The SSMA Journal

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Season End Fun Runs

Scale Rule

Build a Centrifugal Pump

My First RC Scale Ship

USS Constellation CC2 - Part 4

Batteries, Batteries, Batteries - Part 2

SSMA The **Scale Ship Modelers Association of North America**, Incorporated (SSMA) is a not for profit organization as filed in the State of Delaware. SSMA was founded in 1988 to promote scale ship modeling. We assist our members and club affiliates by sharing ship building information, cooperatively providing liability insurance, providing assistance in organizing and publicity for regional and national regattas, and by representing their needs to the modeling industry.

Individual Membership As an individual member of the SSMA you are entitled to receive a quarterly newsletter. Cost of membership is $25.00 per year. Contact the Membership Director. You will find a membership application is included with this issue— please pass it along to a club member or friend. **DO NOT SEND MEMBERSHIPS TO JOURNAL EDITOR.**

Club Membership Membership in the SSMA is open to all radio control scale model boat clubs (electric, steam, and sail) residing in the North American Continent and related possessions. Each club is entitled to receive a Charter, the quarterly newsletter, and Regatta Handbook.

SSMA Newsletter The SSMA Newsletter is a quarterly newsletter. Articles, projects, pictures, info. etc. can be submitted to the Newsletter Editor (Bob Kostosky) by emailing: **bobkost@verizon.net.** Articles should be submitted, either by email in Microsoft Word, or Text format. Photographs should be submitted separately and at the highest resolution possible. (ACTUALLY, send in any format, we can figure something out— journal@ssmana.org) If you have questions about submitting pictures, you can email me as we may be able to assist you. Submissions are encouraged from any author, member or not. We assume unsolicited material is intended for publication unless otherwise noted. We assume letters, questions, news releases and club news items are contributed gratis. So there. And thank you for your participation! Enjoy the hobby and encourage the young!

We are open to ideas on other services that the SSMA can provide to its members and / or other clubs. Please feel free to contact any of the directors with any ideas you may have.

Attention all club officers-

If you send the Editor, (Bob Kostosky) a spreadsheet list of your members with their emails, I will be happy to send them an electronic past issue of **The JOURNAL**. (No junk mail to follow!)

journal@ SSMANA.org

Please join us in making our membership grow!

Send articles, photos and events to JOURNAL@SSMANA.ORG AND/OR bobkost@verizon.net

On the Cover:

Marine Modelers Club

Story on Page 29

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IMPORTANT NOTICE:
SSMANA HAS INCREASED ALL OF OUR FEES

All members

The SSMANA had an unprecedented raise in costs of administrating SSMANA.

Because of the increases we needed to raise all our fees.

All the new applications for Membership, Club Affiliation, and Club Insurance Applications can be found on our website.

The New Membership Application is also the March Journal. Also, you can contact me for the applications, Heinz Ricken at **hricken@gmail.com.**

Please use the new applications.

Applications filled out with the old forms will be returned to members.

Fun Float – November 5

By Robert Osmond—The Bilge Pump

Photos by Steve Sunich and Robert Osmond

There were five smiling skippers running their boats under clear skies with no wind at the Seattle Yacht Club's moorage docks.

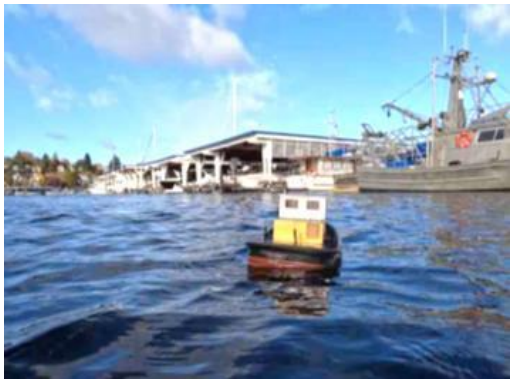
Dave Green was sitting in his new tall stable chair (not the 3 legged 10" high milking stool he usually has) running his Cruiser built with two beautiful 1950 vintage top of the line electric motors and his small Moran Tugboat.

Klaus Bellon, running his varnished runabout, my orange springer with a GoPro on the front, and my Pacific tugboat.

Steve Sunich was running his beautiful scale copy of his yacht located on the Yacht club moorage docks, and his US Navy tug. He also had his neighbor boy, Weston, running a Canadian logging boat that Steve purchased and set up for him to run.

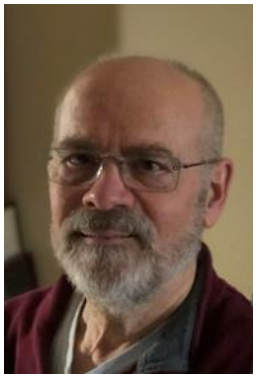
I was running my Pacific and my orange springer with a GoPro on the front. (See on the water photos). This is working very well. I just link it with my I Phone and then run the boat. When I want to take a photo or a video, I just pick up my phone. The screen immediately wakes up the GoPro and shows me what it is seeing, then I click on a photo or a video. They are very high-quality images. (They have been reduced to publish in this newsletter.)

We had a great time, and the weather could not have been nicer.



Part 1 - The Story of My First RC Scale Boat: the RNLI Waveney Class #44-014 *St. Patrick*

By Tim Logan



An Orange and Blue Boat, a Cup of Tea, and the RNLI

On a rather stormy day in Castletownbere, Ireland, some years ago, my wife Nancy and I walked along the shore and spotted some individuals scrambling around a rather formidable looking orange and blue boat. It appeared to be a rescue boat. I remember looking at the choppy foreboding water under the dark clouds and shivering a bit in the cold. What kind of superheroes, I wondered, would have the phenomenal courage to risk their lives in a sea rescue? I was soon to find out.

A few minutes later we arrived at a friend's home, a longtime resident of Castletownbere, to have tea. I mentioned the orange and blue boat. She told us the boat was an all-weather lifeboat in service for the Royal National Lifeboat Institute (RNLI). As it turned out, our friend, whose family members were fishermen, had been a volunteer with the RNLI for some 50 years. With great pride she began pointing out the many articles and awards adorning her walls and shelves concerning the local fishing industry and the Royal National Lifeboat Institute (RNLI). She explained that the RNLI boats and stations were crewed by everyday men and women from all walks of life who were on call 24/7. All were unpaid volunteers.

Be they clerks, bankers, construction workers, accountants, bakers, all RNLI volunteers are of one mind when a callout occurs – to save lives at sea. When their pagers sound for a callout they man the lifeboat and are out to sea within minutes. Constant training and maintenance of the lifeboat, the equipment, and the station is all part of the volunteer's commitment.

I was incredulous. These were indeed superheroes. Thus began my fascination and admiration for all things RNLI and the seeds were sown for my first RC scale boat.

The Royal Navy Lifeboat Institute, known as the RNLI, is regarded as the most effective and dependable lifeboat service in the world. It is a volunteer organization, not connected with the Coastguard or government, with some 185 years of history. Devoted to saving lives at sea on the coasts of Britain and Ireland, the RNLI boasts over 400 lifeboats, 238 lifeboat stations and roughly 33,000 active volunteers, supported by hundreds of thousands of member donors from around the world. 95% of RNLI crews and staff are unpaid. 5600 of the volunteers are lifeboat crews supported by 3700 station crews. Throughout its history the RNLI has saved some 140,000 lives and provided innumerable assists.

Over 600 volunteers have lost their lives in the service of saving lives at sea. The courage, expertise, and devotion of the RNLI rescue crews is nothing short of astounding. If you would like to learn more, an excellent book on the RNLI is Ian Cameron's *Riders of the Storm,* Orion Books, 2002.

Being an avid "stick and tissue" aircraft modeler in my younger days, but never having built a scale RC boat, I decided that one day, when I retired, I would build a working model of one of these fabulous RNLI lifeboats. In fact, after much fascinating research, I decided to build several different models to represent three distinct periods in the history of RNLI lifeboats. Each craft would have unique characteristics and would make an exciting model to my mind.

Having a certain fondness for Ireland I decided that all three would be modeled after boats stationed in Ireland. I began with the *St. Patrick*, Waveney class #44-014 – stationed in Dunmore East, Ireland. Next will be the *Alan Massey*, Tamar class 16-22 - stationed in Baltimore, Ireland. The third model will be the Liverpool twin-engined class ON 877 George and Caroline Ermen stationed in Clogher Head, Ireland. Little did I realize the challenge I had given myself!

A Volunteer RNLI lifeboat crew saving lives off

Hook Head, Dunmore East, Ireland - 2020

The Waveney Class Lifeboats

RNLI lifeboats have developed from oar powered craft of the 1800's to modern state-of-the-art all-weather craft. Each successive class has improved speed, range, utility, and safety. Altogether 22 Waveney class boats were produced from 1964 to 1982.

The Waveneys were based on the USCG 44' motor lifeboat. In 1963 the RNLI sent a delegation to the U.S. Coast Guard yard at Curtis Bay, Maryland to inspect the 44' MLB's. The delegation was quite impressed. These self-righting boats had been tested and proven in the most extreme conditions by the USCG on the American seacoasts. With a semi-planing hull and a speed of 16 knots the 44' MLB was considered a "fast" lifeboat – a first for the RNLI. In 1964 the 28th boat off the USCG Curtis Bay, Maryland, production line was shipped to England. There the RNLI conducted months of extensive sea trials to determine its utility on the British Isle coastlines. The sea trials were an unqualified success and a contract for the first six boats was awarded to Brook Marine Ltd., situated in Lowestoft, UK. The boatyard itself was located on the river Waveney – thus the class name Waveney was introduced. Ever since, RNLI policy has been to name all lifeboat classes after rivers.

