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Tidbits from the Past *by Gene Bodnar*

"The Uses of Hammocks"

Hammocks have been employed in the British Navy since the time of Sir Francis Drake, around 1590. In 1597, they were formally adopted. Officially, each hammock was allowed a space of 14 inches per man, with 28 inches per man for a petty officer. This doesn't sound like a lot of space, but half the crew was usually on deck at the same time, so each man really had twice that space, which is more room that in today's double bed. Officers usually slept in cots slung from beams in their cabins.

A canvas hammock typically measured six feet by three feet, with a mattress made of flock in it. Each sailor either brought his own hammock on board or he bought one from the purser. Each hammock was slung at a numbered peg. Each sleeper used the same numbered peg for every sleep session. At rising time, the hammock was taken down and lashed with seven half hitches, with the number of half hitches representing the seven seas, and then they were placed in the netting at the side of the ship. Thus, the hammocks served as protection from musket balls or splinters caused by cannon fire.

By the early 1700s, each man had two hammocks, one currently in use and a second to be cleaned on Saturday.

Hammocks sometimes served as life preservers. Thrown to a man overboard, they could keep him afloat for several hours.

When a seaman died at sea, he was sewn into his hammock, with the last stitch placed through his nose. With round shot placed at his feet within the hammock, he disappeared into Davy Jones' Locker immediately upon being thrown overboard.

It is said that hammocks provided a very comfortable night's sleep, much more so than a bed or a cot. Since a slung hammock moves in concert with the motion of the ship, the sleeper has no risk of being thrown out of his hammock onto the deck during rough seas, and furthermore, the sleeper is wrapped in the hammock like a cocoon. Basically, the hammock stays still, while the ship rolls around it.

Hammocks were used by navies well into the mid-twentieth century. Even today, many leisure sailors prefer hammocks over bunk beds because of better comfort at high seas.

Model Ships of the Royal Museum Greenwich

Plank Former Model

There's more models that can be built than just building model ships. So this month here's something a little different for you.

Scale: Unknown. A model of a plank former, used for bending planks for shape required before fitting to a hull. The model is made of both wood and iron with the bending bed constructed of a single piece of wood inscribed with individual planks, mounted on several rectangular beams. On the deck are a series of iron bands, which have been drilled with a number of holes at different intervals and at different angles to each other, into which are located the vertical pairs of adjustable iron clamps. The method of bending the plank is demonstrated in the model by turning a number of square headed threaded bolts drilled with a small hole, through which a t-bar is past through to enable turning. The model is fitted with a single plank in the process of being bent into shape.

Date made: Unknown
Materials coating: varnish; metal: steel; wood
Measurements Overall model: 126 x 591 x 229 mm

Source: Royal Museums Greenwich

Ship Wrecks of the World

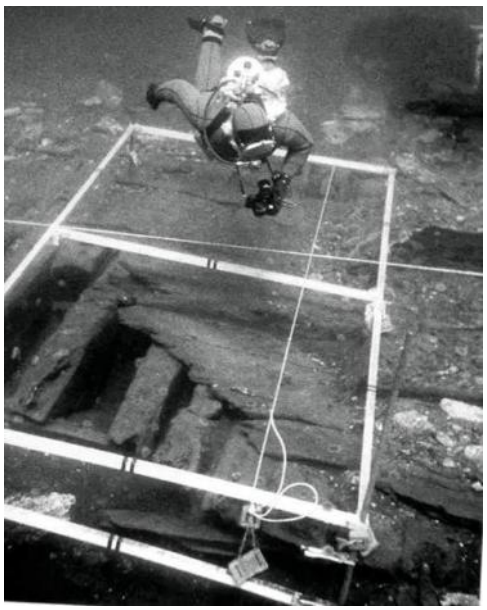
"The HMS Sapphire"

HMS Sapphire was a 32-gun fifth rate of the Royal Navy. She was designed and built by Sir Anthony Deane at Harwich in 1675, at a cost of £4,175 and accommodated 135 men and 32 guns during war.

Capt. Thomas Harman was assigned as her master by the King on the 12th of June 1675. In 1677 HMS Sapphire was also the first command of Sir Cloudesley Shovell, who later became Admiral of the Fleet and eventually died in the Scilly naval disaster of 1707.

The Sapphire spent most of her early service in the Mediterranean.

HMS Sapphire was cornered in Bay Bulls Harbour by a French squadron in August–September 1696. Her master, Captain Thomas Cleasby, in fear that the French would capture the ship, scuttled her and escaped across land to the colony of Ferryland.



NMAS Diver over the wreck site

In the end it was a good thing Captain Cleasby scuttled the HMS Sapphire. He was able to save his own life and the lives of most of his crew and keep the ship from the hands of his enemies. More importantly for us today, the HMS Sapphire has taught us a tremendous amount about 17th century ships, warfare and life in general. This is evidenced by the 20 published articles written about HMS Saphire by NMAS and Parks Canada staff. As well, the National Film Board of Canada created a documentary called "The Mystery of Bay Bulls" and there are more than 30 unpublished articles and thesis written about HMS Sapphire.

The wreck site was found in the early 1970s. Looting of the site prompted the start of the Newfoundland Marine Archaeological Society (NMAS) to protect the site. They along with Parks Canada conducted some preliminary studies of the site from 1972 to 1977. Through their efforts the site was later classified as a Heritage site.

Saint Brendan's Curragh—Part 3

James M. Norton

The first two installments of this series described the construction of the curragh frame (Part One) and the covering of this lattice-like frame with a leather skin (Part Two). Once the leather skin covering the curragh was securely in place, it was time to begin outfitting the hull. The first step was to add the thole pins for the oars. There are six thwarts, for a maximum of twelve rowers, so I added twelve thole pins appropriately placed on the gunwale according to the Colmcille plans. I also eventually added a thirteenth thole pin at the stern, in the midline of the transom, to accommodate a steering oar. Apparently two forms of steering were used in these curraghs, steering oar and steering paddle, depending most likely on the characteristics of the water and on whether oars or sail propelled the boat.

Four wooden pegs were used to secure each thole pin support to the upper gunwale, the pegs passing through the leather into the gunwale frame. The thole pins themselves passed through the base, the leather, and the upper gunwale, eventually resting on (but not penetrating) the lower gunwale. This conforms to what I have been able to see in photographs and diagrams of curragh construction. Figure 1 shows thole pins in the center section of the curragh.

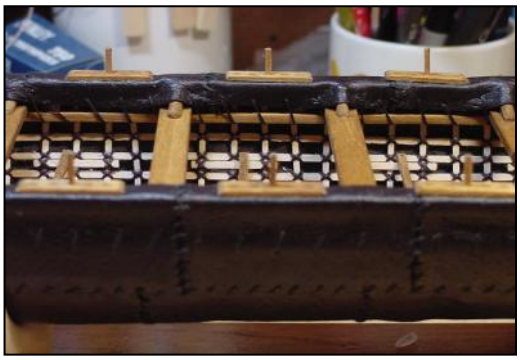


Figure 1

Assembling and installing the framework for the steering paddle was the next step. The H-shaped structure was constructed of ¼" dowels, simulating 6" diameter logs. The uprights and crosspiece were pegged together and tied with rope, corresponding to the method used in Severin's Brendan reconstruction. The uprights were secured to the upper gunwales by pegs, and fitted into spaces in the deck. The steering paddle with its blade and handle was carved out of basswood, and secured to the frame with rope knots that allowed a rotational movement. A wooden strip with a concavity was pegged to the outer edge of the upper gunwale, to serve as a rest for the steering oar and to prevent the oar from rubbing through the leather skin with repeated use. The oar was pulled tight against this support by a leather strap and rope that attached to the upright on the opposite side of the boat. This steering paddle appears to represent, in my opinion, a transitional form between a steering oar and a fixed rudder.

Figure 2

Figure 2 above (as well as subsequent images) also shows the additional ropes that served to help keep the leather skin in place. These ropes were secured to the lower gunwale on one side of the boat, passed up over the upper gunwale, around under the boat, over the upper gunwale on the opposite side, and secured to the lower gunwale there. A thicker rope extended around the gunwale frame in a circumferential fashion.

The additional compressive forces provided by these external ropes would offset the tension created by stretching the leather skin over the gunwale frame.

To assure safe passage, the builder of each Irish curragh would traditionally place a vial of holy water in the boat, usually attached to the gunwale frame at the bow of the boat. I simulated such a vial using a small, tear-drop-shaped glass bead, hung on a peg attached to the stem, as shown in Figure 3.

Figure 3

Next came the deck shelters, one amidships and one at the bow. The framework for the shelters was constructed in the same fashion as the hull – curved ribs and stringers, tied together, and covered with sewn leather skins. The shelter located amidships was constructed first. The wooden frame was tied to the thwarts and gunwales, and a leather skin was pulled down over it and secured to the thick circumferential rope. Leather flaps covered the ends of the shelter, and in the model these flaps are held open with rope ties so that the interior can be seen. Figures 4 & 5.

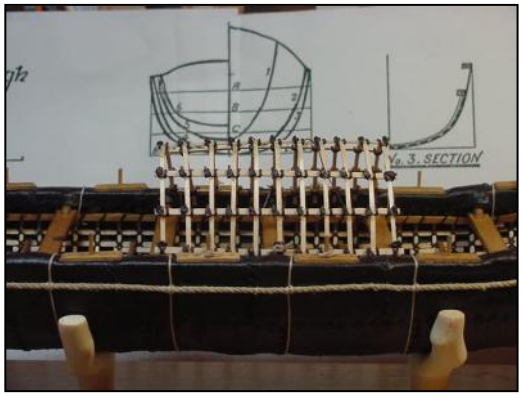


Figure 4

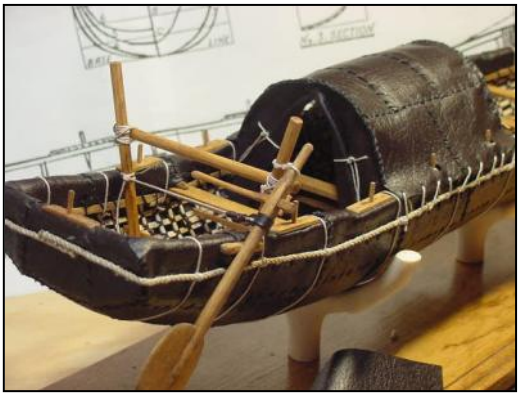


Figure 5

The forward shelter was constructed in a similar fashion, but was left open with no flaps, so that the items that will be eventually stored there could be readily seen. In Figures 6 & 7 below, the mast is in place and the main shroud is shown temporarily attached

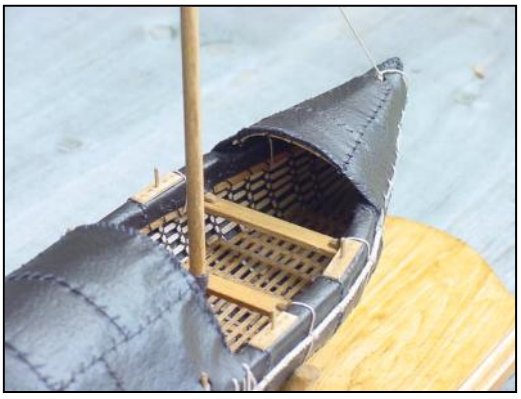


Figure 6

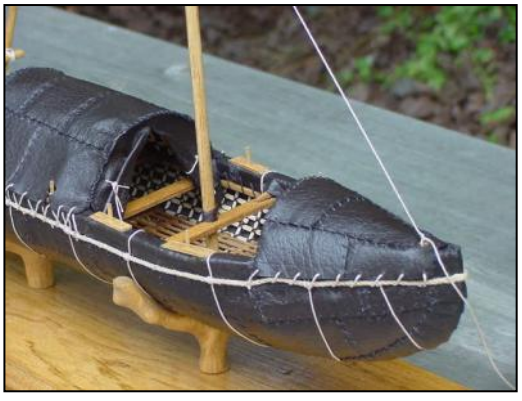


Figure 7

to the stem post, which protrudes through the leather skin at the bow. The excess rigging line will be trimmed and coiled on the final model.

