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How to Contact The MSB Journal

By email: winston@modelshipbuilder.com

On the Cover

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

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Tidbits from the Past *by Gene Bodnar*

"Hardtack"

The name "hardtack" refers to the iron-hard biscuits eaten by sailors during the Tudor and later periods. Hardtack, which was also known as ship biscuit, pilot bread, army bread, and worm castles, was a staple of naval rations for hundreds of years, and it was a sailor's primary source of carbohydrates in his diet.

A typical hardtack biscuit measured three inches square by about an inch thick. It consisted simply of flour, salt, and water, rolled out and baked in a very slow oven until it was hard and dry. This made it cheap to make, easy to transport, and practically indestructible, which also made it an ideal non-perishable food to take on a long journey in a time when refrigeration was un-known.

Eating hardtack was a challenge for the teeth, so sailors undoubtedly softened them in liquid in order to make them edible. They weren't much good for dunking alone, because they remained hard as a rock even after many dunks. On special occasions, the ship's cook might make a dish called dandyfunk, which consisted of hardtack soaked in freshwater and then mixed with salt pork and molasses – a real treat.

One of the big problems with hardtack was the fact that it frequently became infested with worms, maggots, and other creatures that had to be knocked out before eating. Christopher Columbus's brother reported on one voyage that the "food had become so wormy that sailors waited for dark to eat – so they could not see the maggots." Another sailor reports, "After being on board some time, I would munch [worms] equal to any vet, without examining the interior."

Another drawback of eating hardtack every day on long voyages is that it completely lacks vitamins. A sailor dining regularly on hardtack and salt meat commonly suffered from scurvy, a disease that gave sailors spots on the skin, spongy gums, depression, and partial immobilization. A sailor with an advanced form of scurvy would suffer from loss of his teeth, jaundice, fever, and even death.

If you would like to make your own hardtack, just for the sport of it, mix 5 cups of flour with 1 ½ teaspoon of salt. Add about one cup of water, or just enough to make a workable dough. Knead it until it holds together nicely. Roll it out with a rolling pin until it's about 3/8" thick. Cut into squares. Poke lots of holes on both sides with a fork. Bake at 225 degrees for two hours, or until completely dry. Depending on your taste, you might enjoy this fried in bacon grease or butter, or you might like them in soups or stews. You could be surprised.

Hardtack was not only eaten by sailors of yore. Soldiers of the American Civil War ate them and originated the term "worm castles." They were also eaten by gold prospectors during the 1849 gold rush. Even today, hardtack is usually included in disaster ration packs. Alaskan aircraft are required by law to carry it. In Newfoundland and Labrador, a traditional dish called "fish and brewis," (pictured here) which is made of salt cod and hardtack, is still eaten today. Campers and backpackers also carry it along on their journeys, and some have even been known to eat it.

Model Ships of the Royal Museum Greenwich

Bonaventure

Scale 1:48. A Navy Board skeleton model of a 48 to 50-gun two-decker (circa 1683), built plank on frame in the Navy Board style. The model is decked and equipped and is mounted on its original wooden gilded 'dolphin crutches', and has the date '168[?]' inscribed on the lower stern galleries. This model illustrates very well the ornate carved decoration around the bow and stern galleries, as well as the carved wreathed gunports along the upper wales. This model is one of the few which still has the original mica set in the window frames in the stern galleries. This model was probably a builders design proposal for a ship that was built as the 'Bonaventure', a 50-gun two-decker fourth rate of 1683.

Source: Royal Museums Greenwich

Ship Wrecks of the World

"The Hereward"

Hereward was a full-rigged iron clipper built in Glasgow in 1877. It measured 254 feet (77 m), 39 feet (12 m) wide, 23 feet (7.0 m) deep and weighed 1,513 tons. Hereward was a British trading vessel that travelled between Britain and her colonies, especially between Sydney and London. It was shipwrecked on Maroubra Beach, Sydney on Thursday 5 May 1898.

The Hereward was wrecked while travelling from Sourabaya, a port in the Dutch East Indies (now Indonesia) to Newcastle New South Wales where it was to have picked up a load of coal bound for South America. While travelling north along the New South Wales coast on 5 May, it encountered a large storm with wind speeds as high as 47 miles per hour (76 km/h). The winds destroyed the sails of the ship and blew it towards the shore leaving the captain, Captain Gore, unable to avert the disaster. The Hereward was forced onto the northern end of Maroubra Beach, however it avoided the two rocky reefs present there. All 25 crew members were safely brought ashore and made their way to the nearby wool scouring works to make the shipwreck known. The ship had been insured by its owner for £6,000.

After a few months, the ship was sold for £550 to a Mr. Cowlishaw, an entrepreneur who bought the wreck for salvage. On 9 December 1898, he attempted to refloat the Hereward. By pulling on the rope connected to the anchor 300 metres (980 ft) out to sea and using steam winches on board, he managed to get the ship into 14 feet (4.3 m) of water. However, as the ship was nearly free, a southerly gale blew up and pushed the Hereward back onto the beach where it was battered by high seas and broken in two.

The wreck was slowly washed out to sea afterwards and by 1937 only a triangle dorsal fin was visible above sea level. In 1950, Randwick Council feared of the danger that the remains posed to surfers and swimmers and had the remains blasted such that by 1967 it appeared that there was nothing left of the ship.

In recent times, on various occasions, due to large swells and sweeping currents, large amounts of sand has been moved off the sea floor and exposed extensive portions of the Hereward which were once thought to be destroyed and lost forever. In March 2013 after large seas, extensive portions of the ships metal hull, along with mast and engine pieces were exposed greater than they ever had been before. This provided an interesting and enjoyable snorkeling experience for Maroubra locals and tourists alike. Maroubra Lifeguards erected a sign on the shore in front of the wreck stating "Danger - Submerged Object". Local Maroubra surfer and photographer Jeremy Wilmotte took a series of underwater photos of the wreck at this time.

The Sea of Galilee Boat—Part I

In this issue we would like to introduce you to The Sea of Galilee boat model, a kit developed by Scott Miller of Scott Guitars. This wonderful model is based on the findings of the archaeological excavation of a boat discovered on the nort-west shore of the Sea of Galilee in Israel, aptly called the "Sea of Galilee Boat" (also known as the Jesus Boat although there's no evidence to connect the boat to Jesus Christ or his desciples).

We have been looking for an interesting build project that we might run in the MSB Journal. A model that is attainable by any level of modeler. Especially one that wouldn't require a great number of tools. When a build log of this model showed up on the MSB site I followed with great interest (along with various other members).

To make a long story short, Scott was contacted and he graciously consented to us publishing his build here in the Journal. We hope you enjoy it. To find out how you can order a kit of this boat check out the Projects section of the MSB site.

The contents of this build are a compilation of images and text from both Scott Millers practicum included with the kit and a build log by Mario Rangel in the MSB forums. (In fact it was Mario's log that introduced us to Scott's kit.) We hope you enjoy the build of this truly unique boat.

Getting Ready to Build

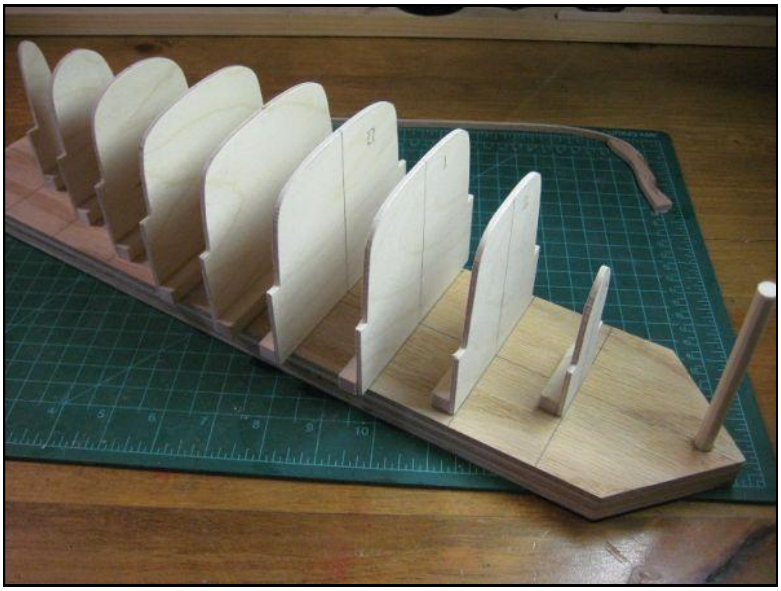
As with any build you do, the first thing you have to do is get prepared:

1. Make sure you have all the build material you are going to need. While all the materials you need for your build are included in the kit. You will need to provide your basic supplies (tools, glues, accessories etc).
2. Familiarize yourself with the kit contents. Your instruction manual will include a detailed list of the materials. Make sure everything you need is there.
3. Read and re-read the instruction manual from cover to cover to make sure you have a good grasp of the process you need to follow in order to build the model. There's nothing worse than jumping in the deep end thinking you know how to do it only to find that you missed a step!!!

Now that you've done that you are ready to get started.

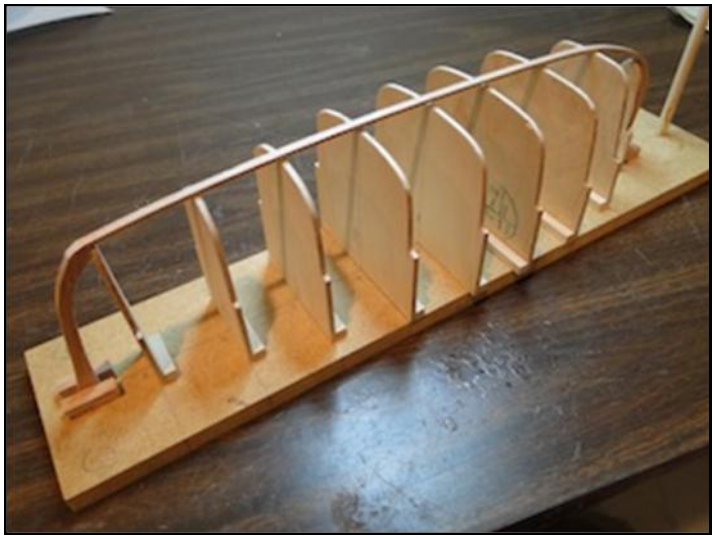
STEP 1—Assembling the Strongback

The kit includes all of the pieces needed to assemble the strongback on which the model will be built. The base plate of the strongback has the centerline and the locations of each of the frames marked on it. You can use any strong high quality glue that you like to attach the frames to the base. Make sure that each frame is perfectly aligned with both the index centerline and frame location line as in the photo to the right. Note: the numbered frames face toward the stern and the lettered frames face the bow (the dowel is at the stern end).



