The MSB Journal

April 2013

www.modelshipbuilder.com

The MSB Journal

ISSN 1913-6943

April 2013

Published by
www.modelshipbuilder.com

How to Contact The MSB Journal

By email: winston@modelshipbuilder.com

On the Cover
HMS Bombay Service Launch
Royal Museums Greenwich

By Snail-Mail

Canada

The MSB Journal
c/o Winston Scoville
2 St. Charles Place RR5
Clinton, Ontario, N0M 1L0
Canada

Article / Content Contributions

Please submit all article and content
contributions to:

Articles and General Submissions: winston@modelshipbuilder.com

Wish to contact a regular columnist?
See their column for their contact information

Table of Contents

Gene's Tidbits *by Gene Bodnar*

"Sailors Tattoos"

Tattoos have been in existence since Neolithic times. Otzi the Iceman, who dates from 500 years B.C., was found in the Alps with 57 simple tattoos on various parts of his body.

The word "tattoo" was introduced to Europeans by Captain James Cook in 1771 when he returned from his first voyage to Tahiti and New Zealand, where he discovered the widespread use of tattoos among the Polynesians.

Sailors have adapted tattoos to suit their own uses. Many tattoos used by sailors tell stories about their lives, their activities, their fears, their superstitions, and their hopes. For example, if a sailor had a fear of drowning, he would get a tattoo of a pig on the calf of one of his legs and a tattoo of a rooster on the calf of his other leg. He believed this would prevent him from drowning. The rationale behind this logic is the fact that pigs and roosters were frequently carried in crates on board a ship. If the ship went down, the crates floated and washed ashore, making these animals the only survivors of the shipwreck, even though neither animal could swim.

Some sailors preferred a tattoo of a pig on the knee and a rooster on the right foot. This meant: "Pig on the knee, safety at sea. A cock on the right, never lose a fight." And finally, the pig-and-rooster motif sometimes meant that the sailor would always have his ham and eggs, so he would never go hungry.

If a sailor feared falling overboard while hauling on a line, he could protect himself from this by having the words "HOLD" and "FAST" tattooed across his knuckles, which would help keep him from dropping the line. Of course, the sailor could also tattoo crosses on the soles of his feet to ward off hungry sharks.

Many sailors had swallows tattooed on their arms, which means that, like the swallow, they could always find their way home. If the sailor had more than one swallow, it meant that he had sailed 5,000 miles for each swallow on his arm.

Other animals also held special significance. A tattoo of a shellback turtle meant that the sailor had crossed the equator. If the turtle was standing upright, it meant that the

sailor had been initiated into King Neptune's Court. A tattoo of a dragon indicated that the sailor had sailed into a port in China. A tattoo of a golden dragon was for sailors who had crossed the International Date Line. If a sailor had a tattoo of a palm tree or a hula dancer, he served in Hawaii.

A tattoo of a full-rigged ship shows that the sailor has sailed around Cape Horn. A tattoo of an anchor was reserved for sailors who sailed in the Atlantic Ocean.

Sometimes, a tattoo would indicate the sailor's rank. A rope tattooed around the wrist indicated that the sailor was a deckhand. If the sailor's tattoo showed cross anchors on the web between the thumb and index finger, that sailor was a boson's mate.

Nowadays, it is common for sailors to put a tattoo of their specialty on their arm, such as a diver's helmet for a diver or crossed hammers with wings for aircraft carrier mechanics.

Model Ships of the Royal Museum Greenwich

Hyacinth (1829)

Scale: 1:60. A contemporary full hull model of the 'Hyacinth' (1829), a ship-rigged sloop 18-gun sixth-rate, built plank on frame and sailor made. Model is decked, equipped and rigged with three masts and flying a white ensign from the peak of the gaff. Launched at Plymouth in 1829, the `Hyacinth' measured 109 feet along the gun deck by 30 feet in the beam, and it had a tonnage of 435 burden. It was flush-decked with a small forecastle and quarterdeck, and was armed with sixteen 32-pounder carronades and two 6-pounder guns. During its 42-year career, it was stationed in the West and East Indies from 1829-41, took part in the China Wars from 1841-42, and from 1843-46 it was stationed off the west coast of Africa in the suppression of the slave trade. After being reduced to 14 guns in 1847, it later became a coal hulk at Portsmouth before being broken up in 1871.

Built: 1829

Model Builder: Unknown

Materials: brass; copper; cotton; paint; varnish; wood

Measurements: Overall model: 722 x 1088 x 385 mm; Base: 161 x 698 x 166 mm

Ship Wrecks of the World

The Search for "Watson A West"

The Channel Islands National Marine Sanctuary (CINMS) continues research efforts to locate an historic shipwreck lost in 1923. Built at the turn of the century, the sailing vessel WATSON A. WEST was reported stranded at the western end of San Miguel Island, which surrounding waters lie within the Channel Islands National Marine Sanctuary and Channel Islands National Park.

Captain Ludwig M. W. Sorensen, master of the WATSON A. WEST at the time of her loss.

The four-masted schooner loaded on 800,000 board feet of lumber at Grays Harbor, a lumber port located in the southern region of Washington State. With 1500 tons of cargo fully loaded in her holds and secured to her deck, she left port on 10 February 1923 en route for San Pedro Harbor. Captain Ludwig M. W. Sorensen of San Francisco was master aboard the WEST for her owner, Pacific Freighters Company of San Francisco. On Friday, 23 February the schooner approached the Santa Barbara northern channel around 11:30 in the evening with wind from the west at 6 knots and a heavy sea running. Captain Sorensen later reported in the official "Record Of Casualties To Vessels," when the schooner approached the channel they encountered thick fog and the evening was dark. The men on watch having "less than a boat length" of visibility were on a collision course for the breakers off San Miguel Island. As the island loomed into sight the helm was quickly brought about with an attempt to set a new course to seaward. It was too late; the jagged rock reefs of this remote island had claimed yet another vessel join the numerous shipwrecks off Point Bennett.

The crew of ten scrambled to launch the lifeboat, having no time to gather their personal belongings. As for Captain Sorensen, he was aware that the WATSON A. WEST was breaking up and did not waste time searching for the ship's papers but grabbed a chart, compass and chronometer,

knowing these navigating instruments would be crucial to their survival. The crew, "exhausted, hungry, thirsty, half-clad", reached Santa Barbara after rowing eighteen hours. The WATSON A. WEST and the cargo became a total loss, the vessel being valued at $10,000 and her cargo at $30,000.

Watson A West underway

The schooner is the last of the larger documented shipwrecks to be located in the Channel Islands National Marine Sanctuary and Channel Islands National Park. To date the search for the WATSON A. WEST has challenged researchers. The shipwreck remains of the lumber schooner, a product of the McWhinney and Cousins shipyards of Aberdeen, Washington, would offer researchers and underwater archeaologists an opportunity to study turn-of-the-century construction methods and learn about the social community aboard ship.

Source: Cultural and Historic Resources of the Channel Islands National Marine Sanctuary

Saint Brendan's Curragh—Part 2

James M. Norton

Part One of this series on Brendan's curragh described the assembly of the curragh's double gunwale, ribs and stringers, forming the basket-like hull. The next steps were to tie the ribs and stringers together with simulated sinew, finish some interior details, and cover the hull with the leather skin, all of which will be described in this installment.

To secure the ribs and stringers together, I needed to tie nearly a thousand knots, one at each of the intersections of ribs and stringers. This was the method used to secure and stabilize the hull shape, and I followed the description in Tim Severin's book. On a test lattice simulating the ribs and stringers, I tried using artificial sinew from my leather supplies for these knots, but the color was too close to that of the unstained wood and the sinew knots did not show very well on the inside of the model. Although using the artificial naturally colored sinew would probably be more historically accurate, I decided to use instead a darker brown waxed-linen thread that would contrast with the paler wood of the frame and would therefore allow anyone viewing the interior of the model to see instantly how the frame was assembled. Figure 1 of test knots on the lattice shows the difference. The sinew knot to the right in the image is barely visible, whereas the waxed linen knots stand out clearly. I believe that taking this little bit of artistic license added significantly to the visual appeal of the model. This knot-tying task needed to be done before I added the leather covering or any interior details to the hull, such as the mast-step and mast, a lattice-like deck for easy maneuvering around the boat and for storing supplies away from bilge water, foot braces for the rowers, etc.

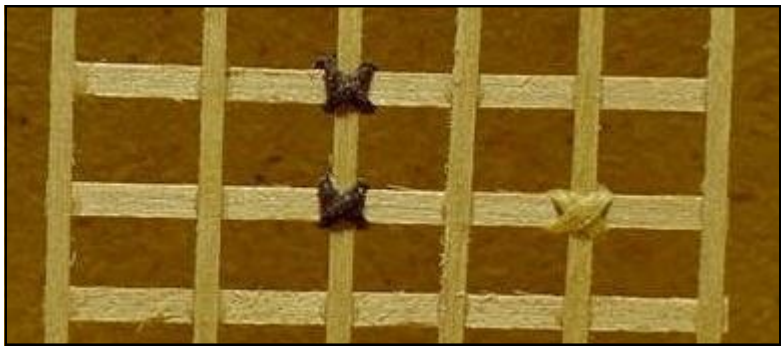


Figure 1

I believe it's important for me to share these construction details with fellow modelers, since many of them will be completely hidden, or at least very hard to see, in the finished model. Hulls of most ship models can be carved from solid blocks, or fabricated using plank-on-bulkhead or plank-on-frame methods, and what's hidden often doesn't matter as long as the final external shape and appearance are correct. I didn't initially intend to follow so exactly the method of construction of actual curraghs. Brendan's curragh, however, is an open hide-on-frame boat, with the interior of the hull exposed. Accurate construction techniques are therefore important for this reason alone, especially since one of the purposes of this model was informing its viewers about historical methods of construction.

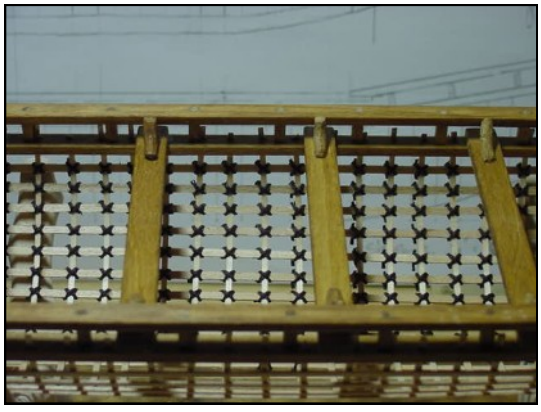


Figure 2

Figure 2 shows the hull with knots completed on one side. The dark criss-cross knot pattern contrasts nicely with the light-colored stringers and ribs, and the knots are easily appreciated at a typical viewing distance. The knots were tied so that the "X"-shaped crossover would be visible from the inside of the hull. The ends of the threads on the outside of the hull were trimmed close to the knots with a razor blade, and a small drop of clear CA glue was placed on each to assure that the knots would not come undone. As I tied more and more of the knots, I could feel the hull become stiffer and sturdier.

