any timber, I'm inclined to use a mask when cutting, planing or sanding it. The next question was where one could source suitable lengths and widths for this 1:96 scale HMS Skirmisher model? Chylds Hall Model Shipyard are able to supply lengths of 500mm, 1mm thick and 3mm wide with the edges of each strip pre-blackened to create the impression of corking. These same strips can also be supplied without their edges being blacked.

Getting started - planked deck

The amount of timber required is easily calculated by measuring the hull as a rectangle and dividing

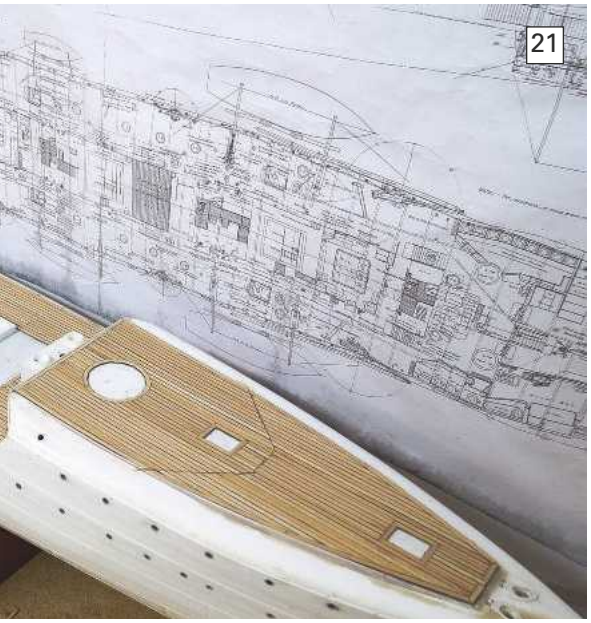
Photo 20. There are two essentials for laying out a planked deck:
1) *A King plank needs to be laid on the centre line.*
2) *Margin planks should be positioned around the deck edges and external mounted structures.*

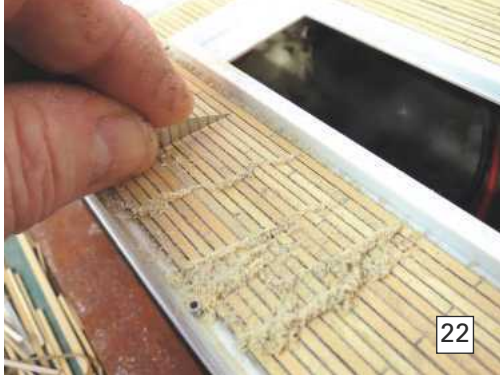
each 3mm x 500mm length into the area. This calculation should allow for the two platforms fore and aft which are also planked and for the inevitable wastage.

The first task is to mark the centre line and the positions of the margin planks around the deck hatches, skylights, housings and deck edge, bearing in mind that allowance has be made for the outer edging strip along the deck/hull joint. Margin plank area and space for the davits along the Spurnwater (the gap between the edge of the plank and the side of the hull) will also have to be considered. Also, selecting a suitable adhesive for bonding the planks to the styrene sub-deck can make the difference between a good and a bad job. From experience, R/C Modellers Glue is a good choice, the reason being it is ideal for bonding timber to styrene and does not mark or discolour the surface of the wood. This glue sets within a short time of application, but there is still plenty of wiggle and adjustment time.

With the King planks on the centre line and Margin planks also in place, the process of actual planking can begin, **Photo 20.** I usually work staggering the end of the butt joints on a four plank spacing, commencing from the King plank outwards, and working on the premise that most planks were between 10 to 15 feet in length and 9 inches wide. Problems can arise where part of the deck needs to be removed for access. Here it is helpful if the opening can coincide with the run of planks both in their spacing from the King plank and the fore and aft line. If this can be achieved, the joint along the edges of the openings will become almost invisible and an example of this can be seen in **Photo 21.**

Photo 21. Deck planks laid and now ready for shaving.





The only other problem comes when endeavouring to reduce the visual effect of a joint across a deck which is much harder to eliminate. One other task, is joggling or nibbling the ends of longitudinal planks into the Margin plank. This is a delicate process that requires some skill and a degree of confidence to achieve the best result. I settled for a butt joint, which in hindsight is incorrect, but looks better than an ill-fitting joggled plank at this scale.

Plank shaving

With the adhesive set, work can begin on preparing the final surface of the planking. One of the questions often asked is how do get the surface even and enhance the corking effect, and the answer is simple. Avoid using abrasive paper as this has a tendency to roughen the plank's surfaces and to achieve the best result, shave the surface with the edge of a good modelling knife blade as in **Photo 22.**

Along the edge of the margin plank at the deck edge is fitted a strip of styrene. On HMS Skirmisher this was a raised steel L-shaped strip, finishing slightly higher than the planking. To help fit the strip, a length of ply was held against the edge as in **Photo 23** whilst the glue set and the final result is quite satisfying as in **Photo 24.**

Photo 22. For the best final result, scrape the planked surface with the edge of a modelling knife blade.

Photo 23. Fitted to the planked deck edge is a strip of 0.5mm styrene.

Photo 24. The completed deck planking and not too bad, even if I say so myself.

Photo 25. Making and fitting eyebrows for the portholes is simple and quite easy.

Photo 26. Making an eyebrow: First, bend a length of copper wire around a tube matching the diameter of the porthole to create a 'U'.

Photo 27. Insert the U-shape into the jig and cut to size.

Photo 28. The result of using the jig, is an eyebrow ready to be fitted into place.

Photo 29. Each eyebrow is covered with a strip of masking tape.

Photo 30. A fixing jig ensures that an eyebrow is correctly aligned.

Photo 31. Using a flat sanding pad the eyebrow's outer rounded face is slightly flattened.

Eyebrows

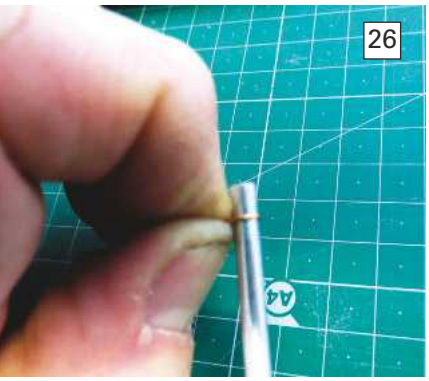
These are a curved strip of metal above the top outer rim of portholes, mounted on the exterior of the ship. Making these can be a time consuming, but with the use of a simple jig they can be easily made and fitted in a relatively short time.
Basically the jig has three parts and needs 0.5mm diameter soft copper wire, as in **Photo 25,** the tools being:

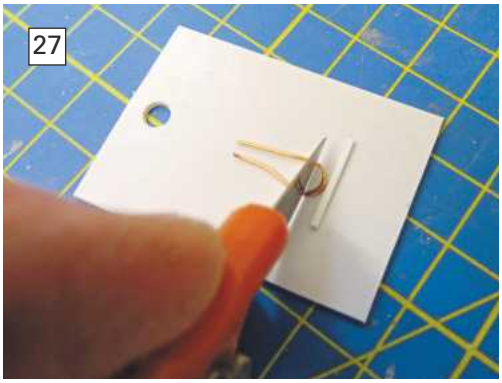
1. Fixing jig
2. Cutting jig
3. Bending jig.

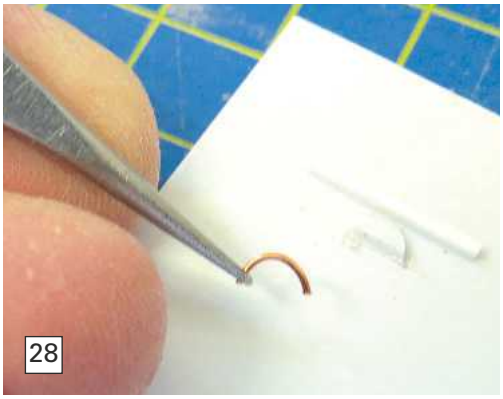
Initially bend the copper wire into a U-shape around the bending jig which should be of the same outside diameter as the porthole, **Photo 26.** This bent piece of copper is then placed into the cutting jig and using a curved blade, the excess is cleanly removed. The advantage of soft copper is that it can be easily cut and we now have one completed eyebrow as in **Photos 27 and 28.**

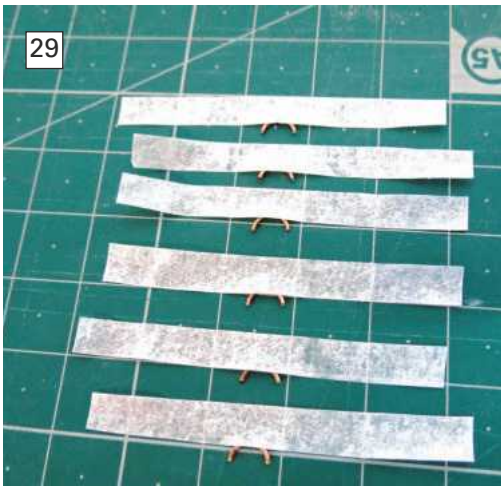
Fixing the eyebrow

After preparing a number of the eyebrows, one of the more tricky operations is fixing them above each porthole. First, cut thin strips of masking tape and attach the tape to each one of the eyebrows as in **Photo 29.** Next, using a strip of masking tape secure the fixing jig below the porthole, ensuring the top edge lines up with the middle of each of them. Following this, take one strip with an attached eyebrow and apply a fine film of cyanoacrylate glue to the exposed surface. Using the fixing jig as a guide, secure the tape and eyebrow to the top edge of the fixing jig as in **Photo 30.**
Within a few seconds the fixing jig can be removed, followed by gently peeling back the tape from the eyebrow. One of the advantages of this method is









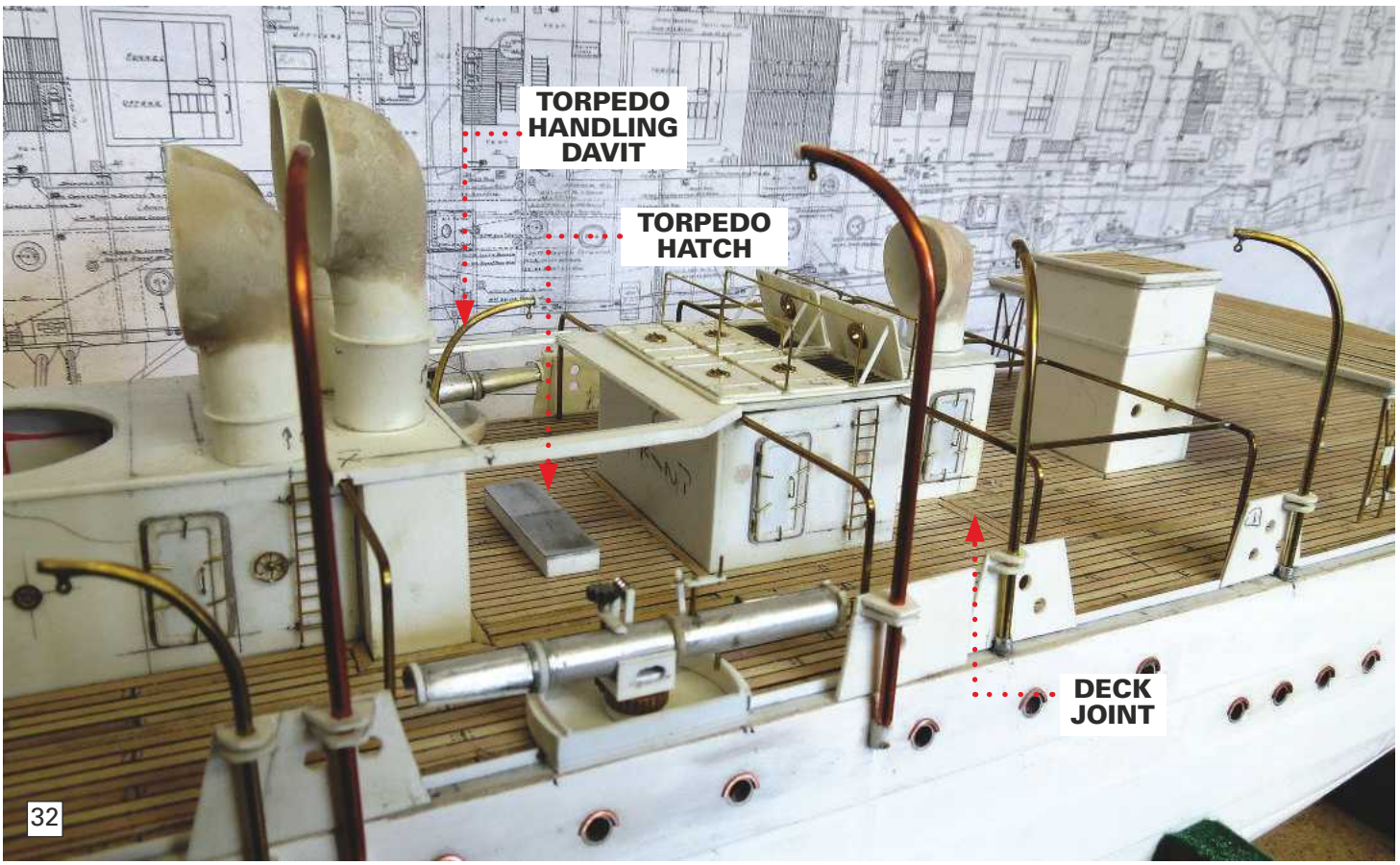


Photo 32. HMS Skirmisher's centre section, now nearly complete.

that you really don't have to fiddle around aligning the eyebrow and your fingers remain glue free. The final step is to flatten the 'round' on the eyebrow by gently sanding its exposed surface, **Photo 31.**

Progress to date

During the course of this project to date, much has been done and **Photo 32** shows the mid-section of the model thus far. Earlier I made reference to the problem of disguising across-deck joints, since the planks will effectively be all cut straight across. The only option here was to fit margin planks either side of the joint as indicated in this last picture. Additional fittings shown here include the torpedo hatch and davit between the cowl vents and some flat hatches.

References and acknowledgements

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Ships and Aircraft of the US Fleet, pages 112 to 116 by Norman Polmar.

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Chylds Hall Model Shipyard: Website is www.chyldshallmodelshipyard.com

Answer to the November 2015 Mystery Picture

The clue was: This ship was launched on the 3rd of March 1950 and for good measure can you identify the aircraft?

Not a difficult one as there were lots of clues in the picture and yes, it was HMS Ark Royal, laid down at Cammell Laird Shipyard on 3rd May 1943, and commissioned 12 years later on 25th February 1955. Significantly, she was the last of the Royal Navy 'cats and traps' aircraft carriers in service before the Invincible class (and the modified HMS Hermes) with Harriers entered service in July 1980. The class consisted of HMS Ark Royal and HMS Eagle, with an overall length of flight deck of 803ft 9ins and a beam 112ft 9ins displacing, in 1975, 53950 tons deep load.

The picture shows an assortment of aircraft embarked. In the foreground and inboard of the island are the Buccaneer Mk. 2's of 809 Squadron. On the deck edge to starboard are Phantom FG1's of 892 Squadron and in the centre right forward an AEW Gannet of 849 Squadron. To the rear of the Gannet are two USN A6E Intruders and on the starboard deck edge is a USN F4J Phantom of VF33, a squadron known as the 'Starfighters'. The other Phantom F4 in USN markings is from an unknown squadron.

Some readers of this column may have served on HMS Ark Royal and may well remember this period in her service career, when cross-decking occurred with aircraft from different nations operating from different flight decks.

This month's Mystery Picture

The clue is: Operation Anvil and look to the stern.

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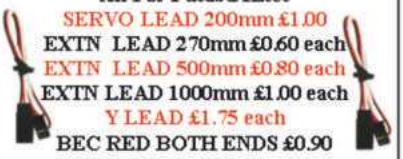

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RIGHT: This ATCH river gunboat by Stan Reffin on the pond at Haydock Park is a superb example of what can be achieved using a Glynn Guest design.

ABOVE: The Air Water Land Model Group had a variety of models on display.

ABOVE: The Canadian Coast Guard Mamilossa hovercraft achieved First place in Working Scratch Built Class, a truly magnificent and unique model.

ABOVE RIGHT: Runcorn and District Scale Model Boats entered into the Glynn Guest theme with enthusiasm.

RIGHT: On the Scottish Model Warship Association stand was a fine model of HMS Kempton, a WW1 Racecourse Class minesweeper.

The 2015 Model Boat Convention

***Dave Wooley** reports from Haydock Park, 29th and 30th August*

This event adopts a theme for each year and for 2015 it was for models built to a Glynn Guest design, he being a designer and modelmaker who has had numerous plans published in this magazine. This was actually no coincidence, as he was also the Guest of Honour and very well received too. Also, I have to say that many of the pictures in this article were taken by Dave Abbott, so a big 'Thank You' to him for his efforts and being Chief Judge for the event.

The venue

This was, as it has been for the last few years, within the spacious surroundings of the main public buildings of Haydock Park Race Course, that is just off the M6 and between Manchester and Liverpool. The comfortable carpeted surroundings with plenty of rest areas, free car parking and sensibly priced catering, make this a great venue and of course outside there were two outside pools for on the water sailing.

The weekend

For 2015 there were 27 clubs, seven individual modeller displays, 20 traders and a Model Boat Chandlery where you could sell your unwanted items. A notable feature of the event is that there are 12 competition classes for individual models, a Best in Show Award, as well as awards for best model on each club stand and a President's Award, all in addition to a full program of sailing activities. 2015 also saw the retirement of Paul Freshney as President of the Model Boat Convention, he handing over now to Dr. Nicholas Jedynakiewicz, a Deputy Lieutenant of Merseyside. Paul remains as Vice President and the event is organised and

ABOVE LEFT: The IoM ferry TSS Mona's Isle by Howard Quayle and to 1:48 scale.

ABOVE: One of the largest models on display and certainly one of the most impressive was USS Arizona built by Josef Slydlowski of the Crewe & District MBC.

run by a highly dedicated, skilled and long serving team of volunteers led by Jean Barlow as secretary and Arthur Barlow as treasurer. The Model Boat Convention is run by modellers for modellers and is non-profit making, but able to support deserving charities.

Models

It's hard to put a figure on the number of models on display, but there were hundreds and hundreds, the majority on club displays, but there was for 2015 a notable rise in the number of individual modellers with their unique presentations. Colin Vass had his 1:72 scale HMS Warspite and his new work in progress of an Italian Zara class cruiser to the same scale. Also, John Hammers' huge Type 42 destroyer as mentioned in this magazine previously was on display as well as the fantastic 1:72 scale USS Arizona by Josef Slydlowski and Chris Behan's hovercraft.

Competition

Glynn Guest Models

The event centred around the models of Glynn Guest and there were two classes, a Junior Boat Building Class specifically for under-16's building models based on his UTE plan, and the other as the Glynn Guest Competition for everyone else building any model from one of his plans, a class which could however also include under-16's.

In the Glynn Guest Competition, young Adam Holmes achieved a well-deserved Second place with his fine model of HMS Bermuda against modellers far more advanced in their years(!), first place going to Stan Reffin with his exceptionally well built ATCH Vietnam river gunboat based on an original Model Boats Free Plan from January 1995. In the Junior Boat Building Class, Fourth was eight year old Scott Sampson of North West Scale and Third went to Emily Charlotte Scorgie from Liverpool MBC. Second was nine year old Kamran Ibrahim Holland and First was awarded to Kyle Woodley of Bryn Bach MBC.

Other classes

Well, what can I say? As always, lots of entries (more than 50) and the President's Award went to RNLB Lester, a Tamar class lifeboat built and entered by Bryan Johnston, a particularly well-crafted model and he the deserved winner. The Best in Show award chosen by the exhibitors was the USS Arizona by Josef Szydlowski, albeit still under construction, and for the second year in succession, Runcorn and District Scale Model Boats gained the award for Best Themed Club Stand.
A full set of results is available on line at: www.modelboatconvention.co.uk

ABOVE: Twelve year old Emily Charlotte Scorgie receiving her award from Glynn Guest.

