

Building the Model Shipways kit of the colonial schooner **Sultana**



These “shop notes” have been prepared for those of you who enjoy the hobby and wish to take their modeling projects to the next level. If you have been building ship models predominately from kits and find yourself deviating from the kit-supplied instructions regularly, then this manual may be of interest to you.

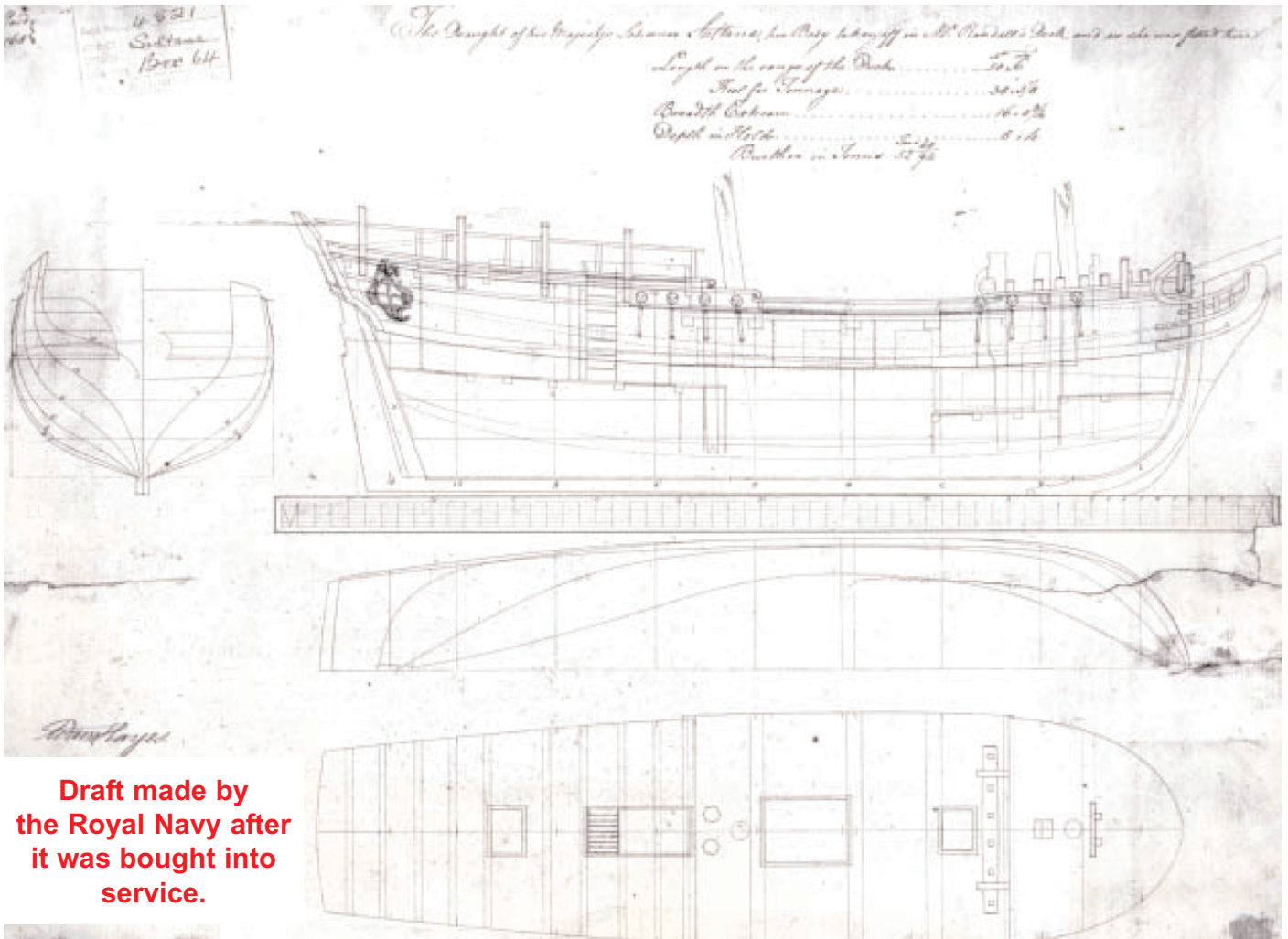
I have been building ship models for decades and now almost always build them from scratch. I spend hours of research gathering every bit of information on the ship before I can begin to draft a set of working plans and specifications. I often find myself doing this for a model of which a kit already exists and can be bought from any hobby shop. However, once you open the box for the kit, it quickly becomes clear that the level of detail presented in the instructions and supplied materials will only build a model that is “OK” in appearance. In order to raise this level to “spectacular” you realize that many modifications will be needed. A lot (if not all) of the ornamental castings and materials will need to be discarded, and rebuilt from scratch. Seasoned ship modelers affectionately refer to this phenomenon as “kit bashing”. This is what I will attempt to describe as I document my building of

the Model Shipways kit for the Colonial Schooner Sultana.

I do not intend to spend much time discussing the history of the vessel. Some of this has already been documented in the kit-supplied instructions and can be easily researched on the internet. It can be summed up quickly as is noted on the website for the replica that now resides on the Chesapeake Bay in Maryland. I recommend visiting this website as a start to your own research.