Numerous modifications were made to the USCG 44' MLB including a double hull below the machinery compartment, an aluminum deck verses iron, an extended wheelhouse to protect crew, raised fore and aft cabin tops to improve self-righting ability, an extra fuel tank, mechanical instead of hydraulic steering gear, pulpit rails on the raised aft deck, to mention just a few. The Waveneys could carry twenty-six survivors under cover and were fitted with radar, radios, direction finding equipment, and an echo sounder as well as a full complement of life-saving equipment. The first seven Waveneys were powered by Cummins main engines; the next seven with General Motors diesels, and the remainder had either Ford Mermaid or Catapillar diesels.

In 1994 the Waveneys began to be phased out of service in favor of the !4m Trent class which replaced most of the Waveneys although some were replaced by the 17m Severn class. The Trent and Severn classes could reach 25 knots, had fully enclosed heated wheelhouses for greater crew safety, more modern technology, and greater range. The last Waveney was taken out of service in 1999.

An excellent source of information on the Waveney class lifeboats is Nicholas Leach's *The Waveney Lifeboats*, Bernard McCall, 2001. A very fine reference on all RNLI lifeboats is Nicholas Leach's *Powering to the Rescue - a history of RNLI steam and motor lifeboats,* Lily Publications, 2019.

The St. Patrick Waveney Class #44-014

The *St. Patrick* was built in 1974 by Graves & Guttridge Ltd, Cowes, England. In March 1974, the *St. Patrick* sailed from Cornwall to Dunmore East with Stephen Whittle, a Dunmore East coxswain since 1959, at the helm. Two weeks later she took over as the Dunmore East station lifeboat. Here she served for more than twenty years until sold out of service in May 1999, to the Royal Volunteer Coastal Patrol in Australia.

RNLI Waveney 44-014 St. Patrick at sea and Dunmore East

Dunmore East is a fishing port in southeastern Ireland just off busy shipping lanes running from the Atlantic Ocean to the Irish Sea. During heavy rains fresh water pours down the estuary to create a dangerous tidal race that has caused the port more than its share of shipwrecks on the craggy rocks at the mouth of the harbor. At high tide southerly gales and the tidal race create huge waves which crush larger vessels against the rocks and pull smaller vessels under. I highly recommend David Carroll's book *Dauntless Courage – (Celebrating the history of the RNLI Lifeboats, and their crews and the Maritime Heritage of the Dunmore East Community)*, DVF Print and Graphic Solutions - Waterford, Ireland, 2020, offers a unique insight into the seaport community and RNLI volunteers of Dunmore East.

During her RNLI Dunmore East service, the *St. Patrick* was launched 252 times and saved 83 lives. An example of one of the more difficult rescues occurred in July of 1976 for which Coxswain Stephen Whittle received the RNLI Bronze Medal. A callout occurred about 3am. An open fishing boat had gone on to the rocks at Swine's Head near Falskirt Rock – at the base of 100' high cliffs. It was a dark night with a Force 5 wind and heavy rain squalls. The bad weather inhibited a rescue helicopter take-off. The only entrance to the area was a narrow channel blocked by salmon nets and hundreds of lobster traps. Coxswain Whittle managed to come within 20 feet of the cliffs with heavy breaking swells in 20 feet of water to throw a line. One of the survivors swam to the line. When the survivor was picked up the lifeboat had to go astern quickly to avoid the rocks. The wrecked fishing boat then washed clear and despite searching for many hours the remaining crewman still could not be found.

The on-board survivor, having been in the water for two hours, was taken to the shore for hospital transfer. Coxswain Whittle then returned to the cliffs but the last man was not to be found. The St. Patrick returned on one engine as the rigors of the rescue had over strained the Starboard gear box.

Coxswain Stephen Whittle

Another notable rescue occurred in 1979 when the world famous Fastnet amateur yachting race became a sailor's nightmare. The 303 yachts and 2500 crew members were caught in a Force 10 storm. Only 86 vessels were to complete the race. 19 sailors lost their lives. 24 yachts were abandoned and 5 sunk. In this treacherous callout the *St. Patrick* took the yacht *Autonomy* in tow while escorting the *Juggernaut* to Dunmore East.

Verbal descriptions of such rescues come nowhere near to conveying the danger and terrifying reality of such rescues. The BBC documentary series Saving Lives at Sea, for those who want to learn more, provides film footage of many extraordinary RNLI rescues.

Part 2 :
I will describe building the *St. Patrick*.

It has been great fun!

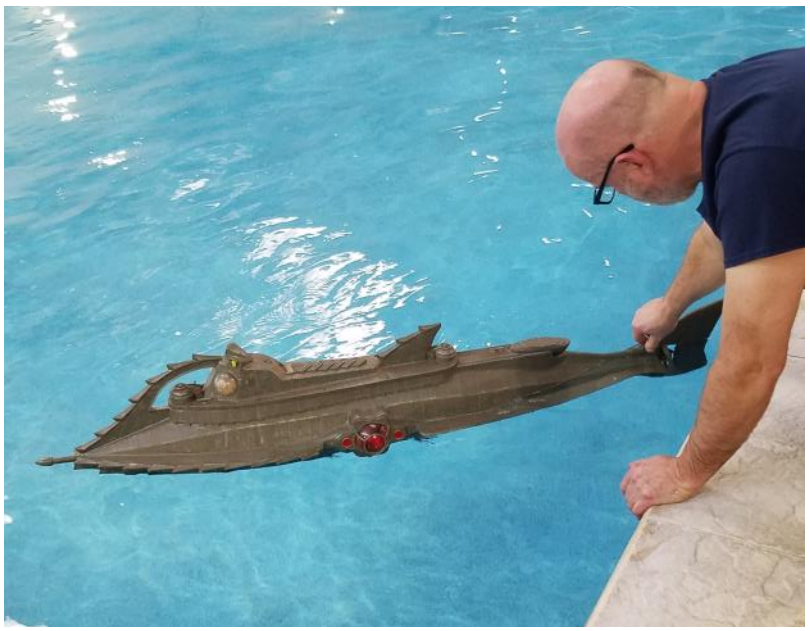
WIP on the 1/12 scale St. Patrick before the wheelhouse build

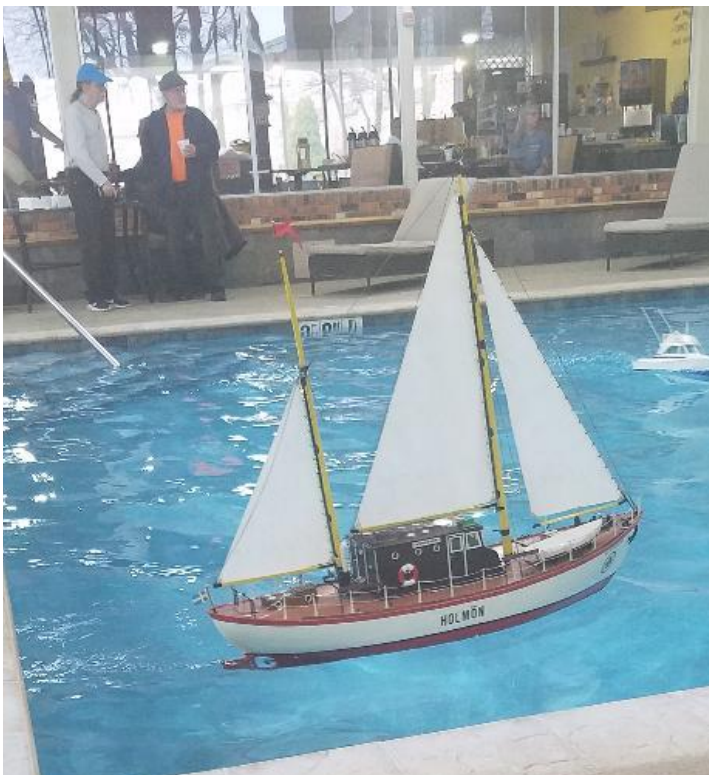
The Maumee Valley Model Boat Club Winter Fun Runs 2022

By Kris Stroud

Winter in Northwest Ohio: cloudy and cold. BUT the members of the Maumee Valley Model Boat Club have not been in dry-dock! Quite the contrary!

Our Club is fortunate to have a great relationship with the Genesis Village Senior Living facility in Toledo OH. Genesis Village has an indoor pool and is large enough to accommodate an assortment of crafts for a great Fun Run: tugs, historical and military crafts, sailboats, and even fast boats. We meet once a month during November through March.