ABOVE: Kyle Woodley (age 13) receiving his First place award for the junior completion from Glynn Guest.

On the water

There were two portable ponds outside on the grandstand's concourse, with a full timetable of on-the-water activity including Tug Football by Ribble MBC and a Glynn Guest Models 'Sail-In'.

BELOW: The main pool was of sufficient size for Tug Football and the mass sailing of Glynn Guest models.

ABOVE: Brunel's SS Great Britain on the Blackpool and Fylde MBC stand.

ABOVE: This model was originally built by Alan Luckett, but presented at Haydock Park by Ken Lingham.

BELOW: The President's Award winning RNLB Lester built by Bryan Johnstone.

RIGHT: A superb model of the dredger Esk built by Joe Lang, originally a plan feature in Model Boats magazine by Dave Abbott.

BELOW: A truly outstanding model based on the Robbe Schutze German Minesweeper kit by Stan Reffin.

RIGHT: An elegant 1:48 scale model Lady of the Loch on the Glasgow Richmond MBC stand.

ABOVE: Bob Abell, with his completed model of a Vintage Gentleman's Cruiser featured on the Model Boats Website Forum. Together with Paul Thomason, these two guys are longstanding stalwarts of that Forum.

BELOW: Paul Freshney (right), the retiring President of the Model Boat Convention presenting Glynn Guest with a token of the Convention's appreciation.

Trade

Shows such as the Model Boat Convention are for many the only opportunity to see and feel what they are buying prior to parting with their money. Here at Haydock, traders such as Models by Design, Mac's Mouldings, Mountfleet Models, Vintage Model Boat Company, Scale Models, Scoonie Hobbies, S&M Tools, Tony Green Steam Models and numerous others, all enabled the modeller to buy pretty much anything he or she needed to pursue their hobby.

Visitors are given a comprehensive show guide with a useful map and a full trader list with contact information, something worth keeping as one or two of the niche suppliers such as Michael McGuinn (Guns) can otherwise be hard to track down, post-event.

Conclusion

The 2015 Model Boat Convention was blessed by good weather, and a super turnout of model clubs and trade support, plus some top-notch competition entries. This event only exists due to its all-volunteer committee and the support they receive from other modellers and their wives managing everything, including the turnstiles. So, a big thank you to them all and as the event gains in prominence, particularly because of its charitable status, they are due to have the Lord Lieutenant of Merseyside as their Guest of Honour for 2016.

‘FOR or OF’- a bit of a difference?

Mooring Post

***Glynn Guest** with advice and tips for modellers*

I was looking through some collections of model plans on the Internet, mainly aircraft but quite a few boats, when a thought struck me. The majority of plans were obviously based on real and hopefully successful working models, but a few appeared to be designs that had been drawn up but without a model actually being built.

Now I’m not saying that a working model could not be built from what was basically a theoretical or imaginary model design, but it worried me. It is very easy for a design which looks ‘right’ on paper to have hidden flaws when you try to turn it into a real object. These might just be minor irritations, but could potentially render all your hard work and effort wasted when the model is difficult or even impossible to build and/or operate. I doubt that even the claim that such plans were produced with a CAD (Computer Aided Design) system would guarantee success 100% all of the time?

This reminded me of the time when a modeller contacted me after his friend had suggested that I could design a model for him to build. I had to disabuse him from the idea that I quickly ‘knock-up’ a model design and then built the model from it. I do produce a sketch design, sometimes full model size, but often a half or even quarter scale sketch can be enough, before starting to build, but the final published design is based on the model which usually had to be modified from my original ideas due to all the unforeseen problems that emerged during building.

This might seem like an unsophisticated way to go about doing things, but I have yet to scratch build a model that did not require some parts needing a rethink, if not scraping! So rather than spending a lot of time and perhaps money with all these CAD programmes, trying to start with what you hope is a flawless design, it has always appeared quicker, easier and cheaper to start a new model with just the basic outline of its construction. I do, however, always take the precaution of checking that the design ought to float and move under radio control!

Some methods of construction do require more ‘designing’ prior to starting the model, the correct shape for frames on a planked hull coming to mind, but even with the utmost care, it is not unknown for shapes requiring the odd adjustment before they can be used. Notably, some kits are not free of this problem either!

Designing your own model need not be the daunting task you might think or others try to suggest. Just start with a sound idea (remember ‘float and goes’) and commence building whilst accepting that some parts and ideas might need to be changed along the way. The end result will be a unique model and one that you can honestly say is my own design and I built it all myself, which ought to give any modeller a very warm feeling!

Fate of the Hobby?

It seems to be quite common to hear or read that someone is predicting the demise of this hobby because ‘no youngsters are taking it up’. This might appear to be true since the average age of people at the lake side or attending model boating events and shows does appear to be, let’s be tactful and say, that its in the mature range. This at least sounds better than my wife’s comment that we are all ‘over the hill’!

Even with increasing life expectancy this looks to be bad for the long term future of the hobby, but whilst not denying this fact, I would question such a pessimistic view.

Looking back through my old copies of Model Boats and its predecessor the Model Maker magazine, I am struck by the age of most people in the photographs and there’s not many young faces about. This is can be taken to indicate that the average age of model boaters has always been somewhat higher than for other equivalent pastimes. As this hobby is still going strong and that you are reading this magazine ought to support this idea, and perhaps there should be reasons for it attracting older people rather than catching them as youngsters.

I suspect that there are two significant groups of older people who come into this hobby. First, a person who already has some modelling experience and wants to carry on with a hobby. This could range from the model engineer who would like something to put his shiny new steam engine in, to an aeromodeller who is getting too old to keep chasing after errant models or for that matter, climbing trees to recover them! The second group would be those who find, perhaps after bringing up a family or entering retirement, that they now have the time to indulge in r/c models.

Both groups could find that a model boat has advantages compared with r/c aircraft and cars. A boat might not work out to be much cheaper but should have the advantage of a much longer life. Unless you are a sort of homicidal modeller or possibly sail with such people, you are unlikely to return home with your model seriously damaged or even lost. Yes, it can happen, but I doubt that it is as frequent an occurrence on sailing waters as at the flying field or car race track.

There is also the question of the ease of operation. With most model boats you can start slowly and build up to full speed, with the option of stopping completely when totally confused! This is a luxury that modellers who hurl their creations skywards do not have and must appeal to the older modeller whose reactions are not as sharp as they used to be? If these ‘grey modellers’ like their hobby to have a competitive aspect then model boats and yachts can still offer this activity. Again, initial costs might not be much different, but risk of damage or loss ought to be less with waterborne craft.

No, I do not believe that building and operating model boats will die out because youngsters are not taking it up and if you need more evidence, then look at the plastic modelling world. Years ago some people said that this hobby was doomed since youngsters were not dashing out to buy the latest Airfix or Revell kit. This was true, but the kit manufacturers retargeted their products, making them more complex (and expensive) to appeal to older people. Yes, simple cheap plastic kits still exist, but a look around a hobby shop and you will find lots of plastic kits that are definitely not intended for children.

So, I’m optimistic about the future of this hobby.

A selection of NiMH and a mobile phone battery

Batteries

***Ron Rees** takes a look at these commonly used, but often abused, sources of power*

Following on from the Brushed and Brushless Motors article (June 2013 MB), there have been requests for an article explaining the whys and wherefores of batteries. If you are going to power your model with an electric motor, then you are going to need a battery of some type, unless you want to try solar power?

The cost, type, size, weight, power and longevity of the battery are the main considerations to be thought about. For example a large model tug powered by a low drain motor will require something very different to a small fast, planing type of model. Our models usually fit somewhere within those two extremes, so it then becomes the suitability of the system installed in the model that will make it perform as desired, or in other words you need to choose the right motor(s) and battery combination for your model. The electronic speed controller will play a part as well, but is not in the scope of this article. There is a huge range of batteries from which to choose, as well as motors, and this is what beginners sometimes find confusing. Batteries can be expensive and we cannot afford to get the choice wrong, so a quick look at how batteries came about and work may help to understand the differences.

History

Batteries have been in existence far longer than many people appreciate, but tremendous leaps in technology and battery science in recent times have given us some impressive newcomers to the marketplace. Historically, there is still some argument in scientific circles as to whether in about 200BC (over 2200 years ago) things that look suspiciously like batteries were being used in Persia (now Iran) to make idols of Gods that shocked you if you touched them, or to plate base metals to simulate gold or silver, but ancient artefacts such as a roll of pure copper with an iron rod in the middle in a clay pot that shows signs of a corrosive liquid, albeit wine or vinegar, looks very much like a battery to me. Whatever the truth, well before generators were discovered in the latter part of the 19th Century, scientists were experimenting with 'The Life Essence' as it was sometimes referred to, obtaining sparks of static electricity by spinning a copper disc between two electrodes, otherwise known as a Static Generator, but there was no way to store the current that was emitted.

In 1749, Benjamin Franklin first used the word 'Battery' when he connected together a batch of linked 'Capacitors'. These were metal coated glass jars (Leyden Jars) and were energised by the spinning Static Generator. By linking them together, he produced a higher discharge, but he still couldn't store it for more than a few minutes.

In 1780, Luigi Galvani discovered 'Animal Electricity' when he made Frog's legs twitch with his iron scalpel leading him to surmise that every living thing held a 'Life Energy'. His contemporary, Alessandro Volta spent 18 years playing with this idea and came up with a stack of metal discs (initially Copper and Zinc) separated by cloth and cardboard soaked in Brine (salt water). This

1

produced a continuous and very stable flow of electricity, but it was nearly 10 more years of experimentation before he was credited with inventing the very first Battery Cell.

Volta is remembered for his work on the Pressure (or the Force) of Electricity and the Volt is now the standard measurement of Electrical Force (or Power). He stated that one cell produced between 1 and 1.5 Volts of power, which remained true until quite recently.

From then on, because all these experimenters published their work, the speed of development and discovery accelerated, and continues to this day. Lead Acid (as in your motor car) and Sealed Lead Acid (SLA) batteries (often used in motorcycles) have now been around for many decades.

An important point to make here, is that very often a single cell is referred to as 'a battery', but a battery can also be a number of cells linked together in series, or even in parallel. So the term 'battery' is often used either way in general conversation.

In this brief look at rechargeable batteries, there are a few we tend not to use in our hobby, so will concentrate on those we do use nowadays and apart from the Lead Acid types, we are principally interested in:

Nickel Cadmium (NiCd or NiCad)
Nickel Metal Hydride (NiMH)
Lithium-ion and/or Lithium-ion Polymer (LiPo)

I think most people are also happy with the Alkaline battery (cell), **Photo 1,** the throw-away type as they are sometimes called, which is still the mainstay for torches, door bells and so on. Some of our radio transmitters work better on these than an equivalent number of rechargeable cells presented as a pre-prepared four, six or eight cell pack. Also, I won't bother with button cells and camera batteries, although a lot of these are now of Lithium-ion or similar, but the development of a portable small storage systems for electrical power has been the driving force behind the invention of several notable devices and in particular, tablet computers and of course mobile telephones.

How do they work?

Historically, a battery cell is a container with two dissimilar metals immersed in a chemical causing electrons to move from one metal to the other producing a flow of electrical energy and that basic principle is exactly the same today as it was back in 1700.

The 21st Century battery cell is still broadly two dissimilar metals in contact with a medium (acid or similar) which we call the electrolyte. This causes the electrons to leave one metal (the Cathode) and travel to the other metal (the Anode) during discharge or use. By performing this action, electrons form a flow. In other words, all the electrons, if they were little arrows, would all point in the same direction and move that way when the cell is connected. If you look at any individual cell you'll notice that it has two terminals. One marked (-) or negative (the Cathode) the other (+) or positive (the Anode). Most of today's battery packs are wired together for you so you usually eventually get a red wire (Anode or positive) and a black wire (Cathode or negative) emerging from the pack

In use, or the 'Discharge Cycle', electrons which collect on the negative terminal will 'flow' through the electrolyte inside the cell to the positive Anode, but you can't see it unless you connect something to it.

To see this in action, use a small motor or a light bulb, something we call 'a load'. When the circuit from minus to plus is made through the wire and the motor or bulb, the electrons will flow and the bulb or motor will work. Disconnect the circuit and the electrons will stop, and so will the motor or bulb.

All batteries through the ages work basically in the same way, but as time has gone on, the metals have changed and so has the electrolyte between them. Extra power, longevity and efficiency as well as a reduction in size and greater flexibility in use is the result of all that research and experimentation over the years to the present day.

Alkaline cells that you throw away when they don't work any more are called Primary Cells and those that can be recharged and used again and again are called Secondary Cells.

Primary (or throwaway cells) will run out of power once the chemical reaction of the electrolyte and metals has been used. They cannot be recharged and warming them in an oven won't work. In fact it could cause the cell walls (usually of something soft like zinc) to swell and the internal corrosive chemicals to leak. Batteries like this should be checked regularly as leakage of the electrolyte will corrode the springs and terminals in your transmitter battery box and eventually find its way to the main PC board as well, if you are unlucky. As mentioned earlier, please note that a Cell only becomes part of a Battery when there are two or more individual Cells joined together.

Wiring

Wiring in parallel - this means connecting the two red (positive) terminals to each other into one red lead and the two black (negative) terminals together into another lead, so you will now have the same voltage, but twice the amperage capacity.
Wiring in series - if on the other hand, you connect the red lead from one cell to the black lead of the another (same type of cell), and the take the spare red lead and black leads from each and connect them to a meter, you will see that you now have double the voltage coming out, but still the same Amp Hours. So for example two identical 6v batteries, each consisting of four 1.5v cells can be wired in series to make 12v.

We'll now look at each of the popular types of battery we use in our model boats, discuss their relative properties, advantages and disadvantages, think about cost, potential power output, maintenance and charging.

Historically, a battery cell is a container with two dissimilar metals immersed in a chemical causing electrons to move from one metal to the other producing a flow of electrical energy and that basic principle is exactly the same today as it was back in 1700.

Sealed Lead Acid 6v battery

A selection of sealed lead acid batteries and a valve regulated battery

Lead Acid Batteries

In **Diagram One,** we have the common types of these.

Liquid filled

On the left of the diagram is this variety which is the oldest type of rechargeable cell in our arsenal and apart from changes in their case, originally of glass but now usually of high impact plastic, the addition of handles and a few minor upgrades, these work exactly the same as those invented by French Physicist Gaston Plante in 1859. They are extremely heavy for the amount of energy they produce, but their cheap cost and ability to supply a high surge of current when needed with little damage to an individual cell, make them the only really practicable battery with a number of cells for starting car engines and other high drain starter motors, as well as mobility scooters, motor cycles, golf carts, milk floats and surprisingly, conventional diesel electric powered submarines.

Nearly half of all battery sales throughout the world (320 million in 1999) are of this type of battery and we use and abuse them till they go dead on us at 7am on a cold winter morning when trying to start the car's engine. In general, they are up to 90% efficient when in good condition and regularly charged, and this covers all sizes from the big lorry battery to the little ones in alarm systems. Very large versions are often stored and kept trickle charged to be used as back-up systems in cell-phone towers, hospitals and other stand-alone power systems.

Their disadvantages are their weight, plus the fact that the electrolyte is liquid (usually sulphuric acid), and they have to have open pressure vents at the top of each cell, meaning they have to be kept upright at all times or the acid will leak out. Model boaters have used the smaller sizes of these batteries to power their models for decades but more often use them for the electric starting of i.c. engines and perhaps for use with chargers at the pondside.

Lead Acid batteries need care and maintenance and tend to self-discharge over time at a rate of anything from 3 to 20% per month when not in use. Most 'dead' versions of these batteries will be re-cycled, and the bulk of the lead-acid car batteries used today are made from 40% recycled ones. Nominal voltages for motorcycle, car and lorry are nowadays usually either 6v, 12v or 24v. Having said all of this, whilst this type of 'liquid' battery is not recommended for putting in a model boat that will be tossed around on the water, there is a version of it that we can use.

Lead Acid Battery - Absorbed Glass-Mat

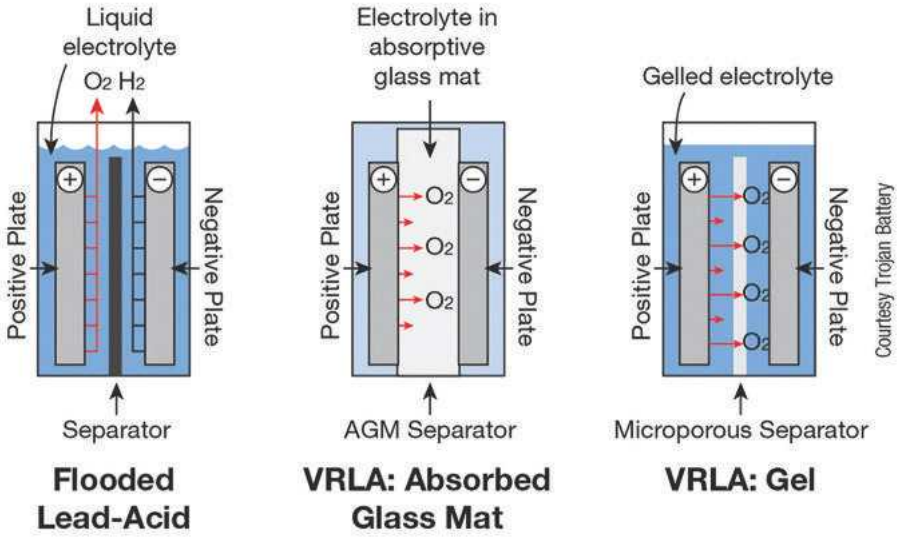
Seen in the middle of the Diagram One and to give them their proper name, these are 'Valve Regulated Lead-Acid (VRLA)' batteries and are the outcome of research into what were called Absorbed Glass Mat batteries. In general, they do much the same as the liquid filled lead acid batteries, but the space between the lead plates is filled with the acid electrolyte suspended in glassfibre matting. All batteries such as this create hydrogen and so calcium is added to absorb that, with the result they can be completely sealed and laid on their side. It was however realised that deep charge, or discharge, caused them to swell so a one-way valve was fitted making them into the valve regulated versions.

Lead Acid Battery - VRLA type - Gel

In the 1970's, the 'Gel Cell' was introduced using similar technology, but with a silicone gelling agent added to the electrolyte. The liquid interior was now filled with a stiff paste and the metal plates squashed more tightly together, reducing evaporation. They were originally designed for applications where little or no maintenance was needed, such as in alarm systems. We tend to use the 6 volt and 12 volt versions of these batteries in larger model boats, with Amp-Hour capacities up to 10 Amps. These are of course what we commonly called **SLA (Sealed Lead Acid)** batteries, convenient because they can be laid on their sides.

They are the type of battery we tend to use in large and heavy models such as tugs, as their weight can also serve as ballast. They are often

DIAGRAM 1 **Battery Types**



referred to as 'maintenance free', although misuse, particularly over-charging, will eventually cause the case to swell and/or leak electrolyte. Remember that all batteries will self-discharge when not in use, and SLA batteries are not designed to be fast charged, although an initial higher charge rate will often kick-start a long stored battery back to life. Ideally these SLA types should be trickle-charged before use to maintain them in a full state and if stored for long periods, a three monthly top-up is recommended.

A dedicated charger will be needed, or one of the 'Smart' chargers that can deliver a charge rate of between 100 and 500ma (milli-amps) for long periods. In alarm and emergency lighting systems, the state of charge is monitored electronically by the system and switched to charge mode automatically when needed. These types of dedicated charger/monitors can be bought from specialist alarm shops. It is a good idea to clearly number and date your batteries and keep a log of their use and charging etc., so as to keep them in tip-top condition.