Once all of the knots securing the ribs and stringers were tied, I turned my attention to some of the fixtures inside the hull – the mast-step, the deck, and the footrests for the rowers, or "footsticks" as they are called in James Hornell's book. The first step was to set in place longitudinal stringers on the inside of the hull to support the deck, which would have been about 2 feet below the thwarts. Figures 3 & 4 of the bow and stern show these internal stringers in place, as well as the completed set of knots. In Figure 3 the mast-step can be seen, resting on short stringers added for additional support. The thwart just above the mast-step is notched to take the mast.

The deck was assembled from the same wood used for the ribs and stringers, and was stained to represent oak. The joints were glued together but were marked to represent a frame that was held together by pegs instead of knots. This would have been necessary, in my opinion, because foot traffic would most likely have quickly worn away leather lashings. The deck was assembled in three sections – a long center section and two shorter sections as the bow and stern, as shown in Figures 5 & 6. The bow and stern section were made of a size that could have been easily lifted by several men to allow access to the space beneath. The long center section was fitted with a hatch with rope handles, again to allow access to the space underneath. The gap at the forward end of the center section in Figure 5 is where the mast would pass through.

The deck sections were then inserted into the hull under the thwarts and resting on the in-

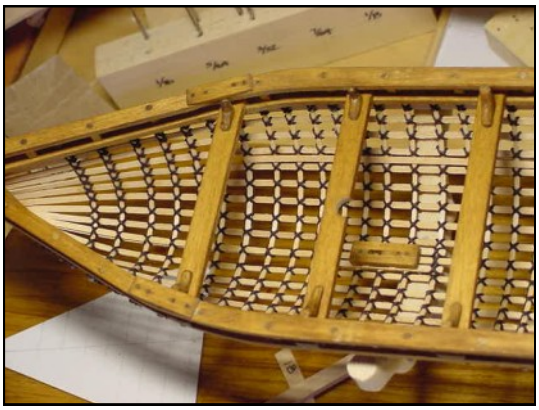


Figure 3

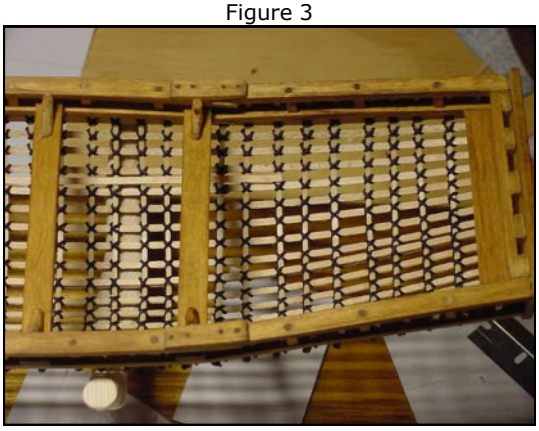


Figure 4

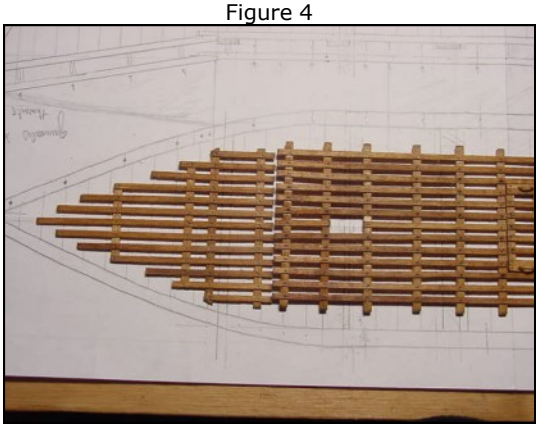


Figure 5

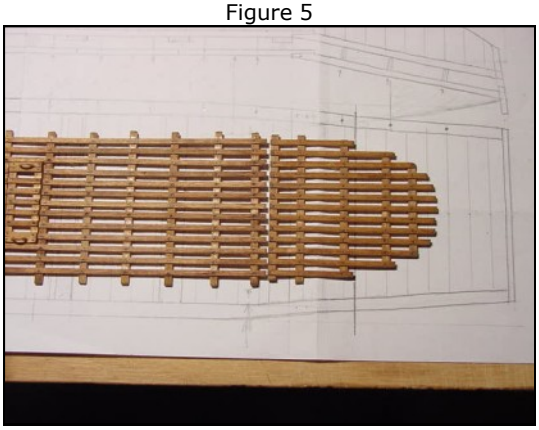


Figure 6

ner stringers, and glued and pegged in place. I chose not to place any storage items under the deck. Eventually, replicas of food packages, waterskins, rolled blankets, chests, *etc*., will be placed on the deck and under the bow and stern shelters, which will be added later.

Once the deck sections were set in place, the rowers' footsticks were fabricated, and placed 2' astern of each thwart and six inches above the floor. The dimensions and placements of the footsticks were taken from James Hornell's descriptions and from plans of the 6th century 36' curragh replica *Colmcille*, built in 1997 to retrace the voyage of Saint Columba from Derry to the island of Iona. (I obtained these plans through the courtesy of Robin Ruddock, a member of the Causeway Coast Maritime Heritage Group [CCMHG] and skipper of the *Colmcille*.) The footsticks, which rested on short stringers spanning three ribs on each side of the hull interior and secured in place with knots, were rectangular in cross-section, except for "worn" areas that were carved into the edges where the rowers' feet would have rested while rowing. Images of the hull interior with the deck and footsticks in place, and with the mast in position, are shown in Figures 7 & 8.

After some experimentation and several false starts, I managed to complete the leather skin and sew it to the frame. I chose from my leather supplies a piece of very dark brown, almost black, pigskin lining leather, similar to that used for the linings of leather gloves or leather jackets. The finely pebbled texture of this leather fit nicely with the scale of the model. I began by cutting a stack of scaled leather "hides", each measuring roughly 2" by 1.75". These pieces represent, at the 1/24 scale of the model, 4' by 3.5' hides, the largest that could reasonably be obtained from the side of a large cow or ox. Figures 9 & 10 show the process of shaping the leather skin to the hull.

With the model hull turn upside down, I began at the stern centerline and laid overlapping hides along the "keel" toward the bow. The hides were attached to one another with contact cement, which would hold them in

Figure 7

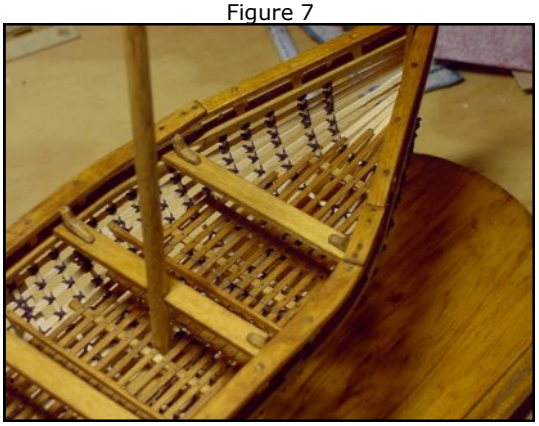


Figure 8

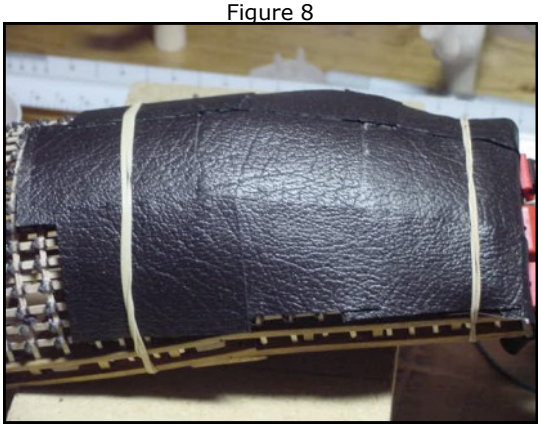


Figure 9

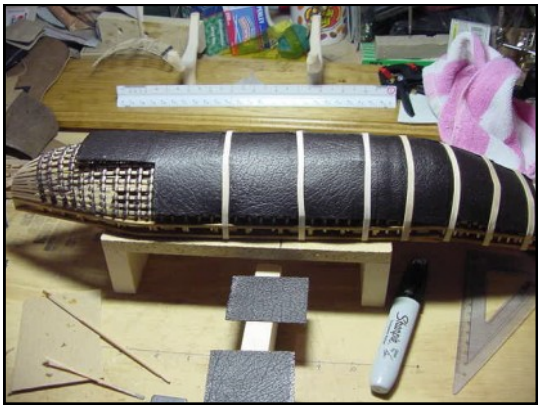


Figure 10

alignment satisfactorily until they could be sewn together. Once a few midline hides were in place, I laid two more rows, one on each side, beginning at the stern again and moving toward the bow. The process was not unlike lapstrake planking, except that the "planks" were leather rectangles! The shapes of the hides were often modified somewhat to fit their position along the curvature of the boat, especially at the stern and bow. While the skins were being glued together over the overturned hull, they were kept in place with rubber bands. Figures 9 & 10 show the first few hides in place (Figure 9) and further progress toward the bow, with the hides held in place by rubber bands (Figure 10).

Once I had three complete rows of hides in place from stern to bow, I added one more row on each side, with the hides in this row extending over the gunwales. These hides were trimmed to a length that would allow the edges to be stretched over the upper gunwale and sewn around the lower gunwale during the process of attaching the leather skin to the hull frame. The gunwales and the transom were actually the only points at which the leather skin is directly attached to the hull, consistent with both ancient and modern curragh construction techniques.

The most difficult areas for fitting the hides were, naturally, around the stern transom and the bow and stem. I had to modify the transom somewhat from its original shape in order to make the hides wrap smoothly around it, and needed to drill a series of small holes in the transom so that the edges of the skin could be sewn in place and drawn tight. The bow presented a somewhat different problem, in that the relatively sharp curve of the bow required the leather pieces to be narrower to accommodate the curvature without wrinkling. In addition, a double layer of hides was required at the bow to simulate the extra thickness that this area would require in order to withstand frequent beachings on rocky shores. Tim Severin's curragh replica was constructed in this fashion, as well. Figure 11 shows the bow section with the extra layer of hides glued in place. The overlapping leather sections at the bow created an organic, almost animal-like appearance, resembling something like an armadillo. Figure 12 is an image of the skin after all the skin sections were glued together, next to the completed frame (on my messy workbench). This image was taken just before I began sewing all the seams.