<http://www.schoonersultana.org>

“The Sultana was built in the yard of renowned Boston Shipwright Benjamin Hallowell in 1767. The Sultana might have gone on to little historical note if it weren’t for coincidence. Sir Thomas Asquith, the wealthy merchant she was built for, decided she wouldn’t be worth the expense of keeping as the combination cargo vessel & yacht he’d imagined. But through connections in the Royal Navy, he arranged for her to be bought into a new fleet the Admiralty was assembling of small, nimble vessels to ply the North America coast as Revenue Cutters.”



Draft made by the Royal Navy after it was bought into service.

This little schooner of 50 or so tons is very important to model builders, not because of its history, but because this is one of the few named early American schooners of which a detailed plan and draft survive. American ship builders during this period were more likely to build a ship from a builder's model rather than from a designer's plan. Most, if not all of the surviving plans, were drawn by the Royal Navy. Ship modelers can now build only a precious few named American vessels that were either captured or bought into service by England prior to the Revolutionary War.

Lauchlan McKay explains this in the *Practical Shipbuilder* (1839). 'As vessels are almost universally built from models in the United States, and as it is much the most accurate and preferred method, I shall commence by showing that mode of construction'

He then goes on to discuss the reasons why this was the case.

'The ship-builder has labored, in the larger portion of our country, under the necessity of working by guess. The publications of other countries have been large and expensive, full of intricacy, scientific rather than practical, and consequently of little use to the uneducated mechanic.'

Fortunately for us, we have the draft of the Sultana made by the Royal Navy after its purchase (Above). The scale for the Model Shipways kit is 1:64. The overall length is 17" with a height of 15". This is a relatively small ship model, but even at this scale, we can add a significant amount of detail. I almost wish that every ship model kit came with two sets of instructions. One for the beginner using only a few details, and a second that covers as much about the ship as possible.

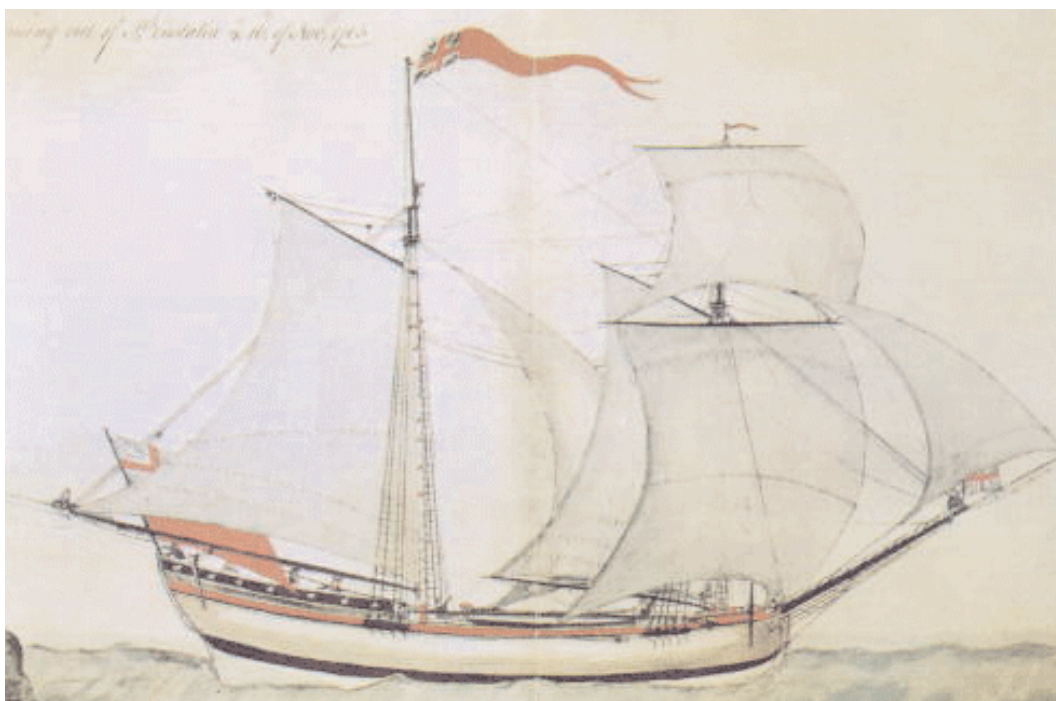
Even if the kit does not come supplied with material for these features, the instructions and techniques used to create them should be clearly described. I believe that many modeling enthusiasts give up the hobby too soon because no such material is readily available. This is the reason why I have written this companion to the kit-supplied instructions.

The photos below show the replica of the Sultana. Even though the builders of this replica took pains to keep the ship historically accurate, modifications were made to keep the vessel up to current maritime codes and safety regulations. They built the replica with an inboard engine and

prop placed into a cutout of the rudder. Even with these modern adaptations, the images make for some useful clarification as we progress through this project. At the bottom of this page is a painting that has been frequently published. Not only are the plans for early American ships scarce, but paintings and drawings of named vessels are also elusive. The Baltik is an excellent example of a schooner similar in appearance and rig to the Sultana. It offers some interesting details for the paint scheme and rigging to which I will refer later.