Step 2– Mounting the Keel Assembly

Stern and Keel Assembly



The keel and stern piece have already been assembled for you. Glue the stern piece to the strongback at the mark indicated. You can use any strong glue that you like, I use thick CA for this because it is strong and dries quickly. Add the scrap blocks to the sides of the stern/strongback interface to strengthen the joint.

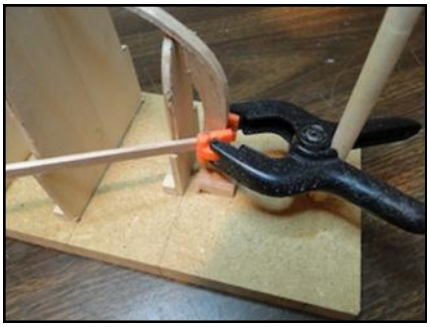
Bow Piece Assembly

Attach the bow piece to the strongback just like the stern piece by aligning it to the index line and gluing it in place. Make sure that the keel touches the strongback frames along the midline and runs fair to these frames, I use thick CA glue.

Step 3—Planking

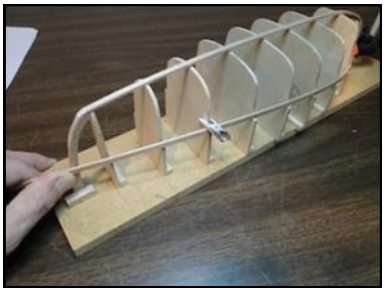
First Plank

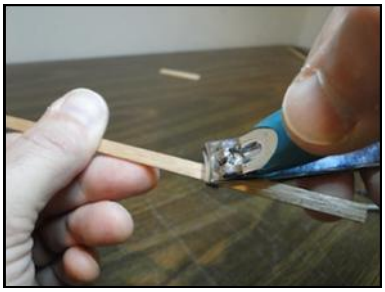
Place the plank up next to the stern piece so that the end of the plank touches the outer border of the stern piece. Place a small piece of scrap material onto the side of the stern post. Making sure it is flush against the sternpost you can then mark and mark the proper angle on the end of the plank that you will need to shape it to. A sanding block will make quick work of the shaping the end of the plank. Simply sand to the line.



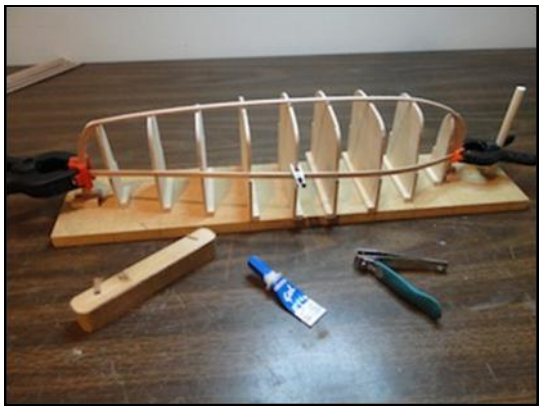
Next place a drop of thick CA glue on the end of the plank and align it so that it touches the flat landing pads cut into the sides of the Strongback frames numbered 1-3. Clamp in place till dry and repeat for the other side. Use the dowel in the end of the strongback to keep the clamp from slipping off of the stern.

Now run the first plank over the flat landing pads till it touches the stern piece. Allow it to run fair and use a pencil to mark the plank so that it can be cut to length.

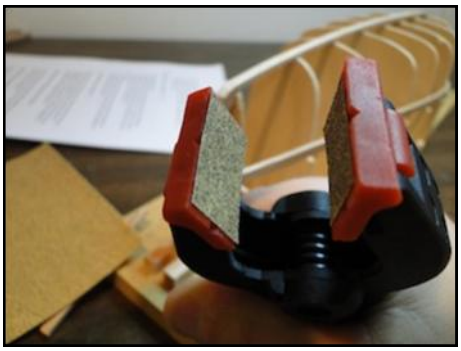
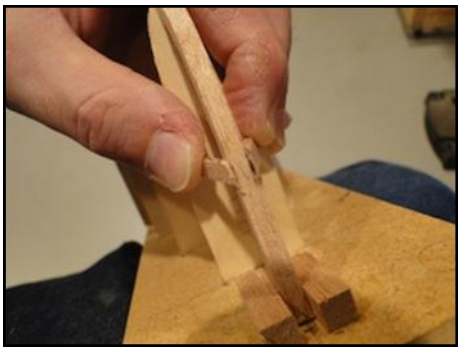




Use a nail trimmer or whatever else you like, trim the board to length. If you use the nail trimmer, be sure to cut it about 1/16" long because of compression of the wood from the trimmer. Also be aware that the scrap will fly out of the trimmer at a prodigious velocity. Mark the bevel to be cut just like you did for the stern end, then using your sanding block sand to fit.



Glue the plank to the bow using thick CA Glue and clamp in place. I find that a plastic spring clamp with some 220 grit sandpaper glued with the abrasive facing out works well to keep the clamps from slipping.

This process is then repeated on the other side. As in all hull-building projects, it is very important to alternatively plank each side so that the strongback and hull sides stay in balance. Make sure that the ends of the planks match in terms of location so that the hull is symmetrical in shape.

Second Plank

This is the last non-tapered plank. Mark the end of the plank at the stern, just as for the first plank, cut the bevel, trim and glue it with thick CA to the stern piece. Make sure that it forms a good solid joint with the top of the first plank.

Run the plank down the hull so that it rests on top of the first plank and touches all of the strongback frames. Mark the bow end for length and cut to length. Mark the bow bevel as above and sand the bevel into the bow end of the plank. Place a small dot of thick CA on the bevel and glue it to the bow piece and hold it in place with a clamp.

Next weld the first and second planks together with thin Zap-a-Gap CA glue. To do this, run a thin bead of glue into the joint between the planks. Be very careful to avoid placing glue where the planks run over the strongback frames. If you should get glue over the frames, it may wick completely through and glue the hull to the strongback. Should this happen, you will need to sacrifice the strongback to get the boat off at the end of hull construction. This thin bead of CA will form a surprisingly strong joint between the planks.

The photo above, shows two different clamp styles that I have used to build these hulls. The ones on the right clamp onto the strongback frames and hold the planks down onto each other. The clamps of the left pull the planks together much more efficiently and do a better job. You can use either type successfully but you will have a much better and easier time if you use the bar clamps on the left.

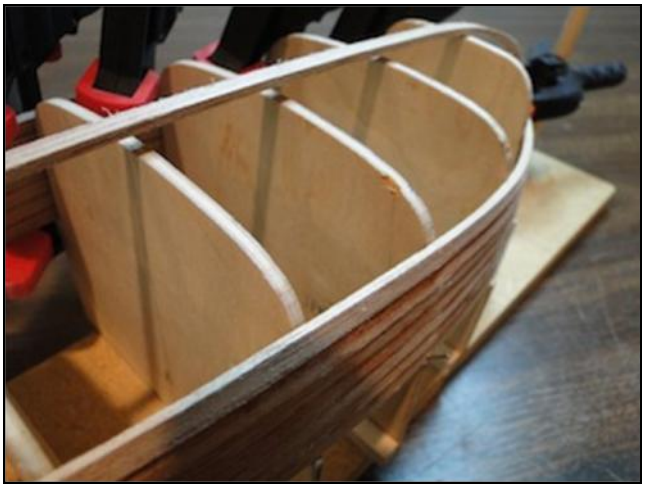
Repeat on the other side.

Planks Three through Six or Seven

The rest of the planks for the hull have been taper cut for you. The tapered end goes toward the stern and I put the tapered edge up (as you look at the hull on the strongback). This will allow the planks to "rise" toward the stern and will make it easier to place planks 7-12 which must not only curve lengthwise, but also form the turn of the hull where the hull goes from being perpendicular to the water to being parallel to the water.

These planks go on easily will give you confidence in your technique and allow you to hone your skills as you approach the hardest planks (and frankly the hardest part of the entire building process).

Planks Seven or Eight to Twelve



These planks need to have a bevel sanded into their bottom edge and may need to have portions of the top edge beveled with a knife or sanded. This allows the planks to go from being perpendicular to the water to being parallel to the water (forms the "turn of the hull"). This wouldn't be too bad on its own, but the planks also have to curve lengthwise along the hull. This photo shows the last "side" plank before the curve of the frames. You can see that each frame has a slightly different amount of curve to it, ranging from no curve in the frame furthest away to a 30 degree bevel/curve in the frame closest to the camera.

I use a sanding block to cut the bevel into the bottom side of the plank (side that will be glued to the hull). I hold the plank on the tabletop at the angle that I want to cut and run the sanding block parallel to the table over the plank. You may have to vary the angle cut over the length of the plank.

Place these planks just like you have been, by fitting the stern first. It is important to test the plank over its length before gluing it in so that you can make adjustments to the bevel that you cut. The first couple of planks are easier than the last few so take your time and do this while you are fresh. The third picture is a photo of the first three in place and you can see how much of the curve has been completed.

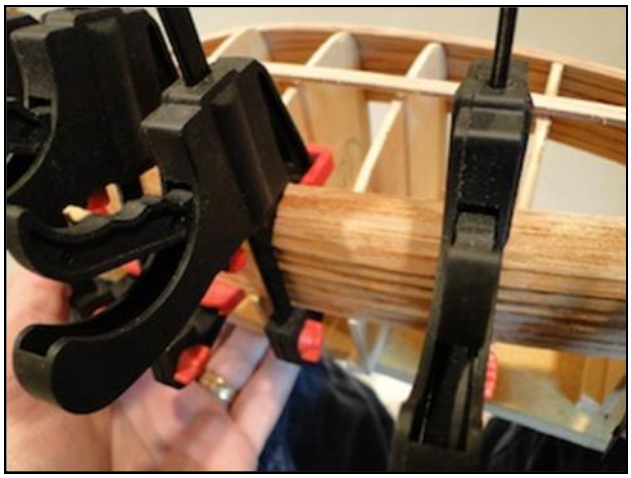
You may find that your hull does not sit flush and touch each of the strongback frames (my first few hulls did!). In this case what I did to correct this was to take some insulated copper wire and tie it around the hull and strongback very tightly so that it acted like a tourniquet. This pulled the hull in so that it touched at each of the frames. You can use rope to do this but be careful about using anything that might make an impression into your hull (like steel wire). The insulation on the copper wire acted as pad-

ding and prevented any damage to the hull.

You may also find that the curve of the hull is so great at one point that it is better to bevel both the plank being glued in and the one that is on the top of the hull. To do this I use ax x-acto knife and carefully cut toward the frames as shown below.