Figure 11

Figure 12

Once the skin sections were glued together, as shown in Figure 12, the task of sewing the seams was begun. I experimented with several different threads, looking for a color that would match that of the skins, and a thread thickness that would scale appropriately. I settled on simple black upholstery thread from the local fabric store. The thread was a little oversized, and the spacing of the stitches was a bit out of scale, but I took some artistic license here, again for the sake of the final appearance. Fine black sewing thread and very closely spaced stitches would be hard to see against the very dark leather of the

hull, in my opinion. After sewing several sample seams, I settled on a stitching pattern that would reveal to an observer that the hull consists of sewn leather pieces, but the overall effect would still be one of an appropriately scaled model.

The stitching was a slow process. I used a set of diamond-tipped needles from my leather-working tool kit, but even with these very sharp needles it was difficult to pierce the hull covering at those points where there were overlapping hides. This was especially true near the bow, where there occasionally were four layers of leather. Getting a needle through this section was sometimes very tough. I had to be careful with the application of force while sewing, for several reasons – to prevent stretching of the leather, to avoid separation of the leather pieces at the glued joints, and to prevent stabbing my fingers with the diamond-tipped needles. I was not always successful at the latter.

Once the sewing was completed, the leather skin was placed back over the hull frame, to check for fit and symmetry. The result was a hull that looked very much like those of modern curraghs and very likely the curraghs of Brendan's time. Figure 13 shows the completed leather skin in place on the model.

Figure 13

At this point, the skin was stretched tightly over the gunwales, and secured in place with the rubber bands again. The first part of the leather covering that was actually sewn to the frame was at the transom, to make sure that the skin was stretched tightly along the length of the boat from bow to stern. Next I secured a few areas on either side, amidships, to anchor the skin in place in the center, and then worked toward the bow and stern. The leading edge of the leather skin was pulled down toward the lower gunwale by a thread that passed under the lower gunwale, came back around between the upper and lower gunwales, passed through the leading edge again, back around the lower gunwale again, and so forth, all along the length of the boat. I worked with two needles, one on each side of the boat, so that the tension applied to the skin would be even from side to side.

Figure 14

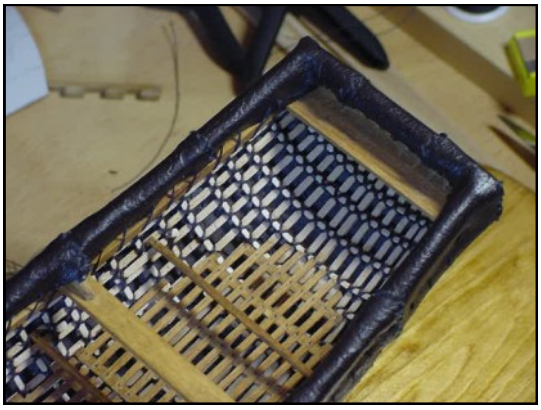


Figure 15

The two images above show the bow (Figure 14) and stern (Figure 15) of the completed hull, showing how the leather skin was tightly wrapped around the gunwales. The

Figure 16

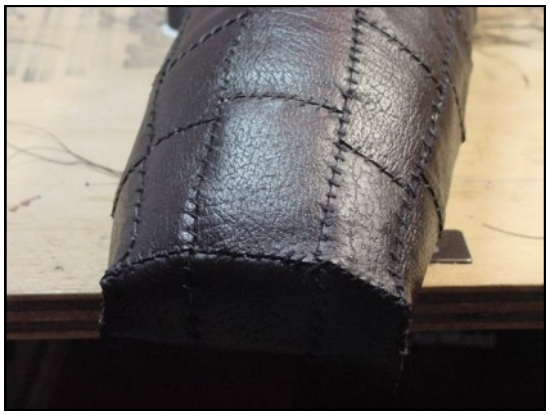


Figure 17

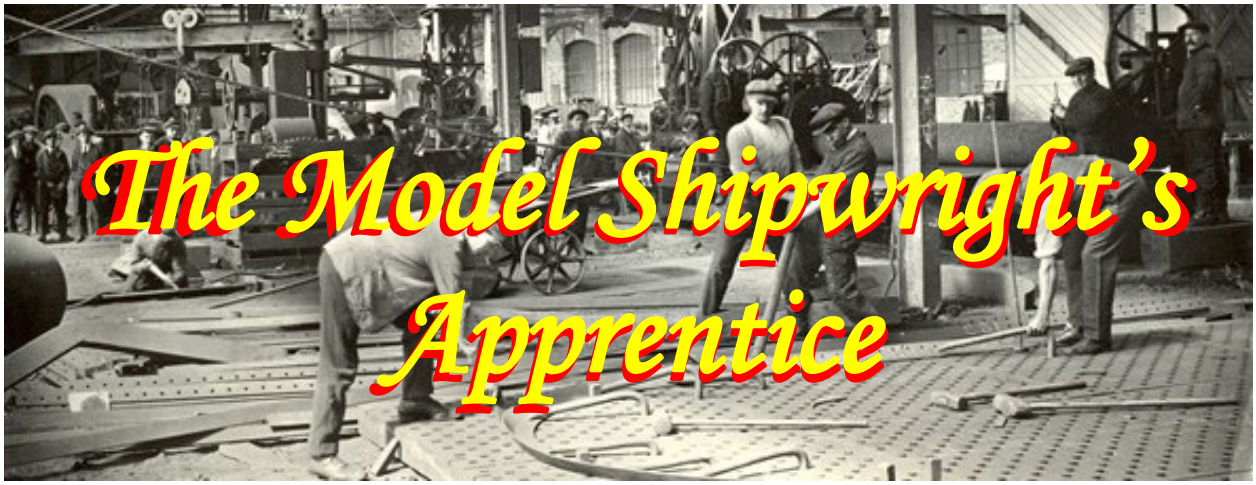
images on the next page show details of the lashing of the leather skin to the gunwale (Figure 16) and a close-up view of the hull stitching at the stern (Figure 17).

In Part Three of this series, I will describe the building of the frame for the steering oar and the oar itself, the placement of the thole pins for the oars along the top of the gunwale, the carving of the oars themselves, and the making and rigging of the sail. Also described will be the construction of the bow and midship shelters, the fabrication of extras such as folded blankets and waterskins, and, finally, the sculpting of a figure of Brendan himself.

Happy modeling!

My primary sources for planning and constructing the model were:

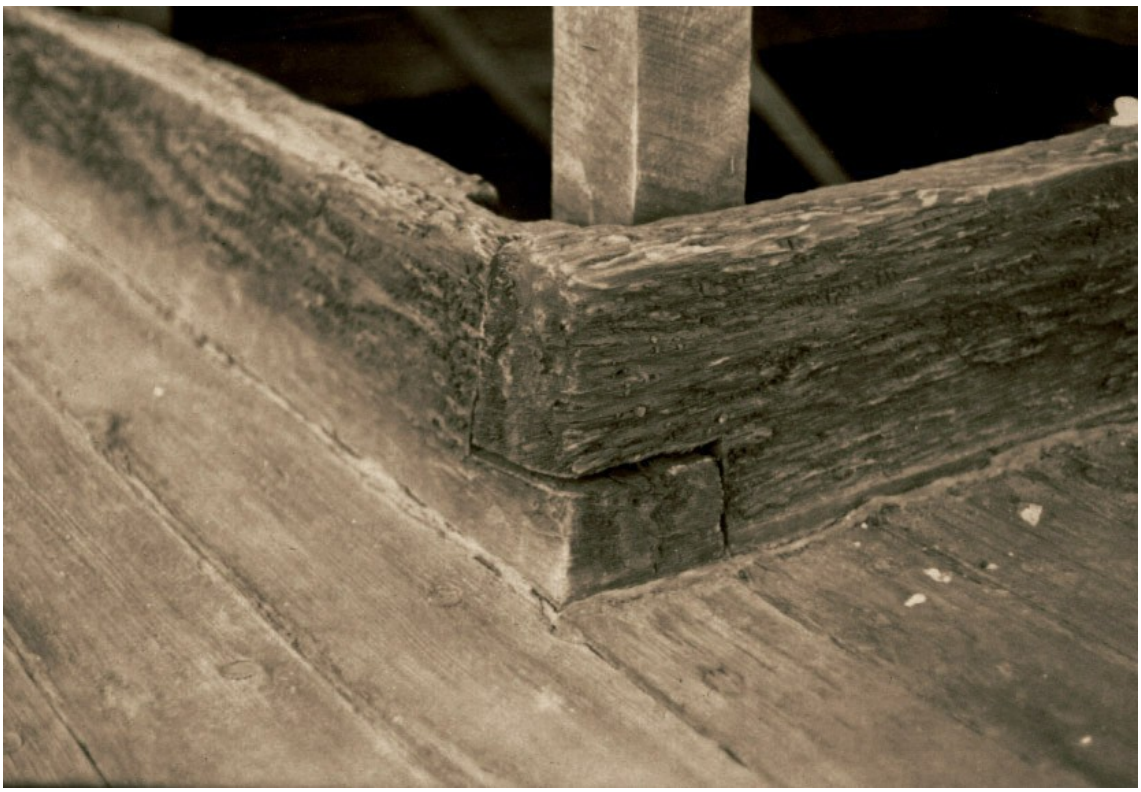
1. The text of the *Navigatio sancti Brendani abbatis* (Translator: Denis O'Donoghue, Date of Translation: 1893; source, http://markjberry.blogs.com/StBrendan.pdf)
2. *The Voyage of the Brendan* by Tim Severin (McGraw-Hill, New York, 1978, ISBN 0-07-056335-7);
3. A National Geographic article (also by 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).
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.

In this issue the subject we're covering is Hatch Coamings submitted by Dave Steven of the Lumberyard for Model Shipwrights (www.dlumberyard.com). If you find this info helpful be sure to drop by the forum and let Dave know.

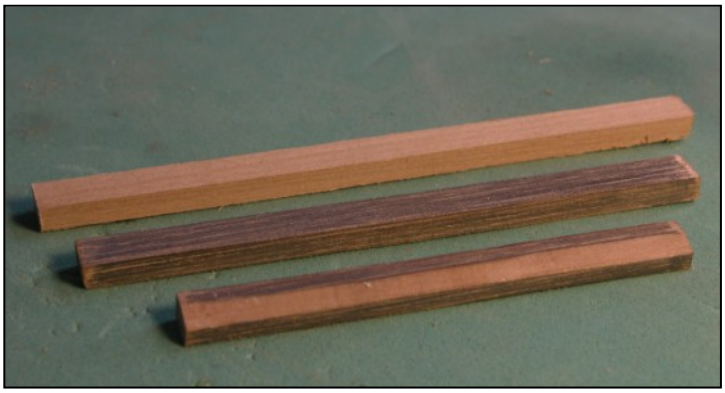
For this how to article we will use an actual hatch coaming as our reference. I have



seen model builders plank up to the hatch opening and set the coamings on the planking. Coamings are set on the beams and carlings with the deck planking running to the side and not underneath. This can be seen very clearly in the second photo.