As with all batteries, they should be disconnected and ideally removed from the model whenever possible, if use is irregular. The gradual build-up of deposits on the plates through misuse, overcharging and being stored uncharged will eventually destroy a battery, but with careful charging and maintenance, they will have a long and useful life.

There are a lot of stories about batteries exploding or bursting, mainly aimed at the newer LiPo types, but this is actually a true statement regarding all sealed types, starting with the SVLA battery as excessive charging can cause it to produce oxygen and hydrogen. This is called 'gassing' and can cause the outer casing to swell. We are dealing with a store of considerable power and if pushed too far by misuse they will 'blow', so stick to the rules for long and safe use, whichever type of battery you are using.

Nickel Cadmium Battery (NiCd or NiCad)

Some modellers may still be using these, and **Photo 2** is of an old, but still perfectly useable 4.8v NiCd receiver battery purchased for 50p at a show. Cadmium is gradually being totally banned and these batteries have now been superseded by Nickel Metal Hydride (NiMH) technology.

The original NiCd was invented in 1899 by Waldermar Jungner of Sweden and the world market in them was massive when first introduced in USA in 1946. A NiCd cell is based around nickel oxide hydroxide and metallic cadmium for the electrodes with a paste electrolyte. Later versions were produced using a 'swiss roll' system of rolling the plates (the sponge) around the electrolyte (the jam) as the separator. This allowed a whole range of cylindrical cells, typically of AA to D size, which could be used singly or in packs soldered or tagged together to obtain different voltages.

Unlike other cells, a NiCd cell was just 1.2 volts, which meant that they could not always be used as replacements in voltage specific applications, since four such cells in series only produce 4.8 volts, whereas four Alkaline cells in series produce 6 volts.

NiCd's were capable of being charged at very high rates equal to about three or four times their capacity and discharged at an even higher rate, perhaps as much as 15 amps in four minutes, with apparently little damage. Initially expensive, prices then gradually fell, but a lot of those later batteries were not of the initial high quality. Because of their ability to punch out the power, a lot of new powered rechargeable hand tools filled the DIY market at the same time, all powered by NiCd battery packs.

If you still have some, they are perfectly usable as I am sure you haven't used the 2000 or so cycles of charge and recharge they were allegedly capable of, but be careful that you use a NiCd rated charger as the newer ones are often only NiMH rated and are not recommended, but dual switchable units are available.

NiCd cells like to be used until nearly flat and then recharged straight away. In fact it was common to regularly recycle these cells by a controlled discharge and then a recharge. Just continually topping them up seems to cause more damage than good as they have a habit of forming a memory and even reversing polarity after misuse or a long period of storage.

If you still use them, then they should be stored charged and checked regularly as they will self-discharge at up to 30% per month when not in use and a regular trickle charge is advisable rather than having a one-hit massive fast charge.

One problem can be corrosion, which manifests itself in various ways. Cells left in a transmitter will often exhibit the classic negative or 'black wire' corrosion, which if left could eat away the whole of the PC board in a radio transmitter. Cells under a plastic heat shrink often exhibit white deposits (aluminium/lead or zinc oxide corrosion) after a heavy life and their terminals can also be destroyed, but in summary in real terms, the once superb NiCd cell is now obsolete having been replaced by the NiMH type.

> *As with all batteries, they should be disconnected and ideally removed from the model whenever possible, if use is irregular.*

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3

Nickel-Metal Hydride (NiMH) battery

This was the result of experiments in Geneva into the hydrogen battery (cell). The research was sponsored by Daimler-Benz and Volkswagen and early examples were used in space satellites as early as 1970. The first 'Hydride' batteries became commercially available to general consumers in 1989.

The positive (Nickel-Oxide Hydroxide) electrode remained similar to that in a NiCd, but the negative changed to a hydrogen absorbing alloy instead of Cadmium. This was the first practical application of nickel-hydrogen battery technology and resulted in cells that at that time, had a capacity of up to three times that of the superseded NiCd, but without the Cadmium heavy metal problem.

NiCd and NiMH cells produce volts at 1.2, but their capacities have increased until it is now possible to find individual cells rated at anything from 500 to 13000MAh, that is to say, 0.5 to 13 Amps. Packs of these NiMH cells are very commonly used in our models these days, coming in all sorts of pack voltages and capacities, **Photo 3** being of a typical Sub-C 7.2v 3700MAh battery pack for powering a drive motor(s).

With the cells packaged in a similar way to the older NiCd types, i.e. AA, A,C, D sizes etc., they have been readily accepted by users who often assume a NiMH battery is the same thing, but with a different name, which is far from the truth. It has also become possible to get an AA size NiMH cell, **Photo 4,** of perhaps three times the capacity and the same voltage as an earlier NiCd type. Another advantage of these cells is their lower internal resistance, something that often caused older NiCd cells to markedly deteriorate over time and the NiMH cell does not have the same memory problems. It is also possible to top-up charge a NiMH battery pack, instead of running it flat before a new charge.

"Trickle charging at about 1/10th of its capacity is the best method and will ensure a long life, but the odd charge at between 30% and the battery's full capacity now and again should not be a problem."

4

Trickle charging at about 1/10th of its capacity is the best method and will ensure a long life, but the odd charge at between 30% and the battery's full capacity now and again should not be a problem. It is recommended that a timer equipped and/or intelligent charger be used, and even though such chargers will switch off automatically, batteries on charge should not be left unattended for long periods, **Photo 5** being of a typical mains (or 12v) powered intelligent universal programmable charger. It can be set to charge all the types of batteries shown on the casing using scroll-through screen menus.

There are a couple of negatives we should consider and the first is that a NiMH cell has quite a high self-discharge rate, typically resulting in the loss of between 5% and 30% of its capacity on the first day after a charge. These figures then settle at around 0.5% to 4% per day after that. So a battery pack left unused could be totally dead after about 10 months. Because of this, normal NiMH batteries are NOT recommended for long periods of low current application, in other words being charged and then expected to power a low current light bulb for an extended period or perhaps more pertinently, being expected to power a transmitter for many hours two weeks after being charged.

As a result of this, conveniently there are some low discharge NiMH batteries available. These have improved electrode separators and positive electrodes, and should maintain about 70 to 80% of their charge after a year, and these can be used in our radio gear. Introduced in 2005, these cells do not have the same high capacity as the others, but typically will remain good when stored at about 20 degrees. Finally on the subject of NiMH batteries, I shall mention it once again, and that is that NiMH batteries are perfectly suitable for powering brushless motors.

Lithium Polymer batteries

Sometimes known as Lithium-Ion Polymer or Polymer Lithium Ion, but commonly known as a 'LiPo', these seem to be the one that causes consternation among modellers and here are some of the questions and myths about these batteries.

- **What do all the numbers and letters mean?**
This is explained later in this section

- **They can only be used for brushless motors.**
No, they can be used for brushed motors as well.

- **They catch fire or blow up all the time, don't they?**

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Well, if you seriously mistreat ANY of the batteries already mentioned, they can blow up, catch fire, burst, leak and so on. So that statement is true, but only if a battery is misused and mishandled.

LiPo's are a follow on from the Li-Ion (Lithium Iron) batteries which are very similar, but are usually encased in a rigid airtight case or produced in a metal tube rather like conventional AAA and AA sized batteries. For the sake of simplicity I will stick to the LiPo battery as both are very similar in use, make-up and charging, but this is the one we will mainly be seeing for use in our models and **Photo 6** is of a typical 2S (7.4v) LiPo battery that weighs next to nothing.

The electrolyte in the LiPo cell is a Lithium salt but unlike the Li-Ion, where it is held in an organic solvent or semi- liquid form, it is suspended as a solid polymer composite (Polyethylene Oxide or Polyacrylonitrile). Because of this change, the LiPo cell is cheaper to manufacture and can be made in a variety of shapes to conform to the needs of the manufacturer.

A Polymer cell is termed as a 'Pouch Cell' or in other words the individual cells are in foil-type plastic (polymer) laminated pouches. A polymer cell does not need outside pressure to hold it all together like the Li-Ion as the electrode sheets and separator (electrolyte) sheets are laminated into each other. Because of the soft outer wrappings, the LiPo cell can be up to 20% lighter than an equivalent Li-Ion, but there are rigid outer case types of battery (a linked number of cells), available for those who prefer them.

Owing to this apparent lack of protection, a soft covered LiPo battery is prone to wear if allowed to move about in the model. Care in making the battery secure, including soft protection against vibration, is important to stop the thin plastic exterior from being worn away or breeched. Making adjustments with a sharp tool inside a model is another danger as an innocent stab through the casing could cause a catastrophic meltdown or even a fire.

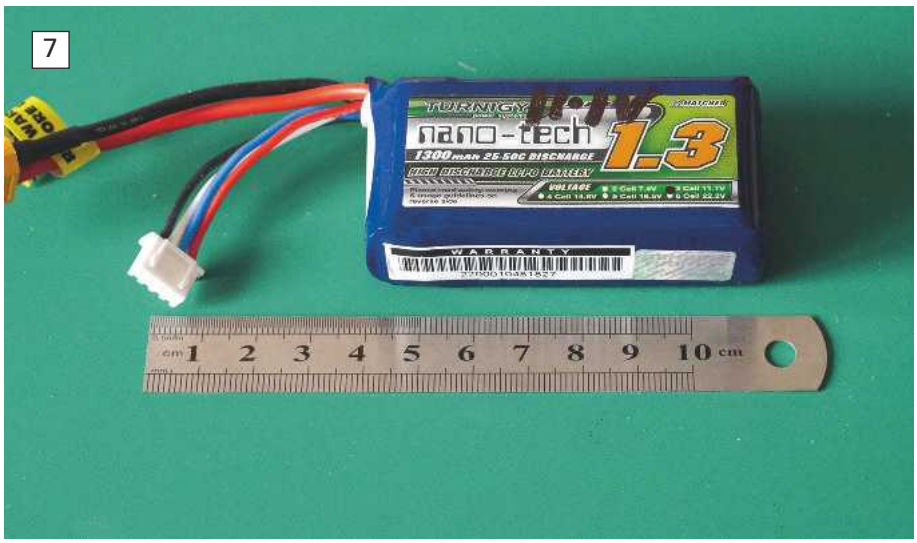
LiPo's should be made easily removable for charging purposes and to check their condition from time to time. They should NOT be charged inside the model.

The battery packs we use in our models are made up of one or more cells, each one having a voltage rating of between 2.7 volts discharged and 4.23 volts fully charged. A nominal voltage is generally applied which makes life easier, it being the average of each cell, hence typically 3.7 volts.

So a battery pack with a voltage of 7.4 volts will consist of two x 3.7 volt cells, (three cells equals 11.1 volts; four cells equals 14.8 volts, etc.). This will usually be seen noted on the battery pack exterior as 2S, 3S , 4S and so on, **Photo 7** being of a 3S battery of 11.1v. This, in weight and size terms, is not that much different to that shown in the previous picture.

Looking at a LiPo battery you will see there are two main power leads, usually black and red connected to a plug which can be of the Tamiya variety, but is often of a higher rated type. These leads will be quite substantial and this is an indication of the potential power stored in this little battery.

There is also another lead with 3, 4, 5 or more, thinner wires terminating in a small white plug, which is called the Balance Lead. A close look will show you that while the lead colours can be anything, red, white or assorted, one of them at the end is always black and this is the Negative lead for the whole pack. Each of the other leads go to the positive terminals of each cell. So, three whites and one black lead means a three cell battery of 11.1 volts. Referring back to Photo 7, you can just see that there are four contacts on the white plug,



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indicated the battery has three cells. The Balance Lead can be used to test each cell individually if you think one is low and can also used to 'Balance Charge' the pack, but should only be used with one of the chargers in LiPo 'trickle' mode. The white balance lead sockets on the charger shown earlier can be seen in **Photo 8,** the device being able to cope with a battery of up to six cells, that is 22.2v, but clearly the fine wires cannot take a large current.

You can also charge the LiPo battery pack at its rated combined voltage using the heavy duty red and black main power leads and the same intelligent LiPo charger, all this being programmable. Such high speed charging will often cease after 90 minutes or so and this is a safety feature and the maximum time will reduce if the charge rate is increased. For those that do not heed this warning, this is where a battery can explode if overcharged. In practice, and in my experience, slow charging though the balance lead is good enough for our use, particularly in a scale model and Component Shop sell a rather handy inexpensive charger for 2S or 3S LiPo packs, **Photo 9 and Photo 10** shows its two Balance Lead sockets, there being no fast charge option with this unit. It self-sets and turns off automatically, a marvellous little device. This picture also clearly shows the four pins for the 3S (3 cell 11.1v) and three pins for the 2S (2 cell 7.4v) LiPo batteries.

In any event, a balance charge every fifth charge or so will ensure that each individual cell is charged to its proper capacity and help maintain the whole pack in good condition.

Charge and discharge rate

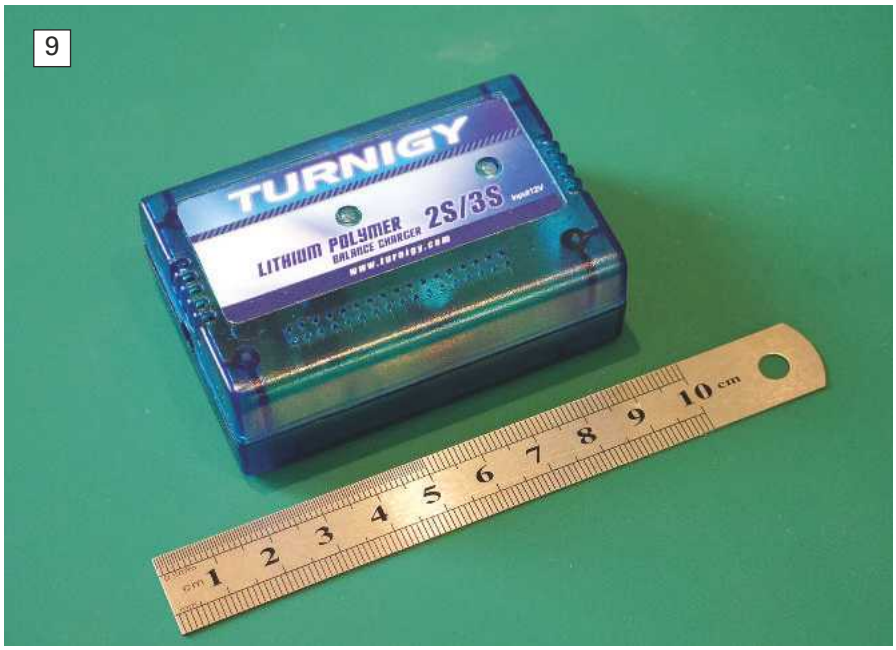
On a LiPo battery case you will find some numbers, typically 3C, 10C, 15C or similar, often in the form of 25C-50C (as in Photo 6). 25C means that it can be charged at 25 times its nominal capacity and the higher second number means this is the maximum discharge rate, in this case 50 x nominal capacity. The highest discharge rate number I have managed to find is currently 140C, which is 140 times the battery's capacity, which is quite remarkable. Do not leave a LiPo battery unattended on charge overnight and a metallic safety charging bag is handy as well or you could just use an old steel saucepan. I have to say though, that I have NEVER had anything untoward happen when charging a LiPo battery properly.

Dumping?

One major problem with LiPo batteries, is that they can dump, or crash irretrievably if used beyond a defined low voltage. For general use a figure of 3.3 volts per cell is regarded as the danger point. Most of the products that use these batteries have a built in electronic system which stops the battery from working when it reaches about 3.3 volts, such as in mobile phones.

In model boats, we can set some speed controllers (usually for brushless motors) to power-down (shut-off) when the low voltage point is reached, but for £3 you can buy from Component Shop a handy little device that makes a loud warning sound for you, **Photo 11,** for 2S and 3S LiPo batteries, something I now use in all my models. Some brushless motor esc's are fully automatic, but others need to be manually set and this little device neatly solves the problem, its noise generation being loud!

All of this may sound scary, but in fact these batteries are 'the best thing since sliced bread', as some would say, and for normal model boating they are proving to be smaller, lighter, great value and more powerful than other more bulky types of battery.



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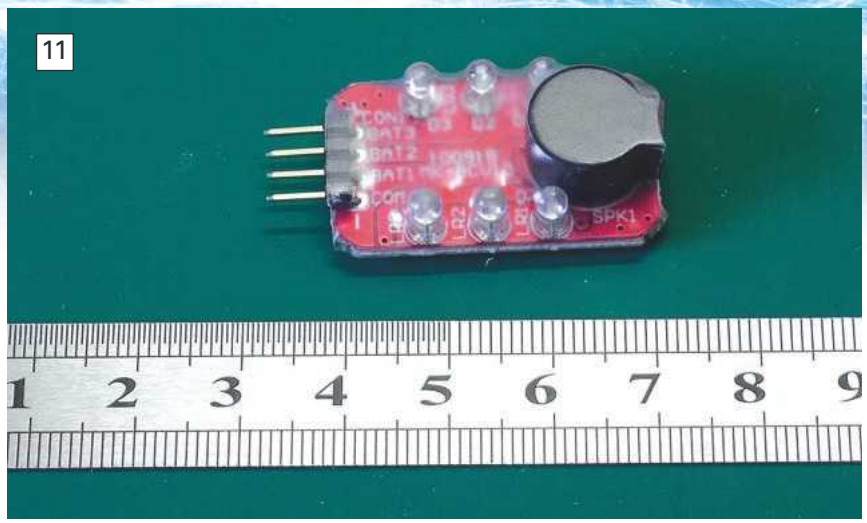
Battery prices

A quick look at the website price lists of suppliers such as Component Shop reveal that depending on your needs, a battery of any type can cost from next to nothing to many pounds(£). The good news is that unusually for nowadays, Component Shop produce a printed catalogue which includes hints and tips which are very useful for those who are not dedicated web surfers. Personally I am now 100% into LiPo batteries for the power source in my model boats as they are lighter in weight than an equivalent NiMH battery and prices are nowadays very competitive. A 2S LiPo battery is nominally 7.4v, not that much different from a six cell 7.2v NiMH Sub-c pack for example, but typically just 50 to 60% of the weight enabling small models to perform even better, but the choice is as always, yours.



Conclusion

This article covers the common battery types that are used in our electrically powered models. While researching all this, Iain at Component Shop confirmed that they charge and discharge 100's of batteries all the time, and they have NEVER had a LiPo pack explode. I must also thank them for their help and friendly service. An advertisement with full contact details can usually be found in this magazine and their catalogue includes the relevant information for charging all their batteries.

Whatever type of battery you use, they will all give long service with care, maintenance and properly regulated charging, and the modern technology enables us to achieve speeds and overall performance and running duration with our models that would be undreamt of, even just a decade ago.

Happy and safe boating - ***Ron Rees***

ABOVE: Les Trathen's survey vehicle entering the pool. The original was based on a 1970's Hobbies plan and uses Meccano gears.

BELOW: Rex Hunt's new landing craft, based on the Speedline Models kit for an LCM 6 (nominally 6 feet longer than an LCM 3).

The outside lake.

ABOVE: S.S. Sir Richard Grenville based on a Dean's Marine kit. Full-size vessel in service 1931 to 1963 and then sold, being sailed by Amanda Hunt.

Modelmaker's Week

Dave Brumstead *reports from Holiday Resort Unity*

After missing the 2014 event due to an impending house move, this year we managed to make our way to Brean in Somerset for the Modelmaker's Week at Holiday Resort Unity. Site accommodation can be rented or you can book a place for your touring caravan and all the details are on the resort's website. The site is positioned on the inland side of the coast road and on the other side beyond the sand dunes, is an extensive beach which was used by the model flyers and those with sand yachts. On site, model flying and model boating activity took place.