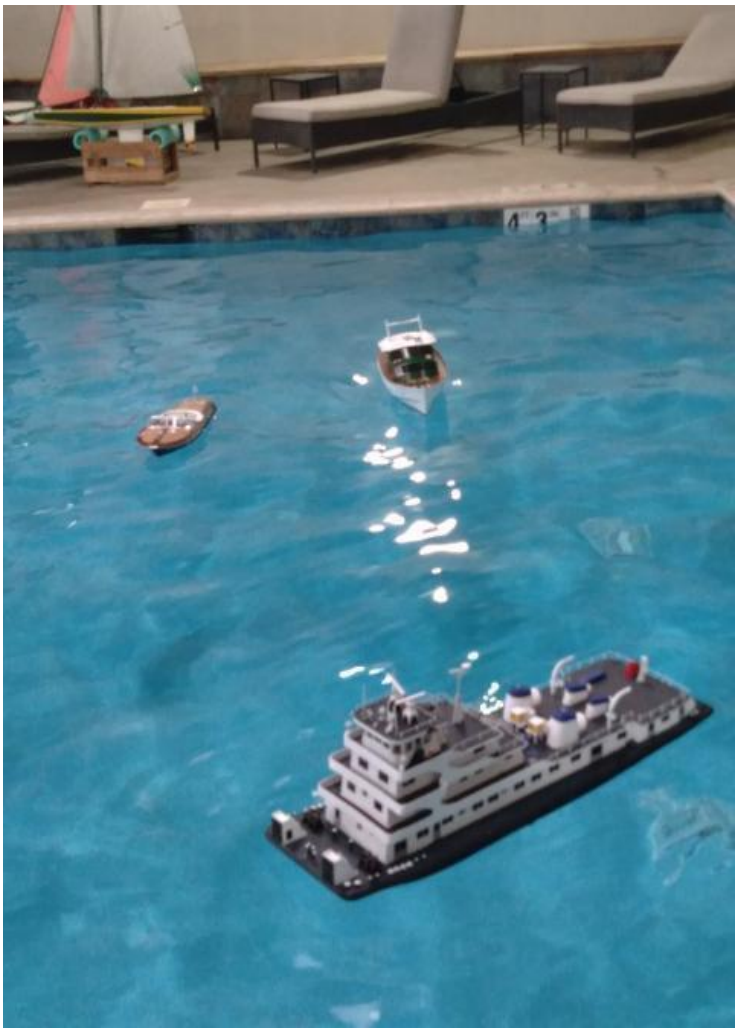
The area is boarded on one side by a full wall of glass windows: the snack bar area can view what is happening in the pool. The opposite wall has a large glass door that leads from the activity room. At one end of the pool an upper level room allows viewing of the area from above. This setup is perfect for showcasing the hobby. Residents, their family members and guests, friends and staff members have the opportunity to watch our members in action.

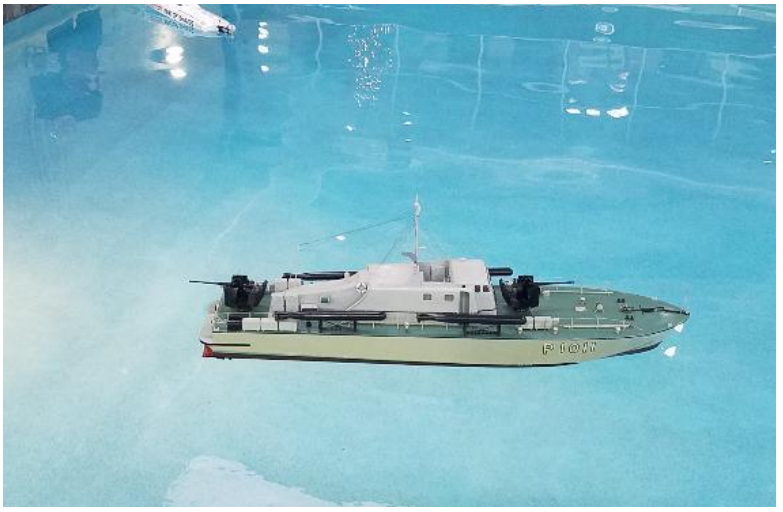
No matter how cold it is outside, the environment in the pool area is downright tropical. Perfect for running all sorts of crafts (but making us wish that spring would arrive!) During our November FUN RUN Genesis hosted a holiday craft show . The venue was decked out with many beautiful Christmas trees and other festive holiday decorations.

Many of those attending the craft show visited the pool area and enjoyed watching our club members. In December our FUN RUN combined as the Club's Christmas Party, held in the snack bar area. We had over 28 members in attendance, along with a nice group of residents and visitors that enjoyed our afternoon of fun.

These monthly Wintertime FUN RUNS allow our members to get together for camaraderie and to hone and practice our skills running our boats. Ideas are exchanged for improvements of our models and possible troubleshooting, new purchases and acquisitions are shared, and suggestions are discussed for upcoming events. Several of our members are working on constructing "training" boats which can be loaned out to spectators so they can try their hand at running a radio controlled craft.

A great way to accomplish our goal of increasing interest in the hobby.





July 15th will be our date at Cabela's in Dundee MI for our 5th annual Regional Fun Run. Last year's event was outstanding and we are anticipating even more participants, vendors and spectators alike. Our 2023 Event Calendar is all set and it will be a busy Spring and Summer!

Smooth Sailing-

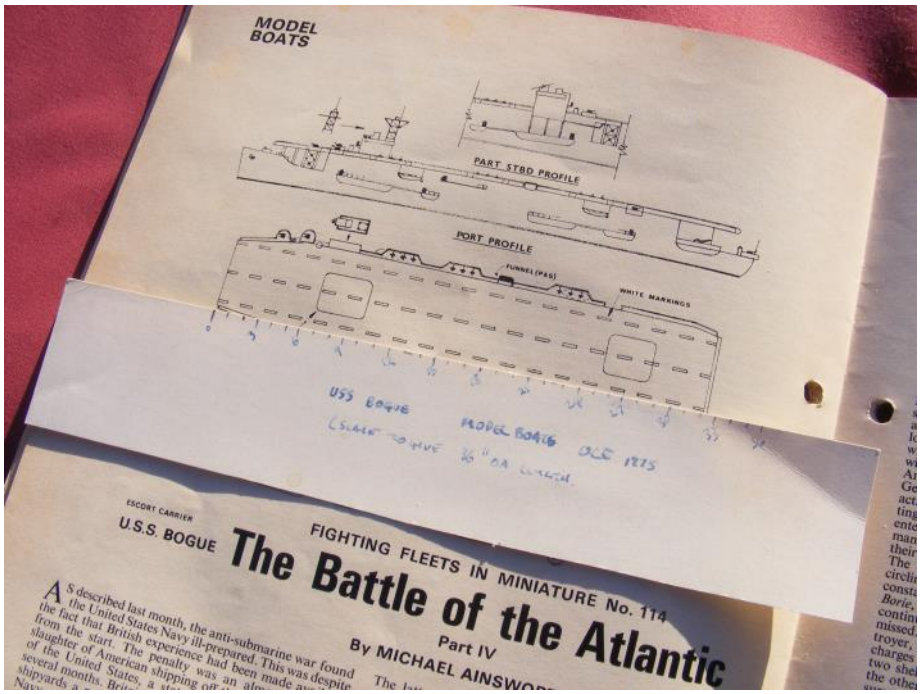
Kris Stroud, President MVMBC

Scale Rule

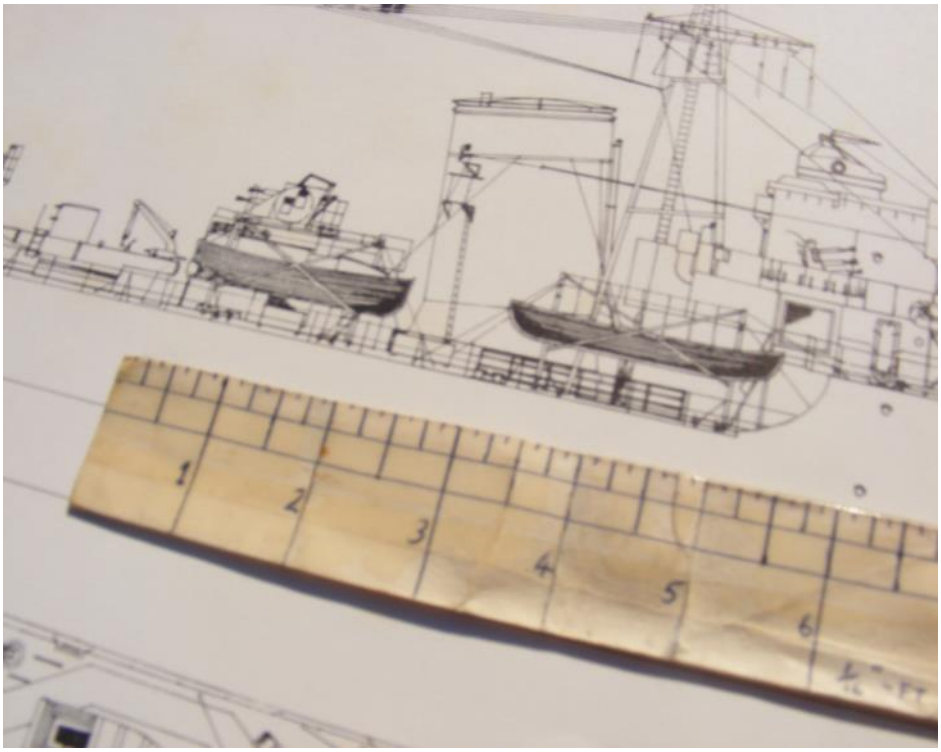
By Glynn Guest

My early attempts at designing and building working models based upon warships made great use of the "Fighting Fleets in Miniature" series. These were side and plan views drawn to a common scale of 1/1200 by Michael Ainsworth. They started in April 1966 and ran in most issues of the magazine until March 1994.