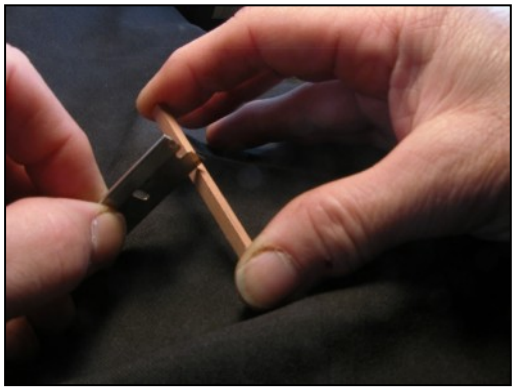
The corners of the coamings use a half lap joint shown in the third photo. Its hard to see in the photos but the sides of the coamings had a taper from the decking to the top edge. Finally the last feature added to the coaming are the notches shown by the red arrows. These notches were used to hold strong backs in place the red arrows show two strong backs.

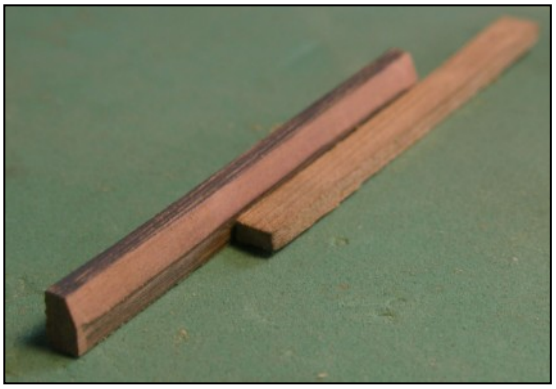
Coamings were typically 5 x 10 inches so cut the correct size material larger than the longest length you will need. It is difficult to make a bevel without any sort of guide. One trick is to use a pencil and shade the piece. As you shape the bevel you can see the lower and upper edges and you are able to keep them even from one end to the other.

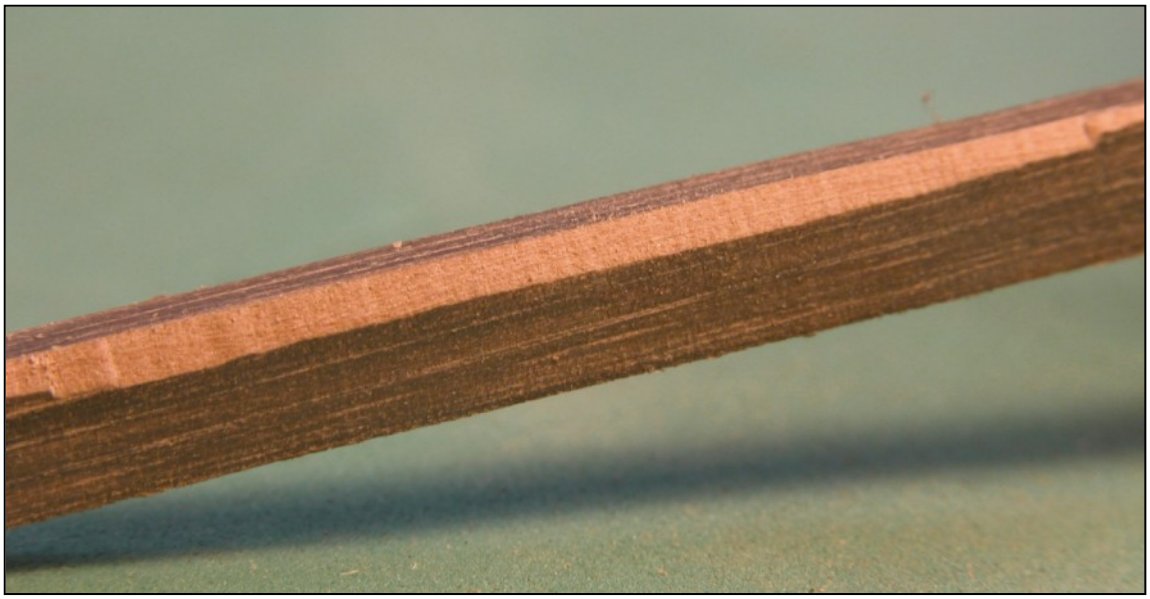


Cutting the bevels by hand can be done quite simply by holding the piece between your fingers and scraping the edge with a single edge razor blade.

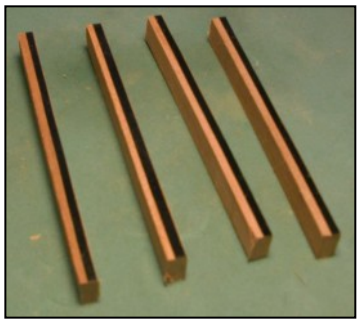
The trick is to keep the shaded edges even all along the piece. Once you are down to size for the bevel a few swipes with a file or piece of sandpaper will even out any irregularities. The top of the deck planking should run along the bottom edge of the bevel.



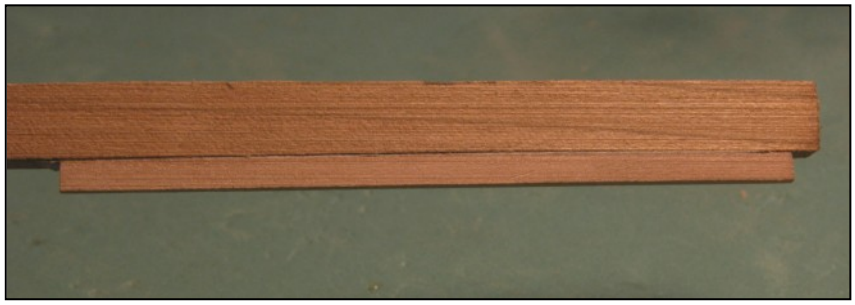




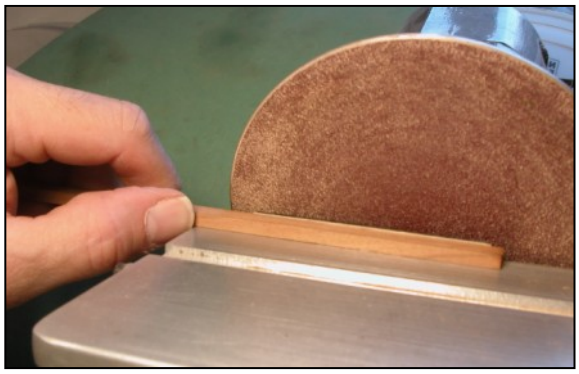
Another method to create the bevels on the hatch coamings is to use a disk sander. First I marked the upper edge by using a strip of electrical tape. Next is to set the table to the angle of the bevel.

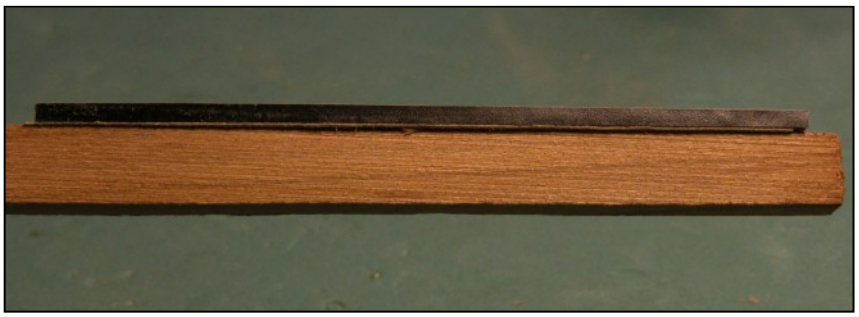


A problem with the small, short pieces is holding them against the sanding disk without sanding the tips of your fingers in the process. A solution to this is use two sided tape and stick the coaming to a larger piece of wood. This give you much better control and saves your finger tips.

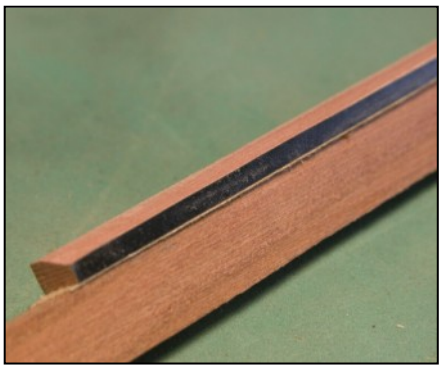


By holding a larger piece of wood you can gently move the coaming back and forth on the disk to get an even sanding along its length. The idea is to sand the coaming right to the edge of the electrical tape.



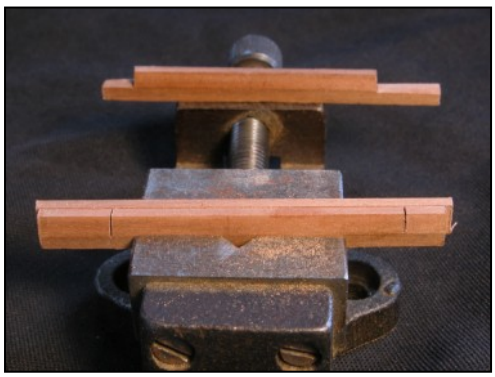


The final pieces will look like the photo to the right

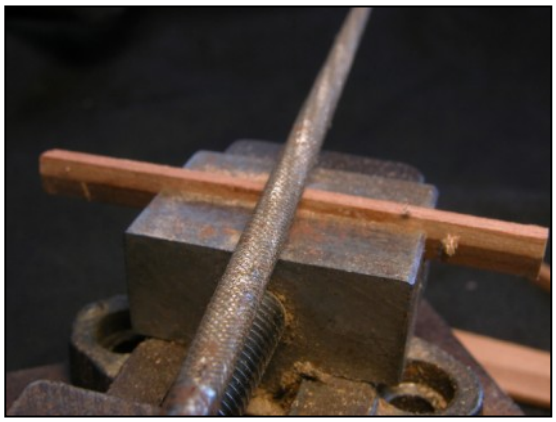


Once all the coaming pieces are cut and beveled the next step is to mark them out for length. Marking is always done with the knife by making a small cut line. Cuts are far more accurate than a pencil line.