The outside lake was used in the mornings for model yacht racing which finished at lunchtime, then in the afternoons it was used for free sailing of any model and in the evenings we had the use of two of the resort's swimming pools. One had a sloping entry which was used by amphibious vehicles and was about half a metre deep whereas the other pool was deeper, but was partially roofed which made it usable regardless of the weather.

Off-site there are plenty of places to visit, including Weston-super-Mare and Burnham-on-Sea and at Watchet there is a small harbour and we were surprised to find an ex-RNLI Lifeboat The Good Hope, a Seaplane tender and the Vosper P1041 Gay Archer MTB.

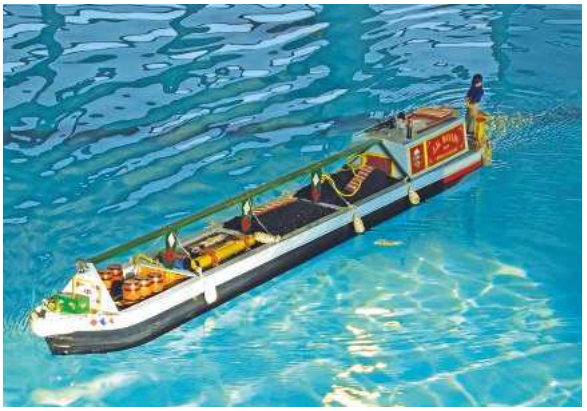
The Good Hope, a 46ft Watson Class boat, was

ABOVE: Small yachts on the outside lake.

BELOW: P1041 Gay Archer at Watchet.

ABOVE: Seaplane Tender No. 437 with additional cover added to stern.

RIGHT: John Baylis' Riverside Models narrow boat, modified to a cargo carrier.



BELOW: Former RNLB Good Hope at Watchet.

2015

based at Montrose from 1939 to 1972 and sold out of service in 1981. The seaplane tender (a bit tatty), is a 41.5ft Mk. 1, No. 437, entering service in 1941 and offered for sale in 1956. HMS Gay Archer was the first of the twelve Gay class vessels capable of a top speed of 45 knots, it being sold out of service in 1963.

The Thursday evening of the week saw the modelmakers converge on the restaurant for a communal meal and raffle, during which the aeromodelling contingent mentioned that this was the 40th year of the Modelmaker's Week, twenty of which had been at this Holiday Resort Unity site.

If you wish to attend this ongoing event in 2016, please check the Holiday Resort Unity website for further information: www.hru.co.uk

by David Walter

RIGHT: The French barque Belem was built in 1896 as a trading ship designed to cross the Atlantic. Today she operates as a sail training ship and is an iconic vessel for France's maritime heritage.

BELOW: The Dutch owned Artemis was built in Norway in 1926 for whaling purposes and is seen arriving in London for the Diamond Jubilee Pageant of 2012.

Tall Ships

Tall Ships visiting the Thames in London always arouse special interest, especially if they arrive under full sail which is rare owing to the confines of the river. This is a selection of those ships visiting London in recent years.

RIGHT: The Columbian Navy barque Gloria was built in 1968, seen here departing the Pool of London with the crew dressed in the colours of their national flag.

BELOW: The Polish training ship Dar Mlodziezy built in 1982 led the Parade of Sail on the Thames in 2014.

Tenacious at anchor off Southend on Sea. She is the largest wooden tall ship of her kind in the world and was built in 2000 for the Jubilee Sailing Trust.

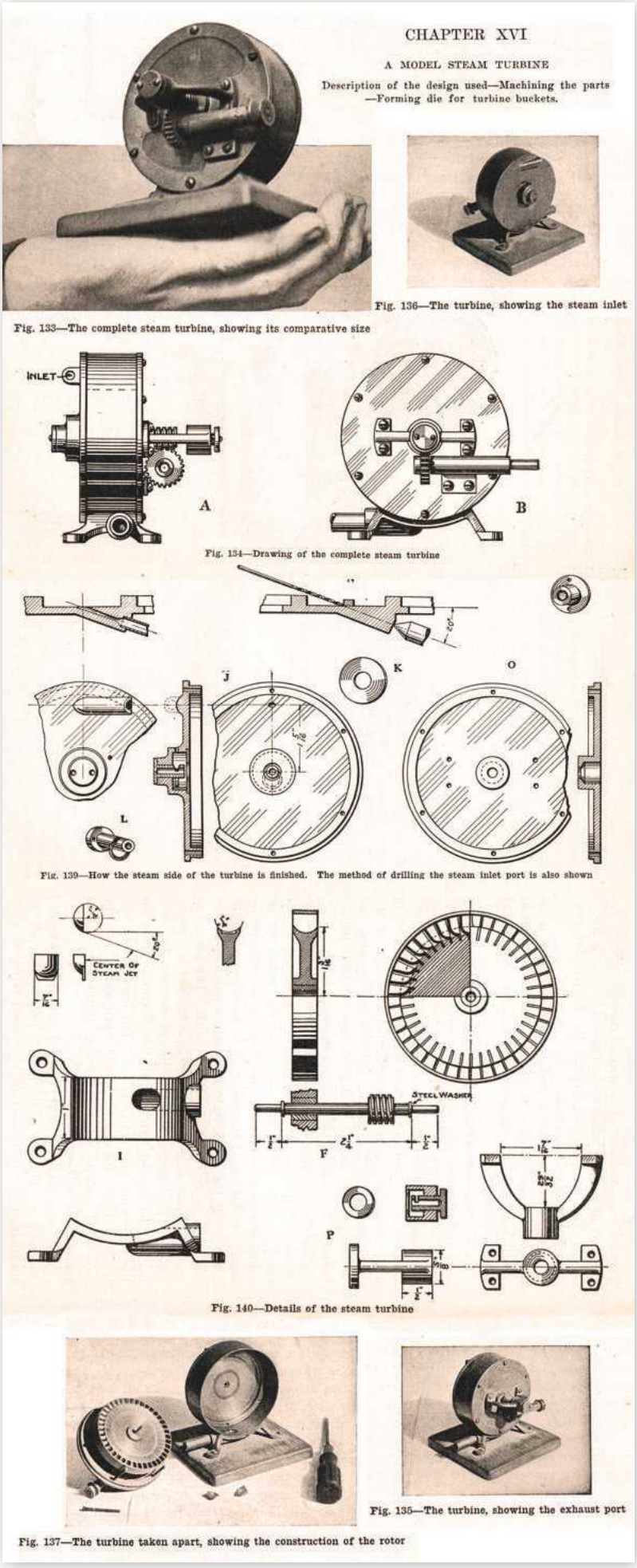
on the Thames

ABOVE: Shtandart is a modern 1999 replica of the Russian Navy flagship originally built for Peter the Great in 1703.

LEFT: The US Coast Guard barque Eagle was built in 1936 by Blohm and Voss of Hamburg for the German Navy as the Horst Wessel.

BELOW LEFT: The very rare sight of the German sail training vessel Alexander von Humboldt II arriving in the Pool of London under sail and unaided by tugs.

BELOW: The trading schooner Oosterschelde was built in 1918 and is the largest restored Dutch sailing vessel.



CHAPTER XVI

A MODEL STEAM TURBINE

Description of the design used—Machining the parts —Forming die for turbine buckets.

Fig. 133—The complete steam turbine, showing its comparative size

Fig. 136—The turbine, showing the steam inlet

Fig. 134—Drawing of the complete steam turbine

Fig. 139—How the steam side of the turbine is finished. The method of drilling the steam inlet port is also shown

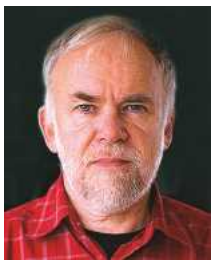
Fig. 140—Details of the steam turbine

Fig. 135—The turbine, showing the exhaust port

Fig. 137—The turbine taken apart, showing the construction of the rotor

this is

Flotsam



John Parker *delves into the archives*

33: Model Steam Turbines

When Charles Parsons raced his prototype steam turbine powered Turbinia through the ranks of parading warships at the Royal Navy Review at Spithead on 26th June 1897, faster than any of them, he began a revolution that was to see the steam turbine largely replace the reciprocating steam engine for ship propulsion. Yet no such similar revolution took place in model boat propulsion, where the steam turbine remains a rarely seen experimental curiosity, and if any vessel at all still claims to be steam powered, it will almost certainly have a reciprocating engine. A consideration of the practical problems of making a miniature steam turbine may shed some light on the reasons for this disconnect.

Engineering challenges

The steam turbine, as readers will be aware, depends on the action of a steam jet on a rotor, a wheel with carefully shaped blades around its periphery that convert some of the energy of the steam into the continuous rotary motion of the rotor. The turbine may be of the impulse type, akin to water transferring its kinetic energy to a waterwheel, or the reaction type, which depends more on the controlled expansion of the steam through a series of moving and fixed blades. Model turbines are generally of the impulse type as these are less complex to make, but the price paid is in lower efficiency.

Anyone with an appreciation of model engineering will recognise the difficulty of making a rotor with multiple, identical blades carefully shaped and securely fixed to provide the required performance. The next challenge soon follows, for by nature the turbine needs to run at a high speed, which requires the rotor to be finely balanced and have good bearings provided with adequate lubrication without allowing excessive steam leakage. Then comes the need for gear reduction, since the high-speed, low-torque characteristics of the turbine are not at all suited to driving a water screw. A gear reduction of 10:1 or more may be required and will waste a lot of the available power if not carefully made. If these are not challenges enough, the turbine will require a more copious supply of high pressure steam than a reciprocating engine, and being usually non-reversible, may require a separate turbine, reversing gearbox or other means such as a reversible-pitch propeller to drive astern. The steam feed jet will be tiny, prone to blockage and critical in regard to its shaping, angle and position in relation to the rotor.

LEFT: Model steam turbine construction, 1919.

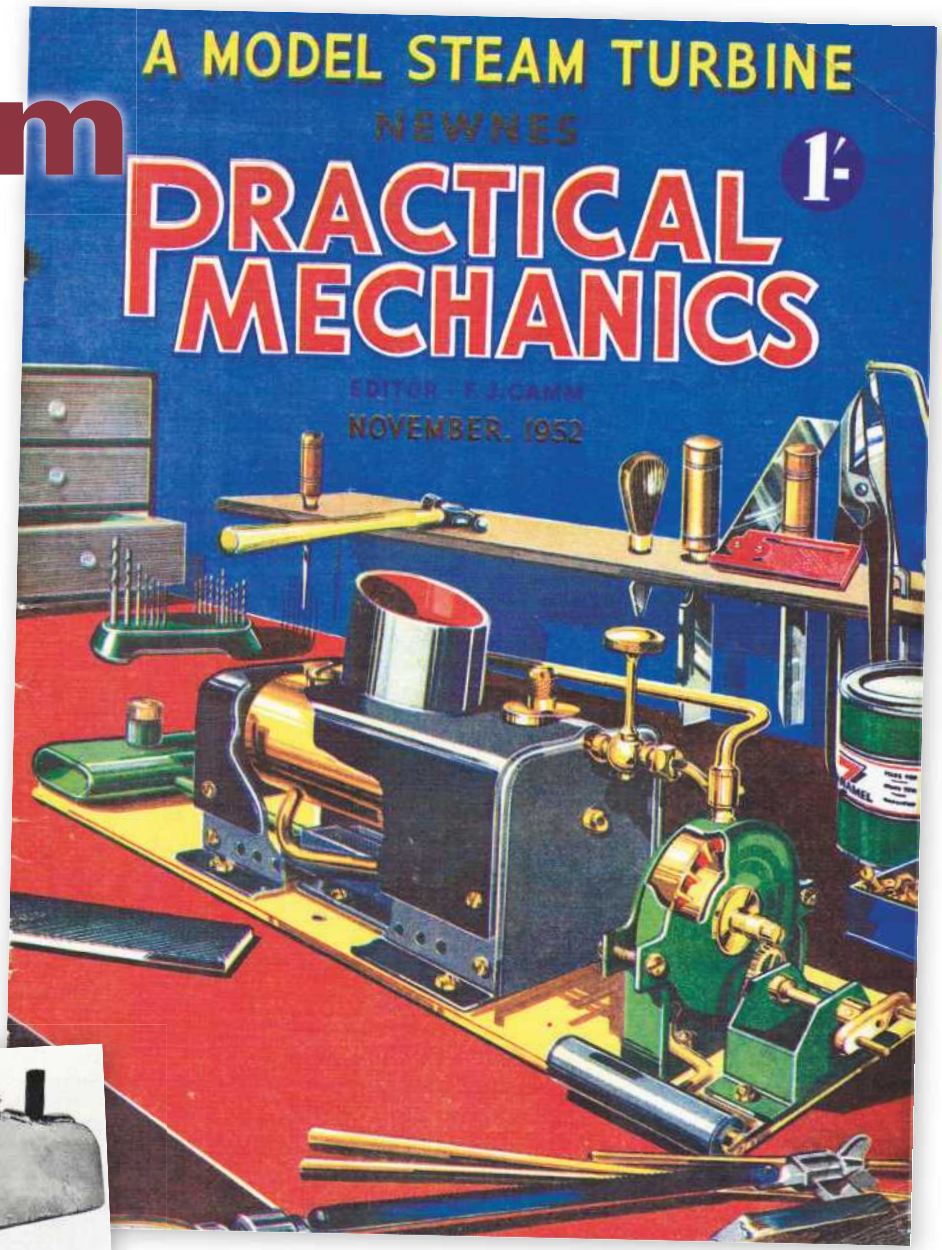
&Jetsam

Past examples

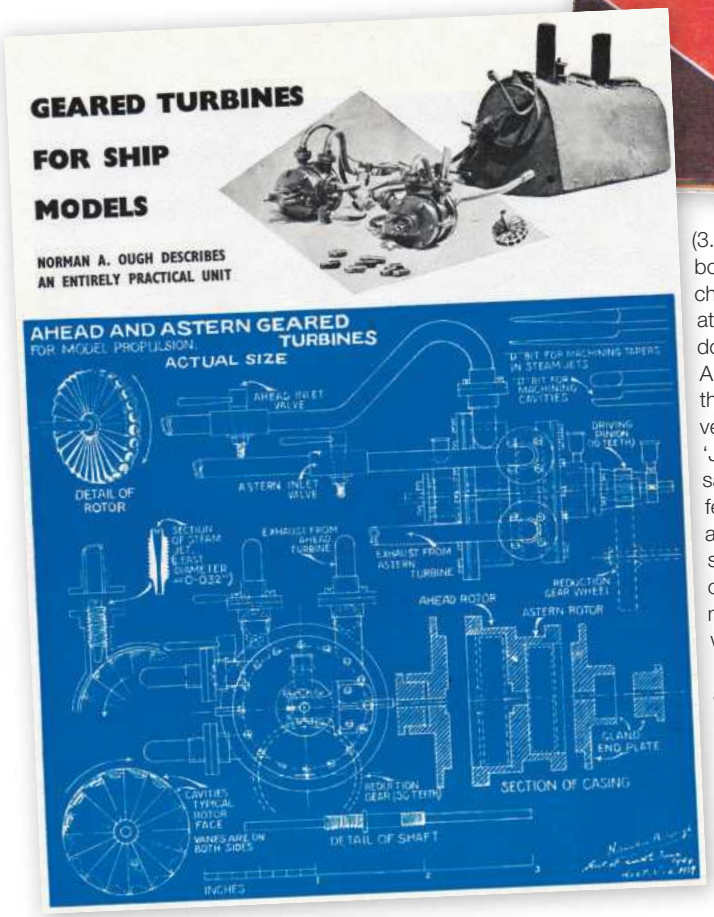
The earliest example I could find in my library for the design of a model steam turbine comes from the book 'Model Making' edited by Raymond Yates and published in America in 1919. I have included a compilation of the drawings provided to build this engine, which are not for the inexperienced as they assume the ability to both make, and machine, castings. Most of the key components are in fact castings, including the rotor, which is slotted around its outer edge to receive forty buckets, or blades, of sheet brass, made with the aid of a forming die. The soldered assembly is then trued on the lathe and fitted with a shrunk-on outer ring. After careful balancing this is fitted to the 3.5 inch diameter turbine casing made of brass tubing. 20:1 worm gearing provides the necessary reduction, with the side thrust of the steam jet on the rotor helping offset the driving thrust of the worm gear.

An altogether simpler design, intended for the beginner, appeared in the November 1952 issue of Practical Mechanics magazine (please see Flotsam and Jetsam No. 20, November 2014 MB). Here the rotor casing is a boot blacking tin and the rotor made from a disk of brass with the 24 blades formed by twisting and cupping segments cut into its outer diameter. A circular shroud is then soldered around the blades and made to be a close fit in the rotor case. The steam nozzle is a length of 1/8 inch (3.2mm) tube with a 1/32 inch (0.8mm) bore 'tapered approximately 1 in 12 and chamfered to 3/64 inch (1.2mm) diameter at the outlet', though the instructions do not make clear how to achieve this. A critical item on any model turbine, this venturi shaping determines the velocity of the steam jet. The article, by 'J. E. J.' shows the turbine fitted to the same metal launch Vanesa previously featured in the August 1952 issue with a reciprocating steam engine. A turbine such as this would not be very efficient or generate much power, but if carefully made would be able to demonstrate the working principle.

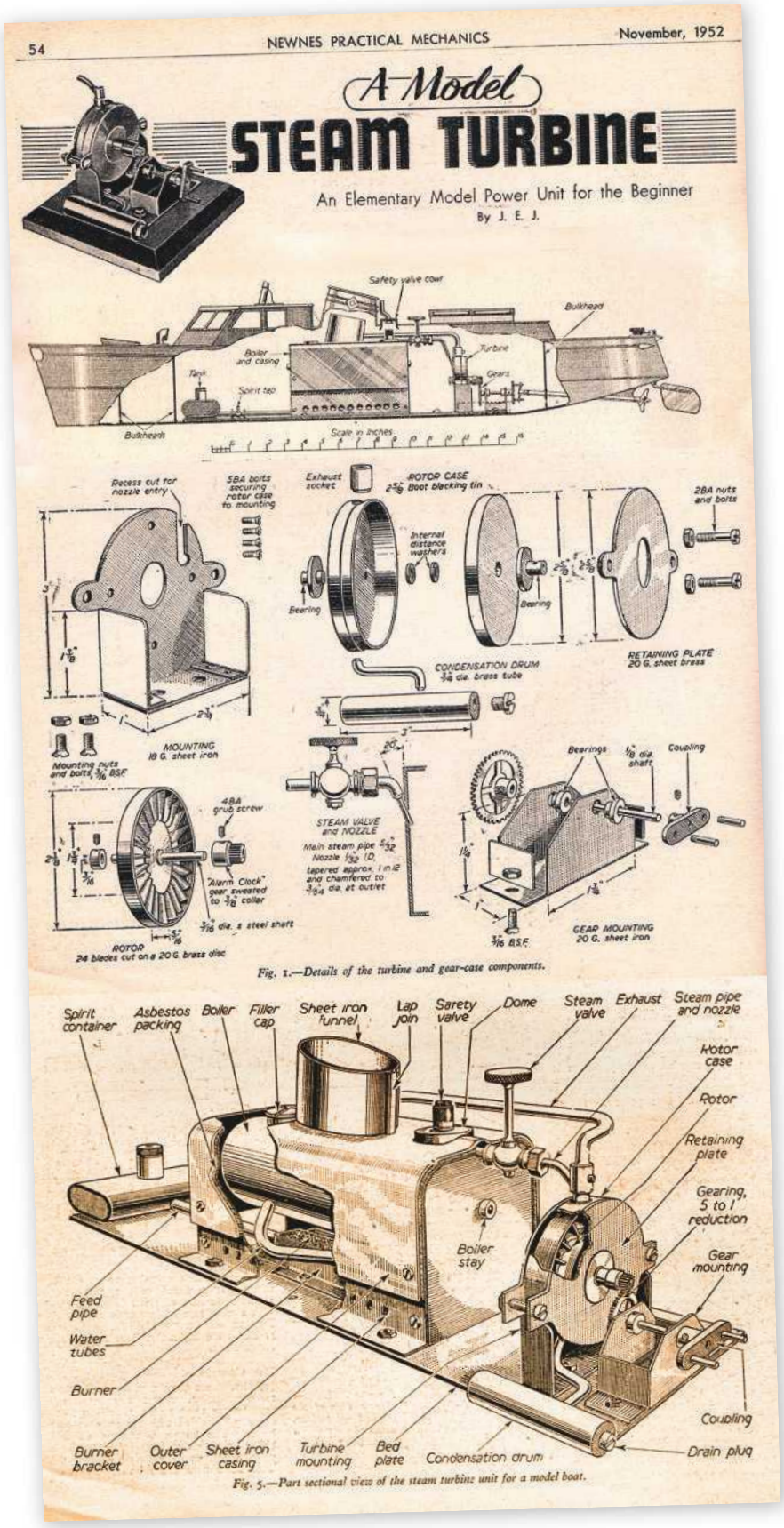
In his December 1959 Model Boats article 'Geared Turbines for Ship Models', Norman Ough describes his own design for a twin-shaft turbine power plant as 'a practical job of some efficiency'. Better known for his warship models made in tinplate, here Ough utilises a separate turbine for each shaft, each with its own ahead and



ABOVE: The cover of Practical Mechanics, November 1952.