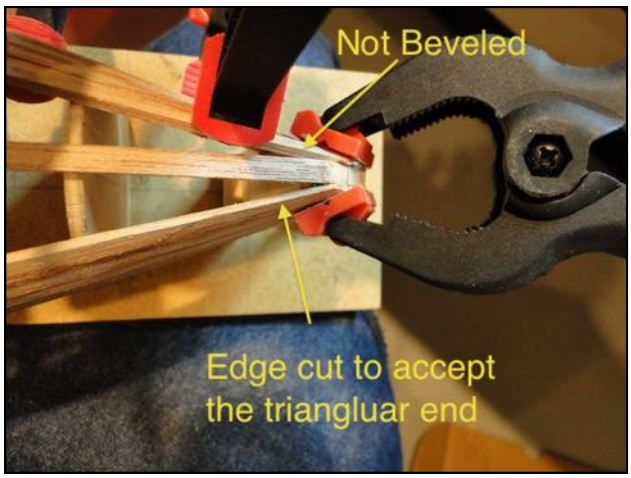
The bar clamps come in very handy during this part of the build. You can use them as in this photo to hold the planks together as they complete the turn to flat on the bottom of the hull.

In this case the molded inside shoulders of the clamps both pull the plank flat and pull it back into the rest of the hull. This is really beneficial! If you don't have these clamps, you will probably have to use the wire trick to pull the planks down onto the frames.



Eventually the planks at the bow will end up just short of reaching the keel. From this point on, the planks from midship to the bow run "flat" on the bottom of the hull. Flat planks are much easier to fit than curving planks so the worst is almost behind us.

We need to modify the hull at the bow to make this as easy on us as possible. Start at the stern and work the plank into place and glue it to the hull till about mid-ships.



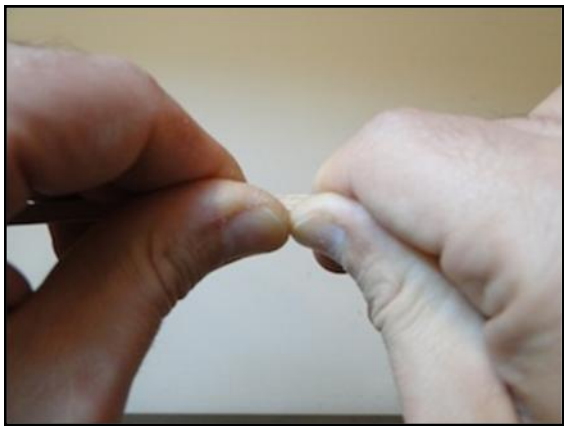
Next, take a sharp x-acto knife and cut a bevel into the exposed edge of the hull planks at the bow, so that a "triangular" profile remains to be filled by the end of the plank that is being installed. In this photo, the hull plank to the bottom of the photo has been carved to accept the triangular end of the plank being installed and hull plank to the top of the photo has not been carved yet.

Fit the plank into place and mark the location of the end of the plank as well as the location of where the plank just touches the keel.

Use a straight edge and a sharp x-acto to cut the "triangular shape" into this plank. I usually cut it a little oversized and trim it back on the model (it is always easier to trim wood than it is to add wood). Here is a photo of the plank in place. It fits so well that is stays in place without any glue or clamps.

You might find that it is beneficial to cut a slight taper (width-wise) into the triangular end of the plank to help it sit in place. This is the only plank that should need this and is because the cut made into the hull might not have been perfectly parallel to the keel.

Planks Thirteen to the End

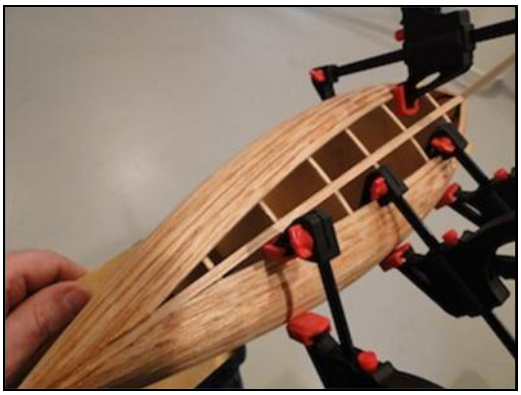


On this hull the thirteenth plank is the first one that has triangles cut into both ends. This may not be the case on your hull because this depends upon where you have cut the bevels in each of the planks at the stern. Since the planks are tapered at the stern end, where you cut the bevel determines how much distance each plank will take up on the stern piece. For example, if you cut the bevel at the very end of the plank, the plank is at its narrowest point (width-wise) and will cover the least amount of distance on the arc of the stern piece. If you cut the bevel further in from the end, the plank will be wider and it will take up more space on the arc of the stern piece. This means that fewer planks will be required to reach the point where the planks change to being triangular on both ends.

This plank is carved to be narrower at the stern than any other plank in the model. This thinness makes it easier to make the more aggressive bends needed to fit this plank. I support the plank with my fingers and gradually but firmly bend the plank into the desired shape. It is important to support the top side of the plank as best you can and move along the length of the area to be bent so that you don't overstress one spot and snap the plank. You can wet the plank with water if you like and even use the bending iron but I find that I can get this done dry and cold.

Here is a photo showing the planks for each side with one showing the edge side and the other the face side. You can see that these planks bend in both axes. The next photo is the plank nearly set in place to show how it fits at the stern end.

All of the planks from here out are triangular at each end and they are mostly parallel to the water so they are harder to clamp. Here is a photo showing the clamps sitting against the side of the hull. There is nothing to keep these clamps from sliding so they don't apply as much pressure as they did on the sides. You will see later on that this can cause gaps between the planks that we will have to fix later.



One trick that you can use is to insert wedges between the plank and the keel. Be sure to support the other side of the keel with wedges so that you don't over-stress it. And risk breaking it. The bottom of the hull will want to rise up from the strongback frames so additional clamps are used to hold it down. I use homemade cam clamps in this photo but you can use whatever you like. You can also use the "tourniquet" technique discussed earlier.

The last plank needs to be shaped to fit the remaining space. Take your time to get this just right, with a tight fit to avoid any gaps.

Removing The Strongback

If you were careful and did not have any glue wick onto the strongback frames, you can now remove the hull from the strongback. Cut the ends of the stern and bow pieces just above the support blocks that you used to glue them to the strongback. Should the hull not free up easily, you may have accidently glued the hull to the strongback. I recommend sacrificing the strongback by breaking the frames that are glued to the hull free from the base plate. You can now gently work them free from the hull.

Cut a piece of scrap planking and insert it at the widest width of the hull to keep the sides spread apart once the hull is removed from the strongback. If you don't do this, the hull will collapse in on itself and you run the risk of breaking the keel/plank glue joints.

Dealing with Imperfections & Some Prep Work

The hull may look pretty rough now and there may be some steps present between planks, especially near the stern. This is all fine, gently sand the outside of the hull to remove most of these imperfections. I recommend using a sanding block for this with 80-100 grit paper. Carefully check the hull against a strong light to see if you are getting too thin in any one area. The chances are that you will see gaps between some of the floor planks as shown below.

If you look at the sides, they should be nice and tight.

There are at least three ways to fix these gaps and I choose my technique based upon how wide the gaps are. If the gap is very wide (1/64" inch for example) and it is on an area of the hull that does not have steps between the planks, I take a piece of veneer and profile it on edge so that it fits in the gap and closes off the space. Don't worry if

there is a faint bit of gap left, there are easy ways to fix this.

This gap in the picture to right is one that sits near the stern and is in an area where there are steps from one plank to the next.

To fix this I take a piece of veneer and taper it width-wise so that it matches the plank

above the gap. I place several small dots of thick CA along the upper edge of the gap and glue the veneer over the gap as if I were "double planking" the model. Here are four of these repairs in place with a bright light shining behind the hull to show that all of the gaps are now closed.

Sand these veneer repairs down and they blend in with the planks pretty well. They will disappear when we place the partial frames.

The last kind of gap is a very thin gap. We repair these with glue and saw dust. I use Elmer's white glue to fill the gap. I am careful to force the glue into the gap and remove as much of the glue as possible because unlike CA Glue, this kind of glue will show up under a finish. I then sand over the area with 100 grit paper and the dust binds to the glue and seals the gaps. Here are the three steps in photos.

Here is the hull after fixing all of the internal gaps.

Join us in the next issue for Part II of the Sea of Galilee Boat

NAVY MODEL GALLERY OF THE RIJKSMUSEUM REINSTATED

By Jeroen van der Vliet

Now here is some good news for ship modellers around the world. In April the Rijksmuseum in Amsterdam re-opened its doors to the public after major renovation works. The national museum of the Netherlands, world-renowned for its Rembrandts and Vermeers, also houses a fine collection of ship models from the 17th to 19th centuries. The origins of this collection lie within the Department of the Navy, that founded a Model Room in 1817 to store the increasing number of technical scale models it produced. Between 1883 and 1889 the collection, by then comprising of more than 1,600 objects, was transferred to the Rijksmuseum. Initially, the whole collection was on public display but soon more and more items went into permanent storage and only some of the highlights, like the Stuart coat-of-arms from the captured English flagship *Royal Charles* of 1667 and the more than 4m tall model of a late 17th century ship-of-the-line, remained. But with the re-opening of the museum earlier this year, some 250 models from the naval collection are back on public display again in a new, dedicated museum gallery.

The Model Room of the Department of the Navy was first and foremost a technical collection. But where the Admiralty of the British Royal Navy had a long tradition in the use of both plans and models of ships, it was not until the middle of the 18th century that the making of ship models for Dutch warships became common practice. It took three hired English shipwrights – Thomas Davis, Charles Bentam and John May – to change all that. Dutch shipwrights at that time relied far more on their own experience and only used some practical guiding principles, first put to paper in the 17th century by Nicolaes Witsen en Cornelis van Yk, when constructing new ships.

Half-block model of a frigate for the Admiralty of Amsterdam and signed by Charles Bentam, second quarter of the 18th century (NG-NM-8532)

The fresh competition from the three English shipwrights soon had its desired effect: a heated debate broke out over the pros and cons of English versus Dutch shipbuilding practice and the oldest models from the Model Room illustrate this. Two half-block models of a frigate built for the Admiralty of Amsterdam (during the 17th and 18th century the Dutch Republic had not one but effectively five separate navies or admiralties that operated as a single fleet in times of war) show the effectiveness of using technical scale models during the initial design stage of ship construction. Minor differences between both

models indicate they were used to highlight different approaches to solving technical issues. After that, the building of technical models did not long remain solely an English enterprise. To illustrate his own ideas for a "new Dutch method" of building ships for the Navy, the Dutch shipwright Paulus van Zwijndregt of Rotterdam also reverted to the construction of a ship model. Ironically, the fine model Van Zwijndregt had in mind had to be ordered in London. It resulted in an unique and highly detailed model, and the only one of a Dutch man-of-war in the style of the well-known English Navy Board Models.