Photos showing the replica of the Sultana which is available for tours along the Chesapeake Bay.



**The Schooner
BALTICK**

1765

Watercolor, unsigned.
Built 1763 Newbury,
Mass. 45 tons.



Getting Started...

Upon opening the box, notice the familiar kit supplied items for a solid hull model. There is the usual roughly cut solid hull along with a small package of pre-cast fittings, not to mention the almost always insufficient amount of strip wood in various shapes and sizes. The plans accompanying the Sultana kit are quite good and, based on this information, the inadequate materials can be turned into something quite remarkable. *As we will soon see.*

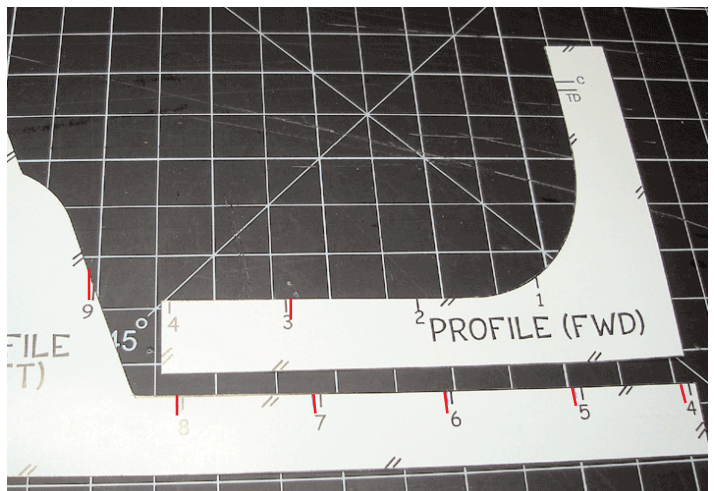
The very first thing that we need to do on the hull is to remove the bulwarks. We will be using a different technique later to create them. One of the more frustrating tasks when carving a solid hull is to thin down the bulwarks. I am sure that you will be relieved knowing that we will not have to do this.

Remove the bulwarks with a sharp blade or chisel. Remember to always carve in a direction away from your hands and body. I have seen some nasty cuts over the years, many of which have resulted in a trip to the emergency room for stitches. The wood is very soft and carves easily. The only portion of the hull that may be tricky is the bow where carving will be against the grain. The photo above shows the hull with the bulwarks removed to the deck level. Do not sand the deck smooth at this time. We will take care of this later and correct the deck camber after we shape the outside of the hull.

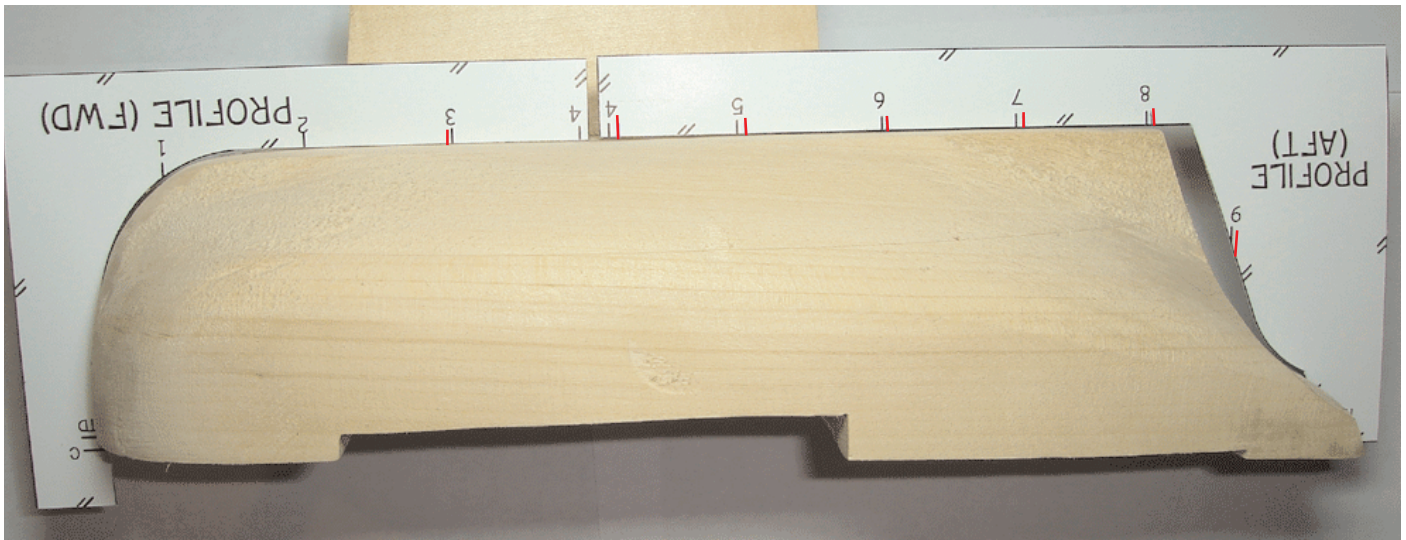
Now that the bulwarks have been removed, cut out the two templates shown in the photo (right). Use a #11 blade in your hobby knife. As the kit-supplied instructions mention, do not use scissors. Scissors may distort the template around any of the more severe curves of the template.