Intended for making static models at this scale, they were quite accurate and illustrated the layout of the vessels, but, were clearly way too small to make a practical RC model directly from them. I had already started using a scale around 1/144 (1 inch = 12 feet) since it allowed a model based upon a destroyer to be built using the standard 3 foot lengths of balsa sheets. A little thought and it was realised that these plans could be conveniently scaled-up using the close approximation of 1/8 inch on the 1/1200 plan corresponding to 1 inch on my models. True, not exactly right but close enough for a decent looking semi-scale model.



To make life a little easier, and avoid making mistakes when reading off the 1/8 inch segments on my rule, a simple "scale rule" was drawn on to a strip of card so the model dimensions could be read off directly, Photo 1. Becoming more ambitious and, hopefully, a little more skilful, I started using more detailed plans such as those by Norman A. Ough. These were usually at a larger scale, something like 1/192 (1 inch = 16 feet). But, wanting to carry on building models in 1/144, they could not be used directly.



Rather than multiplying all the plan dimensions by 1.33 (and this was pre the ubiquitous electronic calculator days!), a scale rule came into use again,

Photo 2.

Since then there have been many times when an interesting looking plan, possibly with no scale being given or even full size dimensions, has been spotted. After figuring out the size of the model I want to build based upon this plan, a suitable scale rule had to be made. No surprises here as I soon created an easy way to do this.

Drawing Lines

The first thing to do is to take a piece of card with a straight edge longer that the image you are working from. Onto this card the positions of the bow and stern are marked, Fig 1.

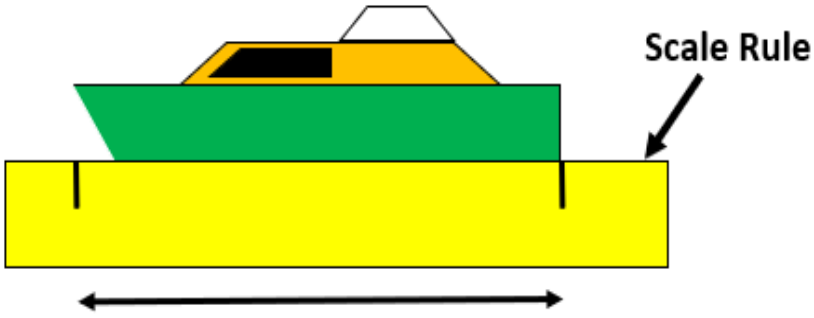


Figure 1

Alternatively, you might know the width of the model you want to build or some other dimension (perhaps a fitting?) and its length on the plan could be used for the scale rule. Now the task is to subdivide this length between these two marks to match the units (i.e. cm, inch, or whatever) you plan to use when building the model. I was taught a method in my Engineering Drawing classes many years ago but it demands proper drawing equipment and the skill to use them.

There may be clever methods using CAD but I'll show you a simple way with just pencil and paper.

Let's make life easy and say you need to divide this length on the card into 9 equal parts. Yes, you will almost certainly need more for the length of a model but it gets the right idea over without giving me the chore of drawing up a diagram with 30, 40 or more divisions! If it makes it easier, just imagine it's not the length but the beam I've taken off the plan.

You start with a suitably large piece of card, mine is the back of the calendar that a milkman used to give his customers each December. Referring to the time when milk was delivered to your doorstep each day shows you how long I've been using this method. A central vertical line is drawn down the card and a point marked at the bottom. Across the top a line perpendicular to the centreline is drawn and then equally spaced points marked to match the likely sizes of the models you might wish to build.

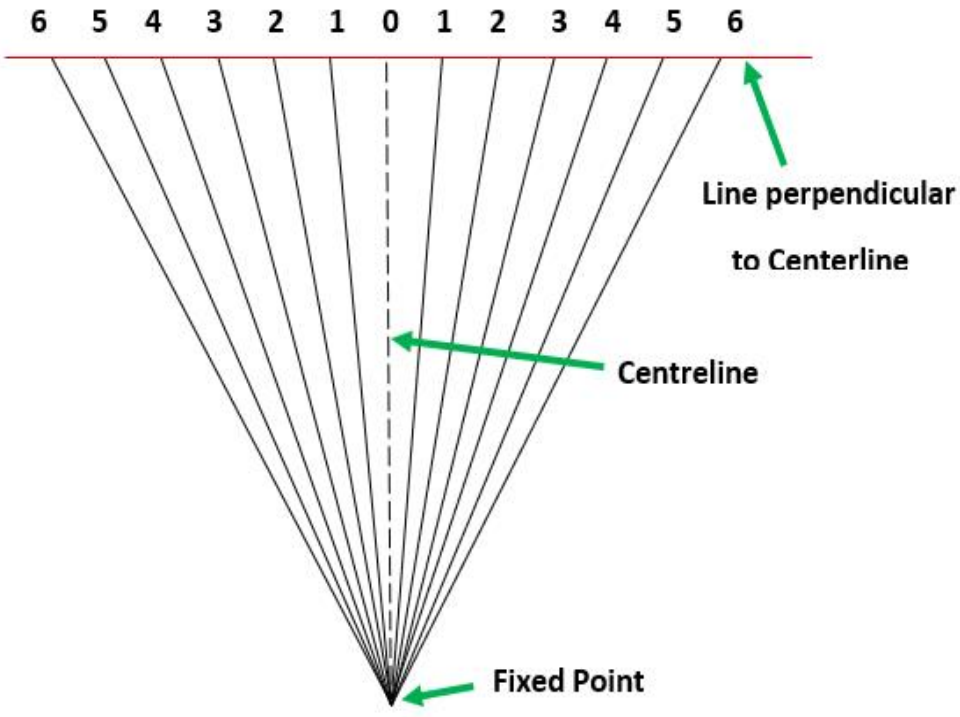


Figure 2

In the example used in this article (i.e. 9 units long), 6 units either side have been used. From the bottom point on the centreline, straight lines are drawn up to the points on this perpendicular line. It's also a good idea to number these lines starting from zero and moving away from the centre, Fig2.

Now, the piece of card being used as the scale rule is placed on this ray pattern of lines and, keeping the measuring edge perpendicular to the centreline, moved up and down.

The aim is to have the marks on this rule that correspond to the bow and stern positions of the plan you intend to work from, match lines that will subdivide the rule to meet the number of length units you plan to build the model at.

In this case it's 9 units, so the bow position is on the left number 5 line and the stern on the right number 4 line. The scale rule can then be marked up, Fig 3b. Your scale rule can be further subdivided into smaller fractions using this method.

This method may not be able to supply the accuracy that some demand but it is cheap and easy and well suited to working from any small drawing which has inspired you. I have also used it when working from suitable photographs.