LEFT: Norman Ough's design, Model Boats December 1959.



54 NEWNES PRACTICAL MECHANICS November, 1952

A Model

STEAM TURBINE

An Elementary Model Power Unit for the Beginner

By J. E. J.

Fig. 1.—Details of the turbine and gear-case components.

Fig. 5.—Part sectional view of the steam turbine unit for a model boat.

ABOVE: A beginner's steam turbine.

ABOVE: Wada Works advertisement, 1982.

by John R. Collins appeared in the December 2001 issue, entitled 'A Model Steam Turbine' and describing a simple design that would be within the capabilities of most scratch builders. Prospective experimenters will also find no shortage of old books available on the subject of building model turbines, often in reprinted or e-book format. The boiler for a steam turbine must of course be subject to the same safety and certification requirements as a boiler used for a reciprocating steam engine.

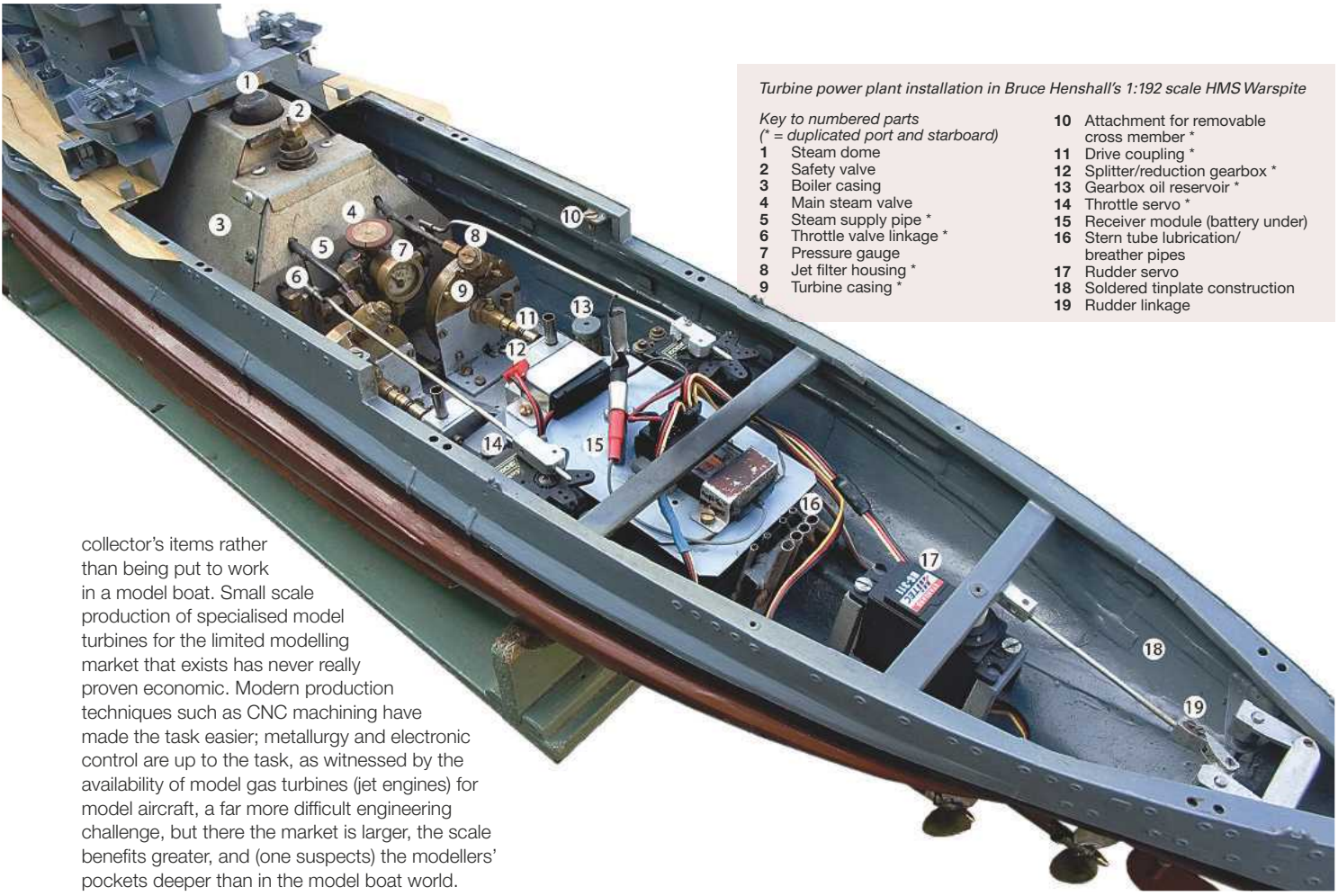
Commercial turbines

From time to time, commercial concerns have manufactured miniature steam turbines for model use. The Davis Steam Turbine, for example, was an optional power plant for the 1930s Streamlinia model boat recently described in these pages (March 2015 issue), using a friction reduction drive. In 1982, Model Boats magazine carried advertisements for the Japanese made Wada Works Turbine and Boiler set. This operated at 30000rpm (3000rpm at the geared output shaft) and managed to offer forward and reverse throttle operation via a steam valve, presumably by using two jets impinging on a double-sided rotor in opposite directions.

Several other examples of model turbines have been available from time to time. Generally these have either been of the simple toy demonstration type, or if capable of usable power output, have only been available for a limited time and intended to become

astern rotors, resulting in no less than eight steam pipes and a look of quite fearsome complexity, even without the boiler feed pump driven by a separate plant. He lists the advantages as being compactness, low height and low centre of gravity, smooth running and ease of control via steam valves in the induction pipes, and highlights the ability of a steam condenser to reduce pressure on the outlet side and thereby improve performance.

A more recent Model Boats article on the subject



Turbine power plant installation in Bruce Henshall's 1:192 scale HMS Warspite

Key to numbered parts
(= duplicated port and starboard)*

1 Steam dome
2 Safety valve
3 Boiler casing
4 Main steam valve
5 Steam supply pipe *
6 Throttle valve linkage *
7 Pressure gauge
8 Jet filter housing *
9 Turbine casing *
10 Attachment for removable cross member *
11 Drive coupling *
12 Splitter/reduction gearbox *
13 Gearbox oil reservoir *
14 Throttle servo *
15 Receiver module (battery under)
16 Stern tube lubrication/ breather pipes
17 Rudder servo
18 Soldered tinplate construction
19 Rudder linkage

collector's items rather than being put to work in a model boat. Small scale production of specialised model turbines for the limited modelling market that exists has never really proven economic. Modern production techniques such as CNC machining have made the task easier; metallurgy and electronic control are up to the task, as witnessed by the availability of model gas turbines (jet engines) for model aircraft, a far more difficult engineering challenge, but there the market is larger, the scale benefits greater, and (one suspects) the modellers' pockets deeper than in the model boat world.

Appeal of the turbine

It must be said that, compared to a reciprocating steam engine, the steam turbine lacks visual appeal and nostalgic attraction. There are no connecting rods flashing up and down, no means of understanding the operation just by looking at it, no chuffing exhaust to evoke a hard-breathing athlete, no hiss of achievement when stopping, just an inscrutable whir coming from somewhere inside a metal drum. This can make it a lost cause for many, who understandably prefer people to be able to see what they have, or have achieved.

A fine example

Despite the difficulties associated with making your own steam turbine power plant, there is always someone willing to give it a go, and I am pleased to say that we have such a person amongst the members of the Broadmeadows Model Boat Group that I sail with here in the northern suburbs of Melbourne, Australia, website: www.bmbg.org.au.

Bruce Henshall has been making models since 1940, and has not let advancing years provide an excuse for accepting a lesser modelling challenge. In a quest for realism his model of the RN Queen Elizabeth class battleship HMS Warspite is built entirely of metal and powered by a twin-turbine power plant of his own design and manufacture, driving all four shafts though two splitter/reduction gearboxes, and it's all been done to a scale of 1:192 (1/16 of an inch to the foot), the model being only just over a metre long.

It is a little uncanny to witness this model as it comes steaming past. The whine from the turbines is quiet, yet strangely purposeful; they can be heard to load down and then slowly spool up again as the model completes a tight turn, due to the drag of the rudders. Rarely can you look at a model ship and consider that not only is it built of the same material, steel, as its full-size counterpart was, but that it also has the same type of propelling machinery. I could remark even further on the realism of this model, for it has been known to steam in circles at times due to problems with its steering, just as the original HMS Warspite did at the Battle of Jutland in 1916. But that would be going too far, and perhaps a little unfair to Bruce, so I won't!

LEFT: Bruce Henshall's 1:192 scale HMS Warspite on twin turbine power - a remarkable model.

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More Power for QE2?

***Tim Henderson** installs more powerful machinery in his model*

In the conclusion to the article about this QE2 model published in the MB September 2015 issue, it was noted that I was disappointed that it had only achieved a full-size ship speed of 18.75 knots, the original steam powered QE2 actually having a top speed of 32.5 knots. During speed trials of the model in March 2015, the model had been timed over a measured distance and an actual speed of 1.33 knots was determined, which is 18.8 knots for the full-size ship and therefore far less than its true top speed. **Photo 1** is of the Clyde steam plant in the model and in use at that time.

Investigation equipment

As part of the investigation into how to increase the speed of the model, a hand-held laser tachometer was acquired and a reflective target disc, it being an 18mm diameter black painted aluminium cylinder with 12 x 12mm self-adhesive reflective tape, was fitted to the starboard propeller shaft, **Photo 2,** this allowing an accurate measurement of the rpm (revolutions per minute) of that shaft.

The laser device is a **PCE DT 62 Laser Tachometer** purchased online for a total price of £33.60 including £6 delivery cost from:

PCE Instruments UK Ltd,
Units 12&13 Southpoint Business Park,
Ensign Way,
Southampton,
SO31 4RP.

A similar instrument can be obtained from Machine Mart for £58.79 and **Photo 3** shows the tachometer aimed at the black painted aluminium cylinder on the starboard propshaft.

Photo 1. The original Clyde oscillator engine propulsion machinery. Only one servo is needed for engine control.

Ship propulsion?

Just to make things clearer and the reasoning behind the calculations, the basic principal of ship propulsion is that a ship's propeller screws its way through water and so pulls (or pushes) the ship with it. This movement is due to the pitch of the propeller blades multiplied by the rpm of the propeller. However, as water is a fluid, the propeller's apparent speed (usually forwards), decreases with its slip and becomes equal to the ship's speed. Slip is due to the resistance caused by the ship's hull moving through water. Resistance for lower ship speeds is proportional to the square of the ship's speed.

Analysis of QE2 model performance

With the model out of the water and as originally configured, a propeller speed of 4200 rpm was recorded at a steam pressure of 1.5 bar. However, with the model tethered in fresh water, the propeller speed dropped to 1100 rpm, which suggested that this was the approximate propeller speed when the model was travelling at 1.33 knots. The five bladed propellers have a diameter of 35.56mm and pitch of 38.10mm. Calculation showed that at 1.33 knots, the propellers would be running at 1077 rpm with no propeller slip and with 5% slip at 1134 rpm and this was the situation with the Clyde engine. Clearly, if the speed of the model was to be raised to 2.3 knots corresponding to a full size ship speed of 32.5 knots, the 'in the water'

propeller speed would have to be increased to over 2000 rpm. So, to achieve this, a more powerful engine would need to be installed and a study of available units showed that the Graham Industries TVR1ABB twin cylinder slide valve engine with 12.7mm bore and 15.8mm stroke, was of a light weight, using much aluminium together with brass in its construction. The existing all brass Miniature Steam Clyde two cylinder oscillating engine has a bore of 11mm and stroke of 11mm, so the TVR1A engine also had nearly twice the cubic capacity of the Clyde engine and furthermore, a slide valve engine makes more efficient use of the expanding steam in the cylinders.

New engine assembly and installation

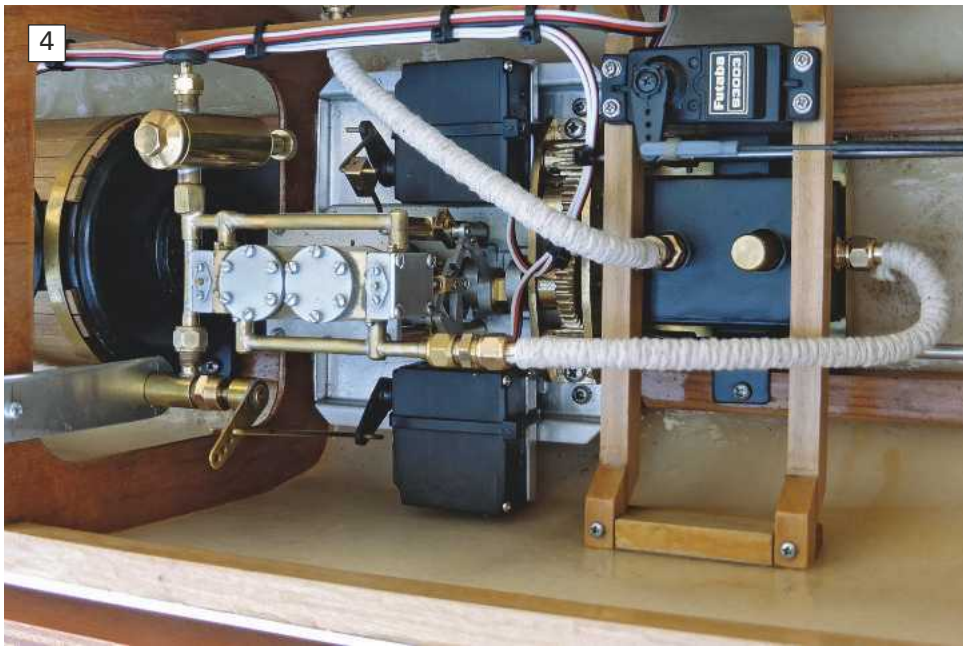
The TVR1A engine was purchased in machined kit form and assembled, it then being mounted on an aluminium baseplate made from folded 1mm thick aluminium sheet. The engine is close-coupled to a gearbox of my own design as the engine has to drive two propshafts. This gearbox has a speed increasing ratio of 1:3, so the twin propellers run at three times the engine rpm, which is same ratio as had been used with the Clyde engine. However, this new gearbox for the TVR1A engine has a much lighter brass frame and the face width of the proprietary brass gears has also been reduced from 6mm to 4.8mm and the hub diameters reduced to a minimum. The finished weight of the TVR1A machinery complete with associated steam regulator valve, lubricator and two servos is 654 grams compared to the replaced Clyde machinery, complete with one servo, which has a weight of 652 grams.

The Clyde machinery was removed from the model, and the TVR1A machinery, together with a lighter weight and larger capacity oil separator aft of the gearbox on the centreline between the propeller shafts, were all installed in the QE2 model, together with the new gearbox**, Photo 4.** No change was required to the fixed lead ballast in the model and although the centre of gravity of the TVR1A machinery is marginally higher, the model remains very stable.

Photo 2. An 18mm diameter black painted aluminium cylinder with 12 x 12mm self-adhesive reflective tape, has been fitted to the starboard propshaft.

Photo 3. The laser device is a PCE DT 62 Laser Tachometer purchased online for a total price of £33.60 including £6 delivery costs.

Photo 4. The new TVR1ABB slide valve engine propulsion machinery. Two servos are required for control (on their sides either side of the engine), but the overall weight is virtually identical to that of the Clyde machinery which only needed one servo. Please note the new slimmed-down gearbox between the engine and propshafts.



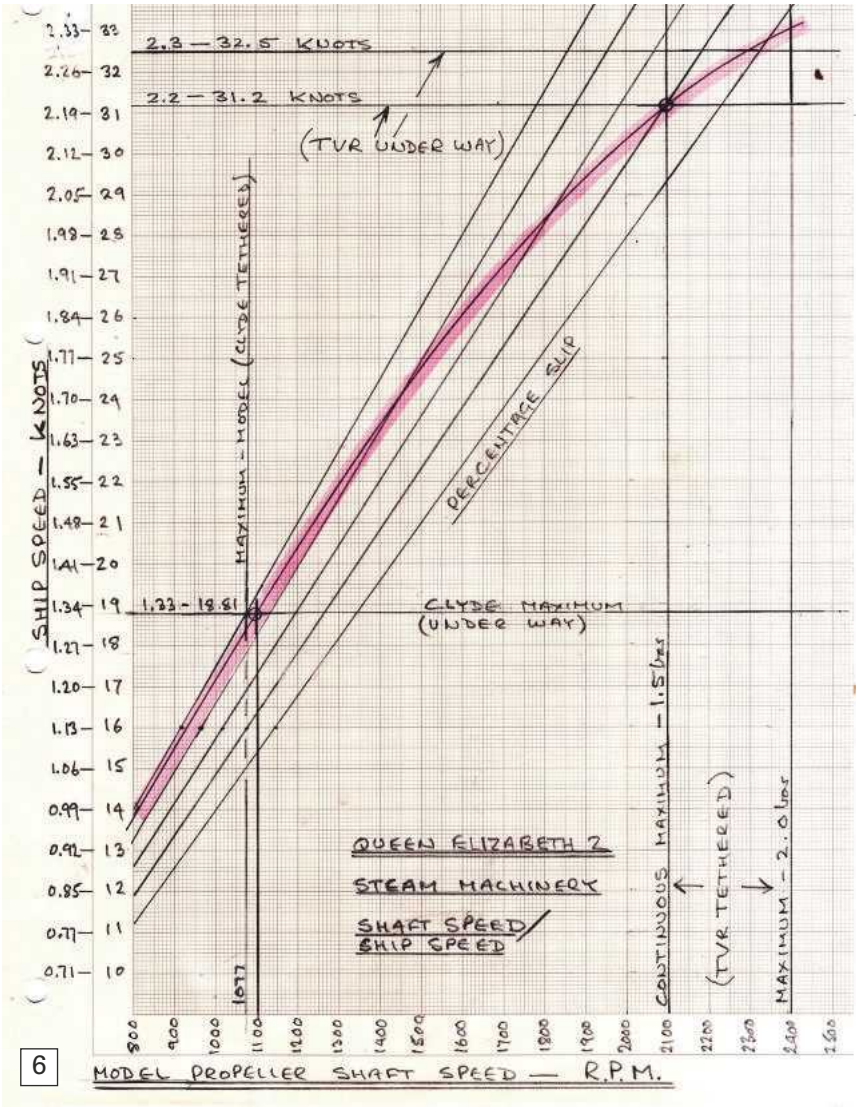


Photo 6. The graph showing ship speed versus propeller shaft speed and the 'slip' at various percentages.