Before you use the templates, test them against the blueprints to see if they are accurate. I was surprised to see that the templates were not even close to the shape and dimensions on the plan. The forward half of the template isn't too bad. The station lines lined up with those on the plan with only minor fluctuations. Correct the templates before you use them.

The other half of the template was far from being correct. The station lines were way off the mark. The entire template was about 1/16" too long. I cut it to the proper length and corrected the station lines to match the blueprint. My guess is that after multiple printing, the correct scale was lost. Luckily, the overall shape of the hull appears to be correct. The photo below shows my corrections on the templates. They are shown in red. These station lines and the other reference points should be transferred to the reverse side of each template before you use them. They will be easier to use when you are shaping the other side of the hull.



Two templates with corrections shown in red



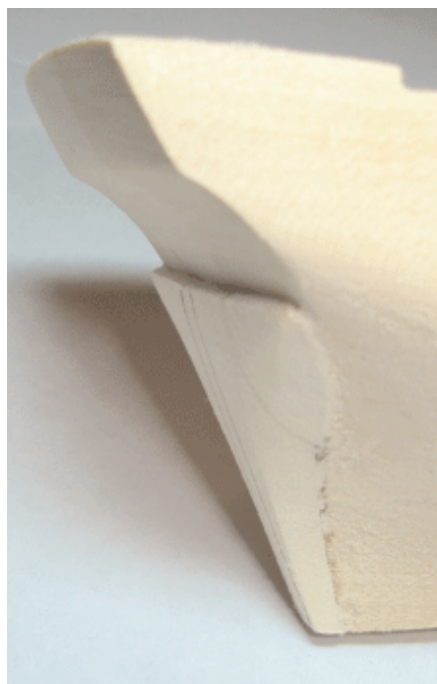
Shaping the Hull...

The bottom of the hull must be sanded before the using the templates to determine the hull's correct length. Use a sanding block to ensure that the underside of the hull (where we will attach the keel) is perfectly flat. Locate the center line of the hull and draw a reference line onto it. This line should be continuous, running down the entire length of the deck, as well as continuing down the stem and along the keel and stern post. This is the line, over which we will position our template. See the photo above.

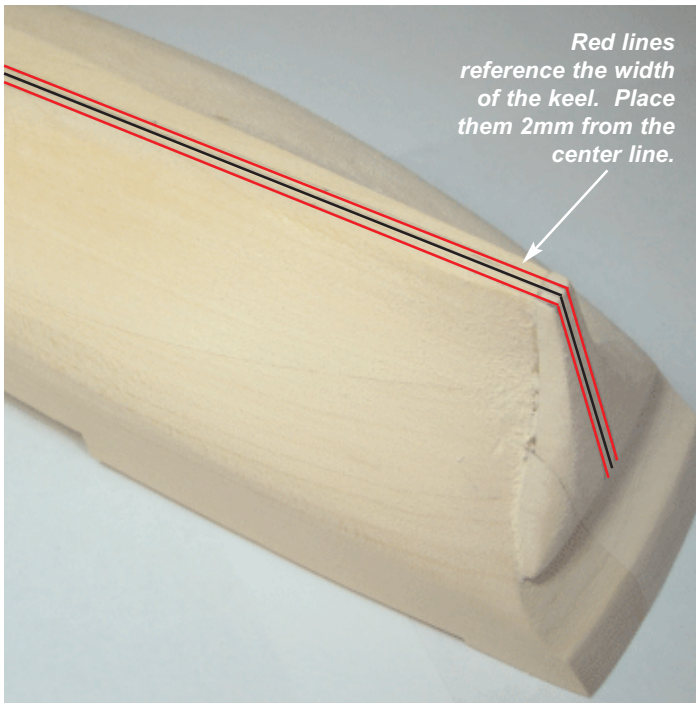
You will notice that the two templates do not fit together along station 4 as they should. The template fits fairly well at the bow, but the stern needs some carving. You could remove this excess wood by hand using a chisel or a sharp blade in your hobby knife. I prefer using a sanding drum on my Dremel rotary tool. Using the flexible shaft attachment, I slowly removed the wood. I only removed small amounts of wood at a time. Stop periodically to check the hull against the template. The final shaping of the stern is done by hand using sand paper. For me, it is easier than carving with a blade because I would be doing so against the grain of the wood. Yes, this does make a horrible mess. However, this will be one of the few instances where we will not be carving or sanding by hand.

Since we will plank the counter of the stern, the entire stern was carved $\frac{1}{16}$ " smaller than

the template requires. The correct profile of the stern and counter were carved to allow for the addition of $\frac{1}{16}$ " thick x $\frac{1}{8}$ " wide planking. After shaping the stern to match the hull profile, I added an additional $\frac{1}{16}$ " of wood below the counter. This can be seen in the photo below. Rather than try to carve only the counter which will be planked, I found it easier to remove a full $\frac{1}{16}$ " off of the entire stern and build the area back up below it. This allowed me to create a uniform ledge, on top of which the counter planking will sit. I will agree, at this stage of the project, it does not look pretty. But it does not have to. The area below the counter and wales will eventually be painted white. The surface will of course be prepared before we paint it.