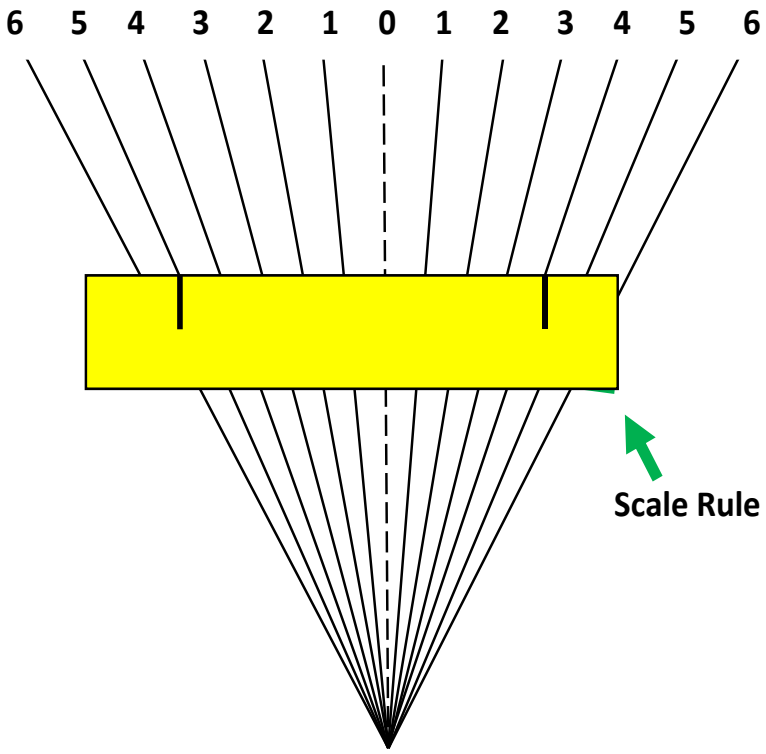


Figure 3a

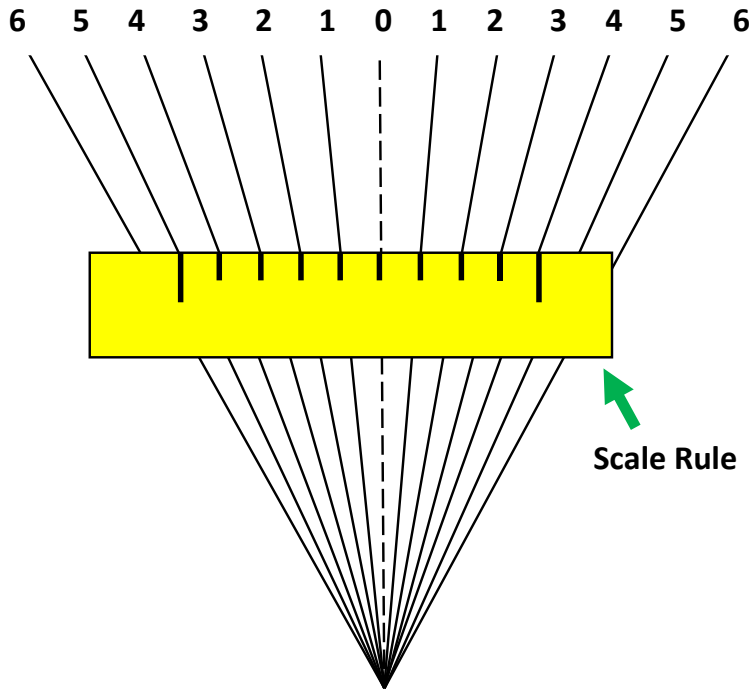
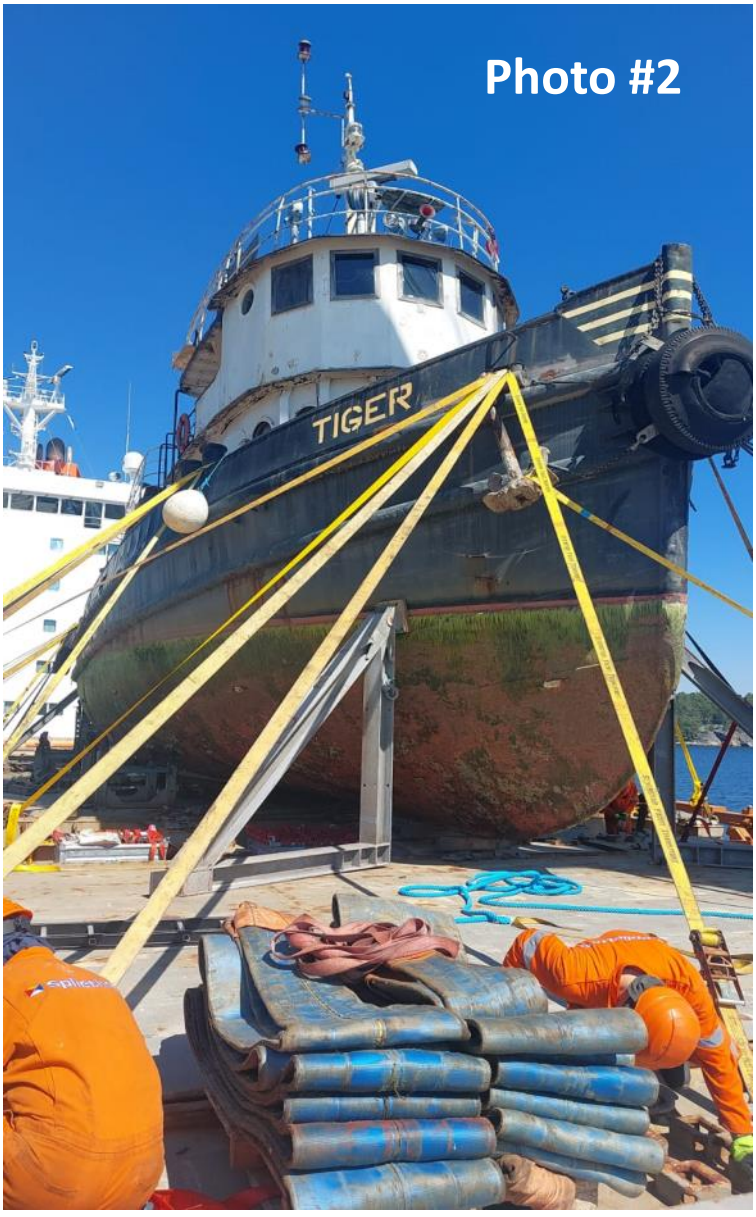


Figure 3b

WWII ARMY TUGBOAT IS COMING HOME (12/15/22)

By Howard Howe

I have previously written an article that was published in the SSMA Journal about building a 1/48 scale model of a steel 86' ST Tug that was built in DeLand Florida in 1943. My interest in the history and building a model was that my Father had worked on the tugboats as a welder and died of pneumonia. Photo 1 is the RC model I built.



Of the 29 tugboats built in DeLand, there was only one survivor that was located in Sweden. The owners offered to donate her to the city of DeLand, if money was available for the return trip to her place of birth. Dan Friend, who is president of the DeLand Historic Trust took up the task of raising money for ST479, *Tiger's* return home and setting her up as a Memorial.

Thanks to Dan's efforts and a major donator, enough money was raised to bring *Tiger* to Jacksonville, Florida via a large transport ship. Photo 2 and 3. This also required dealing with the environmental issues and government regulations both Sweden and US.


Photo #3

After *Tiger* was launched in Jacksonville, she was towed down the St John's River to Green Cove Springs where she had dockage until November. This allowed several months for Dan and support team to do some cleanup and get the auxiliary diesel engine operational for the remaining trip to DeLand. During this period, as a member of the Historic Trust, my son and I drove over to visit and tour *Tiger.* I took my model for comparison with the full scale tugboat as shown in Photo 4

After the Florida Hurricanes, Dan and volunteers moved *Tiger* under her own power to Astor, Florida. Plans are in process for her final resting location before the next move. A lot of the final plans will be based on funding from donations!

Check out the many videos on Youtube by searching "DeLand's Dan Friend".

Captain Howard Howe (retired)


Photo #4

How To Build a Miniature Centrifugal Pump

Robert Wickham 01/2023

First, let's go over how a centrifugal pump works. The key is in the name. This style of pump uses centrifugal force to accelerate water from a stand still to a high velocity via a impeller rotated by a motor. It is vital that the water enters the pump in the center of the impeller so it can be accelerated or thrown to the outside of the pump cavity. If we provide an opening on the outer edge, the water will escape through this hole at a high speed. The downside of a centrifugal pump is it will not draw a vacuum, so it won't lift the water to prime itself. In other words, the pump must be covered by water for it to perform. This works great for a bilge pump which I will cover in a future article called "The Automatic Bilge Pump". There are a couple of ways to overcome the priming problem for fire pumps which will be cover in a later article.

So now let's build the centrifugal pump. Materials needed:

- One piece of ¼ inch Lexan or polycarbonate 8 inches by 8 inches.
  (this material machines well with no blow-ups)
- One 3/16 inch stainless or brass 3 inch long shaft
- Three Du-bro 3/16 inch brass collars #141
- Two 3/16 inch ID sintered ¼ inch long bronze shoulder bushings. These are available in a good hardware store
- One K&S ¼ inch X 0.032 inch brass strip #8240
- Four 6-32 X 1¾ inch machine screws and 8 washers with 4 nuts in stainless steel or brass
- Two rubber O-rings that fit tight around the 3/16 inch shaft
- One 1½ inch long X ¼ inch K&S brass tube #8131
- One 1½ inch long X 3/8 inch K&S brass tube #8135

Cut five 2 inch square pieces of the Lexan or polycarb. Try and do this as accurately as possible. I use a table saw with a fence. Be very careful when doing this to keep your fingers. Draw a corner-to- corner cross on one piece. All the drilling will reference off this cross. Clamp all 5 pieces together in a drill press and using a #50 drill bit, drill a pilot hole through all 5 pieces at the center of the X. Leave this bit in while doing the corners for alignment.

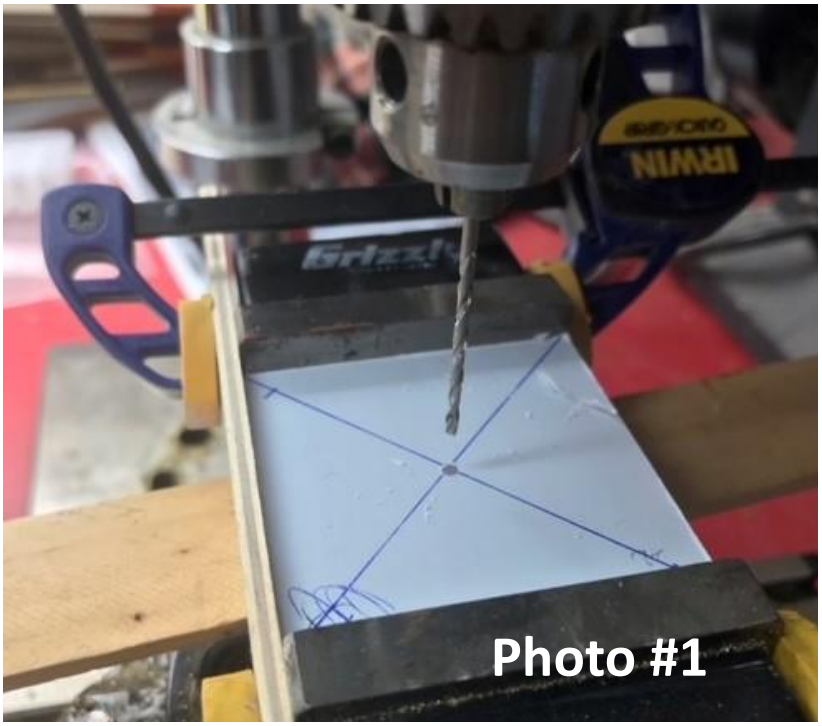


Photo #1

Drill one hole 5/16 inch in from a corner through all 5 pieces using a #28 drill bit. Insert a 6-32 machine screw into this hole to keep the 5 pieces in alignment. Drill a second #28 hole across from the first #28 hole and 5/16 inch in from the corner. Insert a second 6-32 machine screw. Tighten the two 6-32 machine screws with nuts. Now the 5 pieces will stay in alignment while you drill the other two #28 holes for the other two 6-32 machine screws.