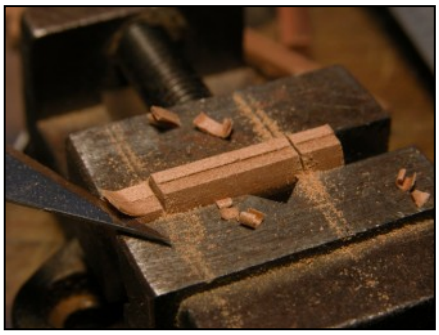
You can either cut both side pieces at once or cut one at a time using the first side to mark the cuts for the second piece. The coaming sitting on the vice is the piece that will sit on the carling, note it has been notched so the beveled top half is cut away. The pieces clamped in the vice are the sides that sit on the beams. These pieces are up side down and the bottom half is being cut for the notches. The bevel line is the guide for the depth of the over lapping notches. Coamings that set on deck beams will need the bottoms

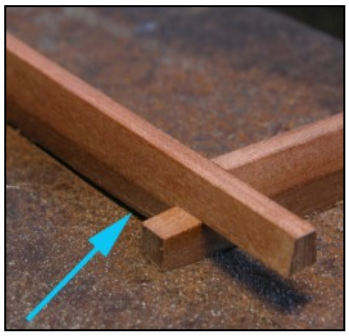


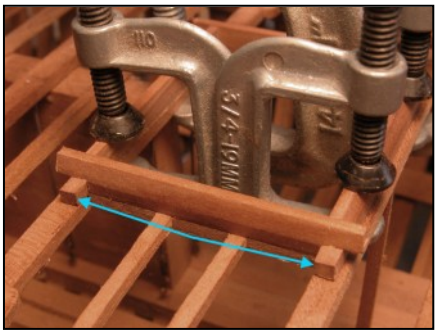
shaped to fit the curve of the beam. By using a rounded file a few swipes across the bottom will produce enough to form the needed shape.



To insure a nice flat even cut, the coaming sides are clamped in a vice to the depth of the bevel. A knife is used and the notch is cut down even with the top of the vice.
In the next photo the blue arrow is pointing the shadow indicating the depth of the notch is still to high. Continuing shaving down the notch until both sides sit flat on the surface.

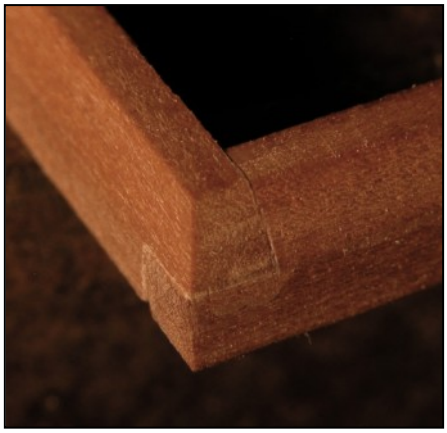






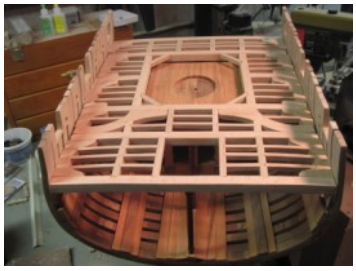
With all the bevels and corner joinery done clamp the two sides on to the carlings so they are even on the inside shown by the blue arrows. Adjust the inside edge of the notches until they fit tight between the clamped sides. Once you have a nice fit glue the corner joints.

The final hatch coaming should sit perfectly over the hatch opening in the deck with nice tight fitting corner joinery. Lastly cut the notches for the strong backs before gluing the coaming to the deck.



The Bomb Vessel Cross Section Model

An exclusive Model Ship Builder Modeling Project




"...This is the finest set of drawings I ever worked with!"
Mike. Rohrer—Proto-type builder

"These drawings are amazing! I'm looking forward to building this model"
Daniel Richardson—USA

"Extremely detailed plans for a model. I have to say, I'm very impressed. Great Job!"
Alfred Anderson—U.K.

"Plans arrived today... They far exceeded my expectations... Thank you!
Tristan Rockstrom—Canada

Plans now Available at the Model Ship Builder web site!

A 1:24 scale model based on Peter Goodwins "Anatomy of the Ship—Bomb Vessel Granado and original Bomb Vessel drawings by Thomas Slade.

Contains 63 pages of detailed drawings and templates of every part of the model.

Numerous 3-dimensional constructional drawings provide you all the information you need to know to build this model. As well, it is supported by an online forum where you can ask questions, view other builds as they occur and even display your build if you wish.

All pages are printed on 11" x 17" stock.

Future plans include a 1:48 scale model timbering kit

Plans: $57.50CND set + Shipping/Handling

Available at www.modelshipbuilder.com

Historical Naval Shipyards

HMNB Portsmouth

Her Majesty's Naval Base (HMNB) Portsmouth is one of three operating bases in the United Kingdom for the British Royal Navy, (the others being HMNB Clyde and HMNB Devonport). Portsmouth Naval Base is part of the city of Portsmouth; it is located on the eastern shore of Portsmouth Harbour, north of the Solent and the Isle of Wight.

The base is home to the oldest dry dock in the world, as well as being the headquarters for two thirds of the Royal Navy's surface fleet. The base is also home to a number of commercial shore activities, including shipbuilding and ship repair (operated by BAE Systems); naval logistics, accommodation and messing; and personnel support functions (e.g. medical and dental; education; pastoral and welfare) provided by Defence Equipment and Support.

The base is the oldest in the Royal Navy and it has been an important part of the Senior Service's history and the defence of the British Isles for centuries. At one time it was the largest industrial site in the world. The Naval Base is also home to the "Portsmouth Historic Dockyard", which allows members of the public to visit important maritime attractions such as the Mary Rose, HMS Victory and HMS Warrior.

The base commander since October 2011 is Commodore Tony Radakin.

The harbour is under the control of the Queen's Harbour Master, currently Commander Nigel Hare, who is the regulatory authority of the Dockyard Port of Portsmouth, an area of approximately 50 square miles (130 km^2) that encompasses Portsmouth Harbour and the Eastern Solent. Shipping movements are handled by a team of admiralty pilots headed by the Chief Admiralty Pilot, Anthony Bannister.

Portsmouth naval base is home to two thirds of the Royal Navy's surface ships, including the aircraft carrier HMS Illustrious. It employs up to 17,200 people. In addition, Portsmouth is building part of, and will be the home port of the two new Royal Navy aircraft carriers ordered in 2008, HMS Queen Elizabeth and HMS Prince of Wales, which will require that the harbour be dredged. This project has secured the base's future for the next forty years and will revitalize shipbuilding in the city.

Source: wikipedia

Masting & Rigging

Send comments to wayne@modelshipbuilder.com

Masts, Sails & Rigging

A Beginners Guide

By Alan McKendrick

Introduction

I have recently been building a model of a 1/300 brig from the Napoleonic Era. It has a resin hull, white metal masts and fittings, and photo etched sails, shrouds, nets and a few other pieces. The instructions were minimal, especially the rigging plan. It was therefore a case of producing my own from first principles.

I've got a number of reference books, all of them good, but all lacking a little bit of what is wanted to make the whole. Most books showed the rigging for a 3 master (or more). I looked at photos of brig models, but again, these mostly missed the bits required, I downloaded the manuals for kits, but again the rigging was not included (you have to pay for that piece of information), so it really was research and design from first principles, also taking into account what was actually possible to model at this scale, as a lot would probably be hidden by the sails.

As I've spent time putting the rigging plan together I thought I'd share the information I've learned with a wider audience. It's not an attempt to write a learned tome on the subject, but more of look at the masts, rigging, and sails required to make a small scale model sailing vessel look good, especially if you are a beginner. The result is fairly generic, as actual details varied a lot between nations, and even within a few years of build. I've attempted to keep the diagrams simple as too many diagrams in books are small, cluttered, and hard to discern. At times I've probably stated the obvious for most people, and I bet I've got it wrong in places as well – I stand by to be corrected. When I found conflicting information, I've used the consensus of opinion. I've included a bibliography so that anyone can do further research if interested enough.

I've split the article into sections:

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

The figures are only sketches and are not to any scale at all.

Masts & Yards

Masts

There is a lot more to these than just big thick vertical, or nearly vertical, tree trunks that sailors use to hang the sails on. Firstly, as the sailing vessel gets larger, they tend to have more masts, and they get taller and thicker. Secondly, when the required height could not

be achieved by one tree trunk, the mast was made using more than one vertical section, and the mast itself, especially the thicker ones, were often a composite of different pieces and known as a made mast as opposed to the single piece section known as a pole mast.

Mast Names

Generally, from bow to stern order, the names of the masts are:

In a three-mast, square-sail ship, (by definition this is 'ship rig', and the only vessel that properly should be called a ship)

Fore-mast: This is the mast immediately fore of the main-mast.

Main-mast: This is the tallest mast, usually located near the centre of the ship.

Mizzen-mast: This is the third mast, or the mast immediately aft of the main-mast (e.g. in two masted vessels). It is usually shorter than the fore-mast.

The naming seems to be less standardised for vessels carrying other masts. Some names given to these are:

Bonaventure mizzen: This was the fourth mast on larger sixteenth century galleons, usually with a lateen-rigged sail and shorter than the mizzen mast.

Jigger-mast: The aft-most mast on vessels with more than three masts, where it is the shortest of the masts, or, the short after mast from which the jigger sail is set on a ketch or yawl.

Most types of vessels with two masts would have a main-mast and a smaller mizzen-mast, although both brigs and two-masted schooners instead carry a fore-mast and main-mast.

Some two-masted schooners have masts of identical size, but the aftermost is still referred to as the main-mast, and normally has the larger course. Schooners have been built with up to seven masts in all, with several six-masted examples. Bowsprit: This is a mast as well – it's just lying down. It extends forward from the vessel's bow.

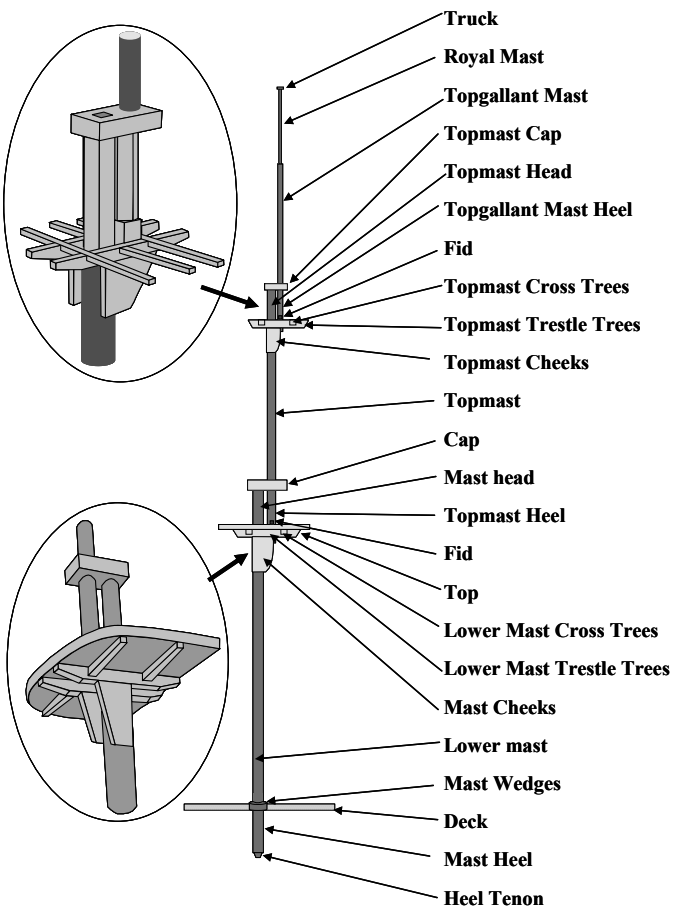


Figure 1. Mast Sections

Mast Sections

Figure 1 shows a sketch of a generic mast. There is a logic to the names of the sections and not all vessels have all

these sections, generally, the larger the vessel the more masts and sections. The lower section is the name of the mast; i.e.; main, mizzen, fore, etc, and is stepped into the hull, so, from the deck upwards.