Photo 5. The QE2 model now runs at 2.2 knots, which is equivalent to 31.2 knots for the full-size ship and notably its wake also now looks so much better and truly realistic.

Maximum model speed

The model was again tethered in freshwater and a propeller speed of 2100 rpm was now measured with a steam pressure of 1.5 bar and at a steam pressure of 2 bar, the propeller speed further increased to 2400 rpm. All this indicated that when the model was running free at 2.2 knots the propeller speed should be the same 2100 rpm.

However during the tethered testing, the propeller speed of 2400 rpm could not be maintained, as the steam pressure rapidly fell back to 1.5 bar from 2 bar.

On the water speed trial

Back to the local marina again, and the model was run over the same measured distance as previously used and yes, it achieved an average speed of 2.2 knots for two runs in opposite directions, which for the full size QE2 would be 31.2 knots, **Photo 5.** Later, during free running trials, the boiler pressure was allowed to rise to 2.0 bar before the engine regulating valve was opened. The QE2 model accelerated rapidly and was observed to run at a speed in excess of the 2.2 knots, and probably more than 2.3 knots, which is equivalent to the 32.5 knots for the full-size QE2, but this could not be maintained for any length of time.

Also, a graph was drawn for model propeller speed rpm and ship's speed in knots, **Photo 6.** Percentage slip lines were added from 0% (no propeller slip) up to 20% slip. The measured model performance speeds were plotted on this graph. These showed some 2.5% slip at 1100 rpm increasing to 15% slip at 2100 rpm. An indicative curve was drawn through these points showing the approximate percentage slip of a propeller from 1100 to 2400 rpm.

Conclusion

I am delighted that this steam powered model can now achieve the scale maximum speed of the original steam turbine driven QE2. On another matter, there have been one or two comments about the lack of windows on this QE2 model, my first objective always being to get it up and running satisfactorily. The lack of windows is being addressed as I write this, and in due course there will be another mini-article about resolving this in the most practical and economical fashion, but I am content thus far as the initial 'steaming' objectives with this model have now been achieved.

(Tim is to be praised for the ongoing logical and practical development of his unique model - Editor)

1

Richard Simpson's series on model steam plants

Boiler Room

PART Sixty: Controllable Pitch Propellers

Not that long ago a fellow steam modeller at my club sadly passed away and as it often the case in such circumstances, his wife was left with dealing with his considerable collection of model boats. As I had done some steam testing on one of his model boats, I knew what it consisted of, **Photo 1,** and the thing that caught my attention was the fact that it was propelled by a controllable pitch propeller. Consequently a deal was done and the model then sat on a shelf for a couple of years until I recently decided that it deserved a bit of attention to get it back on the water and some enjoyment derived from it. This then led to thoughts of the whole idea of controllable pitch propellers and the number of conversations I have had on the subject at the pondside, so I thought it might make an interesting subject for an article.

First, and just to clarify the situation and ensure that all the Marine Engineers who read this are kept happy, is to state that we do not consider propellers with moveable blades as 'Variable' Pitch propellers. Every propeller is of a variable pitch as the pitch changes as you get further away from the boss. The correct terminology is 'Controllable Pitch' as indeed the pitch is controlled to give to varying degrees of thrust, and even of course direction of thrust.

Photo 1. The subject in question, an enclosed launch of under four feet length. A perfect size for a single cylinder Stuart Turner 10V engine as a D10 would be too big. Being non self-starting the engine must therefore either always be running while the boat is on the water or have an additional means of starting it.

Why bother?

The first thing that seems to be a topic of discussion regarding a controllable pitch propeller is simply, 'Why?' When you can have a fully controllable engine operating on a single servo, why on earth would you want the added complexity of a propeller with moving blades? To find the answer we have to go back to a point in time when the majority of steam engines available for model boats were not of the levels of sophistication we currently see and enjoy nowadays, with quite a large percentage of them coming from the catalogues of Stuart Turner or something similar. As many were machined on home lathes, these engines are of larger dimensions that more modern counterparts and twin cylinder double acting and therefore reversible oscillators were more of a rarity and consisted mainly of the Cheddar type of engines. If however you wanted to machine and build your own engine and went down the path of the Stuart Turner range then you were limited to either the D10 (Double Ten), which could be made reversible, or the 10V (Ten Vertical) which couldn't, as it is not classed as self-starting. The D10 could certainly power a model boat hull of around five to six feet in length, but if you wanted a smaller hull and needed a smaller engine you were faced with the 10V, which might be ideal power-wise, but which would require some other means of ensuring 'a start' every time you wanted to reverse it. One means of achieving this is not to control the engine but leave the engine running at a constant speed and control the propeller instead. Hence at that time the Controllable Pitch Propeller became quite a popular means of controlling a non self-starting engine and both plastic and brass examples could be obtained. Since then, the rise in popularity of the reversible oscillator, which uses only a single servo for full speed and direction control, has led to the demise in popularity of the unit, combined with the reductions in numbers of modellers prepared to take on the task of machining a Stuart Turner engine for themselves.

Interestingly though nowadays, a supplier in China has started to manufacture brass controllable propellers again, which seem to be generating interest simply for their novelty value. This recent purchase from the deceased modeller's estate is a perfect example of a model that would be too small for a D10 engine, but perfect for the capacity of a 10V, so a means of arranging a reversing method was required and in this case a controllable pitch propeller had been fitted. The arrangement in this particular boat however has proven to be very challenging from a couple of different aspects, which I will go into further a bit later. So that is why we have them, and let's now look a bit deeper into how they work.

Arrangement

To understand the concept of how a controllable pitch propeller works, we first of all have to grasp the basic concept of how the propshaft behaves. We can start by studying the parts as laid out in **Photo 2.** In any shaft and tube layout, the tube is glued into the hull and so is 'fixed' and the shaft rotates inside it with the engine or motor on one end and the propeller on the other. Both ends of the tube are usually fitted with seals and bearings or perhaps a close fitting plain bush serving the purpose of both. In the case of a controllable pitch propeller, not only does the shaft rotate but it must also slide in and out of the tube. This of course means that the seals at the ends of the tube must accommodate longitudinal movement as well as rotational, which is why they are nearly always a plain bronze bush.

Now that we have the longitudinal movement of the shaft, we have to consider what this means at either end. On the internal side, this movement has to be accommodated in the coupling by either using a spline or, as with this model, two long pins located in drillings in a disc that enables the shaft to be moved backwards and forwards while maintaining the drive, **Photo 3.** The other consideration at this end is how to move the shaft backwards and forwards and the usual means of achieving this is to use two bronze collars fixed to the shaft, which restrain a third collar between

Photo 2. Two similar brass controllable pitch propeller units in their respective tubes. The top one is assembled, but without the operating arm and the lower one completely dismantled to show the internals and their relationships with each other.

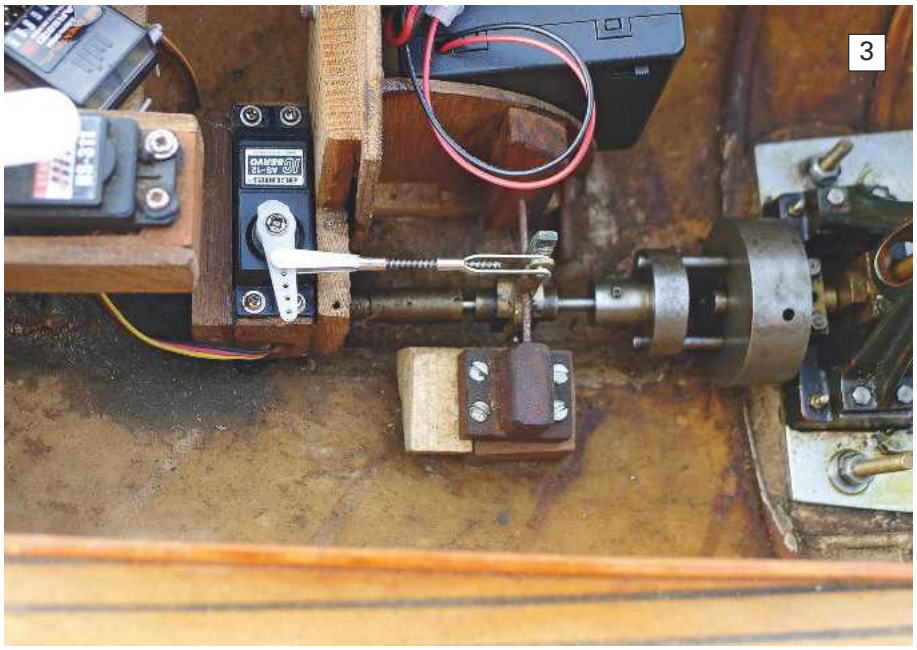


Photo 3. The control arrangement. You can see the servo attached to the end of the control arm and at the end of that the two bronze bushes, locked to the shaft, that allow the control arm to push the shaft in and out. Also note the sliding arrangement at the engine end to accommodate the shaft movement.

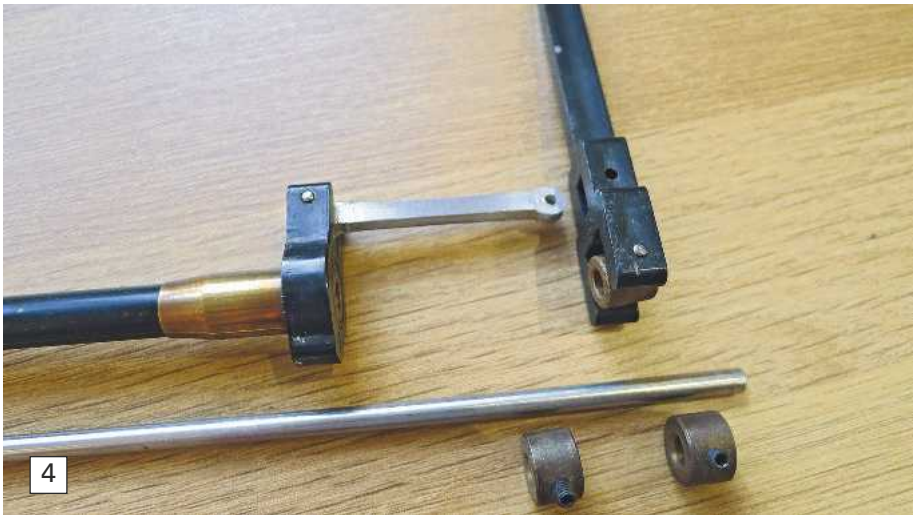


Photo 4. At the control end the operating arm pivots about the end of the aluminium arm and the bronze bush at the bottom pushes against the bronze bushes attached to the shaft. This enables the propshaft to be either pushed into the tube or pulled out of the tube.

them, connected to an operating arm, **Photo 4.** This arm can therefore move the shaft backwards and forwards by pushing the bronze collar against the two rotating collars and so, with the other end of this arm connected to a servo horn, we have controlled longitudinal movement of the shaft.

Having now arranged the movement, let's look at what we can do with it. Ultimately what we are after is a propeller whose blades can rotate between the full astern positions, **Photo 5,** to the full ahead position, **Photo 6,** while rotating about the shaft to give normal thrust. On the propeller end of the shaft a brass three-sided block is screwed on to it, which has a pin, offset from the centre line, located on each of the three faces, **Photo 7.** Each of the three blades is screwed into a bush which has a slot machined across the base of it that locates on the pin. The blades are mounted in the three external faces of the boss with the brass bush also acting as a bearing to enable rotation of the blade and the slot below the bush sits over the pin on the face of the block. Hopefully you can now see that longitudinal movement of the block will rotate the propeller blade as the shaft turns so we now have a propeller with blades that can rotate about their feet from around 20 degrees in one direction to 20 degrees in the other, around a point at which the blade is perfectly perpendicular about the shaft line.

Consequently when the blades are perfectly perpendicular to the shaft line, they are said to be in the zero pitch attitude and no matter how fast the shaft rotates they will not produce any thrust. Moving the blades in one direction will generate thrust, the amount of which is directly proportional to the angle of the blades, and the direction is dependent on the direction of the blade angle to the shaft. So we can now control the thrust in both directions, and the amount of it, by simply adjusting the angle of the blades to the shaft.

Challenges

With this model I wanted to start off by giving everything a once-over before having a trial run on the bench before testing on the water. The installation required a new servo for the pitch control, a bit of a clean up and general oiling, with careful setting-up of that servo as the required movement is actually very small, requiring a narrow range of operation.

With the set-up as fitted to this model, some challenges (aka problems) rapidly became apparent even before it was due for testing on the water, which in themselves were very useful 'learning's' to take into consideration.

The first challenge was what to decide the best speed to set for the engine. Too slow, and there may be a danger of stalling it at higher pitch settings and the performance of the model boat would be weak, as well as the possibility of the boiler over-pressurising and lifting the safety valve. Too high, and steam consumption was significant even with the propeller doing nothing, so that would be wasteful and the boiler pressure might fall-off too quickly. Gentle manoeuvring would also be a challenge with the extremely small movements of the pitch control servo being required.

What was also realised was that the speed of the engine would inevitably vary with the loading of the propeller, so real control was not going to be achieved. In other words, applying full pitch would most likely slow the engine and performance would be lost and the desired control would be absent.

The first attempt on the water quickly confirmed these concerns, as well as identifying the fact that with the engine running as the model was about to be launched, meant that large amounts of steam were being wasted and worse, as soon as it touched the water you needed to have a third hand to control the propeller's pitch to ensure a perfectly neutral position.

Photo 5. The blades turned to the fully astern position. This propeller rotates clockwise when looking from the aft end, with the straight edge of a blade being the leading edge.

Photo 6. With the mechanism fully over in the opposite position, the blades are now in the full-ahead position. If you compare the angle of the blade to the perpendicular you will see in both cases that the blades are a similar angle on either side of it.

Photo 7. At the 'business' end you can see the brass block on the end of the shaft fitted with the pins on the flat faces offset to the centre line. These locate in the slot in the brass bush with the blade screwed into the top of it. As the pin moves backwards and forwards, it moves along the slot and so the blade's angle of attack (pitch) changes.

Solutions

Eventually it was decided that the model required a couple of significant modifications to make it useable and easy to operate, the first of which was that the engine required speed control. This would enable a slow tick-over speed to be set at the pond's bank, so when placed in the water there would not be a frantic thrashing of the propeller and speed could be adjusted in conjunction with propeller pitch to give full control. This would require an additional servo and channel to operate a steam regulating valve. Also the pressure in the boiler should be controlled by either an attenuator valve or an electronic pressure regulating valve to maintain a constant boiler pressure irrespective of engine speed and loading, which in itself will also of course give more consistent control of engine speed. Luckily in the case of this model there was ample room to fit the modifications required alongside the existing steam plant as in **Photo 8.**

These two modifications made a huge improvement to the operation of the steam plant and now enable the maximum benefits to be realised from its controllable pitch propeller.

Conclusion

Controllable pitch propellers enable us to use a non self-starting engine to give complete control of the model, however they do need support from additional equipment to make the steam plant user friendly and in particular, speed control of the engine. This all adds complexity and therefore may put some modellers off, however it does allow us to use an engine configuration that may otherwise not be possible. There is a degree of fascination in the arrangement and just the novelty of seeing the engine and propeller running while the boat stands still, puts a smile on your face and I would really like to try to get one in an open hull so you can actually see everything that is going on with this type of installation.

Photo 8. The complete internal layout showing the boiler, engine and controllable pitch mechanism. It is quite obvious here than a twin cylinder engine of a similar size would be a very tight fit as well as being unnecessary, but there is adequate room for the required control modifications.

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Grant Walker

SEAWATCHBOOKS IS HONORED to present Volume I of a series on the study of the Rogers collection of ship models at the U.S. Naval Academy. The author, Grant Walker, has spent over a decade studying and writing about one of the finest collections of period ship models in the world.

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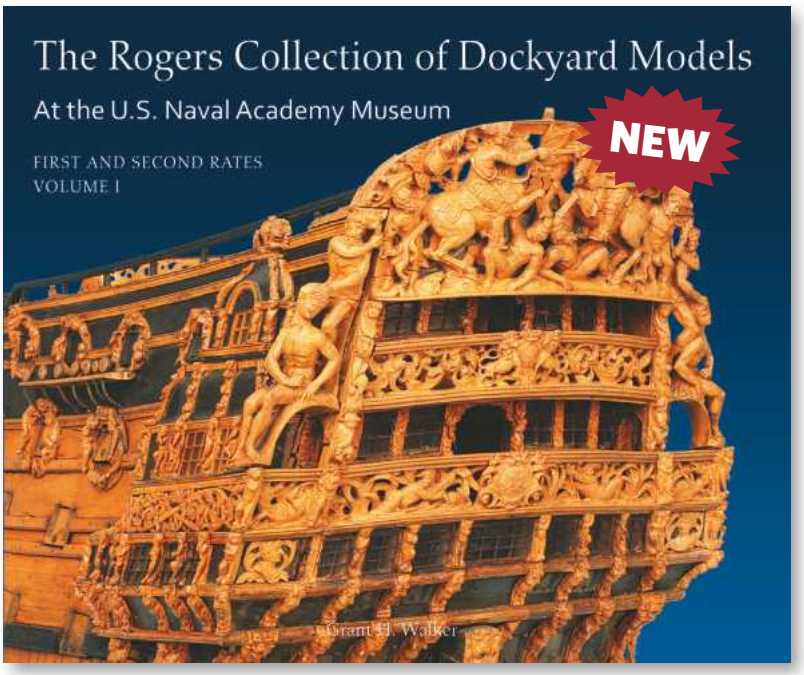

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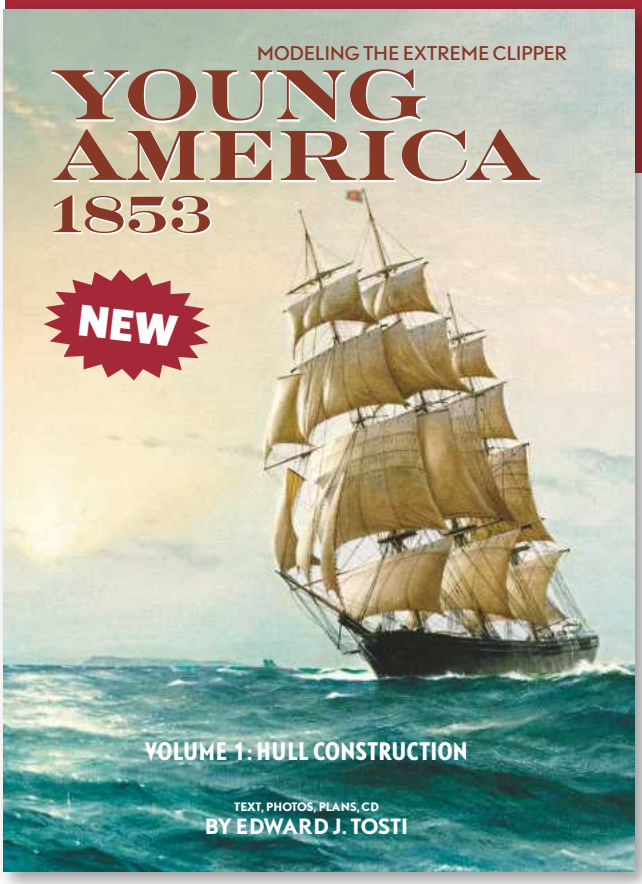

Modeling The Extreme Clipper YOUNG AMERICA 1853

Text, plans and CD by Edward Tosti

ED TOSTI, AUTHOR of the series on the Naiad Frigate, is in the process of modeling this ship with exquisite detail in 1:72 scale. His plank-on-frame model is, as an extra bonus, accompanied by instructions on building a 1:96 plank-on-bulkhead model.