At this point the pieces will only go together one way due to inaccuracies in the drilling process. Mark one side with an “S” pattern or dots like I did in the photo. This is important so you don’t wind up with a “Rubik’s Cube” when you try and assemble this.

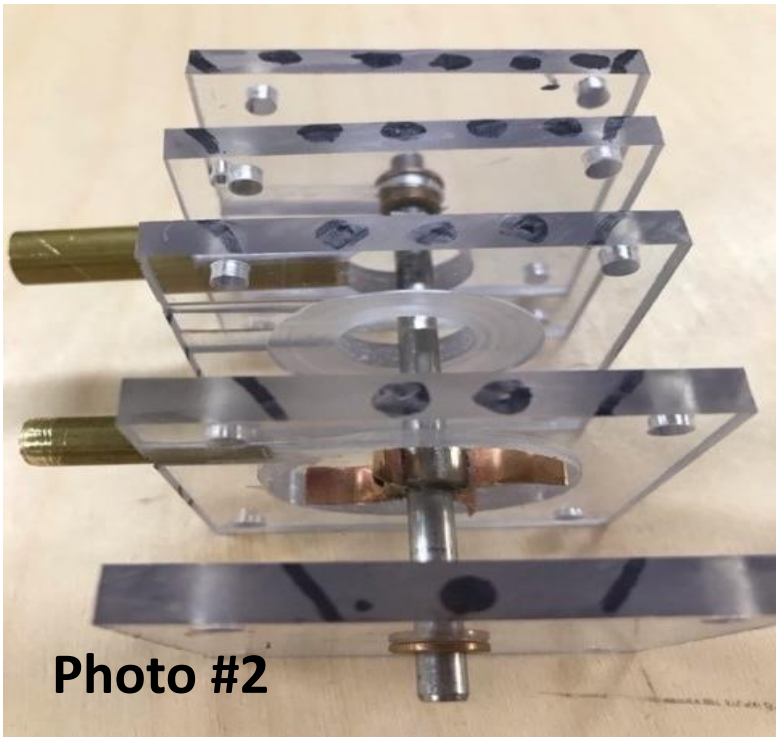


Photo #2

Next drill a 5/16 inch hole through the two outer plates using the #50 center hole as a guide. This is where the sinister bronze shouldered bushing will go. Keep the shoulder on the outside.

Now we will machine the inner plates. The top of the pump will be where the machine screw heads are. This is Plate #1 where the 5/16 inch hole for the sinister bushing is. Take Plate #2 and using a 1¼ Forstner bit, cut a 1¼ inch hole in the center. Using the #50 drill hole for an index point, this is where the impeller will go which will be built shortly. Use the 1¼ inch Forstner bit and relieve the third plate about 1/16 inch. This is necessary to provide impeller clearance. Now use a 5/8 inch Forstner bit and drill the center of the third and forth plates using #50 hole as a guide. The fifth plate has the bearing in it and requires no further drilling.

Now we will drill the input and the output holes. This will require a ¼ and a 3/8 inch drill bits, a brad-point bit works best. Assemble the 5 plates without the bushings and snug the corner bolts. Cut a 1½ inch long ¼ inch brass tube (K&S #8131) and a 1 ½ inch X 3/8 inch brass tube (K&S #8135). The ¼ inch tube will be the output. Using the ¼ inch bit, drill through the 2nd plate which houses the impeller.

Photo #3a

Study the Photos as to placement and alignment of the ¼ inch hole in plate #2. The alignment of this hole with the pump volute is critical.

The 3/8 inch hole for the input is located in the 4th plate. Use a 3/8 inch drill bit to do this. The 3/8 inch hole will lead to the 5/8 inch hole in the center of plate #4. Refer to the Photo #3 for this. Loosen the bolts and clean up the edges of the cavities and holes. Insert the tube and it should look like photo #3.

The 3/8 inch bit will get into plates #3 and #5 a little which is OK as the plate is only ¼ inch thick and we are using a 3/8 inch drill bit. This is why we tighten the four bolts and clamp the stack before drilling.

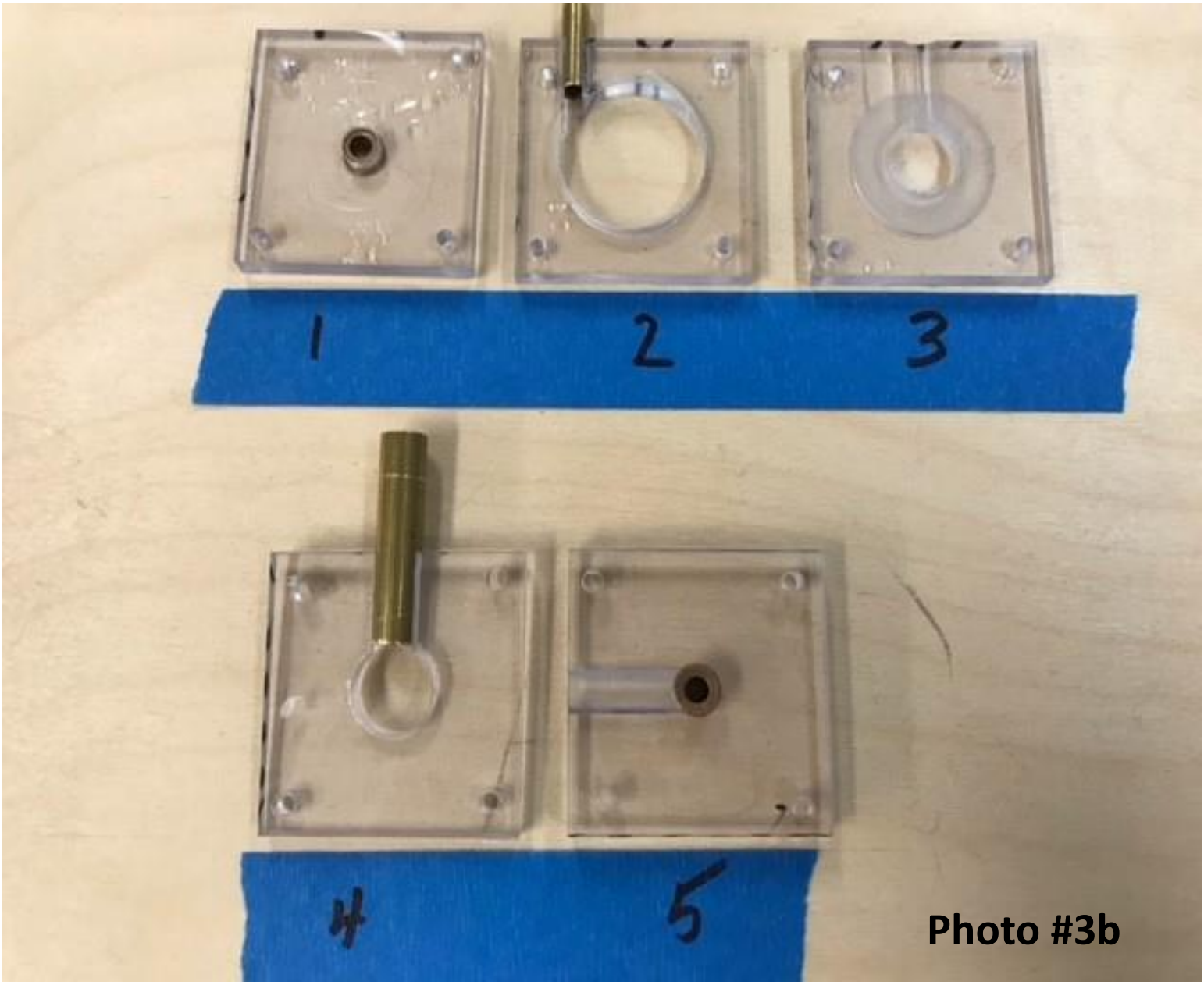


Photo #3b


Photo #4a

Now let's make the impeller. Using K&S, ¼ inch X 0.032 inch brass strip #8240, cut 4 pieces 7/16 inches long. Cut four slots with a fine tooth hacksaw about 1/16 inch deep, spaced at 90 degrees around a Du-bro 3/16 inch plated brass collar #141. Be careful of the Allen set screw.

Place the four vanes in the collar as shown in photo #3 and very carefully solder the four vanes to the collar. Solder them straight and bend them after the solder cools. It now looks like photo #4a and #4b.


Photo #4b

Photo #5

When you assemble the pump, use the 2 Du-bro collars #141 to adjust the position of the impeller for clearance. You can coat the plates with Vaseline to prevent seepage between the plates.

Use a small amount of RTV to seal the two tubes. Also use the 2 “O” rings between the bushings and the Du-bro collars to help with water seepage. As you can tell, all the dimensions are variable to scale-up or down in size to fit your needs. The faster you turn it, the more water it will move. I think you will be surprised at how far this pump (with a 500 size motor) will throw water.

Please watch for upcoming article on various ways to use this pump.