Topmast
This is coupled with the name of the mast, e.g; 'main topmast', 'mizzen topmast'. It is joined to the lower section at the 'top' or 'cross trees'

Topgallant
This is coupled with the name of the mast, e.g; 'main topgallant mast', 'mizzen topgallant mast'. It is joined to the lower section at the 'top' or 'cross trees'

Royal
This is coupled with the name of the mast, e.g. 'main royal mast', 'mizzen royal mast'. It is joined to the lower section at the 'top' or 'cross trees' or sometimes it is a thinner extension of the topgallant mast.

Bowsprit
As mentioned before, this actually a mast. On larger vessels the basic bowsprit was lengthened with a jibboom (Figure 2) and then even further with a flying jibboom, (these really do make it look like a mast lying down) resulting in bowsprits of tremendous length, up to 30 metres total.

The bowsprit (as well as carrying sails) provides an anchor point for the forestays, thus allowing the fore-mast to be stepped further forward on the hull.

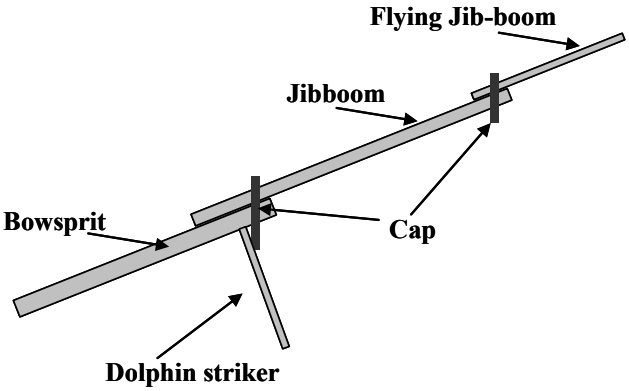


Figure 2. Bowsprit

Yards

On square-rigged vessels, each mast carries several horizontal yards from which the individual sails are rigged. These are named after the mast section supporting them. Hence; main yard, fore topsail yard, mizzen topgallant yard. The lowest yard on the mizzen is sometimes referred to as a cross-jack yard.

Yard Arms
These are the outermost tips of the yard: outboard from the attachments for the lifts.

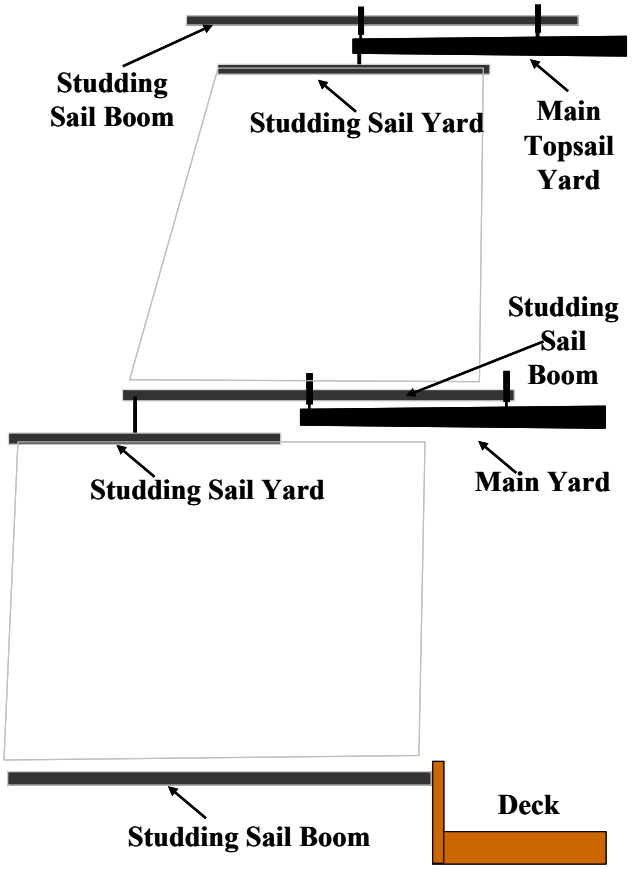


Figure 3. Studding Sail Yard and Booms (Outline of Studdng Sails shown, but no rigging)

Studding Sail Booms
Some square rigged vessels could carry studding sails. The booms that supported these were extended from along the top of the yards; the lower studding sail boom being mounted on the side of the vessel.

Boom and Gaff
The Spanker Boom and Gaff are attached to the mizzen mast and are used to carry a fore and aft sail called the spanker or sometimes the driver and are shown at Figure 4.

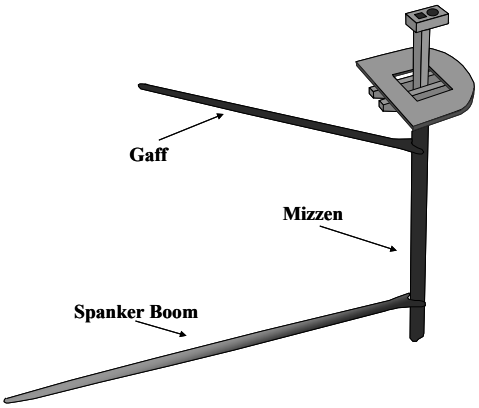


Figure 4:-Spanker Boom and Gaff

Mast Configurations

Some configurations are shown below.

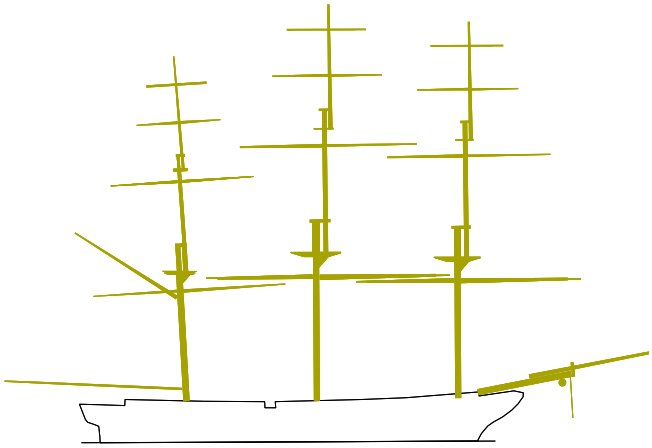


Figure 5:- Masts, Yards, and Bowsprit on a Generic 3 Mast Vessel

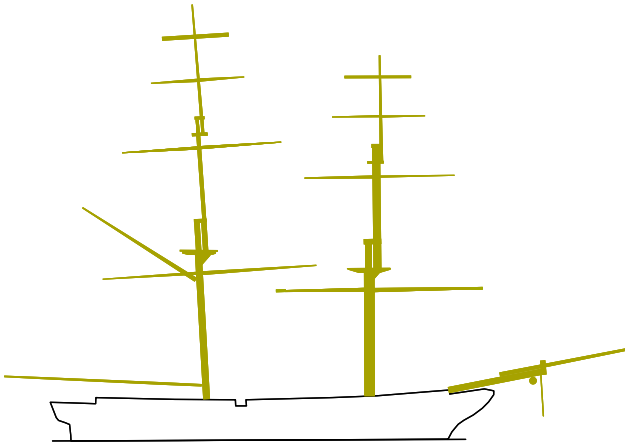


Figure 6: Generic Brig

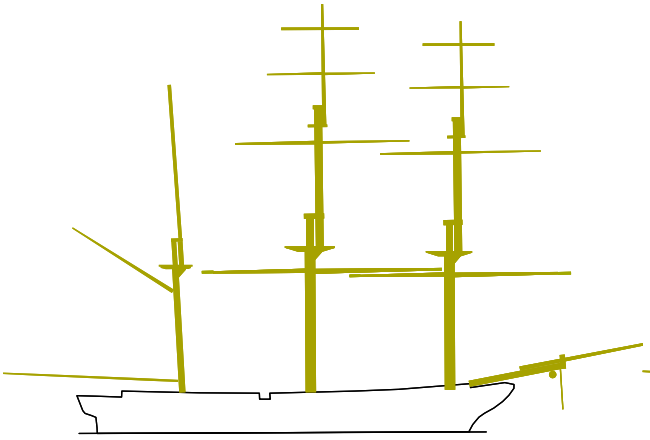


Figure 7: Generic Barque

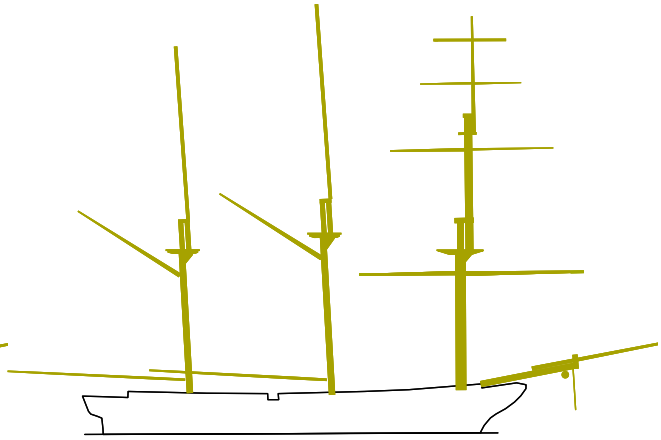


Figure 8: Generic Barquentine

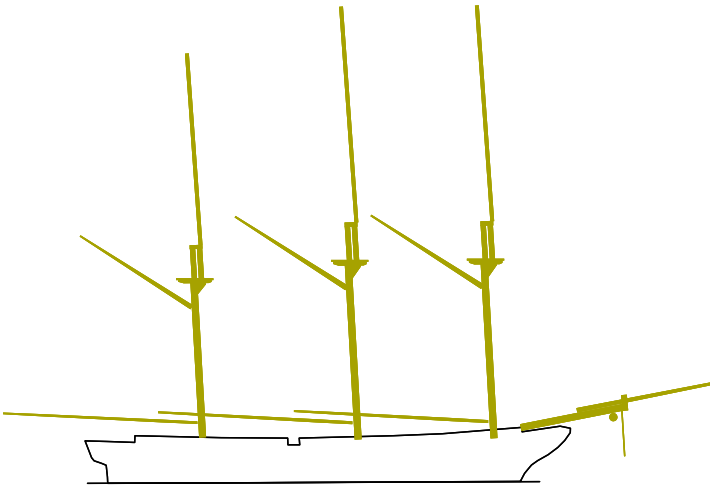


Figure 9: Generic Schooner

Mast and Yard Proportions

The length and diameter of masts and yards varies with ship size, type, period of history, nationality, warship, merchant vessel, the whim of the builder, owner, captain, or admiral, fashion, etc, etc. The only constants seem to be that the mizzen is smaller than the fore which is smaller than the main (and the associated upper masts in proportion), and that yards get smaller and thinner as they get higher up the mast. Masts and yards also taper, but sometimes this is so small as to be negligible, i.e. 59/60 of the bottom diameter at the top of the mast. If you are working from a good set of plans, use the proportions on those, otherwise I've put together tables (Table 1 & Table 2) of average values based on breadth (B) of a vessel. The values were averaged from several nations, warships, and merchant vessels over about 150 yrs. At small scale (1/300) this should be close enough. I'm well aware that some of these values will give fractions of a millimetre; however they give the idea, and then use your judgement.