Stern with additional $\frac{1}{16}$ " piece of scrap wood. This was carved and sanded to match the shape of the hull. Notice the ledge, on top of which the planking for the counter will sit.



We can now begin to reduce the thickness of the hull at the keel. Unfortunately, the best way to carve the hull is difficult to describe in writing. Using a flat blade on your hobby knife, start slowly removing small amounts of wood along the keel. Stop just short of the reference line that you created as this remaining wood will be removed using sand paper. Remember to always carve with the grain of the wood. Begin alternating the use of the flat tipped blade with the addition of a standard #11 pointed blade.

Start carving mid ship and work your way towards the bow, then reverse towards the stern. When completed the keel should be 4mm" thick and look similar to the photographs below. Only after completing this initial carving should you use the remaining 9 templates to define the proper hull shape.

Once it is completed you will never notice the seam between this additional wood and the hull. Once the proper length and shape of the hull is established, it is important to redraw the center line down the hull. It may have been sanded off while working. The remaining 9 templates will soon be used to determine the final shape of the hull. They must be positioned along this line.

Reference lines can be drawn along the keel where each of the 9 remaining templates will be positioned. Start carving at mid ship (template #4). Don't remove too much wood with one pass of the blade. Only shave off small amounts to avoid gouges and deep holes. If this should happen, the holes can be filled with some wood filler.

However, before we can use them, more reference lines need to be drawn onto the hull. Measure the width of the keel from the plans that indicate a 4 mm wide keel. The width of the keel needs to be drawn down the length of the hull. It is also carried up the stem and stern post. Simply draw another line 2mm to the left and right of the center line to establish the keel width. See the photo (above) showing these two lines in red.

This is one of the advantages of building a solid hull model. You will notice in the photos below that I used some wood filler to conceal the seam between the additional piece of wood at the stern. Sand the entire hull smooth when you are finished. Use a medium grade of sandpaper first and finish it up with a finer grade.

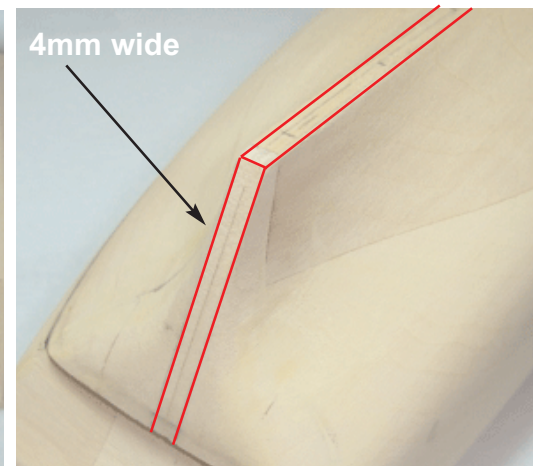




photo (left). Draw another line 1/16" below the (TD). The hull will need to be carved down to these marks along the bulwarks. It represents the deck level without the planking installed. Luckily, the deck camber as machine carved by the manufacturer is not correct. The deck does not slope enough toward the bulwarks. You may be able to achieve the correct depth along the bulwarks by simply sanding the deck camber. Use the templates when you are finished to be sure.

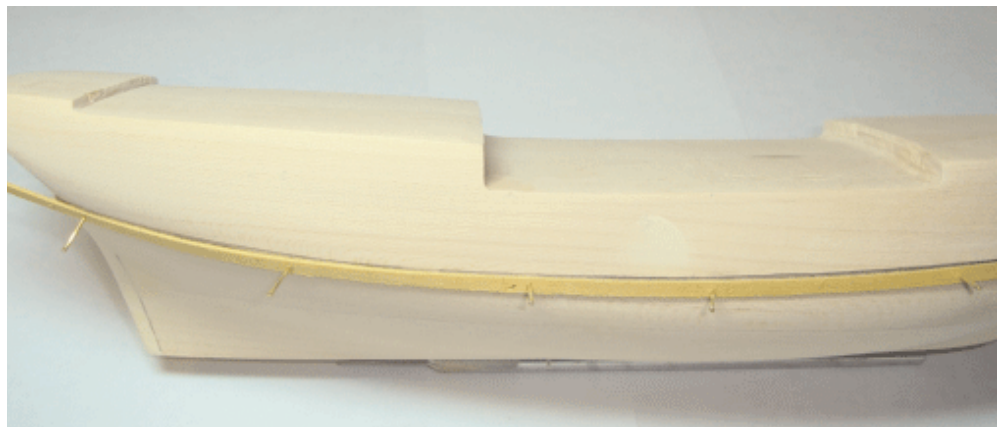
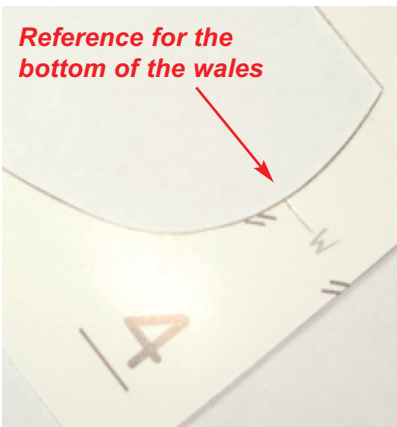
The sides of the hull must also be carved above the wales to accept the hull planking. We must establish the position for the wales first. This is not difficult to find. The 9 station templates can be used to mark the bottom edge of the wales along the hull.