The figure of Brendan himself was a challenge, and went through several incarnations. My final choice of material for the figure was epoxy clay, instead of the Sculpey polymer clay I have used in the past for figures. The latter is cured by baking in an oven, which can be inconvenient, depending on what my wife is doing in the kitchen. It also smelled up the house while baking and proved to be brittle, often cracking or shattering when I tried to drill or carve it after hardening. The epoxy clay, once mixed with the hardener, allowed 2-3 hours of working time, during which the clay gradually became harder and harder. The clay could be shaped by hand and small modeling tools while soft and rubbery. Once fully cured overnight, the clay was very hard and not brittle at all, and could be drilled and shaped by carving, filing, and grinding with a small rotary tool. The 1/24 scale results in a three-inch high figure of a six-foot man. I chose to pose the figure standing at the stern, with one hand on the steering paddle handle and the other resting on the steering paddle frame.

Figures 8 through 11 below shows the construction of the Brendan figure. In Figure 8, the upper arms are still wire armatures, but the forearms and hands have been roughly shaped and positioned to grip the handle and frame. Figure 9 shows the figure after the upper arms have been filled in with clay, but before final shaping has taken place and be-


Figure 8


Figure 9


Figure 10


Figure 11

fore the details of the robe have been added. Covering the upper arms with clay, and letting the epoxy clay harden with the figure in place, firmly and permanently positioned the arms to support the figure in the boat.

Figures 10 & 11 on the right above show the completed figure. The forearms and hands have been refined by carving and grinding, and I have added the large open sleeves, mantle, and hood of the monk's robe. I chose to depict the hood of the robe lowered, because I found that it otherwise obscured too much of Brendan's face. I lengthened the hair on the figure after reading once again descriptions of Brendan in the initial chapters of Fred Hoffman’s book, *Beyond Crystal Castles*. Metal pins embedded in the heels of the figure helped secure it to the deck, and his feet and hands were glued into position with CA glue, giving a strong, four-point attachment of the figure to the model.

The 12', thin-bladed oars, scaled to 6", were carved out of 1/8" by 1/8" basswood strips. Triangular blocks of wood with a central hole, for sliding over the thole pins, were fastened to the oars. The distance between the blocks and the oar handles was determined by the width of the boat, and was set at a point where the handles of opposite oars would not hit each other as the pairs of oarsmen worked. I decided to make eight [8] oars, and to mount four of them in place on the thole pins between the amidships and forward shelters. The others would be stored in the boat. Having some of the oars in place would allow viewers of the model to see how the oars were attached and used, as well as reinforcing the peculiar but functional shape of these unusual oars. Figure 12 to the right shows the eight oars just after initial staining. Also visible in the picture is a feature derived from the fictional book, *Beyond Crystal Castles* – an Inuit harpoon with a walrus tooth tip, given to Brendan and his crew just before they sailed from what is now known as Greenland. The harpoon was outfitted with a coiled rope and stored in a visible location on the finished model.

Figure 12

Water skins were modeled using epoxy clay, with their shape and eventual color based on Internet images of water skins from various cultures. The food packs – presumably wrapped in folded, oiled leather – were also modeled from epoxy clay, painted to represent the dark color of treated leather, and bound with short lengths of rope. I made only two each of the water skins and food packs; I believe that more would have cluttered the deck and obscured too much of the inside hull detail. I experimented with methods of reproducing the sheepskin bedding that would likely have been used in the main deck shelter, and finally settled on a piece of white towel that was cut to the scaled shape and size of a six-sheepskin rug. The simulated sheepskin was soaked in diluted white glue, allowed to

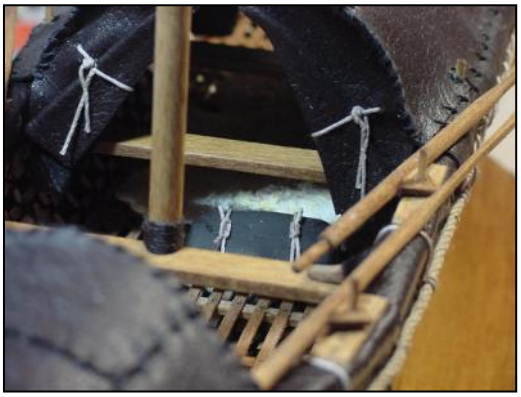


Figure 13

Figure 14

harden in a somewhat tousled position, touched up with yellow and light brown highlights to simulate the natural oils and staining that would have been present, and put in place on the deck under the amidships shelter. A sea chest was made from a carved basswood block covered with leather. Hinges, handles, and a lock were added, and the chest was glued to the deck under the forward shelter. Figures 13 & 14 show these accessories in place on the deck, in or near the for-ward and amidships shelters.

The sail was made from a piece of washed, unbleached, finely woven linen cloth. A sail pattern was drawn in pencil on the cloth, based on dimensions in Tim Severin's book and pictures of his boat, currently housed in the Craggaunowen Project in County Clare, Ireland (http://www.shannonheritage.com/Attractions/CraggaunowenTheLivingPastExperience/TheBrendanBoat/). Seams and reinforced stitching for the reef bands were sewn onto the sail pattern using a sewing machine and thread that was only slightly darker than the sailcloth itself. Previous experimentation had shown that too dark a thread color detracted from the appearance of the sail. Heat-sensitive fabric binding strips were ironed in place around the perimeter of the sail pattern, the pattern was cut out, and a double-folded hem was ironed in place. Folded into the hem, all around the sail, was a continuous piece of steel wire (0.02" diameter) that would allow the sail eventually to be shaped and positioned as if wind were propelling the boat. A boltrope was sewn by hand around the perimeter of the sail, and cringles were simulated by leaving small loops in the boltrope at the sail corners. Reef lines were attached along the two reef bands, and stitched in place. The sail was fastened to the single spar with rope loops, according to the method used by Severin in his reconstruction.

The mast was glued in place, and the forestay was secured to the hole in the stem piece. The shrouds for the mast were secured to the lower gunwale, just forward of the amidships shelter. A halyard for raising and lowering the sail was attached to the spar with a loop of leather and passed through a hole in the top of the mast. The sail was raised into place, and the halyard was secured by tying it around one of the thwarts, a method appropriate for the general lack of rigging sophistication in these ancient boats. Under sail, the spar would not be resting against the mast, but held away from it by the wind, so a hidden wire reinforcement was used at the point of attachment of the spar to the mast, to hold the spar away from the mast and simulate this look. I chose not to stiffen the sail in a "billowed" shape with glue or spray starch, as is sometimes done, because I am not sure of the long-term effects of this treatment. The wire embedded in the hem gives a good enough shape to the sail, in my opinion.

The braces for the spar were made from rigging line, stretched relatively tightly from the ends of the spar to the frame of the steering oar, a convenient point of attachment that would most likely have been used on the actual boat. The two sheets were made

Figure 15

Figure 16

from straight lengths of braided wire instead of rigging line, because these would have been pulled taut by the wind pushing against the free end of the sail and needed to be straight. These braided wires were painted a linen color to match the rest of the rigging

line. They are shown attached to unused thole pins on either side of the boat, just aft of the main shelter – again, corresponding to what might have actually been done. The final appearance of the sail is consistent (to me, anyway) with the look of a boat sailing with the wind, as can be seen in the images below.

I had planned all along to leave the model loose in its cradle, so that it could be picked up and examined, allowing the viewer to appreciate better the nature of the unusual hull, but I eventually decided to mount the model securely to the base. For traditional models, this is easily done, using screws that pass upward through the base and pedestals into the keel of the boat or ship. The Brendan curragh has no keel, however, which presented a problem. (This was a problem not just for me as a modeler, but must have made sailing the boat quite difficult for its crew!)

My solution was to drill two small holes, very close together, in each of the four "arms" of the cradle holding the model, and simply sew the model to the cradle. A needle threaded with a double thickness of black upholstery thread was passed from the interior of the boat outward through the leather skin and through one of the holes in a cradle arm, and then pushed back through the other hole, through the leather skin, back into the interior of the boat. Care was taken to include in this loop of thread one or more ribs and stringers for additional strength and security. The thread was pulled tight to draw the boat tightly against the cradle, and knotted. A drop of cyanoacrylate glue was placed on the knot to prevent its unraveling. Using this method, the boat was firmly attached to the cradle (although a slight bit of "give" was still present). The boat cannot be accidentally or forcibly removed from the cradle without destroying it. The method of attachment is nearly invisible and, from the inside the boat, all the viewer can see is a few more knots against a background of the many, many more knots used to secure the stringers to the ribs. If the boat ever actually needs to be removed from the cradle, these lines can be cut

Figure 17

between the side of the boat and the cradles with a razor blade or sharp utility knife blade,

Figure 18

Figure 19

and the boat will come free. The cradles for the boat, inserted into holes drilled in the flat base, were carved from pine blocks into a branching, twisted, organic form that suggested either driftwood or similarly weathered heavy branches.

The final three images below show the finished model, mounted securely to the base, with the sail, rigging, all of the accessories, and Brendan himself in place at the helm.

I hope that this series of articles has provided the reader with glimpses into the construction of traditional Irish curraghs and into the legend of Saint Brendan the Navigator. Happy modeling!

My primary sources for planning and constructing the model were:

1.The text of the Navigatio sancti Brendani abbatis (Translator: Denis O'Donoghue, Date of Translation: 1893; source, http://markjberry.blogs.com/StBrendan.pdf)

2.The Voyage of the Brendan by Tim Severin (McGraw-Hill, New York, 1978, ISBN 0-07-056335-7);

3.A National Geographic article (also by Tim Severin) entitled "The Voyage of the Brendan - Did Irish monks Discover America?" (National Geographic, 152(6):769-797, December 1977);

4.Ancient Boats in N.W. Europe: The Archaeology of Water Transport to A.D. 1500 by Sean McGrail (Longman, London and New York, 1987, ISBN 0-582-49287-X);

5.The Curraghs of Ireland by James Hornell (Society for Nautical Research, Greenwich, 1973).