Main Mast	Lower Mast	Length (L^{m}) (from keel)	2.50 B
		Diameter at Deck (D^{m})	0.03 L^{m}
		Diameter at top	0.70 D^{m}
		Length of head	0.15 L^{m}
	Top Mast	Length (L^{tm})	1.45 B
		D at foot (D^{tm})	0.03 L^{tm}
		D at top	0.65 D^{tm}
		L of head	0.15 L^{tm}
	Top Gallant	Length (L^{tg})	0.80 B
		D at crosstrees	0.03 L^{tg}
	Royal	Length	0.45 B
Fore Mast	Lower Mast	Length (L^{fm}) (from keel)	2.25 B
		Diameter at Deck (D^{fm})	0.03 L^{fm}
		Diameter at top	0.65 D_{fm}
		Length of head	0.15 L^{fm}
	Topmast	Length (L^{ftm})	1.30 B
		D at foot (D^{ftm})	0.03 L^{ftm}
		D at top	0.65 D^{ftm}
		L of head	0.15 L^{ftm}
	Top Gallant	Length (L^{ftg})	0.85 B
		D at crosstrees	0.03 L^{ftg}

	Royal	Length	0.45 B
Mizzen Mast	Lower Mast	Length (L^{mm}) (from keel)	1.8 B
		Diameter at Deck (D^{mm})	0.03 L^{mm}
		Diameter at top	0.65 D^{mm}
		Length of head	0.15 L^{mm}
	Top mast	Length (L^{mtm})	1.0 B
		D at foot (D^{mtm})	0.03 L^{mtm}
		D at top	0.65 D^{mtm}
		L of head	0.15 L^{mtm}
	Top Gallant	Length L^{mtg}	0.6 B
		D at crosstrees	0.03 L^{mtg}
	Bowsprit	Length (L^{b})	1.35 B
		Diameter	0.04 L^{b}
	Jib Boom	Length (L^{jb})	1.20 B
		Diameter	0.03 L^{jb}
	Flying Jib	Length (L^{fj})	1.2 B
		Diameter	0.02 L^{fj}

Table 1:- Mast Proportions

Main Yards	Main	Length (L^{m})	2.1 B
		Diameter	0.03 L^{m}
	Top	Length (L^{t})	1.6 B
		Diameter	0.023 (L^{t})
	Top Gallant	Length (L^{tg})	0.96 B
		Diameter	0.022 L^{tg}
	Royal	Length (L^{r})	0.7 B
		Diameter	0.016 L^{r}
Fore Yards	Fore	Length (L^{f})	1.88 B
		Diameter	0.02 L^{f}
	Top	Length (L^{ft})	1.3 B
		Diameter	0.02 L^{ft}
	Top Gallant	Length (L^{ftg})	0.8 B
		Diameter	0.02 L^{ftg}
	Royal	Length(L^{fr})	0.64 B
		Diameter	0.015 L^{fr}
Mizzen	Crossjack	Length (L^{mz})	1.4 B
		Diameter	0.02 L^{mz}
	Top	Length (L^{mzt})	0.86 B
		Diameter	0.02 L^{mzt}
	Top Gallant	Length (L^{mztg})	0.66 B
		Diameter	0.016 L^{mztg}
	Driver or Spanker Boom	Length (L^{db})	1.3 B
		Diameter	0.014 L^{db}
	Gaff	Length (L^{g})	1.08 B
		Diameter	0.011 L^{g}
	Spritsail	Length (L^{s})	1.4 B
		Diameter	0.02 L^{s}
	Sprit topsail	Length (L^{st})	0.76 B
		Diameter	0.02 L^{st}

Table 2:- Yard Proportions

Section 2 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

The Work Bench

Tool Reviews, Shop Reviews and more

by bbrockel@modelshipbuilder.com

The Micro-Mark Mini Variable Speed Band Saw

by Mario Rangel and Bob Brockel

Band saws designed for cutting wood run too fast to cut metal, and plastic comes away as a gooey mess. The electronic speed control on our professional quality band saw lets you dial-in the exact speed you need to cut these materials. Make designs you never dreamed possible. Cutting metal is so smooth and fast you'll complete your work in just 1/10th the time of other methods. You can even stack work pieces to make exact duplicates in one pass. And, with the optional diamond blade and cooling system sold separately, you can easily cut intricate designs in glass, tile and other hard materials.

Overall size (band saw only): 15 inches wide x 20 inches high x 11 inches deep; weighs 13 lbs. Includes one .180 inch wide x .031 inch kerf x 41-7/8 inches long x 14 tpi blade, adjustable ball bearing blade guide and instructions. Made in Japan.

Features:

- Sturdy cast-aluminum frame
- Twin 6-3/8 inch dia. drive wheels mounted in ball-bearings
- 7-3/4 inch square aluminum table tilts between 0 degrees to 45 degrees for bevel cuts
- 6 inch throat depth, 3 inch throat height
- Cutting capacities: softwood 3 inches, hardwood 2 inches, steel 3/8 inch, aluminum 3/4 inch, brass/copper 5/8 inch, plastic 1-1/4 inches
- 425 to 650 ft/min. variable blade speed
- 120v AC, 100w motor
- Adjustable miter gauge
- Moisture-sealed electronics

The above information you will find at the Micro-Mark Band Saw .

I purchased this little band saw last year about this time. When I opened the package I found that the band saw was packed professionally and very securely so it would not be damaged during shipment.

The only item that had to be assembled was the work table. All other parts were installed; even the band saw blade itself was installed. The instructions do ask that you make a simple adjustment on the blade itself before you flip the ON switch.

Once assembled and turned on, I found that the very sturdy band saw was light, compact and very quiet running. It has a turn knob for the variable speed adjustment.

The instructions include a chart showing what RPM setting to use with regards to the material you are cutting. (Another helpful tip provided by Micro-Mark.)

The work table is made out of aluminum. It also has a turn knob for the tilting feature provided with the saw. As for the miter gauge provided with the saw, the miter portion is made from plastic, but again is built very well. You set the miter for 30 degrees you do get a 30 degree cut. I tested this feature with a 45 degree cut on 4 scrap pieces. After I was done cutting the pieces out, I put together a nice little picture frame. So when you set the miter gauge for what ever angle you want you will get a nice true cut.

I paid the extra $20.00 for the optional rip fence, which turned out to be a very good investment. The fence is easily installed and slides effortlessly across the table. Once locked in place, it stays in place securely during the whole cutting process. It is constructed out of aluminum with plastic knobs. My opinion it is a very nice option that you should consider purchasing.

As for the overall cabinet itself, it is put together very well. You have knobs for adjusting the speed, band saw tension, and the raising and lowering of the blade guard.
On the guard there is a brass fitting provided so you can add the optional cool system tube for when you are cutting metal material. In the rear of the case is an inlet for your dust collecting system or shop vac. The base of the cabinet has a bracket with screws provided so you can secure the band saw to your workbench.

Changing out the blade turned out to be another very simple process. There are 4 Allen screws located on the front of the band saw cabinet. The Allen wrench is provided with the saw, you simply unscrew all four and the whole front face of the band saw slips right off. No need to remove the tilting work table. You loosen the tension on the band saw, slip off the old and replace with the new. Adjust the tension and you are done. While it is off you can also vacuum up the inside of the band saw cabinet to keep your saw running at tip-top shape.

Micro-Mark also provides a nice variety of optional band saw blades for different materials that you are able to cut with the saw.

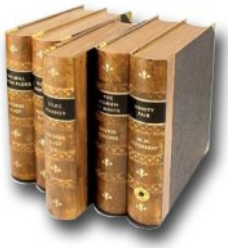
All in all this little band saw in my opinion is a great add on for your hobbies. I not

only use it for model ship building, but doll house furniture, and wooden pen building. Plus if you are very patient like I was, I bought the band saw when they had a 25% off sale. One thing about Micro-Mark they are always having sales. So sit back relax and when the time is right, this little gem will be on sale.

There is a video on the web site for this band saw that demonstrates the band saws versatility. Micro Mark Band Saw Video

---

Would you would like to see your favourite tool or jig on "The Workbench"? Have tool or jig you made yourself and you'd like to share it with others? Feel free to drop me an e-mail and lets discuss it. My e-mail address is bob@modelshipbuilder.com



The Book Nook

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

Old Ship Figure-Heads & Sterns
by L.G Carr Lalughton (1871-1955)

ISBN: 978-1-894572-74-2

ISBN: 1-894572-74-2

REVIEWED by Richard Hunter Figurehead Historian.

Prior to its original publication in 1925 by Halton & T Smith of London, very little material had been published in the United Kingdom on the subject of decorative Maritime woodcarving, both in the Naval and Merchant traditions (specifically the area around the ships' figureheads and stern carvings), apart from the very occasional magazine article appearing in such publications as the *Century* and *Gentleman* magazines; *Illustrated London News*; or *The Strand* magazine, plus a number of other relatively obscure publications from the last 1890s onward. Even then, the treatment of the subject could be seen as somewhat casual in its approach, and at the same time loose in its overall detail. Errors and misidentifications published in one article would be repeated almost verbatim in others; little of the material held in the archives of the British Admiralty or the Public Records office was used or taken into account. Without a doubt, as a naval historian, Leonard Carr-Laughton understood and appreciated the subject and took great care with his meticulous and painstaking research in both public and private archives in the United Kingdom, North and South Europe.