USS Constellation – CC 2 (a Lexington Class battlecruiser)

Designing and Building a 1:96 Scale, RC Model Ship

By Russ Wick, (updated January 2023)

Part 4: Preparations for Model Building:

We are fortunate to have a full basement at our home. A good portion of the space is a nice party room for gatherings with family and friends. The utilitarian part of the basement includes space for the "Design and Engineering Department" and the "Shipyard"

The "Design and Engineering Department" includes a 42inch by 84inch tilt top drafting table fitted with a 72in parallel bar, two bookcases, and a two-shelf library, reference table(s), and numerous drafting instruments including a full set of "ships curves", compasses, dividers, scales, pencils, pens, etc.

Photos of the "Design and Engineering Department" are included below:

The "Shipyard" includes wall and base cabinets salvaged from a kitchen remodel project, a "primary" workbench, two "secondary" workbenches, two "storage / staging" shelves, and a portable "Transport Cradle". The transport cradle can also be configured as an additional workbench for the paint booth and air brush equipment.

The "primary" workbench is 16ft long X 24 inches wide x 42 inches high. It is topped with smooth, 1-inch thick MDF and was carefully assembled and measured to ensure flatness and levelness in both the longitudinal and transverse directions.

A “Center Line” was carefully marked on the top of the MDF work surface and checked with a tightened string to ensure straightness.

When the “primary” workbench assembly was completed, the position of the “stations” (cross section frames) of the hull were carefully marked on top of the work surface. A “carpenter’s square” was used to draw the position of the frames at 90 degrees to the Center Line of the model ship.

NOTE: At a subsequent date, a copy of the “deck plan” of the model at 1/8th inch (1/96) scale was laid on the top of the workbench, under a layer of wax paper, to provide reference for construction of the model.

Photos of the “primary” workbench are included below:

Two “auxiliary” work benches were constructed one 16ft long x 18 inches wide and the other 8ft long x 24 inches wide. I also have several portable, folding tables available as needed for work or temporary storage.

Photos of the “auxiliary” work benches are included below:

Two 10ft long X 15inch wide storage / staging shelves were installed to facilitate storage of the hull and staging of fittings and detail sub-assemblies.

A transport cradle 9ft 6in long x 18in wide was constructed to facilitate carrying the model from the basement workshop to the transport vehicle and then to the water's edge. It is stored below these shelves.

A photo of the storage shelves and transport cradle is included below:

Our home also has an inground swimming pool for testing buoyancy, ballast, trim, propulsion, speed, and rudder control systems on the model during summer months. After each "dockyard period" the model is re-tested in the pool to ensure water tightness. Additionally, removable ballast and trim weights are positioned throughout the hull.

Photos of the model in the pool are included below:

The narrative continues with Part 5 Constructing the Hull

Day/Night Run Concludes Successful 32nd Season

Story by Frank B. Cook, Events Officer

The Club wrapped up its 2022 sailing season in spectacular fashion with the annual Day/Night Run at Lake Massapoag on October 15. Member turnout was high on the beautiful late afternoon autumn day ... as was the surprisingly large number of visitors! Two weeks earlier, the Club had participated in the 2nd Annual Sharon Day event on the shores of the lake. As previously noted, we made a positive impression that day and there is little doubt that was a prime reason we attracted so many visitors to our year-ending float! In fact, many people noted they visited our display, or saw kids sailing the Noodle Tugs, at that event.

L-R: Larry Muhammad, Bob Okerholm, Mike Hale, Arthur Perlmutter. (Frank Cook Photo.)

Further evidence of our impact was seen in the attendance of two individuals who we met on Sharon Day! Ted Correia actually joined the Club at that event and returned with his Dumas model of a USCG 44-foot Motor Lifeboat (MLB) to join the Day/Night Run. Joining the ranks of the newcomers was Larry Muhammad who learned of our Club via the Internet, attended the Sharon Day to learn more, and then brought his RTR tug to sail with us. In addition, a couple of visitors expressed interest in joining up, including a Sharon police officer!

The weather was near perfect for sailing, although the absence of a consistent wind meant that sailboats remained dockside. On arrival at the lake, the temperature was an unseasonable 80-degrees that cooled slightly to 73 at sunset.

As mentioned, there was no wind save for a couple of very short-lived strong gusts between 3 and 4 pm. The result was a flat, glass-like surface for the majority of our sailing time, further helped by the absence of pleasure craft.

Additional club members in attendance included: Linda Arini, Frank Cook, Steve Fifield, Mike Hale,

Bob and Johanna Okerholm, Arthur and Irene Perlmutter, Bob Prezioso, and Charlie and Bonnie Tebbetts. Also dropping by was Don and Gloria Murray, who brought some overseas friends to observe the activity.

As day turned to dusk, many skippers switched on the lights of their craft to create a spectacular sight.

At one point most of the vessels gathered together, just offshore, before sailing into the sunset to conclude the 2022 season.

WEST VALLEY R/C MARINEERS

Batteries, BATTERIES, BATTERIES!

Part 2 of 2

By Jack David

Charging Batteries

Charging batteries is an area that is rife with urban legend and is where most hobbyists get into trouble. Before I launch into my advice, let me relate my experiences with charging batteries. I have NEVER had a battery explode, or catch on fire as a result of charging. There are two reasons for this. One I have always used the correct charger, and **I have always been careful about the rate at which I charged.** That is not to say I haven't come close. I have overcharged NiMh batteries to where they became very hot, but caught my error before a catastrophe occurred. In that respect perhaps I was lucky. The point is this, if you use the right type of charger, charge at the correct rate, and you monitor the charging operation, you shouldn't have any trouble.

So what is the correct type of charger? Simple, one that is specified for your type of battery! If you are using Ni-Cads or NiMh batteries make sure your charger is specific to that type of battery. If you are using AA, or AAA size Ni-Cads or NiMh batteries, you should never charge them at more than a 500 milliamp (.5 amp) rate. Sub-C size Ni-Cads or NiMh batteries can be charged using a "field charger" that the fast electric boaters use, IF you are using a minimum 6 or 7 cell pack, AND you don't charge at a rate that is more than 1.5 times the capacity of the battery pack. In other words, if your Sub-C Ni-Cad or NiMh battery pack is rated at 2500 milliamps, then you should not "quick charge" it at more than 3.75 amps (2.5 X 1.5). This will take about 45 minutes to charge, but it reduces the risk of a battery fire or rupture of the battery case. In addition when charging Ni-Cads or NiMh batteries, using a Peak Detection charger will provide another level of protection, because when the Peak Detection is enabled, the charger will sense when maximum battery capacity is reached and automatically cut off the charge, or go to "trickle charge" until it is disconnected.

Peak Detection Charger

Speaking of “trickle charge” you should not leave your Ni-Cad or NiMh transmitter or receiver pack on “trickle charge” full time, unless it is programmable or a battery cycler. If you look at most “trickle chargers” they charge at 25 to 50 milliamp rate. That is a high enough rate, that it will actually overcharge your batteries, and even though they won’t overheat, the internal chemistry of the battery will change, and they will not only discharge more quickly but they won’t fully charge next time. This is the infamous “memory” that you may have heard about that Ni-Cads develop. In addition Ni-Cads, over the course or their useful life need to be periodically cycled, which is discharging them then re-charging them, otherwise they will develop the “memory” previously described. Most chargers that cycle, discharge to 1.1v and re-charge so that actual charge may be less than total rated capacity. The level of discharge and re-charge should be done only according to the battery maker’s instructions and using a charger which has a cycling (charge/discharge) mode.

If you are charging a lead-acid battery, always remove the battery caps, and charge in a well ventilated area. Cells should be filled to the appropriate level with distilled water (not tap water), and be careful not to let them boil over. Most automotive chargers have selectable charge rates or ether 2 or 6 amps. Automotive lead-acid batteries must always be monitored when charging. If you boil off the electrolyte, you will short out one or more cells, not to mention generating toxic gasses.

The underlying fault with all lead acid batteries is the requirement for an excessively long charge time arising from a two-stage process: bulk charge and float charge. All lead acid batteries, irrespective of type, are quick to charge to 70% of capacity within 2 or 3 hours, but require another 9 to 10 hours to "float charge" after the initial charge.

Charging gel cell batteries is fairly straight forward but should be done very carefully. Compared to flooded lead-acid batteries, VRLA gel cell batteries are more vulnerable to thermal run-away during abusive charging. The electrolyte cannot be tested by hydrometer to diagnose improper charging that can reduce battery life. Most hobby gel cell batteries aren't rated for more than 7 amp/hours, so avoid charging rates that are more than more than 50% of the battery capacity and only with chargers rated for Pb batteries. I have had good luck using a Hyperion programmable multi-charger that I bought for my Li-Po's, selected to the correct battery type (Pb).

Charging Lithium Ion Batteries

Charging Lithium Ion (Li-Ion) batteries must only be done with chargers specific to Li-Ion batteries. That is because the charging process for Li-ion batteries is in three steps,

1. Constant current
2. Balance (not required once a battery is balanced)
3. Voltage source

Top charging is recommended to be initiated when voltage goes below 4.05 V/cell.
All three of these steps are automatic in chargers designed for Li-Ion batteries that have balancers.

Failure to follow current and voltage limitations can result in an explosion!

Lithium Ion Battery Pack (3.7V)

Care of Li-Po's

So what about the scare stories concerning Li-Po's? First, because they are wet-cell, Li-Po's need to be handled more carefully than dry cell batteries. If the case is punctured, or if a fully charged battery is dropped on concrete, it can cause an internal short and then a fire can result. If you do drop a Li-Po on hard surface, do not use that battery until you have monitored it in a safe area and see if it will start smoking or smoldering.