Book one will cover building the hull. Book two, which will be published at a latter date, will cover finishing the main deck along with masting and rigging her.

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

While Gib has built his model using the plank on frame method, it could also be built using plank on bulkhead, or with lifts for a solid hull. Plans for all of the frames are provided along with a full set of templates for a plank on bulkhead build. The ship is fully rigged and makes a beautiful model at 1:96. 10 sheets of plans are provided.

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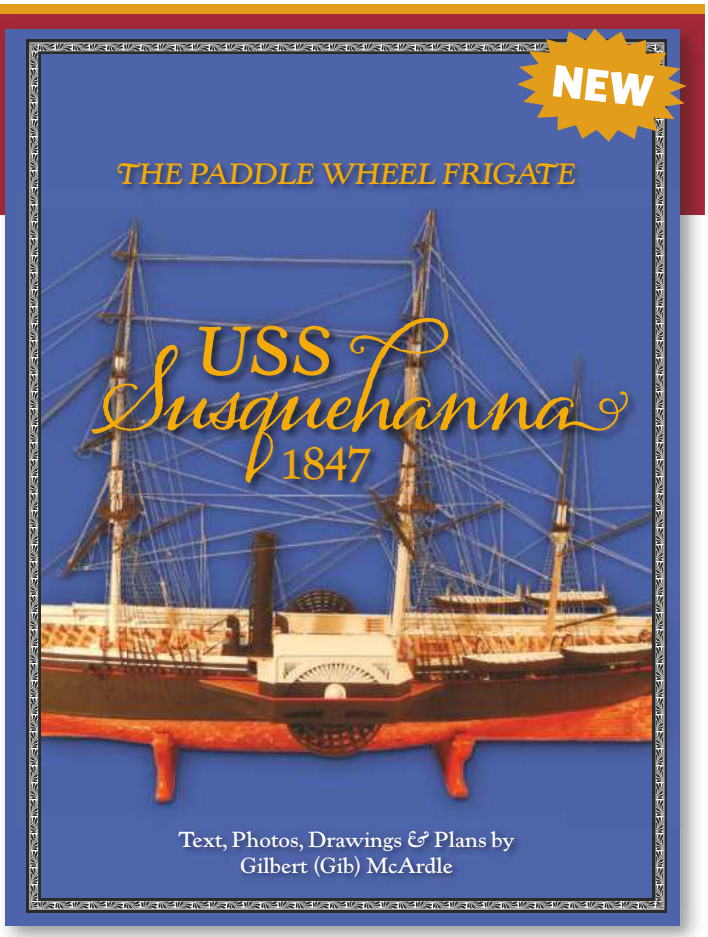

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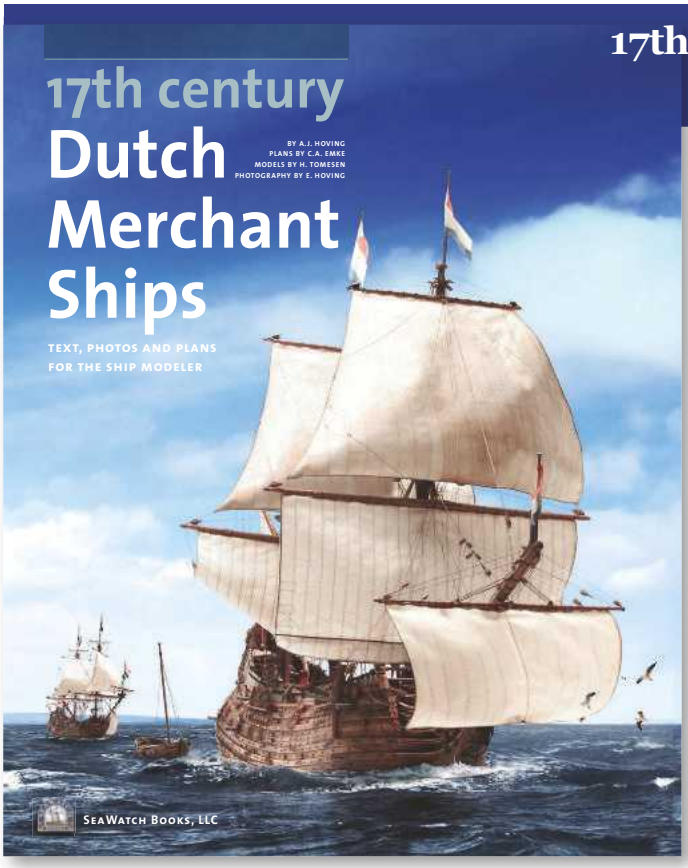

17th CENTURY DUTCH MERCHANT SHIPS

Text, Photos and Plans for the Ship Modeler

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

This book profiling ten different merchant ships from large to small and the accompanying "Plans Portfolio" of 24 sheets, in both ¼ and 1/8 scale, has something for every modeler. Pick your favorite building method, the size and complexity of the ship you want to build, and you are ready to cut wood. Besides being a treasure trove for ship modelers, this work helps document the merchant ships of one of the world's greatest sailing nations.

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

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Paddle Steamer Monarch

Leonard Treppa's *model, in his own words*

I drew the plans for the P.S. Monarch myself from the pictures in this magazine's December 2014 issue. All of my models are made from scratch and are static and therefore non-functional.

The P.S. Monarch model is 24 inches long with the hull made of white Pine using bread and butter construction. The deck is planked with strips of Mahogany, cut on a table saw using a homemade jig. The main saloon was framed using 1/8 inch sq. stock and then skinned with Basswood, as are some other sections of the model. The curtains were drawn on card and are glued from the inside; the hatches slide open and shut; the funnel is made from dowel wood and bored so as to be hollow. The railings are of brass rod, all soldered together.

I had many hours of fun building and painting this model and I have added it to my collection of over 30 craft, some of which are displayed in one of our local libraries.

Thank you for your interest - ***Leonard Treppa.***

BELOW: Leonard Treppa and his display in the local library.

LEFT: P.S. Monarch - start of construction.

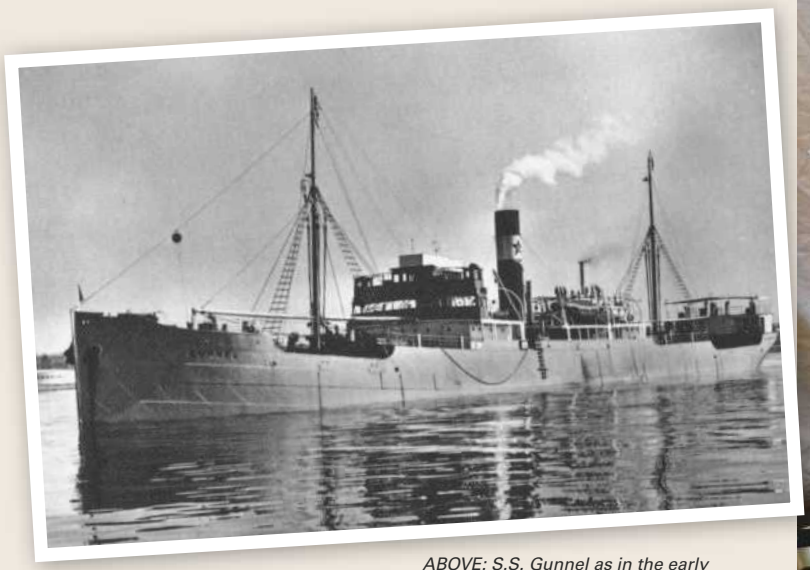
RIGHT: The cabin being built.

P.S. Monarch was finished in July 2015.

> *I had many hours of fun building and painting this model and I have added it to my collection of over 30 craft, some of which are displayed in one of our local libraries*

LEFT: The rest of the superstructure is nearly complete.

RIGHT: The brass railings are all soldered.



ABOVE: S.S. Gunnel as in the early part of the 20th Century.

S.S. Gunnel

Nils Wihlborg's unique model

Nils has created a model of the cargo vessel that was built in 1912 and which was his father's first command. It is based on a 1:96 scale Deans Marine hull, but everything else has been scratch built and notably Nils scanned and loaded the pictures from an old b&w photo album into his computer and then scaled them into a 2D (two dimensional) CAD program using the DraftSight free software.

Then, by using a CNC PCB milling machine (computer controlled milling machine intended for printed circuit boards), together with plastic sign material, the model's upperworks were created using this software technology. Broadly speaking, the parts were drafted with one layer for contours and one for removing the sign material's top colour, and then computer processed for the milling machine.

I am sure readers will be impressed by the quality of the detail created by Nils and this model perhaps shows what can be done nowadays using computer software and all within a domestic workshop setting.

***Paul Freshney** - Editor*

BELOW: A close-up of the superb forecastle detail.

BOTTOM: The deck plating, planking and superstructure woodwork has all been created on the milling machine.

Bow-on view of S.S. Gunnel.

LEFT: An overall general view of the S.S. Gunnel model.

Shrek on Skis!

Andy Cope's *unusual water skier*

Last year I found myself reading a magazine article about the difficulties a fellow modeller had when trying to create a scale water-skiing doll to tow behind a model speedboat. The main issue seemed to be how to get the skier to stand upright with scale size skis planing on the water's surface. Clearly a very difficult balancing act, which usually necessitates the use of oversize skis acting as miniature hulls for buoyancy, which compromises the scale look. The second option modellers have adopted, is to create a circular hull to support the skier, the hull floating when stationary, but planing up out of the water when on tow. This latter option is easiest to construct, but does not provide a realistic water-skiing effect.

Both these options have their merits and pitfalls, but this attempt at a scale water skier aims to take advantage of the best of both these ideas with a scale water-skiing model, towed on a submerged non-planing hull that would be hopefully hidden by the water. Now I guess that no sane person wakes up in the morning and says; 'I know, I'll make a water skiing Shrek', but nevertheless, the idea started with some small plastic 'action' figures, but when I stumbled across Shrek as an unwanted toy from a McDonalds Happy Meal promotion, the challenge became irresistible.

Photo 1: Shrek - the model

1

First, a float for Shrek to stand on was needed, and he uses a small circular plastic Tupperware tub, 120mm diameter and 45mm deep. This empty tub was put into a sink of water with Shrek and lead shot added to it, until it just stayed afloat. Hopefully. this would make the tub float level with the water's surface upon final completion. Shrek was then removed from the tub, leaving the lead shot, which was then over-sprayed in expanding builder's gap filling foam, which when cured was cut level with the top of the tub. Finally a circle of thin plywood was glued to the top of this tub so Shrek could be easily screwed, by his feet, to the top.

Hey-presto, an unsinkable float for Shrek to stand on which floated level with the water's

BELOW: The computer controlled milling machine consumes very little space.

ABOVE: The quarterdeck awning framework was all created using the milling machine.

BELOW: The rear cargo hatch area is well detailed.

surface, the lead acting as a counterweight. After painting the float with satin black paint, two lollypop skies were added for effect.

Photo 2: On the water

Initially it was thought that Shrek could be towed just like any 'normal' water-skier and that was by the hands, with some nylon cord tied between them and the back of the boat. Initial trials using this method and a Fairey Swordsman powerboat ended up with Shrek drowning face down in the boat's wake! So, a somewhat humiliating defeat and not least as it took place in front of a gathered crowd of spectators at the Buxton MBC Club boating lake.

So, opting for Plan B, a line was attached directly to the float itself for stability, but that didn't work either, as the float pitched Shrek backwards and he kept falling over side-wise under tow, but at least he didn't drown this time.

Third time lucky now and this was to keep the float line in place, but re-attaching the first line (from Shrek's hands) directly to the float towing line with a movable bowsie to tension it. By doing this, the forward drag of the float could be balanced against the back rotation of Shrek under tow, and yes success, as Shrek had now learnt to water-ski.

2

Conclusion

The pictures of Shrek being towed show the connection and bowsie about mid-way above the lower line, and this has stopped the skier falling over, doing somersaults or just drowning, and the principle of the two lines going into one is equally applicable for other similar models. And the Shrek model? Well, having a McDonalds Happy Meal to get one free is hardly a hardship is it?

To see a short video of Shrek in Action, please go to YouTube and search for:

'Buxton Model Boat Club 11'.

Enjoy your hobby - ***Andy Cope***

Buxton Model Boat Club

The club operates on the Pavilion Gardens Pond on Thursdays and Sundays (0900hrs to 1200hrs), set within the Victorian Gardens in the Spa Town of Buxton in the Peak District, Derbyshire.

Test Bench

***Model Boats** looks at new products*

Attention - Manufacturers &

● These pages are open to you - your shop window to bring to the attention of our thousands of readers, new products - kits, books, videos, engines, R/C gear, motors, anything that could be of interest to model boat builders. Send your information initially to Model Boats Test Bench, PO Box 9890, Brentwood, CM14 9EF - or ring the Editor on 01277 849927 for more details.
You cannot afford to miss this opportunity!

New Dremel Tool Kits

The Bronze Option Pack has a RRP of only £39.99, but does include the Multi-Tool 3000 and selected accessories.

Recently received from this well known supplier of hobby tools are examples of their, new for 2015, tool kits. These are available in Bronze, Silver and Gold options and each includes a 3000 Multi-Tool with a range of versatile and interchangeable accessories. Each kit has been designed to suit a range of budgets and with great savings on offer against buying each part individually. The more expensive Gold and Silver tool kits include a varying selection of Dremel's patented and high quality EZ SpeedClic accessories, whereas the Bronze option does not. Pictured here are the Bronze and Gold versions which are probably going to be the most popular.

Bronze

This is the ideal starter-kit, including the Multi-Tool 3000, 576 shaping platform and five useful accessories to tackle a host of cutting, sanding and sharpening jobs.
RRP is £39.99.

Silver

With a saving of 40% on buying each part individually, this tool kit features the Multi-Tool 3000 with three Dremel attachments including a flexible shaft for detailed work in hard to reach areas, a shaping platform for 45 and 90 degree angles and a multipurpose cutting kit plus 55 accessories including EZ SpeedClic accessories and a lightweight plastic toolbox.
RRP is £79.99.

Gold

This includes the Multi-Tool 3000 and five interchangeable attachments including a detailers grip, comfort guard, flexible shaft, multi-purpose cutting kit and a line and circle cutter, plus 70 accessories and a wide selection of quick-change EZ SpeedClic options, as well as an aluminium tool box, all saving you 48% on normal retail price.
RRP is £99.99.

The Gold Option Pack is the most comprehensive and at £99.99 represents 48% saving if the included items were purchased individually.

Availability?

Dremel is a subsidiary of Bosch, so these tool kits can be had from some Online retailers and selected large UK DIY stores such as Homebase and B&Q, but for further information and your local availability, then please check: www.dremel.co.uk
*Review by **Paul Freshney***

Sparmax Airbrush & Compressor Kits

Following on from the Test Bench notification in November 2015 MB, combination packs are now available.

Sparmax ARISM Mini Kit

This includes:
ARISM Mini Compressor
MAX-4 Airbrush
Cleaning Pot
RRP is £150. Product code: C-AR-MINI-KIT

Sparmax ARISM Kit

ARISM Compressor with automatic on/off switch
MAX-4 Airbrush
Silver Bullet Moisture Trap
Cleaning Pot
RRP is £180. Product code: C-AR-ARISM-KIT

The Airbrush Company are at: 79 Marlborough Road (East) Lancing Business Park, Lancing, West Sussex , BN15 8UF.
Tel: +44 (0)1903 767800 Website: www.airbrushes.com
*Review by **Paul Freshney***

News from Deans Marine

New kit for Mercandian President

Scale 1:100, length1350mm, beam 200mm, price £345.
The kit is based on a GRP hull with fender strips, plating detail, and port detail moulded into it. The main superstructure and decks are all laser cut from 1 & 1.5mm Hi-Impact Polystyrene sheet. Also included are parts to provide the fine detail and finishing on the superstructure. 250 brass etchings are included to give the superfine detail for this classic model together with a full set of other fittings in cast light alloy and resin. The two large loading doors are glassfibre mouldings with all external details moulded in to their surfaces and a full set of waterslide decals for the hull markings and draught marks is also included. A complete set of the running gear is included, plus comprehensive instructions, keyed to the full-size plan.
An upgrade set is available at additional cost for the crew figures, a cast brass propeller and roller bearing propeller shaft. Initially built as Mercandia President when launched in 1982, the ship then underwent a number of minor name changes, being presented here as Mercandian President.

Mercandian President.

Julie M

Scale 1:35, length 762mm, beam 120mm, first run kit price £125.
This kit is based on a GRP hull with port & plating moulded into it. The deck is laser cut & engraved with planking detail on 1.5mm Birch faced plywood. The main cabin, hatch and funnel are vac-formed from mm styrene hi impact plastic sheet. A full set of fittings in cast alloy & resin is included in the kit with set of decals, name plates and running gear plus full size plan and a comprehensive set of instructions plus a CD of pictures of the build project of the original model.
Both kits are available from:


Contents of the updated Julie M kit.

Deans Marine, Conquest Drove, Farcet Fen, Peterborough, PE7 3DH, England.
Tel: (+44) 01733 244166,
website:
www.deansmarine.co.uk.
Information supplied by Deans Marine - October 2015

Tudor Warship Mary Rose - Anatomy of the Ship Series

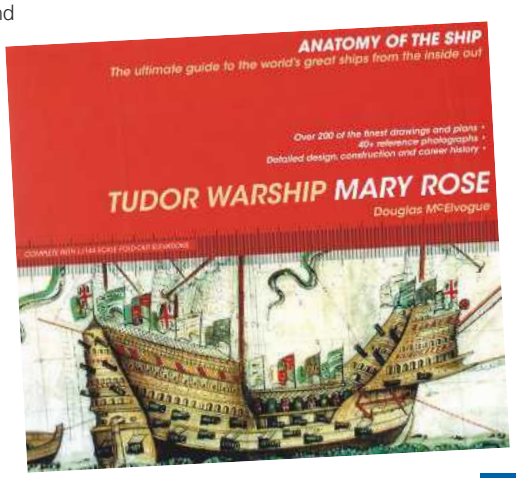
Written Douglas McElvogue. Softback, 144 pages, 255 x 240mm, over 90, black & white photographs maps and plans and over 200 scale drawings. ISBN: 978-1-84486-275-7. Price (RRP) £18.99. Published by Conway, an imprint of Bloomsbury Publishing Plc. 50 Bedford Square, London, WC1B 3DP, telephone: +44 (0) 2076 315600, website: www.bloomsbury.com. Available direct from the publisher or through the usual retail outlets.

This new book, in the well known Anatomy of the Ship series, is a unique insight into the architecture and construction of this iconic warship of the Tudor period. The Mary Rose was built between 1509 and 1511 at Portsmouth and served for 34 years in Henry VIII's navy before catastrophically sinking in the Battle of the Solent on the 19th July 1545. A fighting platform and sailing ship, she was at the time, the pride of the Tudor fleet. Yet she was soon forgotten, until the remains of this magnificent warship were raised to the surface in 1982, after 437 years at the bottom of the Solent near Portsmouth.

This book provides the finest possible graphical representation of the Mary Rose, illustrated with a complete set of over 200 scale drawings showing every part of the ship's interior and exterior, from keel to masthead, together with 1:44 scale fold-out elevations. The book also contains technical plans as well as explanatory views, all with full descriptive keys. The author, Douglas McElvogue, who was Senior Research Fellow at the Mary Rose Trust, uses archaeological techniques to trace the development and eventful career of this warship, while placing it in the context of longer-term advances in ship construction. The Mary Rose is of course now preserved at Portsmouth in a specially constructed facility, so like HMS Victory and HMS M33 nearby, she can be viewed, something that makes life much easier for the enthusiastic model maker.

This is the most comprehensive reference book on the Mary Rose I've ever reviewed and as such is essential reading for the potential ship modeller, but also for those with an interest in the vessel and her history.