Much of this material had not been published before, he was able to categorize the subject into a number of major chapters: Figureheads; The Stern; Quarter Galleries; the Broadside; Inboard Works; and Painting & Gilding. Each chapter has a number of subchapters such as British and then Foreign practice. This is invaluable if one is to understand and appreciate the different styles and traditions used throughout the centuries, from the early limited figureheads and decorations of the fifteenth century to the great ex-

cess of the highly ornate extravagance of the Baroque period throughout the whole of Europe during the seventeenth and eighteenth century, to the ultimate end of the tradition around the end of the nineteenth century. With the dramatic changes in naval architecture across the world, and its fundamental and far-reaching change from traditional sail to steam during the last half of the century, and from wood to iron to steel during the last quarter, each chapter is rich with fine line illustrations taken from surviving models of the period. Today, this detailed research stands as the benchmark for our present-day understanding and appreciation of this complex and fascinating subject. Copies of the original large and handsomely bound limited edition are extremely rare, carry a high price on the open market, and are much sought after by collectors.

Algrove Publishing of Canada, under its Classic Reprint Series, has republished this remarkable book at a cost and quality of production that brings this classic work within easy reach of any Maritime Historian or serious model maker. This new edition of Carr-Laughton's work has been completely reset in a style and format that is both easy to read and more acceptable to modern day readers, while at the same time a small number of errors have been corrected from the original edition This new work has also undertaken a number of improvements, notably a considerably expanded index by subject matter, and perhaps most important of all, a detailed index to ships named within the text. This is an invaluable addition to the original form, enabling readers to locate a particular vessel. The few historic black and white photographs of original surviving figureheads and models at the back of the original edition have been faithfully reproduced and have lost none of their original detail.

It is obvious that Leonard G. Lee, publisher at Algrove Publishing, and his staff in Canada have gone to a great deal of effort and considerable trouble to bring this new and fresh edition of a classic book to production. I feel sure that Leonard Carr-Laughton would be delighted to see Leonard G. Lee's new edition, leaving the original contents and ethos of his work unchanged except for a few modern-day additions and corrections that inevitably follow after almost 80 years.

"Old Ships Figure-heads & Sterns"
WITH WHICH ARE ASSOCIATED GALLEREIES
HANCING PIECES, CATHEADS AND DIVERS
OTHER MATTERS THAT CONCERN THE GRACE AND COUNTENANCE OF OLD SAILING-SHIPS
by L.G Carr-Laughton 1925.

Smyth-sewn softcover, 8-1/2" x 11", 296 pages, 8 full colour pages, numerous black and white photographs and line illustrations, first published in 1925, reprinted in 2006 as part of the Classic Reprint Series.

Copies of this book can be bought direct from...
Lee Valley Tools,
At PO Box 6295, Station J, Ottawa, Ontario, Canada K2A 1TA.
Web site www.leevalley.com
Email: customerservice@leevalley.com
Telephone: (1) 613-596-0350

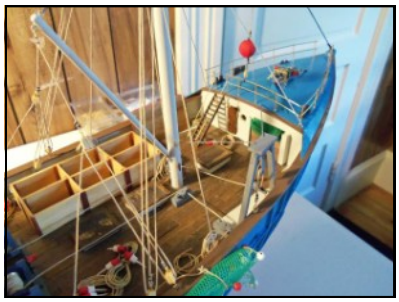
Be sure to visit Richard Hunters website:
The Figurehead Archives
www.figureheads.co.uk

Contributor's Pictures

Send your submissions to: mario@modelshipbuilder.com

21 foot English pinnace scratch built in boxwood.
1/2" scale by master modeler Chuck Passaro.

A typical trawler from the North Sea, built in1970 at an English shipyard. The model kit isbased on the original ship drawings. Tonna-ge: 185 gross register tonnage – Length ove-rall: 40.0 m - Beam: 9.30 m - Motor: 1000 HPdiesel – Engine speed: 12-14 knots – Crew: 7-8 men – Fishing tackle: Drag net (trawl) – Fis-hing area: Around Iceland and Greenland –Haul: Herrings, cod and trash fish.



The kit is A.L. ,SCALE1:80.....by Frank Piscatella

Badges: Heraldry of Canadian Naval Ships

HMCS Oriole

The HMCS Oriole (KC 480) is the sail training vessel of the Royal Canadian Navy based at CFB Esquimalt in Victoria, British Columbia. She is a 31-metre sailing ketch, currently the oldest commissioned vessel in the Royal Canadian Navy, and also the longest serving commissioned ship.

Description: Or an oriole proper.

Significance: Nothing could be more appropriate for the badge than the oriole in its natural plumage.

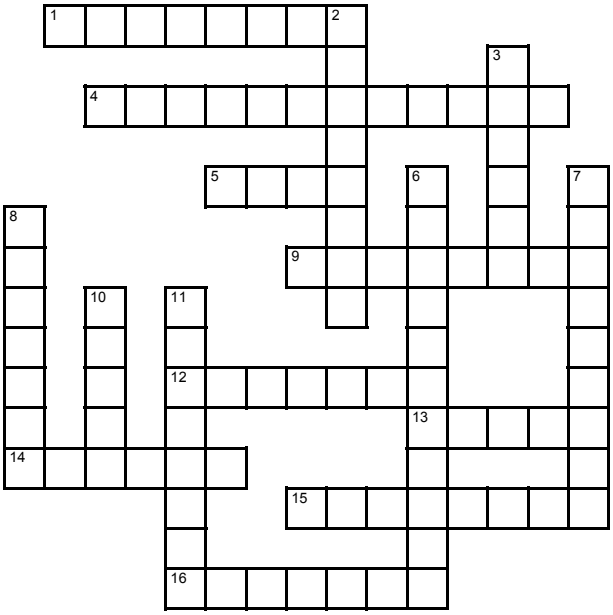
History: The Oriole was originally laid down as the Oriole IV, the successor in a line of vessels named Oriole that were in service as the flagships for the Royal Canadian Yacht Club of Toronto, Ontario. During World War II, she was chartered by the Royal Canadian Navy as a training vessel. In 1949 she was again chartered by the Navy as a new recruit training vessel, and subsequently moved to Halifax, Nova Scotia, in 1951. She was officially commissioned HMCS Oriole 19 June 1952, and two years later the navy moved her to CFB Esquimalt to become a training vessel to the Naval Officer Training Centre.

Current Status: The Oriole provides sail training to junior officers and noncommissioned officers as part of their introduction to life at sea. She also provides a venue for teamwork exercises and adventure training available to all of the Canadian Forces. She participates in many events, races and public relation day sails in support of local charities.

Gene's Nautical Trivia

SHIPS OF HOLLYWOOD

Note that all ship prefixes, such as HMS, USS, The, etc., have been dropped from the answers.



Across

1. Nemo's ship in "20,000 Leagues Under the Sea"
4. Ship in a Bogart film of 1951
5. Fishing boat in "Jaws"
9. Liner in "The Last Voyage" (1960)
12. French ship in "Master and Commander: The Far Side of the World"
13. Sealing schooner in "The Sea Wolf"
14. Destroyer escort in "The Enemy Below"
15. WWI ironclad in "Britannic" (2000)
16. Ship in "Billy Budd" (1962)

Down

2. Ship in "The Sand Pebbles" (1966)
3. Whaleship in "2010 Moby Dick"
6. Ship in "Cutthroat Island"
7. Steamer in "Around the World in 80 Days" (1956)
8. Ship in "On the Beach" (1959)
10. Shrimp boat in "Forrest Gump"
11. Ship in "Captain Blood"

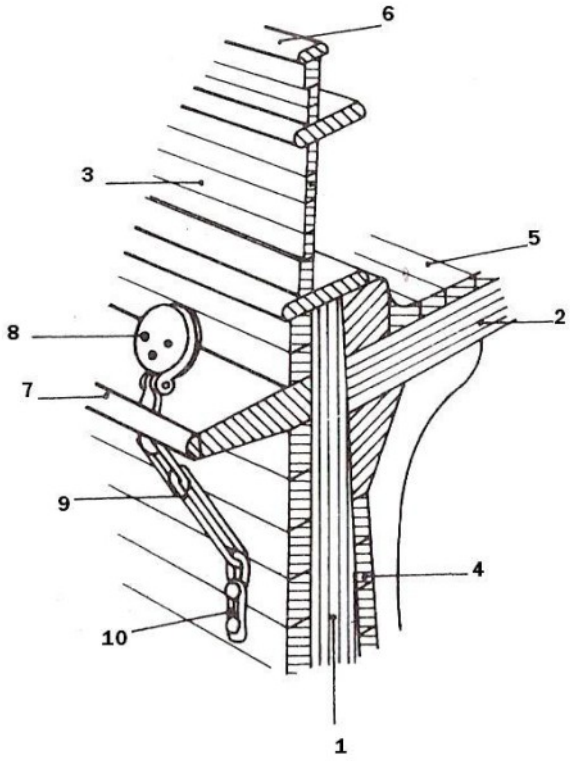
ANCHOR

The following puzzle contains at least ten words associated with an anchor. The words can be found in any direction – across, down, or diagonally. Can you find them?

G	L	L	I	B	K	R	P
E	N	S	T	O	C	K	O
I	N	I	H	K	K	F	O
O	M	T	R	A	E	L	H
R	C	R	O	W	N	U	O
O	E	D	A	L	B	K	L
S	H	I	T	T	P	E	L
I	A	L	U	A	B	L	K

NAME THE PARTS

The following diagram illustrates the chainplates and chains of a typical 19th century warship. Identify the numbered parts from the list provided at the bottom of this page.

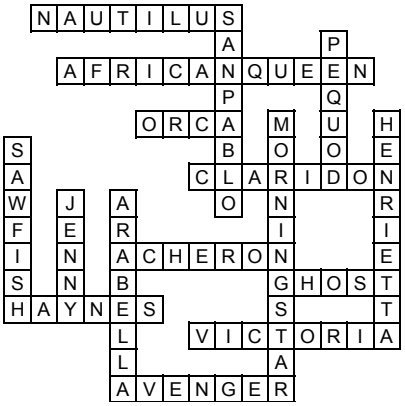


1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

CEILING
CHAINPLATE
CHANNEL
DECK BEAM
DECK PLANKING
FRAME
LOWER DEADEYE
OUTER PLANKING
PREVENTER
RAIL

ANSWERS:

SHIPS OF HOLLYWOOD



NAME THE PARTS:

1-Frame
2-Deck beam
3-Outer planking
4-Ceiling
5-Deck planking
6-Rail
7-Channel
8-Lower deadeye
9-Chainplate
10-Preventer

ANCHOR:

RING
HOOP
STOCK
SHANK
FLUKE
CROWN
BILL
BLADE
ARM
THROAT

COMING NEXT ISSUE

One Eyed Willy's
Treasure Hunt

Be sure to keep your eyes open in the next issue of the MSB Journal for the start of One Eye Willy's Treasure Hunt. Enter the Treasure Hunt for your chance to win a great prize from one of One Eyed Willy's Sponsors.