6.Beyond Crystal Castles, by Fred Hoffman (Xibris Corporation, 2003, ISBN 978-1413420203).

The articles contained in this section are presented for your perusal. They represent one of many possible ways of completing a given modeling task. We hope you find the information helpful in your modeling endeavours. Like to share the way you do something with others? Contact mario@modelshipbuilder.com for more details.

A METHOD OF BUILDING A PLANK-ON-FRAME LIFEBOAT

By Gene Bodnar

While building my 1:48 scale model of the American Civil War ironclad USS Cairo, I reached the point where the only things remaining to build were four lifeboats. Although the plans for the vessel are outstandingly detailed, they do not provide any details on the lifeboats, only their basic shape. Since the rest of the model was so well-detailed, I wanted to present the lifeboats in similar detail.

There are many ways to build a POF lifeboat, and a variety of those methods can be found in many building logs. The method described here is one I have developed and used for several years with much success.

The first thing I did is carve out the shape of the lifeboat shown on the plans from a piece of basswood, as shown in Fig. 1. On my scale, it measures 6 ½" long, 1 ¼" wide, and only ¾" deep. I cut out the basic shape on two sides with a band saw, and then shaped the remainder with a Dremel sanding drum.


Fig. 1

The next step, illustrated in Fig. 2, is to build a jig for the lifeboat. It is simply a piece of ¼"-thick basswood that has been cut about an inch wider all around than the lifeboat carved in Fig. 1. Draw a centerline lengthwise down the piece. Place the carved boat in the approximate center of the jig, and then mark out ¼" intervals from stem to stern. Use a T-square to draw the lines all the way across at each marking. These lines represent the location of each of the frames. At each end of the jig, I glued ½" pieces of basswood to raise the jig

off the surface about an inch.

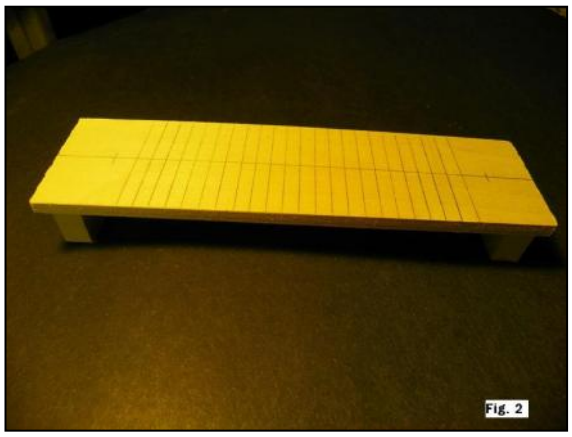


Fig. 2

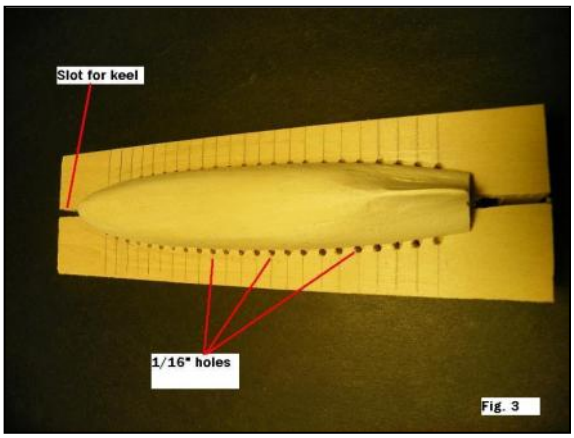


Fig. 3

Now glue the carved boat upside down onto the jig, centering it as perfectly as possible. Then cut a 1/8" slot at the bow end of the jig right up to the boat itself. This slot will eventually hold the keel in place. The slot shown at the stern can be used for your rudder assembly, but it is not necessary at this point. See Fig. 3.


Fig. 4

Next, drill 1/8" holes on each side of the inverted boat at each one of your frame locations. It is best to use an awl before drilling the actual holes so your drill bit doesn't slip.

We are now ready to make the frames. I used 1/32" basswood strips about 1/8" wide for the frames. They should be long enough to extend from one frame hole to its partner on the other side, plus another inch or two to extend below the jig a bit. Finally, they should be soaked in a bowl of hot water for at least 10-15 minutes before using them, so that they will be easily bendable. See Fig. 4.

Take a frame strip in your fingers and bend it gently several times. Insert the strip in any one of the central holes on your jig, extending it about an inch below the jig. Hold it in place in the hole, and then bend it around the boat, inserting it into its opposite hole. Use your fingers to press it down tightly, so that it comes in firm contact with the boat in all places. While holding the frame in this position with one hand, turn the jig over and place a droplet of glue at each side of the frame holes. Then clamp into position on the underside of the jig. Don't use too much glue. The goal is to use just enough to glue both sides of the frame to keep it from shifting position. Fig. 5

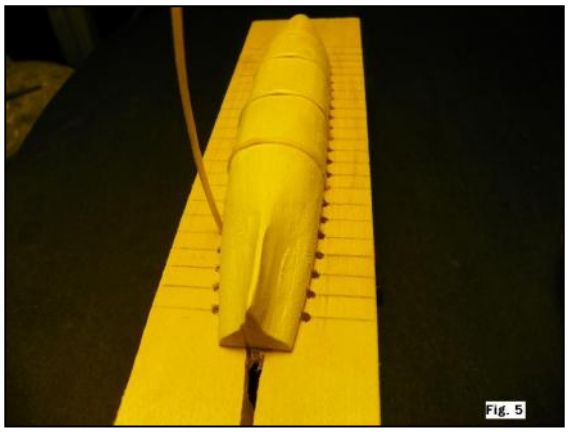


Fig. 5

shows three frames in place and one about to be bent to the opposite side. Fig. 6 shows the clamps hold the frames tightly in place on the underside of the jig. Of course, you may not be able to lay the jig upright while the clamps are in place, but you can set it sideways, too.


Fig. 6

The order of placing the frames on the jig doesn't matter. You may have to wait a while for the glue to dry before installing more of the frames, but you are known for your patience.

When all the frames have been installed, and after all glue has dried, you may remove the clamps and snip off the excess framing material from the underside of the jig. Your finished framing will appear like that shown in Fig. 7.

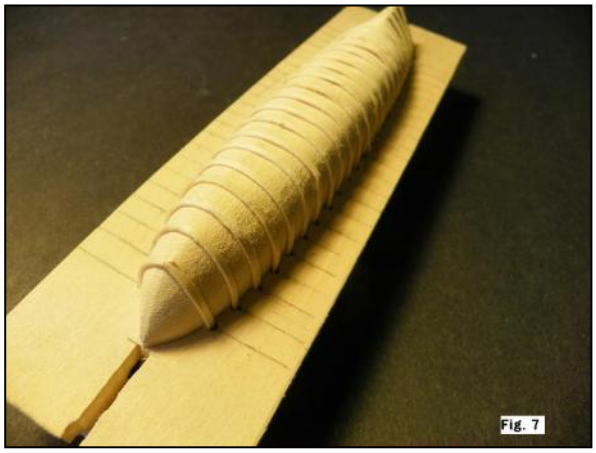


Fig. 7

The next step is to cut out and glue the keel to the frames of the boat. The shape of the keel can be determined from the plans given. Carefully cut it out from a 1/16"-thick piece of basswood. I like to make the keel extra-wide so that planking has plenty of room for attachment – the keel can always be sanded down later. Make sure you cut the keel to extend one-half inch or so into the jig.

Test-fit the keel onto the frames. If it's not quite right, make the necessary adjustments – this must be a perfect fit! Once you are certain the keel will fit properly, apply a SMALL AMOUNT of glue to each frame at the point where it will meet the keel. Don't use too much glue. You DON'T want the glue to seep onto the carved boat, because it will be next to impossible to remove the frames if this happens.

Place the keel in position. Use rubber bands around the jig and the boat to hold the keel in position while the glue is drying. Make sure the keel remains perpendicular to the jig, which can be accomplished by a slight shift under the rubber bands. See Fig. 8. After everything is in alignment, you might want to place a very SMALL AMOUNT of glue on each side of the keel at each frame to make sure the keel is definitely in contact with each frame. Wipe off excess carefully.

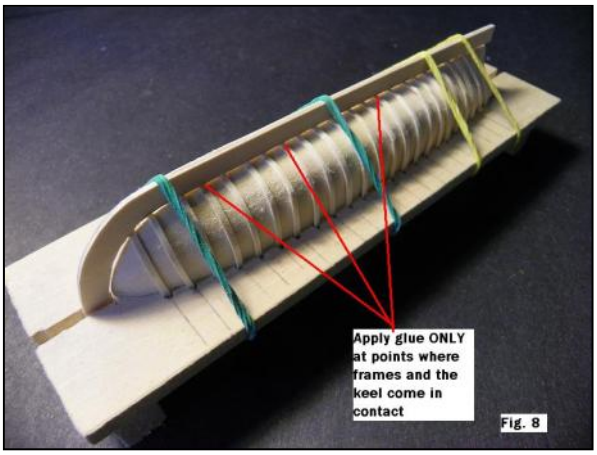
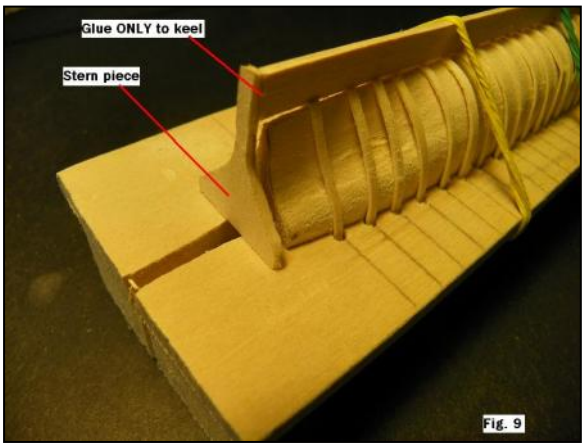


Fig. 8

Finally, measure and cut out a stern piece for the boat. Its shape can usually be determined from the plans. Glue the stern piece in place just beyond the carved boat, and at a slight angle, but ONLY glue it to the keel, not to the carved boat or the jig. Again, you want to remove the finished frames off the carved boat after the frames have been planked.

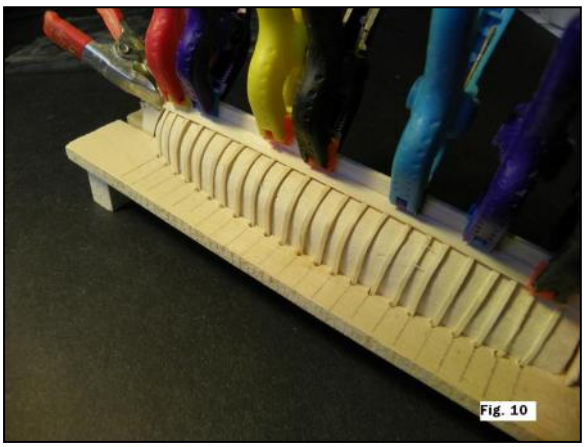


So far, we discussed how to carve the basic shape of a lifeboat around which the POF model will be built. We also explained how to build a jig for the POF model. We then proceeded with installing frames on the jig, attaching the keel to the frames, and finally mounting the stern piece. This next section we will continue with planking the lifeboat.