Model of a Dutch 40-46 gun man-of-war in the style of the English Navy Board Models, c.1738 (NG-MC-498)

At the beginning of the 19th century, when the Department of the Navy came into being, much had changed. In 1795 the five different admiralties had been amalgamated into one central organisation under French influence, and with the creation of the Kingdom of the Netherlands in 1813 also the Royal Netherlands Navy was formed. With much of its former overseas colonies restored and its European territory even enlarged with what we know today as Belgium and Luxembourg, this new kingdom was in great need of a new navy. It is in this light that we have to look at the institution of the Navy Model Room in 1817 with its goal "to improve our knowledge and treatment of objects to be dealt with daily at this ministry". By now, the use of technical scale models in ship construction, especially of half-block models, had become common practice and the Navy needed a permanent storage for the growing number of models. Many of these models were of documentary importance, as a sort of three-dimensional archive, while others could also be used as an instructional aid. First keeper of the new naval collection was to be Jochem Pieterszoon Asmus (1756-1837). Asmus had been working as superintendent at the Naval Dockyard in Amsterdam but more importantly he was a model shipwright of some merit and a life-long keen collector of everything maritime, even saving the collections of the former admiralties and the Dutch East India Company during the troubled times of revolution and war in the late 18th and early 19th century. Now in his sixties, he was the perfect candidate for the new job.

Right from the beginning, the Navy Model Room doubled as an historical collection and even as an naval art collection. Objects that referred to the glorious maritime past of the Dutch Republic, personal belongings, captured flags and paintings, remembering the epic fleet actions under Tromp and De Ruyter, were added to the already rapidly expand-

ing collection of technical models. Asmus gathered and secured many older models and items stored in offices, assembly rooms, warehouses and dockyards of the former admiralties which throughout the 19th century were being closed for good. Items of Asmus' impressive private collection mixed with those from the Navy Model Room, too, further adding to the diverse appearance of the model collection. It was this eclectic character that eventually led to the transfer of the whole collection from the Navy to the new Rijksmuseum in the 1880s.

However, the bulk of the collection consists of contemporary models and instruments. The 19th century brought many revolutionary changes to the ways navies operated. First there was the advent of steam power and many models illustrate the working of successive steam engines and how they could be made to good use on board warships. Mid-century, the introduction of new explosive shells led to the practice of armour plating and the development of new types of warships: the ironclad and the monitor. These developments were decisive for the future appearance of ships. The wooden sailing ships soon made way for all-steel, steam powered and screw propelled ships while rows of broadside guns were replaced by fewer, but heavier, turret artillery. It has been said that a sailor from De Ruyters' fleet would still feel at home on board an early 19th century naval vessel, while he would be completely disoriented if he boarded a ship from the end of that same century.

Model of a cross-section of an armoured gun turret, 1868 (NG-MC-1244)

Increasingly, the Royal Netherlands Navy looked abroad to keep informed about new developments that were gathering momentum elsewhere. Scale models proved a very effective medium to demonstrate these developments back home – and even two centuries later many of them still do. These models illustrate new ways of construction, introducing new technologies or practices. some are genuinely new discoveries or attempts to secure a patent, others the result of industrial espionage – but all are novel approaches that eventually made it into the Navy or did not. There are even some unique oddities, too. Like the model of a submarine, designed between 1835 and 1839. In the end it was never build due to a lack of finance, leaving the brass model as a stark reminder of what could have been.

Model of a submarine by Lipkens and Uhlenbeck, c.1839 (NG-MC-1156)

The new Ship Model Gallery of the Rijksmuseum is a cross-section of what the collection as a whole has to offer. The centre-piece of the new presentation is the display of the rigged models from the 17th to 19th century, while wall-mounted display cases feature various themes like the construction of ships, decoration, armaments, life on board, the introduction of steam power and armour plating. A sample of the large collection of half-block models is shown as are models associated with non-naval tasks of the Department: models of lighthouses and buoys, semaphores, life-boats, dredgers and icebreakers. In all, 250 of the 1,600 objects are on display, the highest number since the 1920s when much of the model collection went into permanent storage. Now, lovingly restored and researched by a group of specialists and volunteers for almost thirty years, the brainchild of Jochem Pieterszoon Asmus has finally been reinstated to its former glory.

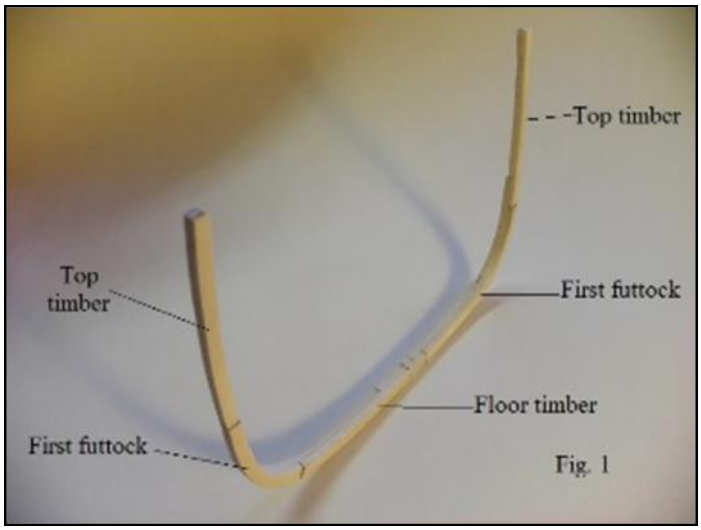
Rijksmuseum
Museumstraat 1
Amsterdam, The Netherlands
open daily from 9-17h

www.rijksmuseum.nl

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.

How to Build a Frame

Perhaps you have never build a frame and are curious as to how it is accomplished. There are many ways to construct a frame for a POF model. The method described here represents a fairly simple one and is based on the midship frame of Donald McKay's clipper ship Great Republic (1853). This particular method is called the "long and short floor system," because of how the floor timbers are attached, as you will see. The actual structure and components of the frame are described in extensive detail in William L. Crother's book entitled "The American-Built Clipper, 1850-56." I will explain how to duplicate the structure for a model.



I chose the midship frame because it is the easiest frame to build. It contains no bevels or odd shapes anywhere in its body; it has nothing but simple butt joints; and it has a continuously smooth curve throughout its length.

It is assumed that you either have acquired a plan of this frame or you have lofted one yourself. This article will not explain the lofting process, which may be found elsewhere.

First, let us examine the various components that make up the midship frame. Almost all clipper ships had double frames, which means that each frame was composed of two

separate layers. In Fig. 1, the terms for the components of the top layer are labeled. The floor timber rests directly on the keel and has the greatest moulded dimension (the height as seen while looking through the body of the ship from forward to aft) at its center. Then you see a butt joint followed by the first futtock, which is the term used for a timber attached to a floor timber. Following around, you next see another butt joint followed by a top timber. A top timber is another futtock but it is always located at the very top of a frame.

There are some important points to mention before going on. First, in other ships, there may be two or more futtocks between the floor timber and the top timber, but this frame only has one. A second point is that many frames used chocks instead of simple butt joints. A third point is that, in this particular frame, the floor timber is the thickest in width, while the first futtock is slightly thinner, and the top timber is yet thinner than the first futtock. If you own a thickness sander, these thicknesses can be worked out and applied to each of the components. However, this is not necessary, as I will describe later.

The bottom layer of this double frame is identical to the top layer, with two big exceptions: The butt joints are not located in the same places; instead, they are staggered or offset from those on the top layer. This is to provide strength and stability to the finished frame. The second exception is that the futtock between the floor timber and the top timber is called the "second futtock" to distinguish it from the first futtock on the top layer.

Now that we understand the terms, we can proceed to lay out the butt joints on our frame pattern, as shown in Fig. 2. Incidentally, I like to trace the exact same pattern on both sides of the sheet with carbon paper. Here, the black lines represent the butt joints of the top layer of the frame, and the blue lines represent the butt joints of the bottom layer of the frame. It is best to extend all butt joint lines well into the pattern, so that they can be easily seen later.

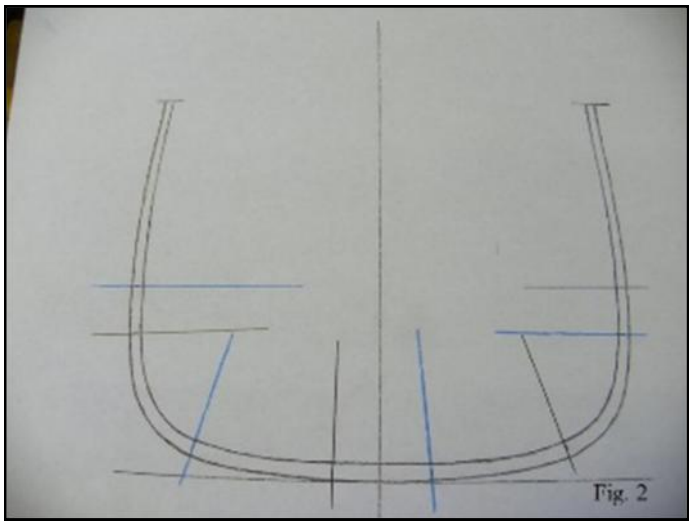


Fig. 2

The next step is to prepare pieces of wood, one for each part of each layer of the double frame. Of course, it is best to make all five pieces required for one layer of the double frame at a time, including assembling them, and then make all five pieces for the second layer. Here, the object is to outline each piece of a piece of wood, but make the outline larger than the actual shape, so that you allow room for sawing them to shape. Using the frame pattern, I trace the outline onto wood with a piece of carbon paper. The most important part of this procedure is to place the butt joints as precisely as possible.

Now cut out each piece on your jig saw or band saw. Keep track of what piece goes where by labeling each piece to avoid confusion. They will look similar to those shown in Fig. 3.

The next step is to sand the butt edges of each piece. Make sure that each butt fits

exactly onto your frame pattern.

Next, glue the butt joints together on your frame pattern. Make sure they match the frame plan precisely. See Fig. 4. Do this for both top and bottom layers of the double frame.