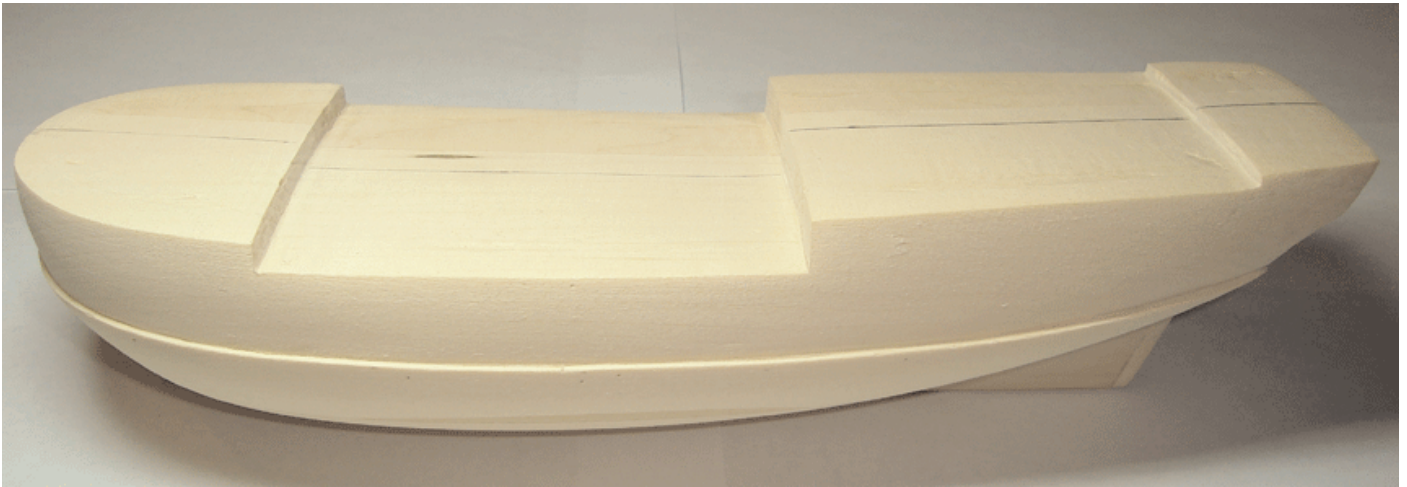
Preparing the Hull for Planking...

The model will be planked above the wales and on deck. These modifications will drastically improve the overall appearance of the model. To prepare for this planking, the hull will require some additional carving. The deck's surface is the first area that requires our attention. The planking material I used was 1/16" thick and 1/8" wide. I purchased these basswood planking strips from a local hobby shop where they cost about 30 cents each. I needed about 35 of these strips to complete the model. I suggest buying a few extra strips just in case there are some that get broken. They may break when we bend them while planking.

Because we know the thickness of our deck planks, the decks must be lowered by 1/16". The templates that were used to shape the hull have the top of the deck noted on them (TD). See the

Sheet one of the blueprints has the body plan. It includes the location for the wales. Position the templates on top of the body plan and draw a reference line to indicate the bottom of the wales. See the photo below (left). These reference points should be transferred onto the hull. A flexible wooden strip (batten) can be placed along these reference points. Hold it in place temporarily with some small pins. See the photo below right. Check the hull at various angles to ensure that this batten has no unsightly dips or rises as it runs from bow to stern. Any corrections should be made now before we begin carving. When you are satisfied with its position, draw a pencil line down the entire length as shown in the same photo. Repeat this procedure on the other side of the hull. The hull can now be carved to a depth of 1/16" above this reference line.





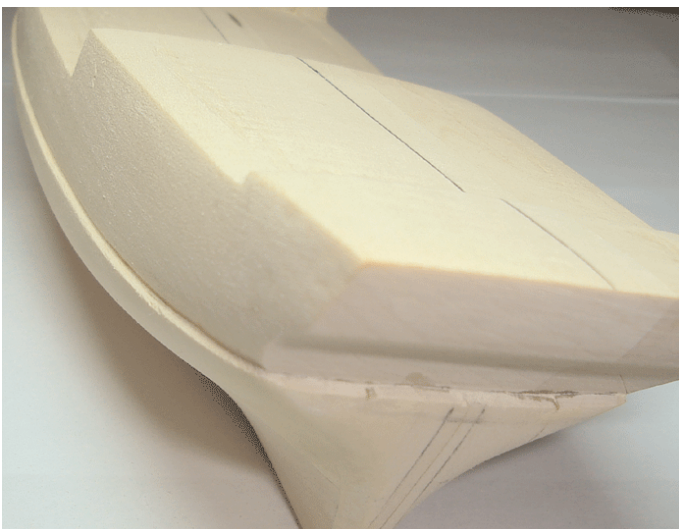
I used two types of Xacto blades to carve the hull above the wales. I used the standard #11 blade and a flat blade (#17) for all of this hull *shaving*. I characterize this process as *shaving* rather than carving. I will do my best to describe this process in writing. See the photo below for the two Xacto blades used.