Planking the frames will be the most difficult part of the build, mainly because it requires careful cutting and shaping of the planks as well as extreme care in installing them onto the frames with glue.

All planking is cut from 1/32" basswood, and Elmer's Carpenter's Glue is used for attaching the planks to the frames. In addition to basswood and glue, you will need a variety of different kinds of small clamps and pins to hold the planking in place until the glue dries.

The first plank (the garboard strake) is simply a straight piece of basswood cut to the full length of the lifeboat. The bow end should be rounded to fit snugly against the curve of the stem, and the stern end should extend slightly beyond the stern piece. Run a bead of glue down the full length of the strake, and then smooth it out evenly with your fingers, ensuring that there is not an excessive amount of glue anywhere along the strake. When you press it in place against the keel and the planks, you do not want the glue to seep onto the carved boat – you want the glue only to touch each of the frames and the keel. If any of the glue comes in contact with the carved boat, it will be next to impossible to remove the finished boat from its jig. Now press the plank into place against the keel. Place clamps all along the length of the keel so that the strake is held firmly in place. Let the glue set before you install the garboard strake on the other side of the keel. See Fig. 10.



Once the garboard strakes have been installed and the glue has set, cut out the next strake to be used on both sides of the boat. Note that there will be a fairly prominent curve to the strake at the bow end. Cut the strake to match this curve. This may take a

little practice and trial-and-error to get it perfect. Again, apply a small bead of glue all along the plank, and press it in place, pinning it with straight pins where necessary to hold it firmly onto the frames. You may use clamps, if they fit, but pins will work just as well. See Fig. 11.

Now the next strake will require tapering at both ends in order to fit snugly along the curve of the boat. See Fig. 12. Use your eye and your best judgment to cut strakes for both sides of the boat. The goal is to get the best fit you can by cutting the strakes to fit as perfectly as possible. Of course, complete perfection is probably not possible; some of the strakes will have a slight gap in some locations, and others may create a slight bulge. Don't fret about minor problems, because they will be fixed later. Just do the best you can as you proceed with each strake.

After installing five or six strakes (or more, depending on your particular boat), you will reach the last strake at the top of the lifeboat. This is a critical one. Note that it is just touching the jig at the bow and at the stern, but between both these ends is a smooth-flowing curve that leaves an increasing gap in the jig until it reaches the midship point of the boat, where the curve is at its widest. See Fig. 13. Of course, no boat is flat along its top edge, so you want to attain this curve in the final strake on both sides of the lifeboat. Glue and clamp it in place.

After the glue has dried, it is time to remove the planked hull from the jig. Using a single-edged razor blade, carefully cut off every frame right at the edge of the last strake on both sides of the boat, as shown in Fig. 14. After you've cut ALL of them, hold the jig in one hand and slowly pull off the hull with your other hand. It should pull off easily. If it doesn't, this means you either didn't cut off all the frames or you applied too much glue, which has seeped onto the boat. Don't panic. Check to make sure all frames have been cut. Pull gently again. If it's still stuck, gently try to pry the hull off

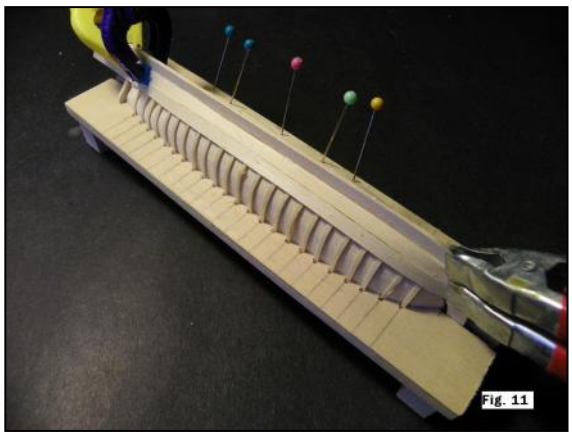


Fig. 11

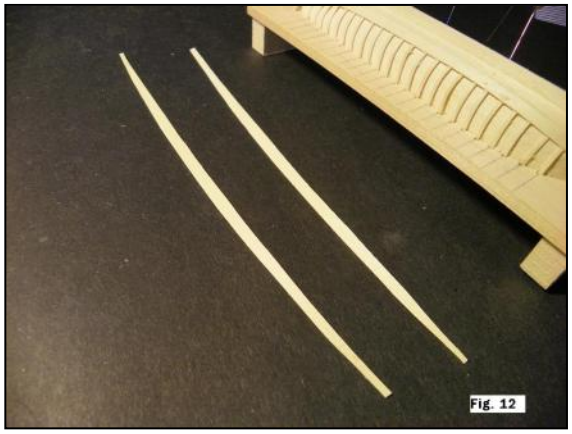


Fig. 12

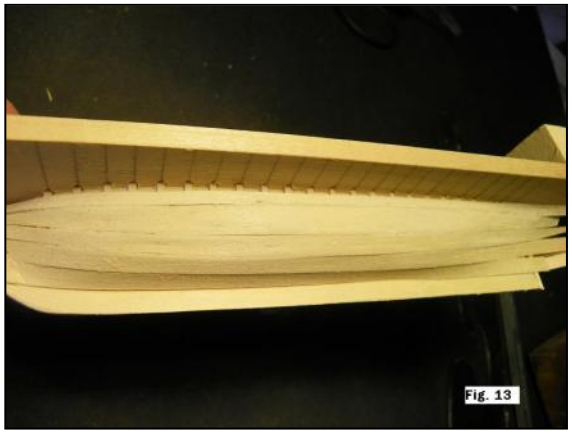


Fig. 13


Fig. 14

with your fingers. Sometimes, only a very tiny amount of glue may have seeped onto the carved boat and can be popped off with a gentle tug. If this fails, give a harder tub and hope for the best. If it breaks beyond repair, start over. You will have learned a lesson.

If all goes well, your hull should look similar to that shown in Fig. 15.


Fig. 15

The next step is to trim off excess planking from both the bow and the stern, as shown in Fig. 16. Use a razor blade to cut the curve of the bow planking off. Do the same with the stern area, cutting the planking level with the stern piece. Use a sanding stick to smooth out both areas. As shown in Fig. 16, there will be some minor problems. Some of the planks will not be quite even; others may contain slight gaps between the strakes. Do not be concerned at this point; they will be fixed later. The hull is far too fragile to make any fixes at this point.


Fig. 16

Next we will construct the detailed parts that comprise the interior of the lifeboat. When the interior is finished, the hull will be strong enough to withstand much more handling than it can now.

This first item to install in the interior is the keelson. The keelson provides longitudinal support for the hull, and it provides greater support for all the frames. The keelson is made of 1/16”-square piece of basswood, extending from the bow to the stern. Apply glue sparingly, set the keelson in place, and pin it down until the glue dries. See Fig. 17.

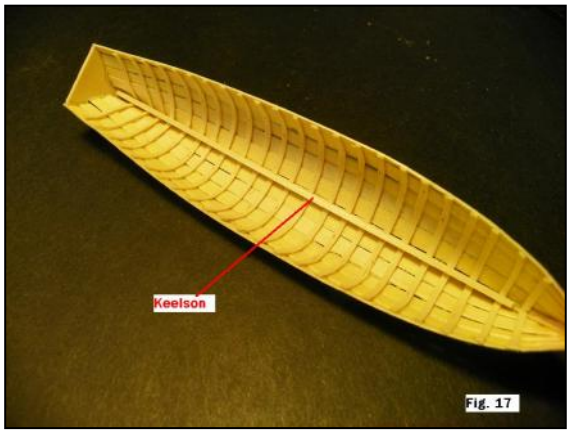


Fig. 17

Almost every lifeboat contains foot wales in the midship area of the bottom of the boat. In this lifeboat, there are six 1/32” strips of basswood that cover the bottom central third area of the boat, with three on each side of the keelson, spaced evenly apart, as shown in Fig. 18. Apply glue and hold them in place with your fingers until the glue sets.

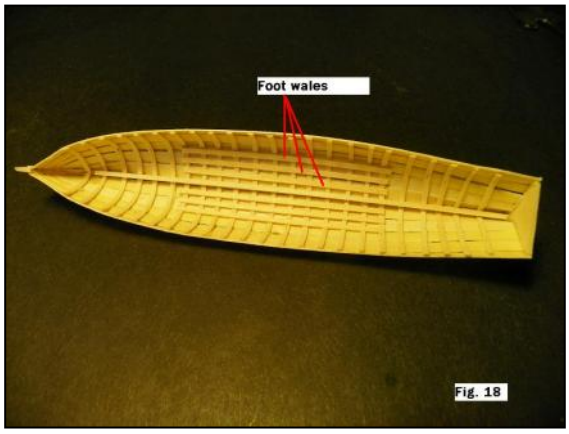


Fig. 18

The next items to install are the two risers, one on each side of the boat. The risers will support the benches, thwarts, and breast planking, which will be installed later. In order to install the risers, we need to position them evenly on both sides of the boat; otherwise, the benches and thwarts will appear lopsided. To do this properly, we need to cut about six temporary spacers that will assist us in the alignment process. I used tiny 3/16"-wide pieces of basswood that I clamped temporarily to the sides of the boat level with the top edge of the upper strake, as shown in Fig. 19.

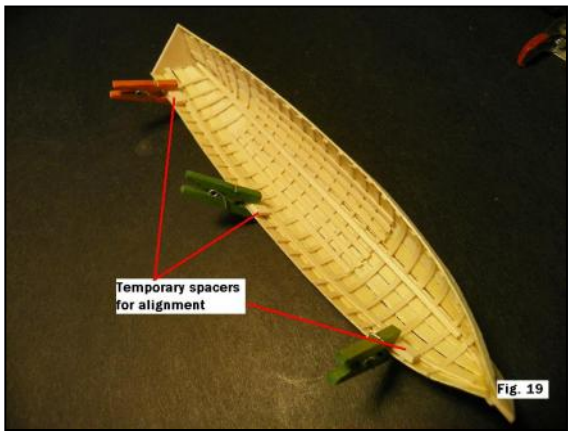


Fig. 19

The risers extend the full length of the boat on both sides. They are thin strips of 1/32" basswood glued immediately below the temporarily spacers. See Fig. 20. Push them right up against the temporary spacers, and use small clamps to hold them in place until the glue dries. The temporary spacers can now be removed.