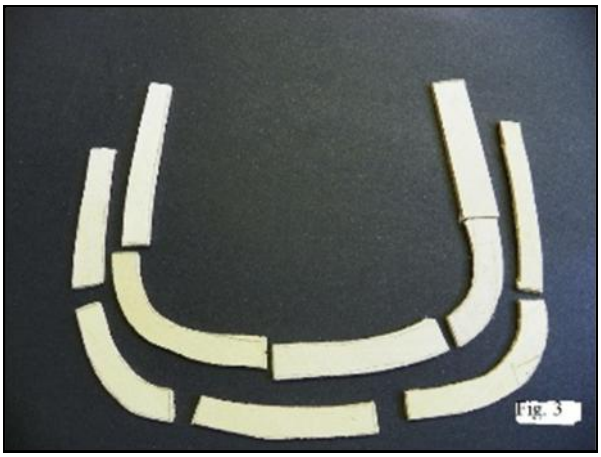


Fig. 3

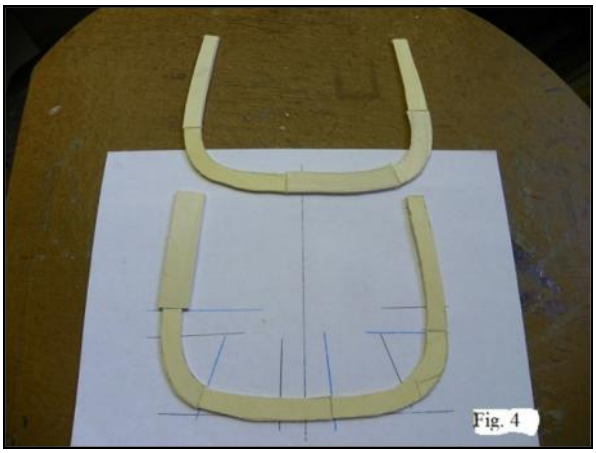


Fig. 4

Now rubber-cement the bottom layer onto the frame pattern. Align the butt joints perfectly. Rubber cement is used because you want to be able to remove the paper pattern easily when the frame is finished.

Now glue the top layer directly onto the bottom layer, again aligning the butt joints with the frame pattern. Use a good wood glue, such Elmer's Carpenter's Glue. See Fig. 5. Note that all butt joints are located precisely.

The next step is to cut out the frame on your band saw or jig saw. Stay on the outer edge of the line as you cut it. Then sand all edges smooth.

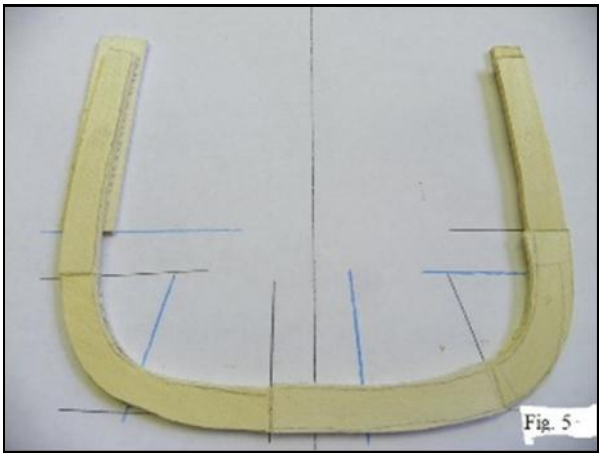


Fig. 5

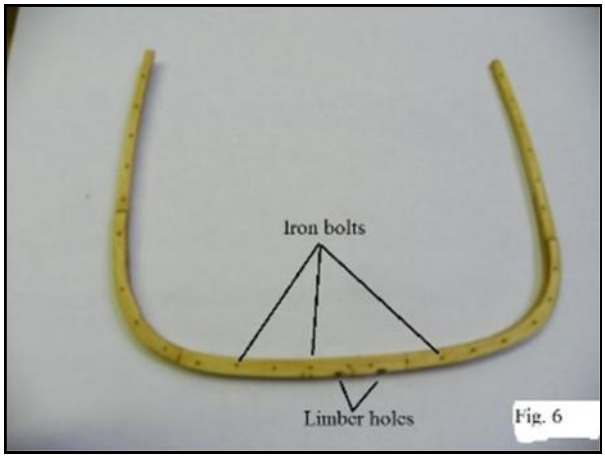


Fig. 6

Many modelers stop here, making this their finished frame. It's entirely your own choice.

Not owning a thickness sander, I reduced the sided dimension of the first and second

futtocks and the top timbers by cutting a notch at the appropriate joints to the proper depth. Then, using a disk sander, files, and sanding sticks, I reduced the thicknesses of each component to their scale sizes, as can be seen in Fig. 1.

Of course, you can add whatever other details your particular ship calls for. In the case of the Great Republic (see Fig. 6), I added two limber holes at the bottom, one on each side of the center of the floor timbers. Limber holes allow water to drain to the pump well. I also added iron bolts, one every 4 feet on scale, using bamboo treenails to simulate iron. The bolts were only one inch thick in real life. Finally, I gave the finished frame a coat of Pre-Stain Wood Conditioner and then a coat of Minwax Golden Oak Stain. Most clippers had frames built of oak. You can add anything else shown on your particular plans, keeping your scale in mind all the while.

It takes a bit of time to build a frame accurately. Most ships contain upwards of 70-80 frames, frequently more, so you can expect to invest a good 40-50 hours in just building frames. Is it worth it? The satisfaction achieved in knowing that you've built a true-to-scale model for the time invested makes it all worthwhile. A well-made plank-on-frame model is a thing to behold.

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 and/or names. To find them visit the various product pages below on the Model Expo website and follow the list of clues that follow.

When you believe you have acquired your answers email your submission including your mailing information to:

one-eyed-willy@modelshipbuilder.com. In the Subject Field put: September 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 Number	Clue
MS2160	What's the name of the model on this page?
MS2260	What's the name of the model designer of the model displayed on this page?
MS2040	What is listed as the launch date of the real ship this model is based on?
MS2016	Who build the original ship this model is based on?
MS1850	What is the name of the famous Captain that is associated with this ship?
MS2150	What are the deadeyes and blocks made from in this kit?

The winner of One Eyed Willy's Treasure Hunt in the July issue was Stephen Meliza of Oregon

Masting & Rigging

Send comments to wayne@modelshipbuilder.com

MASTS, SAILS AND RIGGING
A BEGINNER'S GUIDE;

Sails

by Alan McKendrick

SAILS

CONTINUING FROM THE LAST SECTION (May Issue), I will now talk about Sails. Just to refresh;

I've split the overall article into sections:

- Section 1- Introduction
- Section 2- Gives a brief description of Masts and Yards
- Section 3- Covers Standing Rigging
- Section 4- This one - Sails
- Section 5- Will cover Running Rigging
- Section 6- Will cover how all the above work together

In this Section I only intend to describe the names, shape, construction (within limits) and the position on the vessel of the sails. I will attempt to describe their use in a later section. The figures are only sketches following the style in some of the books I have and are not to any scale at all.

INTRODUCTION

It would take a complete book to describe all the sails and rigs on sailing vessels throughout the ages, so I will generalise around the ship rig, with brief mentions of other rigs. Not all the sails mentioned were used on one type of vessel.

Sails are used to propel the vessel through the water by use of the wind (described in a later Section) and are generally named after the mast, yard, or rigging that supports them in the spread position. They have been made from animal skins, beaten bark sheets, woven palm fronds, woven from wool, canvas woven from linen (from the flax plant) and woven from man-made materials such as nylon.

SAIL SHAPE

The shape of a Sail is termed either Quadrilateral (also known as a square sail) or Triangular, even if the edges are a curve and not a straight line.

SAIL NAMES AND POSITION

Sails are generally named after the mast, yard, or rigging that supports them in the spread position.

The sails supported on the yards as the principal sails are Quadrilateral in shape. Hence we have from the deck upwards, the courses; these are the Mainsail or Main Course, Foresail or Fore Course, and Mizzen Course usually known as the Crossjack, pronounced and sometimes written Cro'jack.

Above the courses are the Topsails; sometimes divided into the Lower Topsail and the Upper Topsail. next come the Topgallant Sails, on larger vessels these could be divided like the top sails, and above them are the Royal Sails. Some clipper ships of the mid-19th century carried Skysails above the royals. Some even had a Moonsail or Moonraker above their Skysail. Top Sail and Top Gallant Sail are often pronounced Tops'l and To'gan's'l, respectively

Sails that are spread in a fore and aft configuration by the stays that support the masts and known as Staysails. They can be either Triangular or Quadrilateral in shape and take their names from the stay on which they are rigged, so, for example, the sail on the Main Top Mast Stay is called the Main Top Mast Staysail. Again, different styles of vessel have different configurations and numbers of Staysails.

Figure 1 shows the positions of some of the sails mentioned. (Please excuse the colours – it was an attempt to show the sails a bit more clearly).

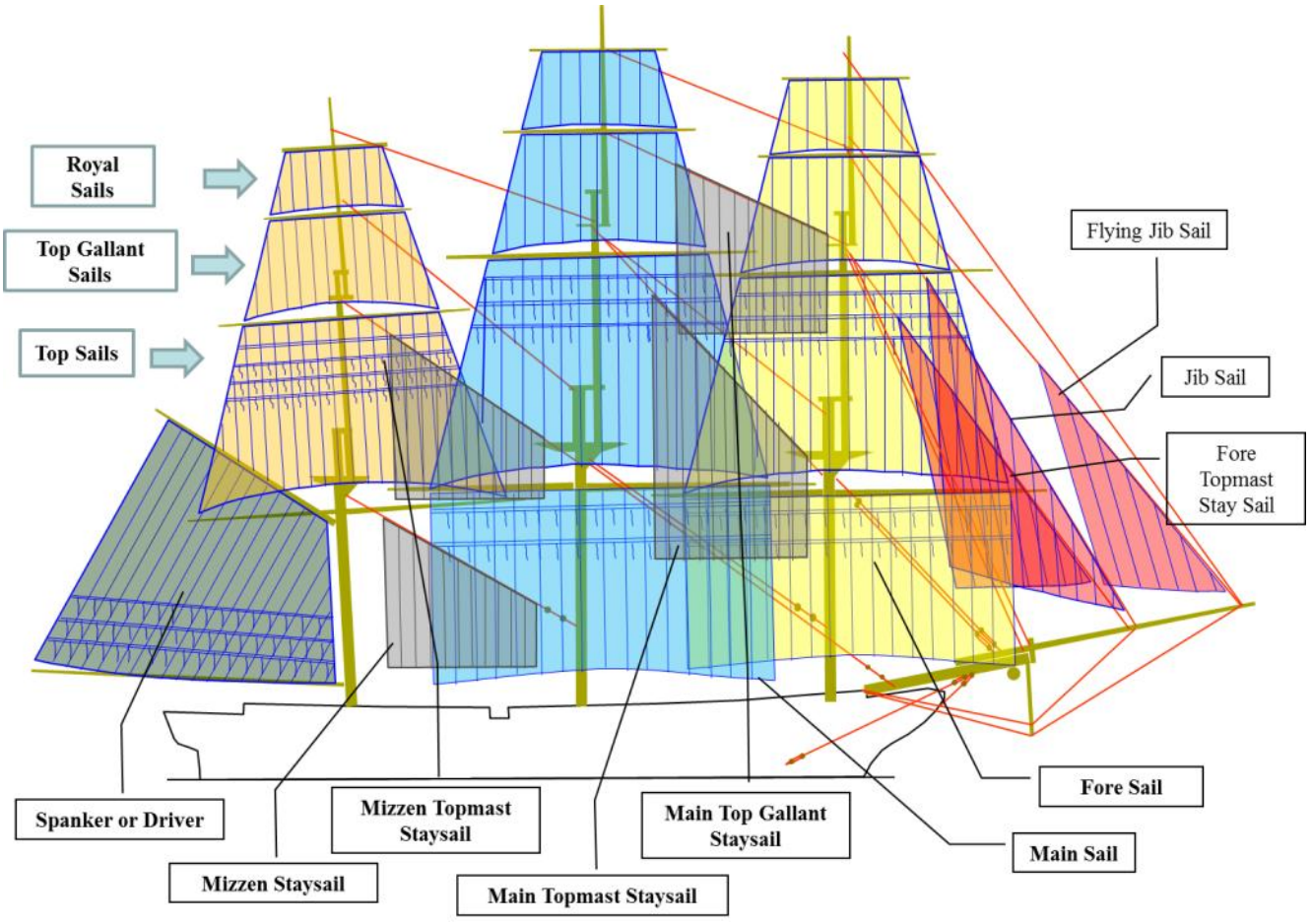


Figure 1: Positions of Some Sails on a Three Mast Square Rigged Ship.