A wise precaution when working with high voltage and high capacity Li-Po's is to have a Class C fire extinguisher handy that is rated for electrical fires. Li-Po's should not be discharged to less than 3.25 volts per cell. If you don't already have one in your boat, you should install a low voltage warning device on either the balance tabs of your battery pack, or to one of the unused channels of your receiver (if you have telemetry) to warn you of low voltage on your battery.

One thing to remember about Li-Po's, at full charge, the battery has about 4.25 volts per cell. If you are thinking about using a 2S Li-Po in your boat as a receiver pack, you may need a voltage regulator, as a fully charged 2S Li-Po will be producing over 8 volts. That could overload your receiver or servo(s) which may only be designed to run on no more than 6 to 6.5 volts.

If you have not been very conscientious about maintaining your batteries, they will start to "puff". Puffing happens over the life cycle of the battery, particularly if the batteries are not kept at a 44-54% level when in storage. Why do I say 44-54%? Because that is the level that brand new Li-Po's are charged to when they are in storage awaiting sale. That is the level you should keep your Li-Po's stored at when not in use.

I have personally only experienced one brand of Li-Po battery that *didn't* puff on me. Some will start puffing very early, others will take longer. My experience was that a little bit of puffing is not a major concern. However when the case puffs up noticeably like a balloon it is time to get rid of the battery. You should cut the battery leads and put it in a container of high concentration salt water. The salt water will actually act like an electrolyte and discharge the battery to the point where it can be disposed of safely.

Charging Li-Po Batteries

This is where people get into trouble with Li-Po's.

Li-Po's must be charged carefully and must NEVER be charged with any charger other than one designed specifically for Li-Po batteries.

I use a Hyperion dual port charger that is programmable and can charge Li-Po's, Ni-Cads, NiMh, and gel cell (Pb) batteries. To ensure proper and safe charging of your Li-Po's the charger must be set to the proper number of cells (1-7S), and the charge rate should never exceed 1.5 times the capacity of the battery. Example: a 3000 MaH battery pack should not be charged at more than 4.5 amps (3 X 1.5).

Hyperion Multi-Charger

You should also have a balancer that can be connected to the balance tab on the battery pack that will balance the cells as the battery is charged to ensure that all cells charge evenly. You need to make sure that you have the correct type of plug for the balancer to connect to the balance tab. JST type connectors are becoming very common. However, if you are using a Thunder Power battery, their balance tabs are completely different from other battery packs and will require the use of a Thunder Power charger (sounds like JR radio vs Futaba). When you are using a balancer make sure you have programmed the charger correctly for the cutoff. Most chargers have either a time, voltage, or TCS capacity cutoff or all three. This is a safety feature to avoid overcharging your battery which could cause a fire.

For scale and sail boaters, there just isn't a need to quick charge Li-Po's at the pond since unless you are running a fast electric, you should have plenty of run time on a single charge if your battery pack has enough capacity. If you have a power boat with a high amp propulsion system, bring more than one battery pack, so you can run your boat while the other pack is charging.

When charging Li-Po's make sure that you charge them in a fire resistant area or have your Li-Po's in a charging bag. And don't forget to have a class C fire extinguisher handy. **Never, never leave Li-Po's connected to a charger overnight!**

Charging Lithium Iron Phosphate (LiFe) batteries.

Conventional lithium iron phosphate (LiFe) batteries need two steps to be fully charged:

Step 1 uses constant current (CC) to reach about 60% State of Charge (SOC);

Step 2 takes place when charge voltage reaches 3.65V per cell, which is the upper limit of effective charging voltage.

This means that a 6.6V LiFe battery pack will actually charge to 7.3V, but when the pack is removed from the charger it will drop down to 6.6V. This is why you **only use a charger specific to LiFe batteries for charging**, (or a multi-charger that has LiFe capability) and is why you won't need a regulator to run receivers and servos that are rated for maximum 7V input.

Battery Selection

So what kind of battery or battery pack should I use in my boat? The volume and type of hull, the purpose of the boat (racing versus cruising), the energy and capacity density and power and current drain required to run all the servos and propulsion system, combined with the desired run time will dictate what type of battery to use.

For instance in smaller sail boats, the weight to capacity ratio is critical so the relative weights of different battery packs and types is important. Straight NIMH batteries AA cells with 1500 Mah capacity weigh less than AA cells with 2500 MAH capacity for instance.

This tends to be true for all battery types except wet cell automotive batteries. Whereas if you are running a 1/96 scale battleship, battery size and weight isn't as important as is voltage, and capacity. In fact for a displacement hull such as a warship or cargo vessel, having a heavy battery means you won't have to use as much ballast to get down to the design waterline.

Another important consideration is battery pack shape and configuration. You need to fit a battery into a confined space and sometimes be able to move it fore and aft to control weight distribution to balance the boat, especially if you are running a boat with a planing hull, such as a speed boat or PT boat.

Finally, if you are running a high speed power boat with a motor that draws high current (in excess of 25 amps), you will probably need to use either Ni-Cad, NiMh, or a LiPo battery pack(s). As of the date of this article, these types of batteries are still the primary types of batteries available to the model boater that can tolerate high discharge rates and are available in higher capacities (up to 5000 MaH in the case of LiPo's).

Well, that's about it for batteries. Smooth sailing, fair winds and following seas!

K.N. "Jack" David
Scale Director

SSMA has received a donation of a new RC Model Boat Kit.

Germany Missileboat 143A

A WARSHIP MODEL FROM DRAGONLAND

Scale - - 1/72 Length - - 883mm

Beam - - 120mm

SSMA is selling the Model RC Boat Kit.

The Selling price is $75.00 plus shipping.

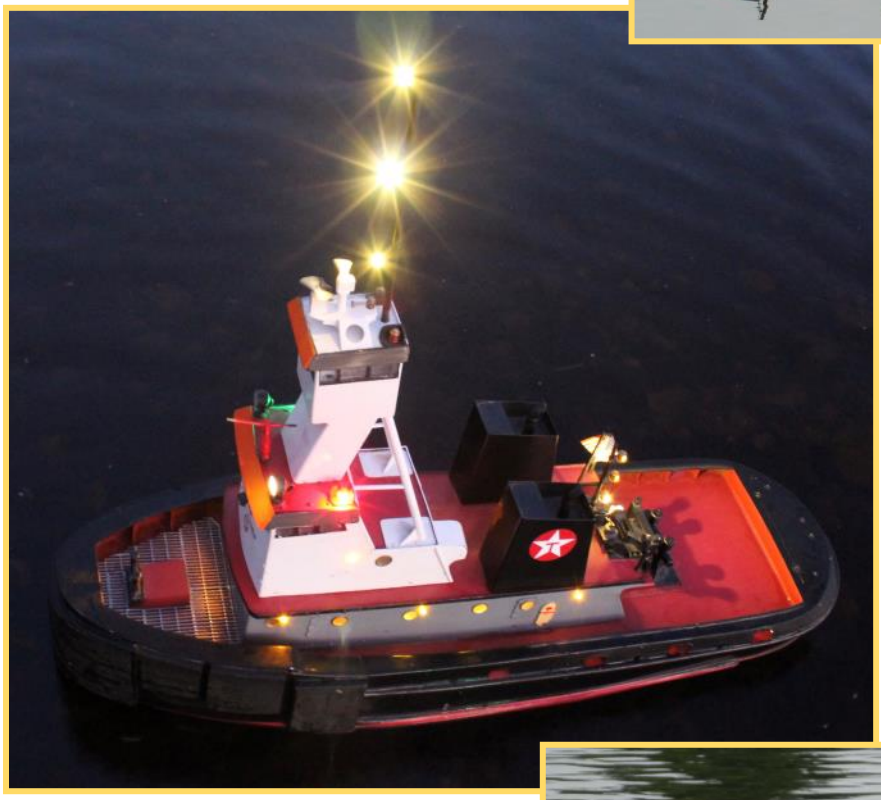
For information contact Heinz

hricken@gmail.com

The Shipyard

Right:

Blaine Russell's "Knee Deep II". It's a modified Lobster Yacht built from a Midwest Maine Lobster Boat kit.



Left:

Charlie Tebbetts tug

"Texaco Star Fuel Chief"

Right:

Ken Valk's

Aged & weathered "Louie-G". Known as Double Enders these old 40's era fishing boats were used on the California coast for general fishing, crabbing, & shrimp

2023 SSMANA Membership Application

Name:_____

Address:_____

City:_____ **State:**_____**Zip Code:**_____

Telephone:_____ **Cell:**_____

Email:_____

If this is a renewal, what is your Membership Number?_____

Are you a member of a local club? **Yes**_____ **No**_____

If so, what club? _____

Please indicate what types of ships interest you (mark all that apply)

Military_____ Fast Electric_____ Pleasure_____

Coast Guard_____ Civil War_____ Submarines_____

Work Boats_____ Paddle Wheel_____ Sail_____

Type of construction you do (mark all that apply)

Kit_____ Scratch_____ Partial Kit_____ R-T-R_____

Type of power you use:

Electric_____ Steam_____ Wind_____

Dues are $32.00 for individuals; $35.00 for family memberships

Please make check payable to **SSMANA** and send to:

Mr. Heinz Ricken
SSMA Clubs/Membership Director
514 Cranford Avenue
Cranford, New Jersey 07016

Scale Ship Modeler's Association of North America

WWW.SSMANA.ORG

Last page photos from

Ron Ginger's sailboat from the Maine Modelers Club of New England