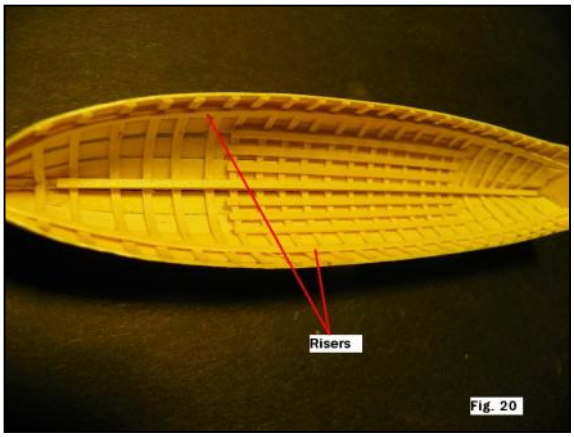


Fig. 20

The sternsheet bench, the thwarts, and the bow decking can be installed next. See Fig. 21. All are made from 1/16" basswood, and they all sit snugly on the risers and up against the frames. Draw the measurement for the sternsheet bench on the basswood, and cut it out carefully with an X-Acto knife. Apply glue to the outer edges, overlapping the glue slightly onto the undersides. Press it into position on the risers, making sure that it is perfectly horizontal, eyeballing its position by looking down the length of the lifeboat.

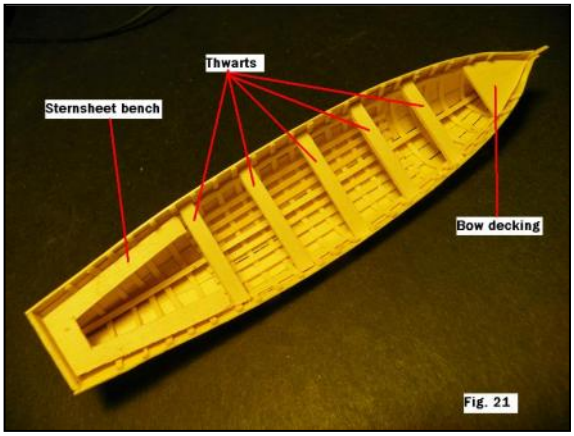


Fig. 21

I used a solid piece of 1/16" basswood for the bow decking. Measure and draw the plan on a piece of basswood, cut it out, and glue it in position at the bow.

Cut the thwarts to extend all the way across the boat to rest on the risers on both sides. The central thwart has parallel edges, but as you approach the bow and the stern, there will be a slight angle on the edges of the thwarts. Cut them accordingly. Glue the thwarts in position.

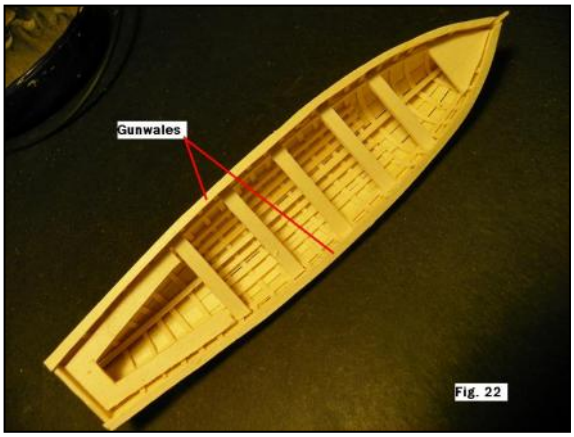


Fig. 22

The gunwales are installed next. Lay the boat upside down on a sheet of 1/32" basswood. With a sharp pencil, draw a line all

around the outer edge of the boat. Now, with a No. 11 X-Acto blade, cut out the shape you have drawn on the basswood; however, make your smooth cut about 1/16" on either side of the line you've drawn. Remember that the line corresponds exactly to the edge of the boat, but the gunwales will rest precisely on the edge, with about 1/16" projecting out from either side of this edge, as shown in Fig. 22.

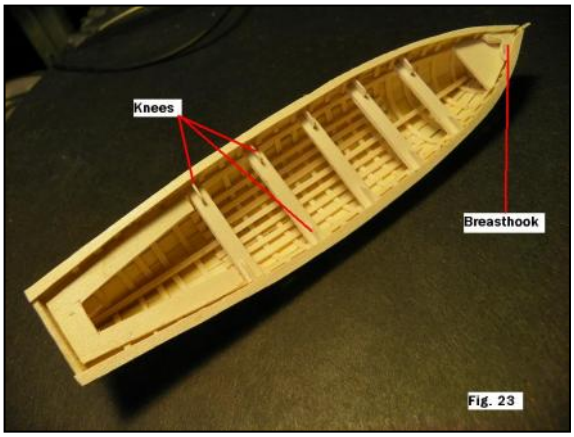


Fig. 23

Fig. 24

It is best to install one gunwale at a time, so split your outline with an X-Acto knife. Take one of the gunwales, and apply a bead of glue on its underside. Position it in place, and hold it there until the glue sets. Since it's impossible to clamp or pin, just make sure it's in proper position, and hold it there with your fingers, allowing the glue to set for a few minutes. Repeat this with the opposite gunwale.

The breasthook and the thwart knees can be completed next. The breasthook is a piece of 1/16" basswood cut to fit as shown in Fig. 23. Glue it in position directly under the gunwales. The thwart knees are very small pieces of 1/32" basswood cut to shape and glued in position with a pair of tweezers.

The last items to install on the boat are the washboards and rowlocks, which are illustrated in Fig. 24. They are strips of 1/32" basswood glued in place atop the gunwales. The bow washboards will require pre-bending to fit properly.

Now is the time to clean up any minor issues you may have still remaining with the interior of the vessel. For example, note in Fig. 24 that I added an extension to the stem to that it projects a little beyond the washboards. I also added an extra piece to the transom at the stern. Now is also the time to sand the gunwales to a nice smooth curve if they are not that way already.

Now that the interior of the boat is finished, it's time to finish the exterior. Undoubtedly, the exterior suffers from minor gaps in the planking and excess bulges in some places. In order to fix these problems, you will need a good, soft, pasty wood filler. I like Elmer's because it's extremely soft and can be applied with your fingers, and it washes off very easily with water. See Fig. 25, where I have also shown the kind of sanding stick I use for sanding the hull. This one is available in beauty salons

Fig. 25

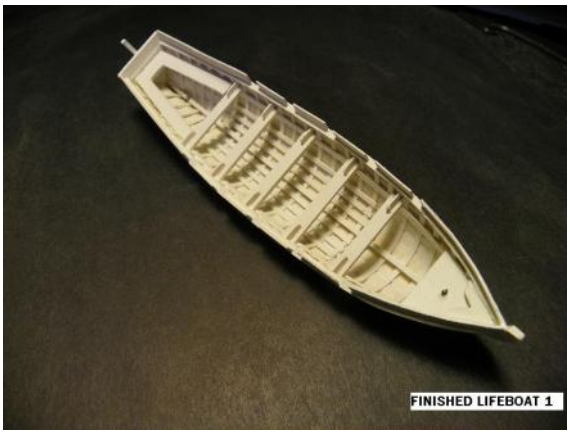
Get a small blob of the wood filler on your finger, and apply is gently onto the hull,

spreading it all over the hull, particularly in areas with gaps and bulges. See Fig. 26. Don't press too hard because you don't want the wood filler to be squeezed through into the interior of the boat, leaving unwanted stuff on the interior. When you're satisfied, let the wood filler dry thoroughly.


Fig. 26

Now comes the sanding of the hull. Use ONLY a fine-grit sanding stick. Rub the stick back and forth all along the hull until you are satisfied that the hull is completely smooth and looks like … well, a nice smooth hull.

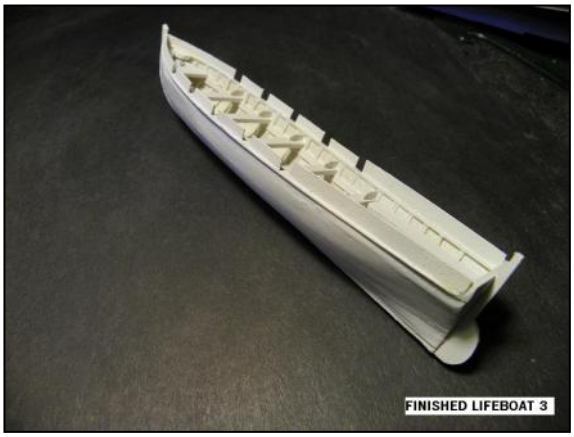
Next, using a disk sander, carefully sand off the keel until it is at its proper molded and sided dimensions. Add a rudder made from a 1/16" piece of basswood. Add two small eyes so the boat can be rigged to its davits. You can add oars, a tiller, or whatever other parts your heart desires. Check for any imperfections and correct them now.


FINISHED LIFEBOAT 1


FINISHED LIFEBOAT 2

Finally, give the lifeboat a coat or two of your choice of paint. In this case, I used flat white enamel spray paint.

Your finished lifeboat should be very appealing and even impressive. This method of building a plank-on-frame model can be applied to literally any type of small-size vessel. I have built them as small as 2 ½" in length, and I have also built them with clinker planking. Of course, the more you build in this style, the more experience you gain, and the more experience you gain, the easier it becomes to build a quality POF model of a lifeboat.


FINISHED LIFEBOAT 3

One Eyed Willys Treasure Hunt

Welcome to One Eyed Willy's Treasure Hunt!

This months Treasure hunt prize, is a Model Shipways 1/4"=1' scale 18th Century Long Boat model provided by our friends over at Model Expo.

How to play

As the contest title suggests as part of the Treasure Hunt you will be required to go on a quest. You will be required to find words to complete a sentence. To find the words visit the various product pages below on the Model Expo website and follow the list of clues. As you find each word enter them on the lines below.

When you believe you have the answer email your submission to:

one-eyed-willy@modelshipbuilder.com. In the Subject Field put: MAY 2013

All entrants with the correct answers will be entered into a draw. The Treasure Hunter whose name is drawn from the list of contestants will be the winner of this months treasure. The winner will be announced in the next issue of the MSB Journal.

	Item #	Clue	
1.	MS2027	2nd paragraph	1st word
2.	MS114	Title	6th word
3.	SB97807	Title	5th word
4.	MS2040	1st paragraph	7th word
5.	MX51CB	Title	1st word
6.	JS238T	Title	1st word

_____ _____ _____, _____ _____ _____

Masting & Rigging

Send comments to wayne@modelshipbuilder.com

Masts, Sails & Rigging
A Beginners Guide

By Alan McKendrick

STANDING RIGGING

CONTINUING FROM THE LAST SECTION, I will now talk about Standing Rigging. I've put it here in the overall article, so I can refer to it when we get to 'Sails'. Just to refresh;

I've split the article into sections:

- Section 1- Introduction
- Section 2 gives a brief description of Masts and Yards
- Section 3 will cover Standing Rigging
- Section 4 will cover Sails
- Section 5 will cover Running Rigging
- Section 6 will cover how all the above work together

The figures are only sketches and are not to any scale at all. I have not gone into any great detail on how the Standing Rigging is secured to either the mast or ship, and again these are only representative. There were differences caused by builder, nationality, when built etc.

PURPOSE

Masts were talked about in Section 2, but we have a think about what is going on for a minute. These relatively slender, long pieces of wood have to carry a considerable weight of yards, sails and rigging. They also have to transmit the force provided by the wind to the vessel to cause forward motion. Bear in mind that they have also to withstand the tendency to whip around caused by the ships motion. Unaided, they would snap. That's what Standing Rigging is for. Remember old fashioned tents (before glass fibre hoop frames); the tent poles were supported by guy ropes from the top of the pole out at angles and pegged to the ground. The Standing Rigging works in exactly the same fashion – support for the masts.