The Triangular Staysails rigged forward of the foremast are called ***Jibs***, some different terms from forward to aft are as follows in Table 1:

Position from Fwd	Different Vessels				Stay	
1	Flying Jib (A)	Flying Jib (A)	Flying Jib (A)		(A)	Flying Jib Stay
2	Outer Jib (B)	Jib (B)	Outer Jib (B)		(B)	Fore Topgallant Stay
3	Inner Jib (C)	Fore Topmast Staysail (D)	Inner Jib (C)		(C)	Jib Stay
4	Fore Topmast Staysail (D)		Jib (D)		(D)	Fore Top Mast Stay

Table 1

MIZZEN OR DRIVER

The description of the Mizzen Sail seems to vary with type of vessel and time period. Rigged on the Mizzen Mast it can be:

- The lowest sail on the mizzenmast of a square-rigged sailing ship, i.e, the Mizzen Course
- Bent to a yard or gaff parallel with the ship's length.
- Rigged by a boom and gaff aft of the Mizzen Mast, as a driver

Another name for it coming into use about 1790 was Spanker.

SPRITSAIL

Small square sails set on a yard and flying under the bowsprit on square rigged ships. A Spritsail Topsail was a small square sail set on a short mast stepped vertically on the bowsprit.

STUDDING SAILS

Studding Sails, or Stunsails, are Quadrilateral in shape and are rigged on booms that lengthen the yards beyond the leeches (sides) of the courses, topsails, and topgallant sails. These sails are used only in favourable winds and moderate weather. Figure 18 shows how some Studding Sails were rigged.

CONSTRUCTION

SAILS of the period I am using were made of canvas, of different textures, and made from strips of sail cloths, which were 20 inches wide. A bolt of sail cloth was 80 yards in length. The heaviest canvas used in the Royal Navy was known as No. 1; and as it increased in fineness, and diminished in strength, the number increased to No. 9. The Navy used canvas made from flax, although canvas could be made from hemp or cotton as well. The sail was skirted around its edge with a rope called the bolt rope.

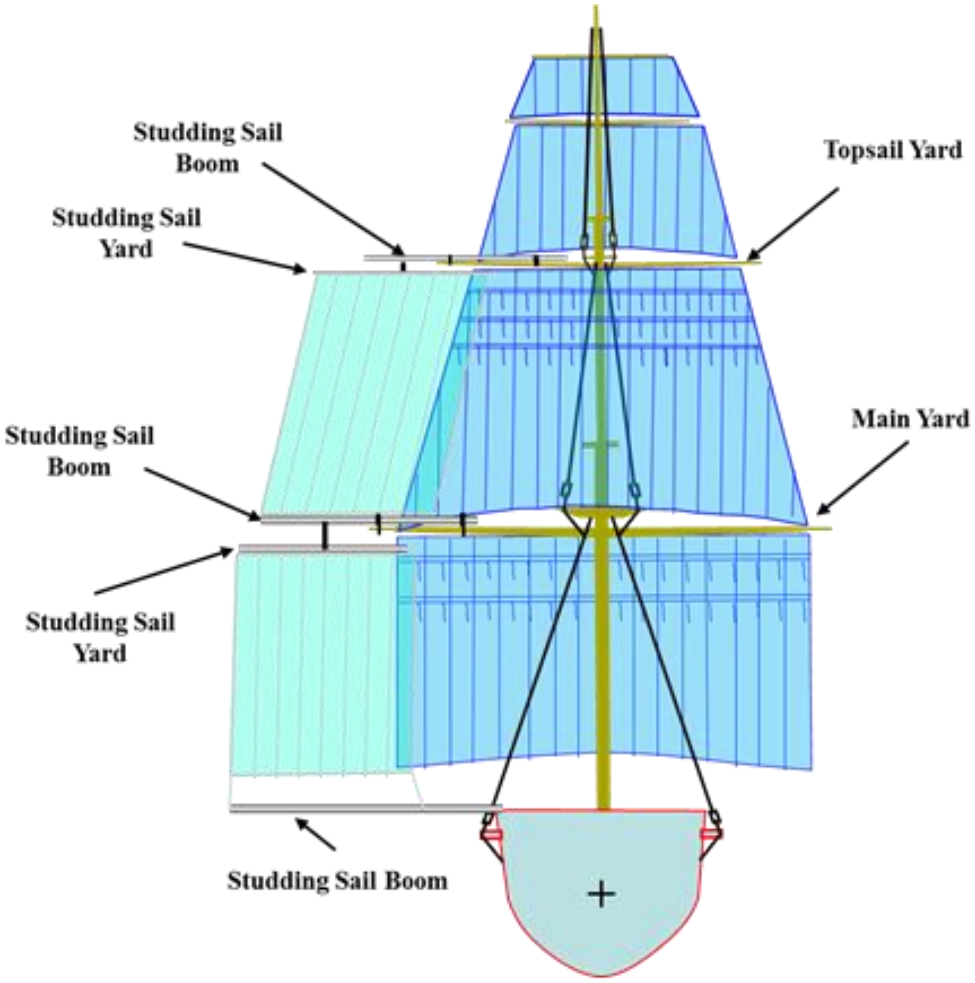


Figure 2: Example of Studding Sails

QUADRILATERAL SAILS

The parts of a quadrilateral sail are named as follows; the upper edge is called the head, the sides are called the leeches, and the bottom, or lower edge, is termed the foot. If the head is parallel to the foot, the lower corners are denominated clews, and the upper corners earing cringles. For a quadrilateral sail where the head is not parallel to the foot, the foremost corner at the foot is called the tack and the after lower corner the clew; the forward corner of the head the throat or nock, the after corner the peak, or head. The foremost edge (or side) is called the fore-leech, or luff, and the aftermost edge the after-leech. Figures 3 and 4 show sketches of a Quadrilateral Sail.