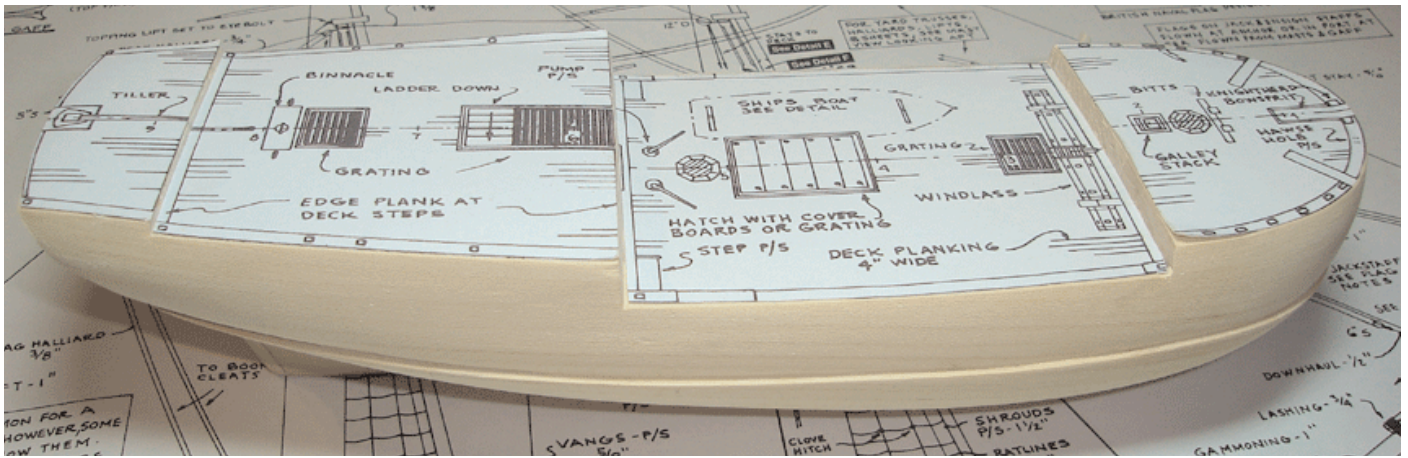
Carving this “ledge” into the hull is a slow process, but it is not difficult. It should look like the hull as shown in the 3 photographs on this page. To carve this “ledge” use the standard pointed #11 blade to score along the reference

line you just created. Score it to a depth of 1/16”. We will be using the same sized planks for the hull that we will use for the deck. Begin removing the wood up to this scored line by shaving small amounts of wood at a time. This can be done while still using the #11 blade.

After you have defined this “ledge”, remove the wood above it with the #17 blade. Slowly work from mid ship towards the bow. Then turn the hull around and shave from mid ship towards the stern. Remember to only remove small slices of wood with each pass of the blade. Always carve with the grain.

The entire surface of the hull should be sanded smooth when you are finished. Use the templates again to ensure that the hull has the correct shape. There should be a consistent 1/16” of space between the template and the hull above the wales. Sure, this does take some time to do, but I assure you it will be worth it.



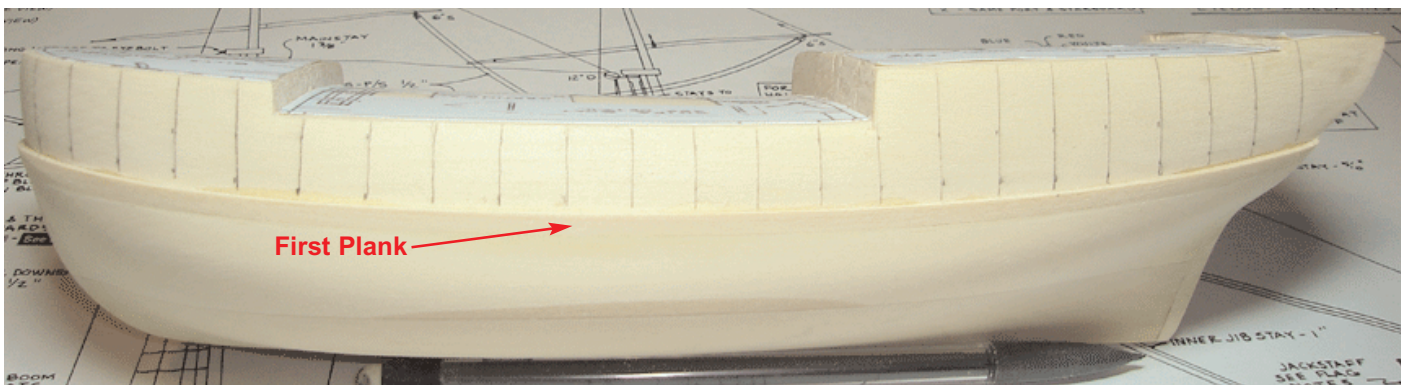
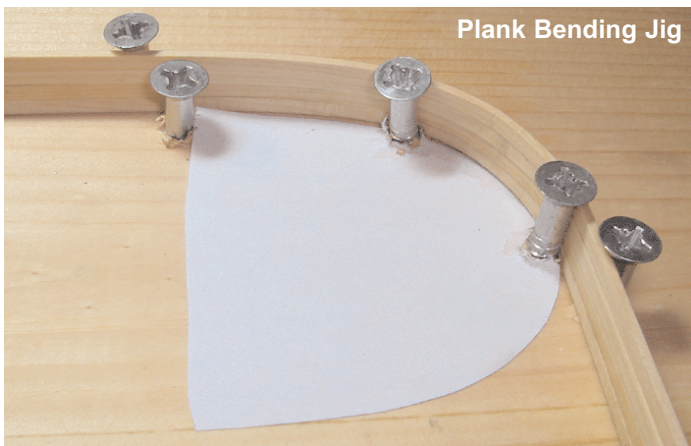