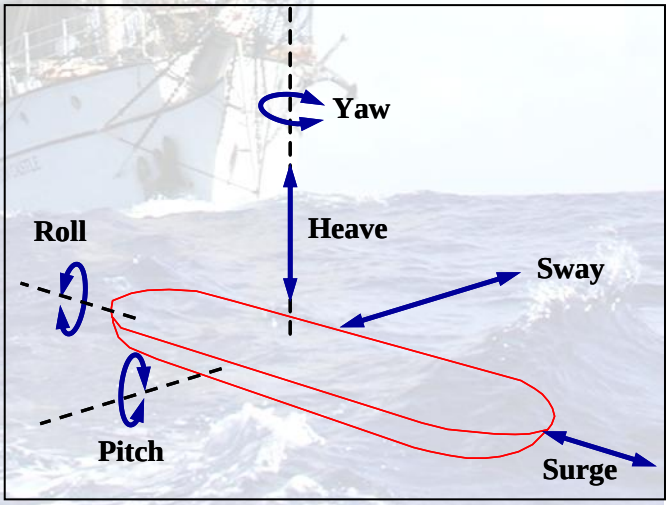


Figure 9:- Ship Motion

SHIP MOTION

Let's talk about a ship's motion for a minute. A ship can be moving in 6 different ways at once (and from per-

sonal experience in the North Atlantic, I suspect even more). Figure 9 shows these movements.

They can be split into two main areas; Horizontal and Vertical. Figures 10 and 11 below expand on this.

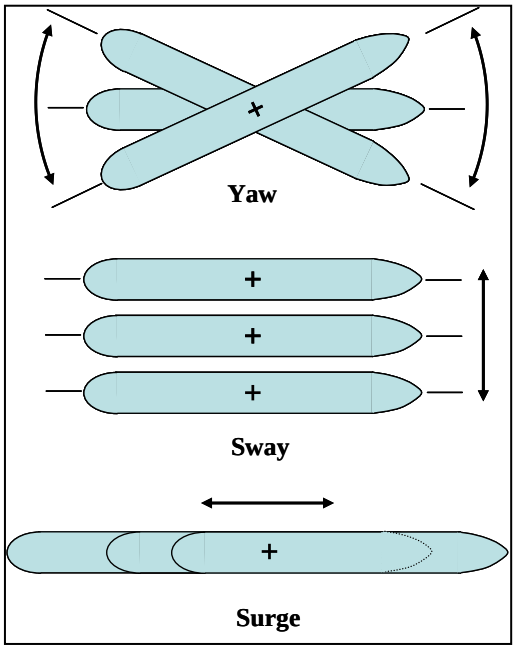


Figure 10:- Ship Horizontal Motion

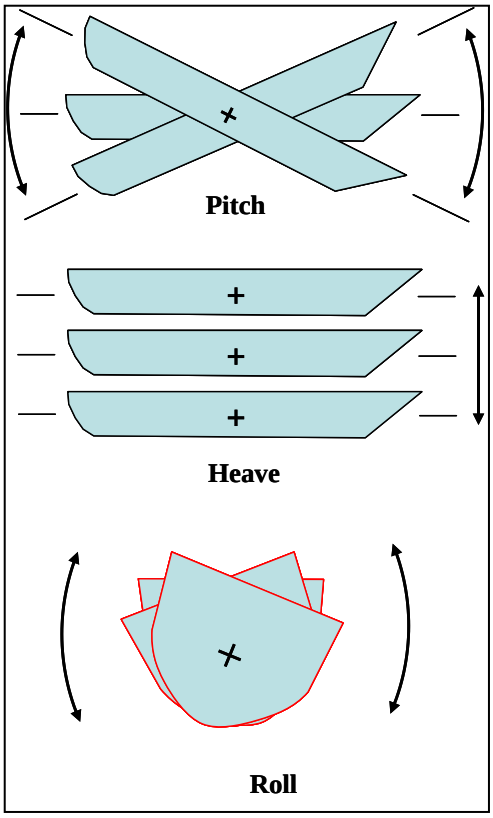


Figure 11:– Ship Vertical Motion

The two motions that really cause the masts to move are pitch and roll as shown in Figure 12.

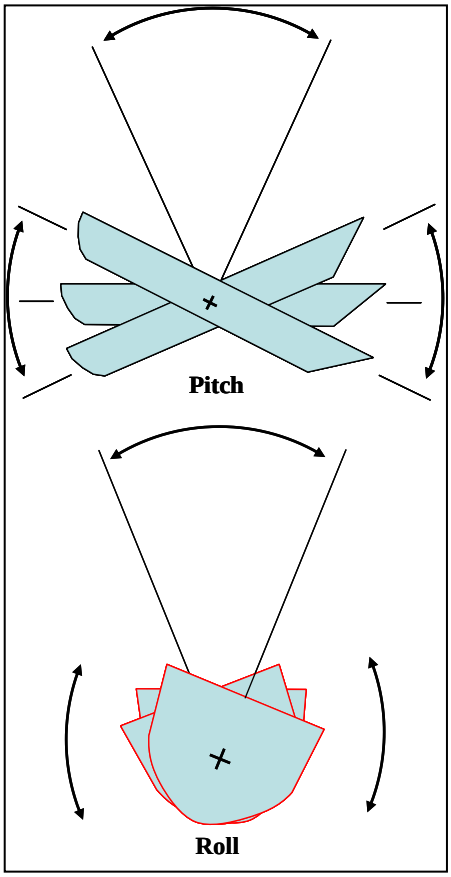


Figure 12:- Effect of Pitch and Roll on Mast Movement

As can be seen, the mast tops really whip around. Without support, it would not be long before they snapped.

GENERAL LAYOUT

These supports for the masts cannot just go anywhere. Ideally they would be equally spaced; however there are only so many places on a ship available for positioning and securing them because of the requirements for avoiding such things as cargo hold access, deck cargo, accommodation, deck fittings, deck machinery, the cannon in a warship. They also have to allow the yards to be braced around so the sails catch the wind, (this will be covered in Section 5), yards lifted or lowered when required, and to be kept clear of the sails and Running Rigging.

Where the Standing Rigging is attached to the masts is also determined by the requirements for working the vessel. If it is just attached at the mast top, the mast would tend to buckle, say, at the cross trees, and if at the cross trees, then the topmast would whip

SHROUDS

The shrouds support the mast laterally against the effects of Roll and Pitch in the forward direction. They run from the top of the particular mast section to (in the case of the lower mast) to an arrangement of wooden blocks known as 'Dead Eyes' that are secured to the ships side by 'Chain-plates', strips of iron bolted to the ships side and held clear of the ships side by the 'Chain-wales,' sometimes called 'Channels'; large pieces of horizontally mounted wood that give a wider base and help spread the load. The topmast shrouds have a similar arrangement, however the base is spread by the maintop, and they are secured to the main shrouds. Similarly for the topgallant shrouds.

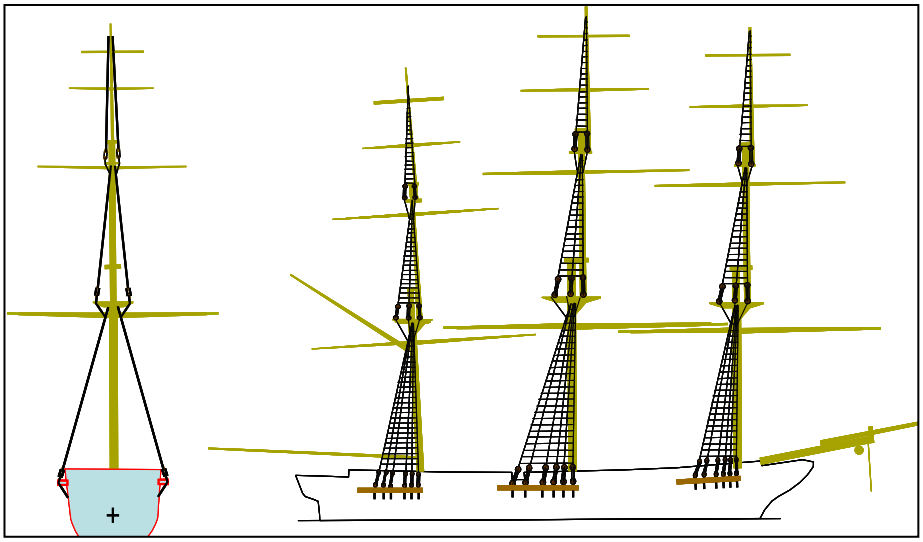


Figure 13:– Shrouds

BACKSTAYS

The backstays support the topmasts and topgallant masts from pressure from behind. They are long ropes, reaching from the topmast-heads to both sides of the ship, where they are extended to the Channels.

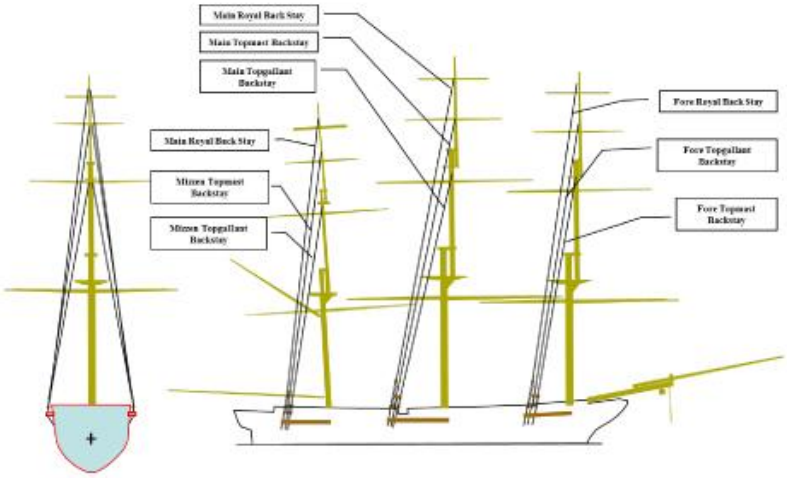


Figure 14:– Backstays

FORESTAYS

We have support for the masts from the side and behind. The support from forward is provided by the Forestays. These are single ropes, running along the centre line of the vessel. This allows the yards and sails to be braced around without catching on them. As a result, they are thicker than the backstays and in some cases, e.g., the mainstay, are backed up by a 'preventer' stay. Figure 15 shows the forestays.