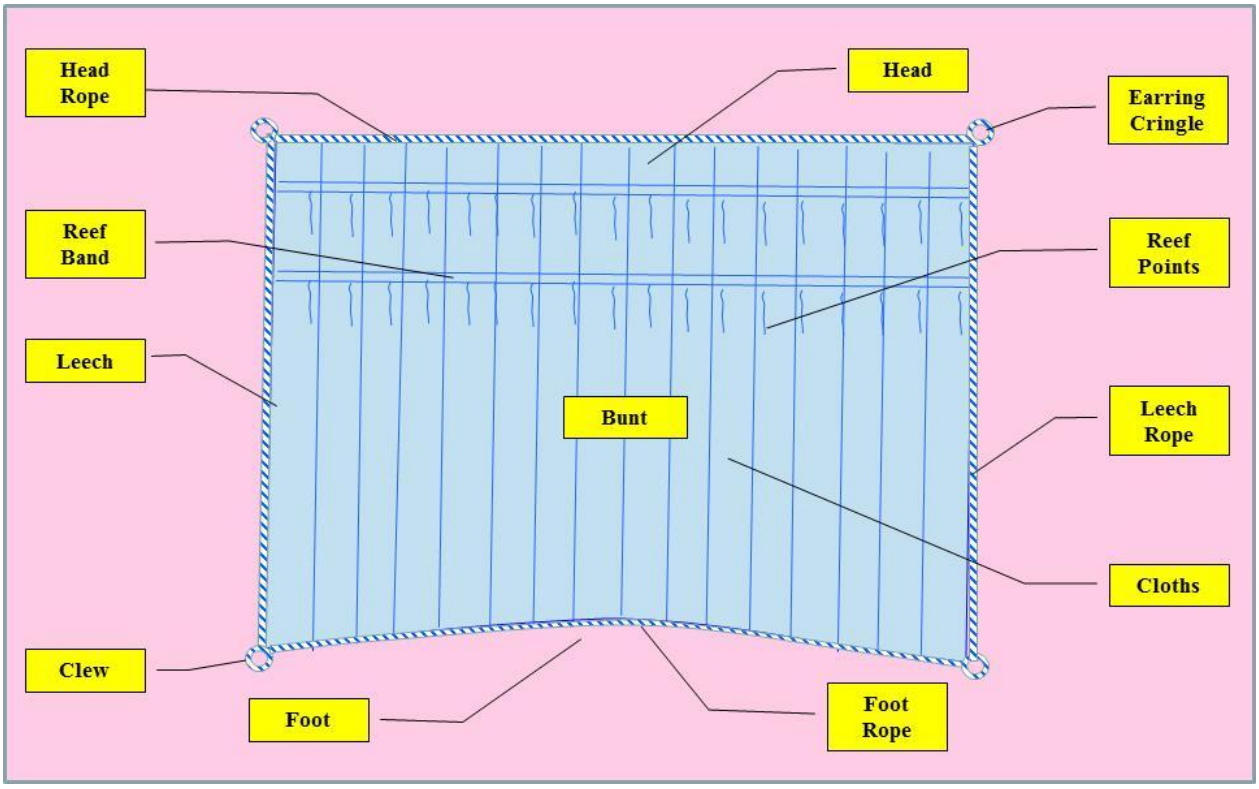


Figure 3: Quadrilateral Sail

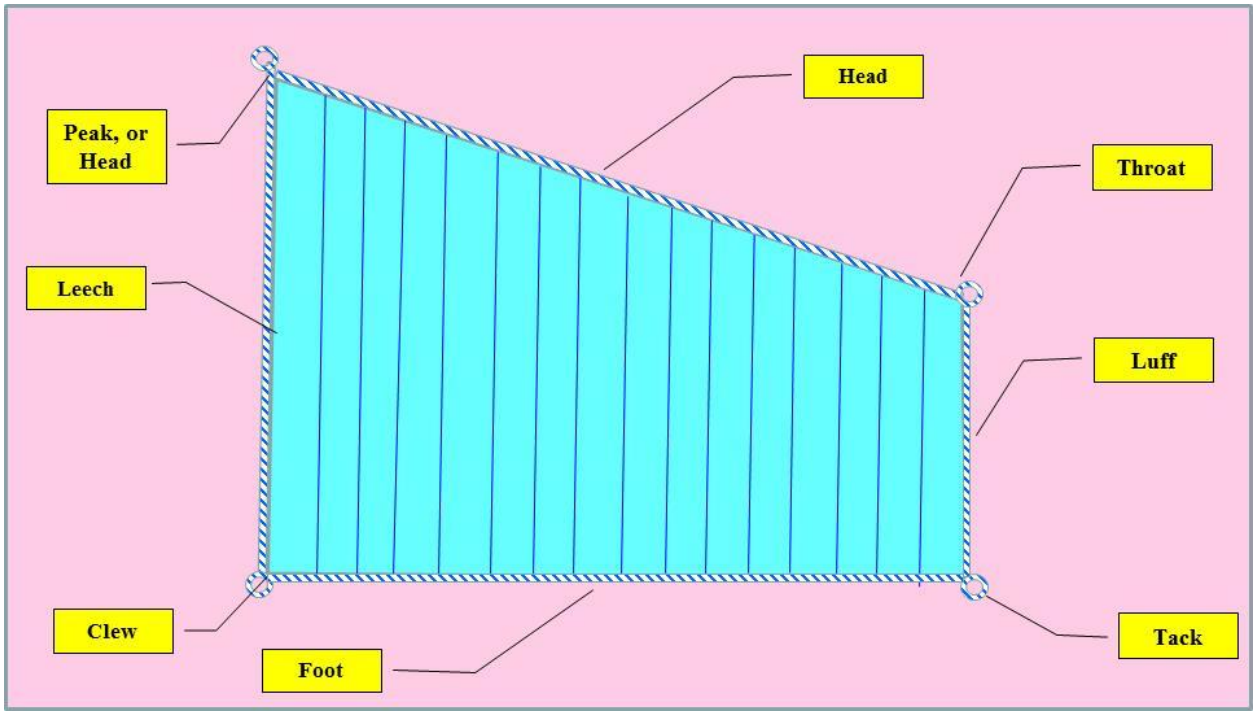


Figure 4: Quadrilateral Stay Sail

TRIANGULAR SAILS

The parts of a Triangular Sail are named as follows; the foremost corner at the foot is called the tack, and the after lower corner the clew; the after corner the peak, or head. The foremost edge (or side) is called the fore-leech, or luff, and the aftermost edge the after-leech. Figure 5 shows a Triangular Sail.

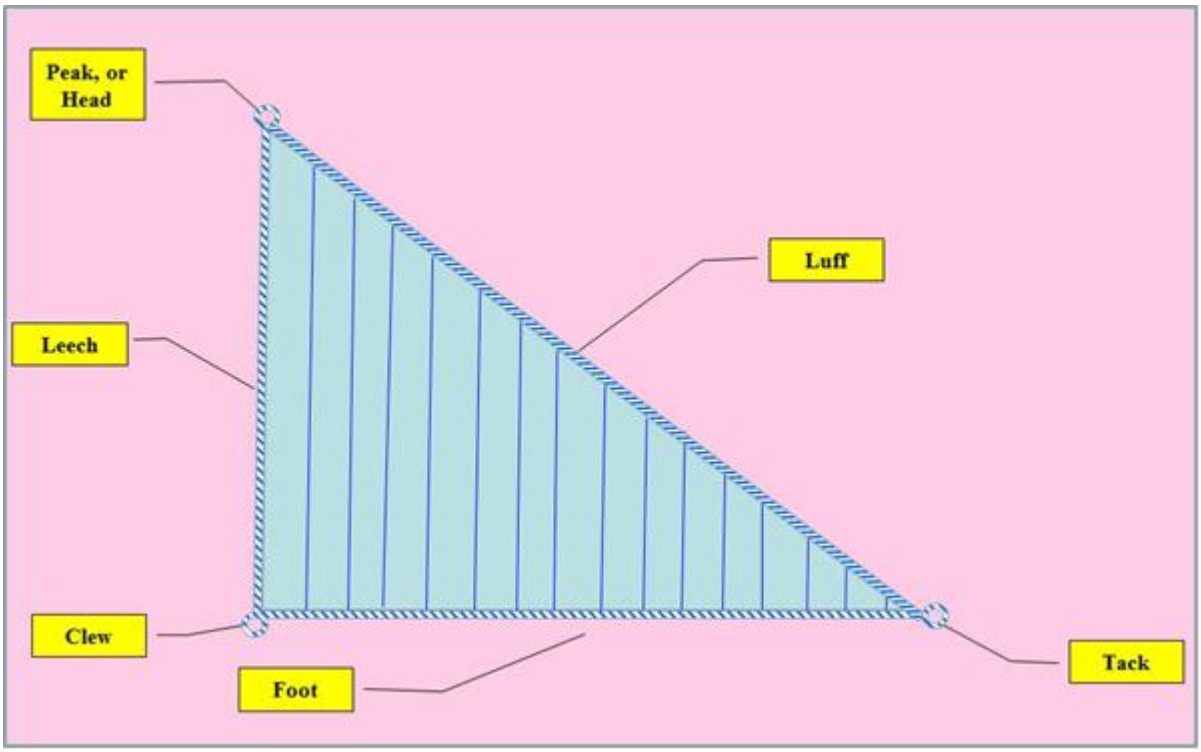


Figure 5: Triangular Sail

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These are the main books I used as references.

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
Historic Ship Models by Wolfram zu Mondfeld

Contributor's Pictures

Send your submissions to: winston@modelshipbuilder.com

Be sure to send in your submissions. All modeling subjects accepted. Ideally, send at least 4 images and a short description of your build. It need not be a completed build as its always interesting to see builds under construction too. Send the highest resolution image possible in order to maintain a good display

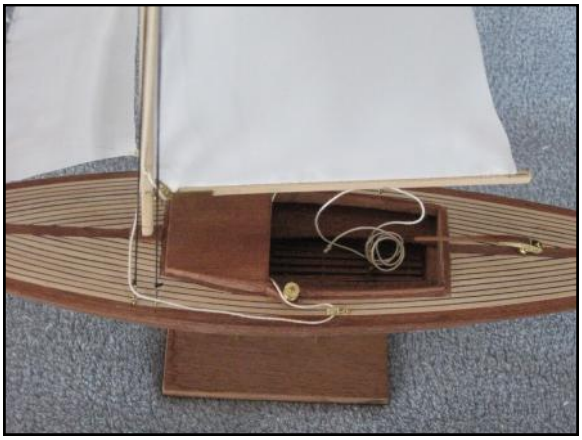
Billings boat Regina by Wintergreen

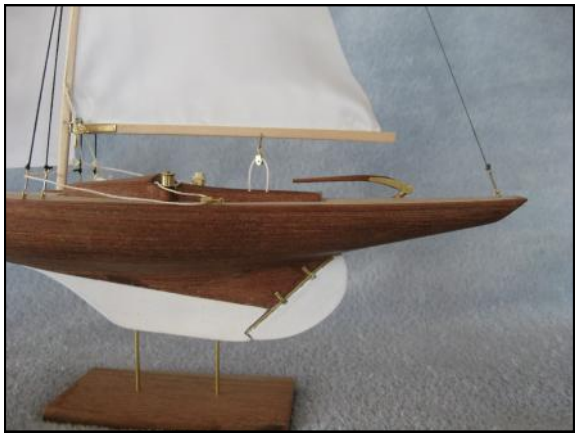
"This kit was started back in 1991. Before my first was born. Now that she has moved away from home the kit is finally finished!

Almost everything above deck level is scratch built. All plastic cleats, blocks and deadeyes are replaced by home made ones. All metalwork is home made also. Sail and rig is cotton. The boats dingy is left undone, on purpose, I had to, to get the kit finished."

The Dragon by Bob Thommen

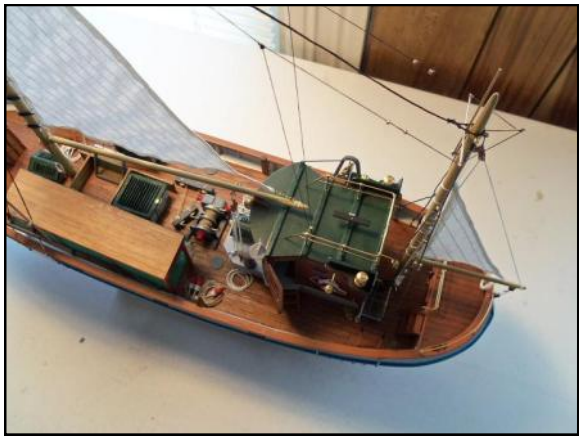
The Dragon was designed by Johan Anker in 1929. The original design had two berths and was ideally suited for cruising in his home waters of Norway. The boat quickly attracted owners and within ten years it had spread all over Europe. The Dragon is such a good sailor that owners were soon racing them and in 1948 the Dragon became an Olympic Class. Over the years the cabin was shortened and the cockpit made larger.





Billing Boats Mary Ann by Denis Wenzel

The Mary Ann is the first model produced by Billing Boats in 1958. It has been modified 4 times during the years and changed names 3 times. The ship is a typical 45-ton cutter commonly seen in the harbour at Esbjerg, Denmark; often more than 600 cutters of this type can be seen at a time. The model kit is based on the original ship drawings.....built by Denis Wenzel



Artesania Latine Jolly Boat.....Sarah Lagoon

Badges: Heraldry of Canadian Naval Ships

New Canadian Naval Ensign

Instead of the regular section covering a badge from one o the Canadian naval ships, because it affects all Canadian ships, this months I thought it would be nice to introduce the new Canadian Naval Ensign. The following is an extract from the Ottawa Citizen's Defence watch section from May 2, this year.

Defence Minister Peter MacKay announced the adoption of a new Canadian Naval Ensign to be worn by Her Majesty's Canadian Ships, naval vessels, Naval Reserve Divisions, and other designated units starting on Sunday, May 5.

"The men and women of the Royal Canadian Navy can be proud to serve their country under this new Canadian Naval Ensign," Vice-Admiral Paul Maddison, Commander Royal Canadian Navy said in a statement. "We are restoring the use of a standard Commonwealth practice, and an important symbol recognizing our rich naval heritage and the historical roots of the modern Royal Canadian Navy." Photo of Ensign below courtesy of RCN:

More from the RCN:

This is an historic moment for the Royal Canadian Navy, which flew the White Ensign from 1911 until the adoption of the National Flag in 1965, according to the RCN.