Planking the Hull...

We are almost ready to plank the hull. I like to double-check the shape of the hull one more time before I commit to planking it. Photo copy the deck layout from the blueprints. Cut out each deck as shown in the photo above. As you can see, the cap rail was left on the deck layouts when I glued them onto the model. Rubber cement was used to hold the templates in place. The edge planks for the forecastle and quarter deck were left on the template for the main deck. An additional plank will be added to the face of each step lengthening each of them. The same is true for the raised deck at the stern. The edge

plank for that area was left on the quarter deck's template. This will all make sense when we plank the deck. The real reason for doing this is to see that the outside shape of the hull is correct. You will be surprised how much additional wood may need to be removed. These templates should fit perfectly to the edge of each deck where the bulwarks will be located.

When you are satisfied with all of this checking and re-checking, you can start planking the hull. As mentioned earlier, the basswood strips are 1/16" thick x 1/8" wide. The curve at the bow is quite extreme. I wouldn't attempt to bend the wood strips as you are gluing them to the hull. They might break while under the stress of the bend. It's easier to pre-form this curve with the use of a jig. The jig is shown in the accompanying photo. As you can see, it is a very simple jig. Soak the wood strips for about 15 minutes. Then carefully and slowly bend them into the jig. When they dry, the strips will maintain the curve you created. The white paper glued to the surface of the jig was traced from the deck layout. It represents the curve of the bow at deck level. I was able to pre-form 4 strips at a time in this jig.



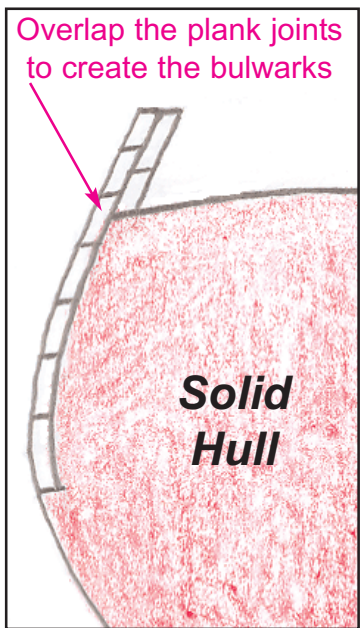
With an ample supply of pre-formed planking strips, you can start gluing them onto the hull. Instead of cutting them into smaller lengths, you can glue one continuous strip from bow to stern. Place it along the ledge you carved into the hull's side. The individual plank lengths are simulated. I drew some reference lines onto each side of the hull. The lines were spaced 10mm apart. The first line was drawn at station #4. You can see these lines in the photo on the previous page. After each strip was firmly in place, I took the flat edged (#17) Xacto blade and scored each strip at specific intervals along the plank. Each plank segment was 6 reference lines in length. When this was finished, I glued the next strip onto the hull.

This is a very effective method for smaller models. It is by no means the only way to achieve a satisfactory result. It is just as easy to cut the planks to their actual lengths before you glue them into place. However, one continuous strip will make the creation of the bulwarks much easier. This will make more sense as you read through the next few paragraphs.

As you can see in the photo below, the simulated joints look just fine. Work your way up the hull until you get to the surface of the deck at mid ship. Make sure that you scribe these simulated joints into each strip before moving ahead to the next one. When you get to the planking strip at the deck level, it should extend above the deck's surface. See the diagram above that my daughter was kind enough to color in with some crayons. You can see the arrow pointing to the plank that extends above the decks surface.

Using one continuous strip makes it easier to create the bulwarks for the bow and quarter deck.

After you glue this plank into position, it will be time to place the first plank on the inside of the bulwarks. The overlap should give you enough surface area to glue this plank onto it. Notice how they follow the contour of the hull's shape.



After the glue for this plank dries, place the next strip on the outside of the hull. Continue in this fashion until you have reached the desired bulwark height. Always remember to alternate one strip on the outside of the hull followed by another on the inside of the bulwarks. As long as you maintain the overlap with each plank, the process should go smoothly. Take the measurements for the bulwark height from the plans.

Remember to add an extra 1/16" to this measurement because we haven't added the deck planking yet. The deck planking will be 1/16" thick. See the photo below which shows one side of the hull planked. Also note how the plank joints were staggered from row to row. This is in keeping with the planking techniques employed during that time period. Sand the top of the bulwarks to the correct shape afterwards.