BOWSPRIT

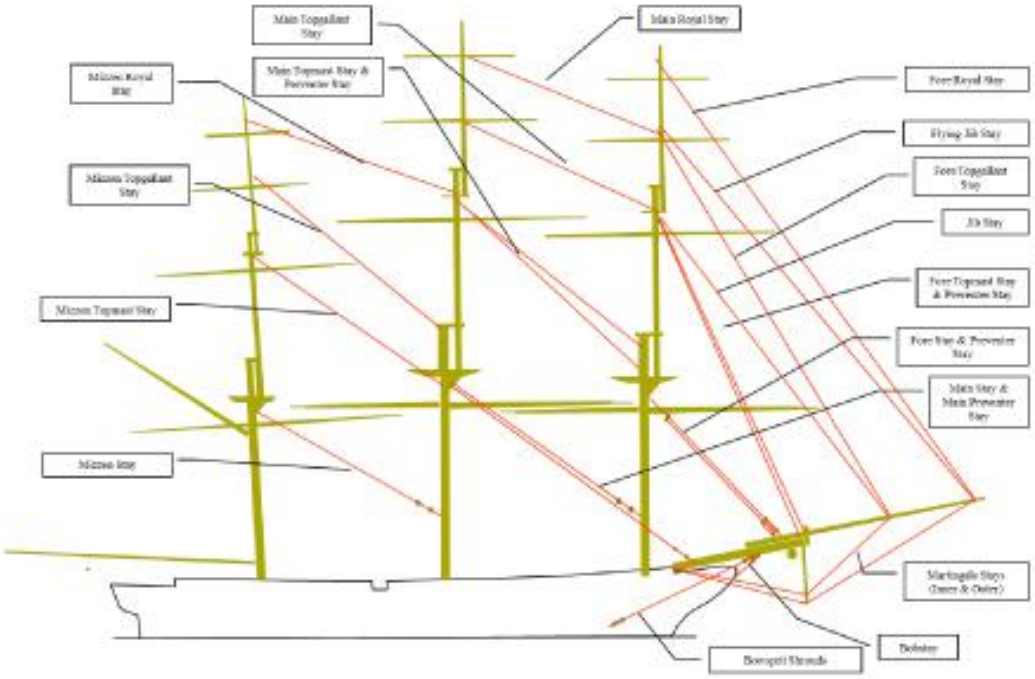


Figure 15:– Forestays

The Bowsprit acts as supporting point for the forestays from the main and fore masts. It in turn is supported by martingale stays that are led down and back to the ship via the Dolphin striker. In addition, the Bowsprit also has Shrouds that are attached to either side of that ship providing lateral support.

THE BIG PICTURE

Figure 16 on the next page shows all of the standing rigging from the Starboard side.

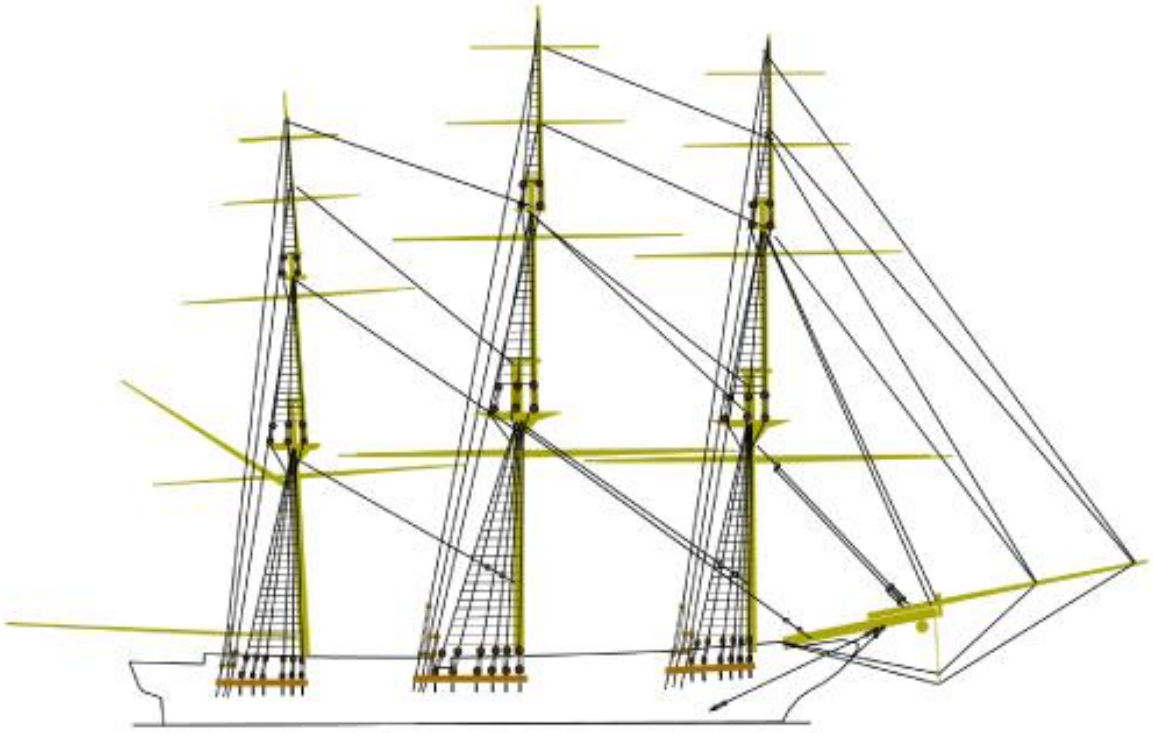


Figure 16:– Standing Rigging

BIBLOGRAPHY

These are the main books I used.

- Historic Ship Models by Wolfram zu Mondfeld
- Rigging Period Ship Models by Lennarth Peterson
- The Oxford Companion to Ships and the Sea edited by Peter Kemp
- The Masting and Rigging of English Ships of War 1625 – 1860 by James Lees
- Seamanship in the Age of Sail by John Harland

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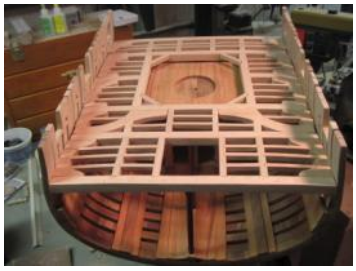


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Daniel Richardson—USA

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Historic Naval Shipyards

Norfolk Naval Shipyard

The Norfolk Naval Shipyard, often called the Norfolk Navy Yard and abbreviated as NNSY, is a U.S. Navy facility in Portsmouth, Virginia, for building, remodeling, and repairing the Navy's ships. It's the oldest and largest industrial facility that belongs to the U.S. Navy as well as the most multi-faceted. Located on the Elizabeth River, the yard is just a short distance upriver from its mouth at Hampton Roads. The name was changed from Gosport Shipyard in 1862.

British control

The Gosport Shipyard was founded on November 1, 1767 by Andrew Sprowle on the western shore of the Elizabeth River in Norfolk County in the Virginia Colony. This shipyard became a prosperous naval and merchant facility for the British Crown. In 1775, at the beginning of the American Revolution, Sprowle stayed loyal to the Crown and fled Virginia, which confiscated all of his properties, including the shipyard. In 1779, while the newly formed Commonwealth of Virginia was operating the shipyard, it was burned by British troops.

Figure 1 Map of Norfolk Naval Shipyard

American control

In 1794, United States Congress passed "An Act to Provide a Naval Armament," allowing the Federal Government to lease the Gosport Shipyard from Virginia. In 1799 the keel of USS Chesapeake, one of the first six frigates authorized by Congress, was laid, making her the first ship built in Gosport for the U.S. Navy.

The federal government purchased the shipyard from Virginia in 1801 for $12,000. This tract of land measured 16 acres (65,000 m²) and now makes up the northeastern corner of the current shipyard. In 1827, construction began on the first of what would be the first two dry docks in the United States. The first one was completed three weeks ahead of similar projects in both Boston, Massachusetts and South America, making it the first functional Dry Dock in the Americas. Dry Dock One, as it is referred to today, is still operational and is listed as historical landmark in Portsmouth, VA. Additional land on the eastern side of the Elizabeth River was purchased in 1845.

American Civil War

In 1861, Virginia joined the Confederate States of America. Fearing that the Confederacy would take control of the facility, the shipyard commander Charles Stewart McCauley ordered the burning of the shipyard. The Confederate forces did in fact take over the shipyard, and did so without armed conflict through an elaborate ruse orchestrated by civilian railroad builder William Mahone (then President of the Norfolk and Petersburg Railroad and soon to become a famous Confederate officer). The capture of the shipyard allowed a tremendous amount of war material to fall into Confederate hands. 1,195 heavy guns were taken for the defense of the Confederacy, and employed in many areas from Hampton Roads all the way to Fort Donelson Tennessee, Port Hudson, and Fort de Russy, Louisiana. The Union forces withdrew to Fort Monroe across Hampton Roads, which was the only land in the area which remained under Union control.

In early 1862, the Confederate ironclad warship CSS Virginia was rebuilt using the burned-out hulk of USS Merrimack. In the haste to abandon the shipyard, the Merrimack had only been destroyed above the waterline, and an innovative armored superstructure was built upon the remaining portion. The Virginia, which was still called the Merrimack by Union forces and in many historical accounts, engaged the Union ironclad USS Monitor in the famous Battle of Hampton Roads during the Union blockade of Hampton Roads. The Confederates burned the shipyard again when they left in May 1862.

Figure 2
Ruins of the Shipyard after the Civil War

Following its recapture of Norfolk and Portsmouth (and the shipyard) by the Union forces, the name of the shipyard was changed to Norfolk after the county in which it was located, outside the city limits of Portsmouth at the time. This choice of name was probably to minimize any confusion with the pre-existing Portsmouth Naval Shipyard in Kittery, Maine near Portsmouth, New Hampshire.

Modern shipyard

Figure 3 Lightship Portsmouth

For $3, visitors can go aboard the Lightship Portsmouth at the Naval Shipyard Museum

From the Reconstruction Era until 1917, the shipyard was used both for ship repair and construction and for ship stationing; the current major naval base for the region, Naval Station Norfolk, did not yet exist. As such, the then Norfolk Navy Yard served as the official Homeport for ships stationed in the Hampton Roads region.

No major expansion occurred at the facility until World War I when it was expanded to accommodate 11,000 employees and their families. The shipyard was again expanded in World War II, doubling its physical size, and greatly expanding its productive capacity. During its peak, from 1940 to 1945, 43,000 personnel were employed and 6,850 vessels were built.

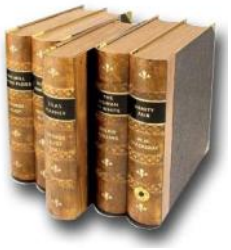
After World War II, the shipyard shifted from being a ship construction facility to an overhaul and repair facility. Its last two ships, USS Bold and her sister ship, Bulwark, wooden minesweepers, were christened on March 28, 1953 during the Korean War.

Currently, the shipyard is composed of several noncontiguous areas totaling 1,275 acres (5.2 km²). Norfolk Naval Shipyard provides repair and modernization services for every type of ship that the U.S. Navy has in service, which includes amphibious vessels, submarines, guided missile cruisers, and supercarriers, although in recent years the shipyard has primarily focused on nuclear ships and nuclear support ships. The Norfolk yard is one of the few facilities on the east coast capable of dry docking nuclear aircraft carriers. Another facility capable of drydocking such carriers is Huntington Ingalls Industries (HII), located on the other side of Hampton Roads in Newport News, which is the only U.S. shipyard that currently builds and refuels nuclear aircraft carriers.