From that point onward, the National Flag was adopted as both the Ensign and the Jack. In 1968, as part of efforts to emphasize the importance of military ensigns and flags, while also reflecting the new National Flag, a distinctive Naval Jack was adopted by the Canadian Armed Forces. The Naval Jack incorporated the Maple Leaf in the canton with a badge in the fly of the flag.

Today, the flag previously known as the Naval Jack is adopted as the new Canadian Naval Ensign, and the National Flag becomes the new Naval Jack, which mirrors a standard practice amongst Commonwealth nations. The change will most importantly distinguish Canadian warships from other Canadian flagged vessels. It will also promote and strengthen the Canadian naval identity, while underscoring the unique commitment of our men and women at sea who serve as members of the Canadian Forces in Royal Canadian Navy ships and vessels, according to the RCN release.

The Jack staff (bow), where the Naval Jack is flown while alongside, moored or at anchor.	The Masthead (top center of ship), where the Commissioning Pennant is flown, and where the Naval Ensign is flown while at sea.	The Ensign staff (stern), where the Naval Ensign is flown while alongside, moored or at anchor.
		

The RCN Backgrounder:

A naval ensign is a flag worn by a warship to indicate its nationality. Most Commonwealth nations wear a distinctive naval ensign on their warships that includes elements of their national flag. This is an internationally accepted practice that is also observed by many non-Commonwealth nations throughout the world such as Japan, China, and Russia. However, not all nations have a distinctive naval ensign, and some nations, such as the United States and France, instead choose to wear their national flag as the naval ensign on their warships.

Wearing a distinctive naval ensign that incorporates the National Flag, distinguishes Canadian warships from other Canadian flagged vessels and foreign navies. It also recognizes the special status of Canadian warships under international maritime law, which stipulates that warships on the high seas have complete immunity from the jurisdiction of all states other than their flag state. Because Canadian warships are units of the Canadian Armed Forces, crewed by military personnel who deploy throughout the world in furtherance of Canadian national policy, they are deemed to have special status under international maritime law. Additionally, the Canadian Naval Ensign promotes and strengthens our Canadian naval identity, and underscores the unique roles, responsibilities, liabilities, and powers of the crews who serve in Her Majesty's Canadian Ships (HMCS) and other naval vessels.

There are now two distinct symbols that signal Canadian nationality onboard Canadian warships and other naval vessels. The first is the Canadian Naval Ensign, which is worn at the masthead while at sea, or at the stern when alongside, moored, or at anchor. The second is the National Flag, also known as the Maple Leaf Flag, which is worn as the Naval Jack at the bow when the ship is alongside, moored, or at anchor. Additionally, while not specifically required by law or maritime custom, Canadian warships have historically displayed a Maple Leaf badge on or near the main ship's funnel.

Starting in 1870, the Canadian Marine Service used a Blue Ensign to designate the special government status of its vessels. When the Naval Service of Canada was established on May 4, 1910, this practice continued. At the Imperial Conference of 1911, there was a naval agreement whereby Canadian warships would fly the Royal Navy White (naval) Ensign at the stern and the flag of the Dominion (the Canadian Blue Ensign) at the jackstaff located at the bow. Canadian merchant vessels flew the familiar Red Ensign, indicating their non-governmental status. Later that same year, on August 16, King George V authorized that Canadian naval forces be designated as the Royal

Canadian Navy (RCN). On December 16, 1911, the Canadian Government ordered the following:

All ships and vessels of the Royal Canadian Navy shall fly at the stern the White Ensign as the symbol of the authority of the Crown, and at the Jack Staff the distinctive flag of the Dominion of Canada, such distinctive flag being the Blue Ensign with the arms of the Dominion inset in the fly. The White Pendant will be flown at the Masthead. (Canadian Order-in-Council PC 2843 of December 16, 1911. Published in the Canadian Gazette on December 30, 1911.)

HMCS Halifax flies new Canadian Naval Ensign for the first time

The authorization of the White Ensign and Blue Jack in 1911 included the statement that "The White Pendant will be flown at the Masthead." The ship's pennant (to use the modern spelling) is the mark of a commissioned ship and also symbolizes the captain's authority to command the ship. This pennant, also known as the captain's pennant, the mast-head pennant or the commissioning pennant, is really the distinguishing flag of the captain. If the Sovereign or a more senior officer in the chain of command were aboard, their distinguishing flag would displace the captain's pennant at the masthead. Together, the Ensign at the stern, the Jack at the bow, and a distinguishing flag at the masthead form a part of the ship's suit of colours.

While the White Ensign remained unchanged until its use was discontinued in 1965, the Blue Jack underwent a series of changes: the four-province badge was used on the fly until 1922; thereafter, the shield of the Canadian arms was used. The maple leaves on that shield changed from green to red shortly after 1957.

The RCN continued using the White Ensign and the Canadian Blue Jack up until the adoption of the Maple Leaf Flag as the new National Flag on February 15, 1965. The Maple Leaf Flag was also adopted as both the Ensign and the Jack, as it is a common Commonwealth practice to wear the National Flag as a jack. As part of post-1965 efforts to develop military ensigns and flags, a distinctive naval jack that incorporated the Maple Leaf Flag was created in 1968 and flown by commissioned warships when alongside or at anchor.

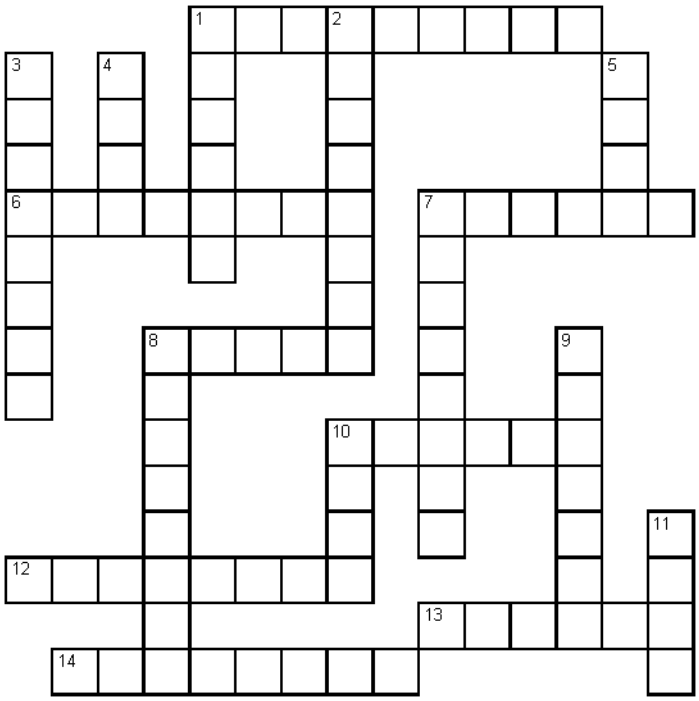
Coincidentally, in 1968 the Canadian Armed Forces were re-organized into one service and the RCN ceased to exist as a separate service, with all naval forces being assigned to the Canadian Armed Forces Maritime Command. In 1985, an Order-in-Council authorized the Canadian Armed Forces Naval Jack to be flown ashore as the Maritime Command flag, in addition to flying it onboard commissioned warships. The National Flag remained as the Ensign and was flown by all Canadian naval vessels.

In the early 1990s, the British Royal Navy-style Commissioning Pennant was phased out in favour of a new Canadian-designed Commissioning Pennant, which featured a maple leaf instead of the Cross of St. George. Only commissioned warships fly the Commissioning Pennant.

On August 16, 2011, the historic name of the RCN was restored and Maritime Command became known as the "Royal Canadian Navy." On May 5, 2013, the Government of Canada restored a standard Commonwealth naval practice by authorizing RCN vessels to fly a distinctive Canadian Naval Ensign and fly the National Flag as the Naval Jack. Essentially, the flag previously known as the Canadian Naval Jack became the Canadian Naval Ensign, whereas the National Flag became the Canadian Naval Jack.

Gene's Nautical Trivia

Nautical D-Day



Across

1 Softened hardtack and molasses dish
6 Line used to tighten the luff of a mainsail
7 Small engine used for hoisting or pulling
8 Equipment used to hoist and retain a small boat
10 The fifth mast from the bow on a six-masted schooner
12 Overlap of an upper mast and a lower mast
13 Another name for a longshoreman
14 Shelter over a hatch

Down

1 Ship's boat that is single-banked with four oars
2 Abandoned floating vessel
3 Equatorial area with unsettled weather and very light winds
4 Long flat sailing vessel of the Indian Ocean
5 Submerge, as a submarine
7 Sloping line of a hull expressed in degrees
8 Sailor's bag used for personal necessities
9 Movable crane with a stationary base
10 Friction between the water and the hull of a ship
11 Small flat-bottomed boat with high freeboard

THEIR MOST FAMOUS BOOKS

Can you name the most famous nautical book written by each of the following authors?

1. Herman Melville _____
2. Joshua Slocum _____
3. Richard Henry Dana _____
4. Jules Verne _____
5. Steven Crane _____
6. Thor Heyerdahl _____
7. B. Traven _____
8. Jack London _____
9. Rudyard Kipling _____
10. Herman Wouk _____

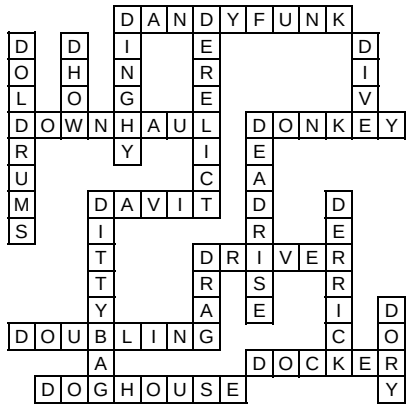
WHAT'S IN A NAME?

Unscramble the letters in the following phrases to find the names of famous ships.

1 BONUS EEL _____
2 MICK'S BAR _____
3 MORE RAYS _____
4 RUSTY TACKS _____
5 RAT IN A BIN _____
6 LEAFY WORM _____
7 INSURE LOOT _____
8 IS NOT AFRAID _____
9 LOWLY AIRMAIL _____
10 CAPTURE GERBIL _____

ANSWERS

NAUTICAL D-DAY:



WHAT'S IN A NAME:

1-Bluenose
2-Bismarck
3-Mary Rose
4-Cutty Sark
5-Britannia
6-Mayflower
7-Resolution
8-Star of India
9-Royal William
10-Great Republic

THEIR MOST FAMOUS BOOKS:

1-Moby Dick
2-Sailing Alone Around the World
3-Two Years Before the Mast
4-20,000 Leagues Under the Sea
5-The Open Boat
6-Kon-Tiki
7-The Death Ship
8-The Sea Wolf\
9-Captains Courageous
10-The Caine Mutiny