Book Review by ***John Deamer***



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Sales

STAR POND YACHTS. Eighteen and some are ex-shop stock. A wonderful comprehensive collection for display or sailing. Offers? M.G. Butler, tel: 01142 667081 (Sheffield). 210915

BILLINGS SMIT NETHERLAND complete with battery and r/c. Needs some TLC. Lack of space forces sale. Buyer collects, £90. John Bowers, tel: 07968 434033 (Chatteris, Cambridgeshire). 210915

EMPIRE CLASS TUG. 1:32 scale, one metre long in show/carry case, full electrics & smoke, name is Lady Jan. Model has been placed in shows & is in lovely condition. £600 ono. Brian Burn, tel: 07894 843529 (St. Neots, Cambridgeshire).

RAF FIREBOAT, scratch built with working navigation, masthead and searchlights, working fir hydrants, all r/c controlled. No batteries or r/c, but includes pump, 4 servos and Bobs Board s/c, motor, shaft and brass prop' etc. Photos available on request. £185 ono plus p&p. Chris Croxley, tel: 01383 728770 (Fife).

VIC 57, built exclusively for steering competitions and can be sailed sideways with bow thruster and rear Z drive, includes Dx6 r/c, £200. Also, GRP mould for producing Kings Britannia with materials etc. £120. Buyer collects or pay p & p. Mr. A Edgecombe, tel: 01242 696801 (Cheltenham).

OUR LASS II trawler with Planet 7 r/c, bow thruster, engine sound, working lights, £530. Also MS Vliestroom with servo, no r/c for £250 ono, plus other boats, buyer collects. Please call P.D. Dyer, tel: 01202 690130 or 07971 808066 (Wimborne, Dorset).

HMS ATHELING 1:144 scale escort carrier, scratch built, 46 inches long & 9 Hurricanes onboard. New 12v battery, speed controller, 2.4GHz 6 channel Rx & new running gear. Sails well & well built, £200. Mr. G. Stear, tel: 01752 779137 (Plymouth).

HITEC 4 CHANNEL Tx and Rx 40MHz FM with 2 sets of Xtals, all in Logic padded case plus charger for Tx/Rx. All for £20, buyer collects. Mr. P. Baker, tel: 01622 728272 (Maidstone, Kent).

LARGE GLASS DISPLAY CASE. 37 x 28 x 12.5 inches (width/height/depth). Slim frame, light green suede covered base, all as new, £75. Rob Griffiths, tel: 01692 650932 (Norwich, Norfolk). 290915

CHEDDAR PROTEUS steam engine in perfect running order with boiler. Little used & can be seen running, £900 ono. R. Clementson, tel: 07778 365365 (Birchington, Kent).

DEANS MARINE THORNYCROFT ASR. ACTion R/C electronics, spare propellers and main battery. £250, buyer collects. Mr. P. Baker, tel: 01622 728272 (Maidstone, Kent).

LCM6 by Speedline with sound effects, working door and r/c Sherman tank. £400 ono. Ill health forces sale. Brian Nowill, tel: 01777 704577 (Retford, Nottinghamshire).

WAVERLEY LIFEBOAT 40ins long, scratch built, twin 600's & r/c, £230 ono. Also: Billings Colin Archer, sails, motor & r/c, £275 ono; SB Celia Jane, GRP, deck beams & drawings, £85 ono. Buyer collects, photos if required via email, Ray Wood, tel: 01622 761778 (Maidstone, Kent).

HMS VICTORY - kit built 40 ns long, 28ins high, 8 ins beam. Copper plated hull, complete less rigging. Poor eyesight forces sale. Sensible offers? David Friston, tel: 07538 102989 (Stevenage).

KATHLEEN sailing barge, Remploy static kit complete, unmade, excellent quality, sails, planked hull, no plastic parts, £250. W. H. Lee, tel: 02083 602691 (Enfield).

TAMCO 6ch 2.4GHz Tx plus 2 Rx's, no servos, £30 inc. p/p. John Haskins, tel: 01225 315453 after 6pm (Bath).

Wants

MAST, RIGGING & SAILS for 34 inch model of Gypsy Moth, incomplete when originally purchased. Can anyone assist please? Thomas Coakley, tel: 02072 239997 (Battersea, London). 300915

PLANS of Clan Ross sister ships Argyllshire and Robertson built at Greenock in 1954 please. Mr. F . Lively, tel: 01706 813056 (Lancashire).

SIX CHANNEL Sanwa receiver please. Mr. E. Higham, tel: 01614 861934 (Cheadle Hulme, Cheshire).

DODO. I am looking for information and photos for this Windermere paddle steamer please. Mr. M. Nicholson, tel: 02380 420487 (Southampton).

EXPERIENCED plank on frame modeller to build Euromodel Como Royal William kit on commission to exhibition standard. P. D. Davies, tel: 01263 587345 (Norwich).

TYPE 23 FRIGATE 1:96 drawings, new or used and readable, preferably of HMS Somerset, fair price paid. David Brown, tel: 01579 343096 (Cornwall).

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BMPRS News

Website: www.bmprs.co.uk

Craig Dickson *reports from Kingsbury Water Park*

ABOVE: Collision narrowly avoided by AA176 after AA55 spins out! (Photo courtesy of Judith Beesley)

LEFT: Boat preparation area - it was to be a rainy day.

Having passed the halfway point of our race calendar, event Number Seven featured our eagerly awaited visit to the fantastic Kingsbury Water Park. You may recall that in 2014, the planned events at this venue regrettably had to be cancelled due to the substantial weed in the lake. Thankfully, now in 2015 the lake was clear of weed and ideally suited to some great racing action and it was such a delight to be back at Kingsbury once again, despite the less than favourable weather conditions on the day. Yet again we experienced persistent rain from start to finish of the event and heavy it was at times, requiring protective covers for the transmitters. However as it was mid-summer, we had the benefit of warmth and calm water, so at least the racing conditions were safe and not that off–putting. As a society we always aim to run events that deliver the maximum overall enjoyment to as many members and spectators as possible, irrespective of the conditions on the day.

Local Kingsbury club member Malcolm Pratt took on the role of OOD (Officer of the Day) and did a superb job of managing the race meeting from taking the initial pre-event bookings to overseeing the whole day. The Butler family including Robin, Sue and Sally also played key roles in manning the race control desk and taking care of the vital task of lap scoring throughout the day. The overall turnout was a bit lower than normal, with 28 boats entered, but considering the inclement weather forecast, it wasn't a bad turnout in the circumstances.

With the drivers meeting concluded by around 1000hrs, everyone was eager to crack on and get the racing underway in what promised to be wet conditions throughout, on and off the water!

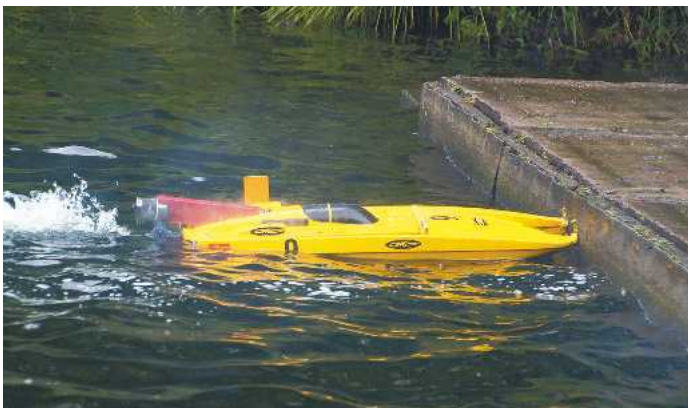
AA class

Five boats were entered in this class, which is the smallest mono-hull class with nitro fuelled engines of up to 4.6cc capacity. These boats put on a good display of racing with decent consistency in terms of laps scored, in both the morning and afternoon heats.

Andy Rennie's CMB powered Challenger 43 had a superb race achieving 74 laps in total for first place. He drove really well keeping out of trouble whilst

BELOW: Ouch! Malcolm Pratt's cat' hitting the concrete lake edge and engine still running but going nowhere.

BELOW RIGHT: D127: The petrol engined Phantom of Ian Searle.



ABOVE: Graham Stanley's big cat' prior to its mishap. (Photo courtesy of Judith Beesley)

LEFT: Garry Dickson's Challenger stopped suddenly, with the crankcase of its engine destroyed, now in two pieces.

clocking up the laps with consistent scores in both heats.

My West 28 powered Magnet achieved 73 laps taking second place. In the second heat, I cut the throttle at Buoy 3 to avoid a collision and stalled the engine. The necessary rescue and re-start cost valuable laps, which although frustrating was all part of the fun!

Graham Stanley's OS 21 powered Cavalier gained 55 laps in total for third place. His Cavalier when on form really flies and takes some matching speed-wise, but on this occasion it had a few stops limiting the laps score.

Kian Searle's Challenger 43 was slow off the blocks in the first heat as its Picco engine needed the glow plug removing to purge the engine of layup oil to enable it to start. And then late into Heat One, having hit a buoy hard, the rudder was knocked back and the steering linkage damaged. Then later in Heat Two, the flexi-shaft snapped! So all in all, he did pretty well to score 54 laps in total for fourth place.

Mark Beesley didn't have a great run with his outboard powered Cavalier ending up in fifth place with just 41 laps. Thankfully though, he had entered four different classes so his fingers were crossed that he would do better in the subsequent ones!

A class

This popular (mid to small) sized glow nitro fuelled engine class only had three entries on this occasion, however the three competitors enjoyed some great friendly racing and exchanged some good banter.

Mike Barnes enjoyed a faultless performance racing his ASP 46 powered Challenger 43 and with 95 laps in total it was a relatively easy win for him, this being his fourth consecutive win in the A class with this boat.

Sally Dickson also achieved good consistency with no stops or mishaps, her Crusader gaining 77 laps for second place. This Crusader 3 is powered by an SC 46 engine that is now into its third full season of racing with still all its original parts including the bearings. It is worth noting that these inexpensive SC (or ASP) engines remain very popular in this class and deliver excellent results for their owners.

Kian Searle's CMB 45 powered Manta Ray took third place with 56 laps in total and why only third? In Heat One, the boat kept stopping and the reason discovered later, was due to the receiver aerial not being attached properly, so causing the fail-safe mode to operate and stop the engine. Although this was fixed for the afternoon's race, the boat then hit a buoy very hard, causing the engine's manifold seal to split which severely reduced the power available from it.

B class

In this nitro fuelled class of mono-hulls for engines of up to 11cc, four competitors were entered. Malcolm Pratt's superb CMB 67 powered Apache notched up its fourth consecutive win in this class achieving 95 laps in total for a commanding lead, so well done Malcolm.

Mark Beesley's unnamed (we call it XXX) boat,

ABOVE: Graham Stanley's catamaran front sponsons needing yet another repair after hitting the concrete bank. This is the trouble with catamarans, they have two hulls!

BELOW: The A class winner was the impressive Challenger 43 of Mike Barnes. (Photo courtesy of Judith Beesley)

ABOVE: AA11: The winning AA class Challenger 43 of Andy Rennie. (Photo courtesy of Judith Beesley)

ABOVE: The rescue boat's crew did a superb job in the wet conditions.

had consistent lap scores in both heats and took second place with 49 laps in total. A few stoppages cost him quite a lot of laps, denting what would otherwise have been a much higher score, but second place still earned valuable points for the championship table.

Garry Dickson's West 52 powered Challenger ended up with 32 laps in total and third place. In the second heat, the engine stopped extremely suddenly, making a horrible weird sound, indicative of some serious problem inside the boat. Upon recovery and removal of the engine bay hatch, the reason was indeed truly astonishing as the engine had literally blown-up with the top half of the crankcase, cylinder head and liner completely separated from the rest of the engine and sitting in the hull's bottom void. It is worth saying that despite this disaster, the supplier of the engine did subsequently promptly replace the broken parts under warranty so as to enable Garry to be ready for his next race.

Andy Rennie didn't have a great race in this class as his Warhawk only achieved a single lap leaving him in fourth place. At one point when his boat had stalled, the rescue boat accidentally ran over the top of the Warhawk, so this was one of those occasions when you don't get disqualified for having a collision with the rescue boat!

C class

Ian Searle was the only member to enter this class with his powerful CMB 90 powered Makara. All he had to do was get one single lap for a guaranteed first place and maximum championship table points, so with all eyes on Ian, this actually proved far from easy and indeed impossible on the day. Ian simply could not get the engine to start, despite replacing the glow plug and checking the new one, and then suspecting he had bad fuel which was

BELOW: D class action! (Photo courtesy of Judith Beesley)

also replaced, but all to no avail. In the end he had to concede defeat and scored a big fat zero number of laps, so nil points from the day. You can never assume anything in this hobby of ours, as this misfortune perfectly demonstrated.

D class

This S.I. (Spark Ignition) class had the most entries of the day with eight competitors which made for some fantastically exciting racing. The boats in this class are not only extremely powerful, but are also substantial in size being up to 60 inches long, which makes them an amazing spectacle to see and hear when racing. The class was split into two heats of four boats for safety considerations, although by the afternoon session, half of the boats had retired so actually only one 'after lunch' heat was needed.

Mike Barnes' Zenoah powered Patriot had a truly ballistic race, scoring a massive 110 laps and first place. His driving skills proved to be outstanding, going flat out even through tight turns close to the buoys, and without hitting them. Garry Dickson's MPM powered Saturn wasn't far as he clocked up a similarly impressive 102 laps for second place. Third place with 65 laps in total went to Kevin Alcock. In Heat One, his Patriot was running flat out down the pit straight when he clouted Buoy 1, sending the boat into a spectacular somersault, it landing near the lake's edge bushes needing rescue.

It was a shame that four of the competitors had to retire their boats after the gruelling race conditions of the morning heats. Notably, Malcolm Pratt's Patriot was retired with zero laps when he noticed that the Tiger King engine was smoking excessively and suspecting a piston ring needing attention, he decided not to run it to prevent possible major damage to the engine. Paul Edgecombe's Patriot was going really well in the morning heat, until its radio box became un-bonded from the hull causing major steering and throttling issues as one would expect, leading to retirement from the afternoon's heat.

Reliability and consistency had a huge impact in this particular class on this race day.

Catamaran T1 class

Andy Rennie was the only competitor in this class, so he did what was needed to gain the win and 15 championship points, with just one sedate lap being sufficient to be the winner.

Four AA class boats rapidly approaching Buoy 4. (Photo courtesy of Judith Beesley)

Catamaran T2 class

It was great to see six entries in this catamaran class which allows for the largest of nitro and spark ignition (petrol) engines, but a similar pattern emerged to that of the mono-hulled D class in that only half of the competitor's boats survived the first heat. This class did however deliver some astonishing lap totals and incredibly exciting head to head racing.

Kevin Alcock's Conquest was so badly damaged at the previous Nottingham event it was subsequently scrapped and so he was now racing a brand new identical replacement boat. He drove this new RCMK powered catamaran faultlessly and scored a massive 117 laps for first place and the accolade of highest laps of the day. Well done Kevin!

Mark Beesley also raced his RCMK powered Conquest with equally impressive skill gaining 112 laps and second place. Garry Dickson's Mercury also topped the magical century, but 103 laps in total was only good enough for third place. In Heat One, he had pushed his Mercury bot too hard, flipping it at Buoy 2 and the resultant recovery and re-launch inevitably losing some laps. What happened to the remaining three who retired their boats after the morning heat?

Graham Stanley's F1 catamaran, after stopping in the first heat, was re-launched but with a big, big problem, as he had forgotten to switch on the radio system, so the boat ran straight into the concrete section of the bank coming to an abrupt, and extremely damaging halt.

Malcolm Pratt's Aeromarine catamaran suffered a similar fate well into the first heat when his radio control went 'dead' and the boat ran into the same section of concrete that Graham's had earlier, with significant damage to both its front sponsons.

Paul Edgecombe's X-Cat was 'flying' in the morning heat until he misjudged Buoy 1, hitting it really full-on, flipping the boat which resulted in considerable damage to the running gear with its flexi-drive system ripped out and rudder damage. So on this day, this class was truly eventful in all sorts of ways.

Conclusion

The dreary wet conditions throughout this day at Kingsbury did not dampen our enjoyment, but capturing decent action photos was rather challenging as the low light conditions prevailed. Perhaps the unsung heroes of the day were those who manned the rescue boat getting thoroughly soaked in the process, these gallant guys including the Kingsbury members Pat, Steve and Michael. They did a superb job and we are, as always, very grateful to them. I look forward to updating you following our next event.

*Cheers for now - **Craig***

BELOW: Mark Beesley's Conquest catamaran on its way to gaining second place. (Photo courtesy of Judith Beesley)

BMPRS Kingsbury 1 results - 26th July 2015

Name	Number	Hull	Engine	Heat 1	Heat 2	Total
AA class						
1 Andy Rennie	11	Challenger 43	CMB 21	38	36	74
2 Craig Dickson	55	Magnet	West 28	39	34	73
3 Graham Stanley	29	Cavalier	OS 21	33	22	55
4 Kian Searle	128	Challenger 43	Picco	24	30	54
5 Mark Beesley	176	Cavalier	OS 21	18	23	41
A class						
1 Mike Barnes	4	Challenger 43	ASP 46	47	48	95
2 Sally Dickson	77	Crusader 3	SC 46	38	39	77
3 Kian Searle	128	Manta Ray	CMB 45	18	38	56
B class						
1 Malcolm Pratt	9	Apache	CMB 67	47	48	95
2 Mark Beesley	176	XXX	ASP 61	24	25	49
3 Garry Dickson	44	Challenger 48	West 52	22	10	32
4 Andy Rennie	11	Warhawk	CMB 67	1	0	1
C class						
1 Ian Searle	127	Makara	CMB 90	0	0	0
D class						
1 Mike Barnes	4	Patriot	Zen 28	52	58	110
2 Garry Dickson	44	Saturn	MPM 31	51	51	102
3 Kevin Alcock	75	Patriot	RCMK	27	38	65
4 Ian Searle	127	Phantom	Tiger King 27	32	19	51
5 Paul Edgecombe	95	Patriot	Zen	42	0	42
6 Mark Beesley	176	Wave Rider	Zen 26	31	0	31
7 Kenneth Dodd	78	Phantom	Zen 30	17	0	17
8 Malcolm Pratt	9	Patriot	Tiger King 27	0	0	0
Catamaran T1 class						
1 Andy Rennie	11	X-Cat	Rossi 40	1	0	1
Catamaran T2 class						
1 Kevin Alcock	75	Conquest	RCMK	58	59	117
2 Mark Beesley	176	Conquest	RCMK	54	58	112
3 Garry Dickson	44	Mercury	MPM 31	46	57	103
4 Graham Stanley	29	F1 1320 GP	RCMK 30	44	0	44
5 Malcolm Pratt	9	Aeromarine	CMB 91RS	25	0	25
6 Paul Edgecombe	95	X-Cat 48	RCMK 30	22	0	22

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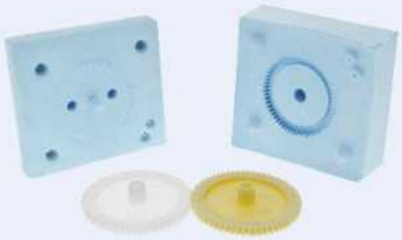

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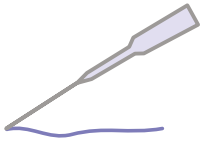

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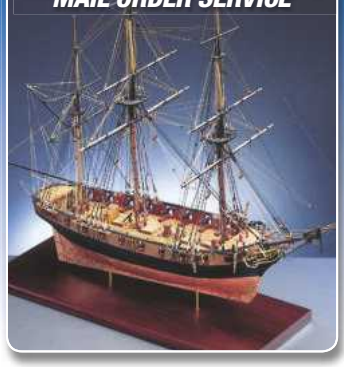

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