Captain William Kiestler, commanding officer of Norfolk Naval Shipyard was relieved of duty on July 1, 2010 by order of Vice Admiral Kevin M. McCoy, commander of Naval Sea Systems Command, after a year on the job because of a loss of confidence in his ability to command.

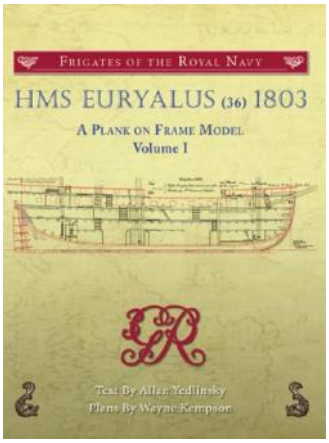
Captain Greg Thomas was permanently relieved of command on October 26, 2011. Rear Admiral Joseph Campbell held the post as acting shipyard commander until February 16, 2012 when the command was assumed by Captain Mark Bridenstine.

Source: Wikipedia



The Book Nook

Books of interest for the Model Ship Builder
and ship building enthusiasts



HMS Euryalus (36) 1803
By Allan Yedlinsky & Wayne Kempson

Seawatch Books LLC

ISBN: 978-0-9820579-9-5

Get your copy from the
Sea Watch Books.

Another fine book from Sea Watch Books LLC, the "HMS Euryalus (36) 1803 A Plank On Frame Model Volume 1", by Allan Yedlinsky and Wayne Kempson.

This is the first of a two volume set of books on the building a 1:48 scale model of the HMS Euryalus, the third of 26 Apollo Class frigates designed by Sir William Rule between 1798 and 1814. The plans for the model are based on the original Euryalus plans as well as the original Apollo class plans. The plans also provide a good basis on which to build any of the 26 ships with some more specific research on the given subject matter. A unique feature of this book is the inclusion of a CD which includes printable drawings of the frames.

The books starts with some historical background information on the ship including Admiralty letters. Then it jumps right into the build providing all the information the modeler needs to build this model. The information is well laid out with plenty of pictures to assist the reader. This first volume ends with the building of the lower deck. In the back of the book you will find a CD and 14 sheets of scaled plans.

This is the first of a series of books planned to be released by Sea Watch Books on "Frigates of the Royal Navy" over the next few years. Even if you don't plan on building the model, these books will undoubtedly be a great addition to your reference library. Looking forward to seeing the second book.

Seawatch Books LLC
www.seawatchbooks.com

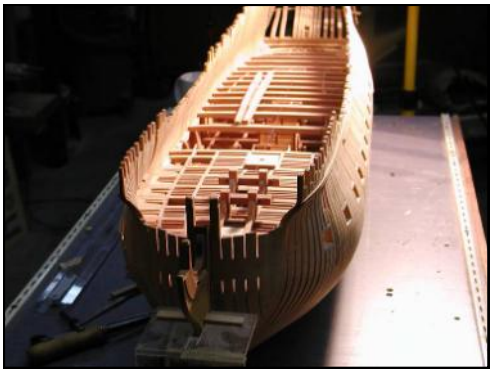
Don't forget to check out the
Model Ship Builder Amazon Bookstore.

Contributor's Pictures

Send your submissions to: mario@modelshipbuilder.com

This is a generic catboat model submitted by Bob Thommen (9.5" at 1:24 scale). A catboat is really any boat with a cat rig. The cat rig being a single mast and sail set well forward in the bow. These boats were usually had centerboards so they could be sailed in shallow waters.

Alfred 1778...74 gun ship by Master Modeler Gary Bishop A beautiful work in progress! 1/48 scale... 49 inches long, 10 1/2 inches wide and 13 1/2 inches at the stern.




Jotika/Caldercraft 1/64 hm Brig Badger....by Ronaldo Saplala




Here we have Doug Shorr's 1:32 scale model of the Battle Station, a project build from the Model Ship Builder website

Picture Submissions

Wish to see your pictures here? We welcome all submissions; wood, plastic, resin, cross section, card, r/c. Send your pictures to: mario@modelshipbuilder.com

Ideally you will send four or more pics and a short description of the model, its scale etc. Images should be of the highest resolution possible. It doesn't have to be a completed model either. Send along some progress pics of your current model. Try to send original pics that you haven't posted to the various modeling forums

So just what is "Full Sheets to the Wind" all about? Simply put, there's a lot of great modeling websites out there that we just don't know about because we are so used to frequenting only one or two.

Our goal each month is to bring you some highlights from around the web of sites we think are worth taking a look at. The subject matter could be anything from interesting articles on model building to nautical history to model gallery's. The sky … or should I say… the seas' the limit.

We'd also like to bring you some updates from some of the more popular discussion forums out there where you can perhaps find others working on similar projects as yourself. So, if you see something out there that you think others would find interesting be sure to drop us an email and let us know.

We hope you find this new and upcoming section enjoyable and helpful in your modeling endeavors.

Badges: Heraldry of Canadian Naval Ships

HMCS Winnipeg

Figure 1—The First HMCS Winnipeg

Figure 2—Current Winnipeg

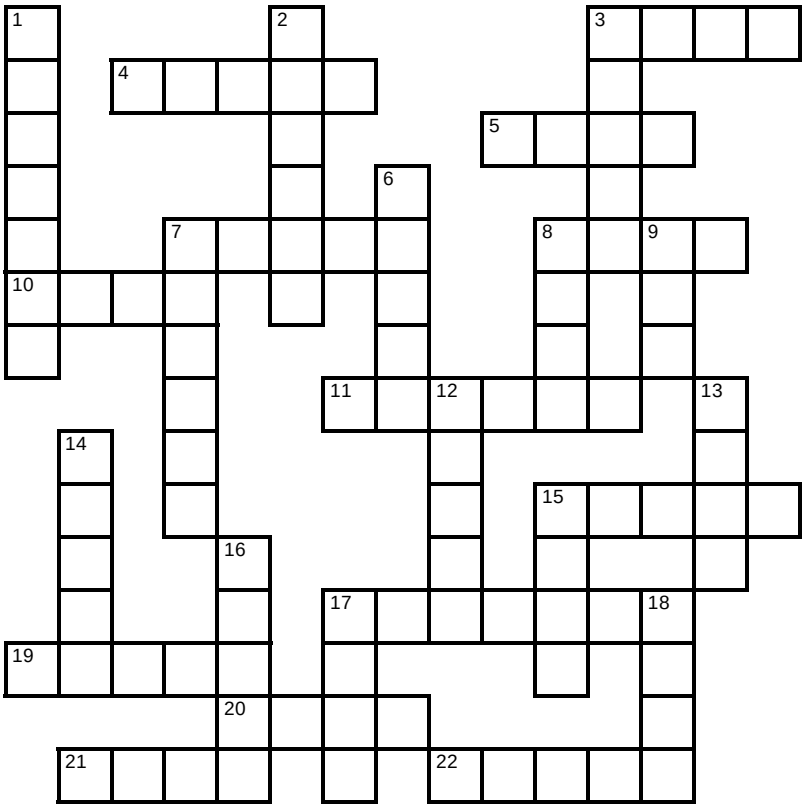
The ship's badge combines a traditional naval Tudor crown surmounting a border of cordage patterned for a capital ship of the line. Within this border is found the distinctive heraldic field described as "Azure, a Bison passant, Or" which is derived from the former Civic Devices of the City of Winnipeg. This badge was carried by the first HMCS WINNIPEG as well, and was first passed as a sealed pattern in 1948.

The ship's motto is "Unum cum virtute multorum," which translates to "One with the strength of many." This is the motto of the City of Winnipeg, and with the kind permission of Her Worship the Mayor, also became the ship's motto in November, 1989.

Source: Various

Gene's Nautical Trivia

Handling the Ropes



Across

3 Temporary but secure join of one rope with another
4 Any rope hanging down unfastened and subject to buffeting by the wind
5 Pull on a rope without the assistance of blocks
7 Pull on a cable without the assistance of a capstan
8 Put an extra serving on a rope
10 One turn of a rope that has been stowed away
11 Ease any rope by letting it slacken a small amount
15 Fasten a rope by giving it turns around a cleat
17 Haul on a rope in order to bring in the last few possible inches
19 Give a horizontal pull on a rope
20 Length of rope wound concentrically
21 Short tight bend occurring in a rope twisted too hard
22 Draw up a weight by means of tackles

Down

1 Gently slacken a taut rope on a tackle
2 Slacken a rope and let it run out
3 Pull down on a rope or the fall of a tackle
6 Pass a rope's end through any sheave or block
7 Yield without resistance
8 Wind a small line around a rope, securing every turn by a hitch
9 Stop a rope by securing another to it with several turns of yarn
12 Haul on any fall or rope passing through a sheave
13 Direction in which a rope may be turned by blocks, cleats, or fairleads
14 Coil a rope flat on the deck so that it can run freely
15 Pass a rope around a post in order to fasten it
16 Ease a rope and then hold it or secure it again
17 Haul on a taut rope at right angles to its direction, taking up any slack
18 Break or separate a rope

NAUTICAL QUIZ

1. How many feet are in a nautical mile? _____
2. What is the "cat" in the phrase "no room to swing a cat"? _____
3. What rigging exerts side forces to keep a mast vertical? _____
4. In what direction are you going if you are making a heading of one eight zero? _____
5. What is the distance from the gunwale to the waterline called? _____
6. How long is a league? _____
7. What is the highest naval rank? _____
8. What is a cask of drinking water called? _____
9. How deep is a fathom? _____
10. What color is the light on the port side of a ship? _____

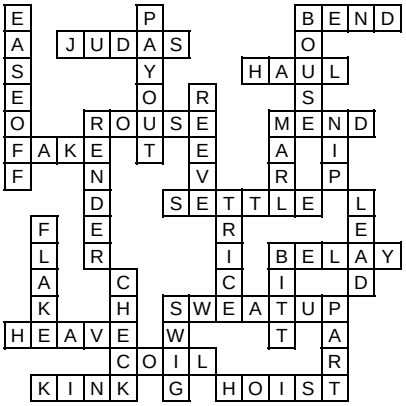
MEET JACK

Each of the following 2-word terms begin with "Jack." Do you know the second words in the 2-word terms?

1. JACK _____ It is stropped with a long leg ending in an eye-splice and a short leg ending in a wall knot.
2. JACK _____ Climbing device with rope sides and wooden rungs.
3. JACK _____ Rope rove through the grommets of a reef band.
4. JACK _____ Nickname for a sailor who is disliked by his shipmates.
5. JACK _____ Belaying device used particularly for fitting across the shrouds.
6. JACK _____ Device used to move heavy pieces of cargo.
7. JACK _____ One who is against the establishment or authority; also known as a sea lawyer.
8. JACK _____ Old nickname for a sailor.

ANSWERS

HANDLING THE ROPES:



NAUTICAL QUIZ:

6,080 feet
Whip
Shrouds
South
Freeboard
3 miles
Commodore
Scuttlebutt
6 feet
Red

MEET JACK:

Block
Ladder
Line
Nastyface
Pin
Screw
Strop
Tar