

## ***Intermediate techniques for modeling yard details*** **Stuns'l Boom Irons, stirrups, footropes, yard cleats, blocks and more...**

Have you ever examined a kit model built by a friend and wondered how they managed to expertly depict the deck fittings? This was only their second or third attempt at modeling yet the planking is very well done. The wood working skills demonstrated are inspiring. You look closely at the joinery and sharp craftsmanship of the hull and deck planking. The hull planking has perfectly cut and positioned stealers and drop planks. The deck planking is nibbed cleanly into the margin plank. Time and care was taken to simulate the caulking between the planks. It's quite an accomplishment considering you friend hasn't yet purchased a belt sander, mini table saw, miter chop saw, mini lathe etc. It was all accomplished with unwavering care and attention to the details.

Then your eyes slowly wander up to the masts, yards and rigging. Your initial joy is soon replaced with confusion and disappointment. The same level of detail used to model the hull was not carried over to the masts and yards. You wonder why. It almost looks as though there are two different models that were mistakenly joined together. The yards in particular, although cleanly made don't have the same level of detail and historical correctness.

You are probably already aware of the fact that most kits and there instructions show few details. They are usually written as a broad overview and summary. The few details mentioned get even sparser and more simplified when it comes to mast and spar creation. Most likely, the model builder is directed to use the kit supplied eye bolts for the stirrups. These are simply glued into pre-drilled holes

along the bottom of the yard arm. To make the footropes (horses), kit supplied rigging line is reeved through the eyebolts and tied off around the yard. But due to the nature of the supplied line it is impossible to get them to hang with a natural swag. The line was wound so tightly around the plastic bobbin from the kit that it has ugly kinks and twists which cannot be removed after rigging it.

The stuns'l boom irons are usually constructed from wire and simply bent with little loops on both ends and slipped onto the yard arm. They look very much like a first project rather than a second or third attempt. I believe the reason for such a disparity between the hull and yard details is due to the fact that less "how-to" information is readily available. In addition to the poor direction provided in kit instructions, there are also many popular modeling books directed towards the beginner with poor techniques described. For example, in "Ship Modelling Simplified" by Frank Mastini you would read this...

*"Stuns'l booms were supported by two iron rings. The inside ring wrapped around the boom and was fixed to a short iron rod that ran to another ring secured to the yard. The one on the end of the yard was supported by a bent iron rod inserted into the yard end. These rings are sometimes supplied in the kits, but if not, you can make your own. Here are some simple ways to make them. For the one at the end, use brass wire. Bend it over the tip of a pair of roundnose pliers or over a dowel of the right size to form the ring, and then bend the wire."*

These less-than-ideal alternatives for yard and mast construction often linger on well into a third or fourth modeling project. Most of the builder's attention is usually devoted to improving their skills to construct the hull and its many deck fittings.

What follows are a few intermediate techniques for producing better results when modeling your yard arms. They can be achieved without the need to purchase additional milling or soldering equipment. Simple materials can be found at any local hardware or crafts store (or maybe even your spare parts box). The exercise below documents the building of a lower yard for the main course (circa 1800).

If you are building a kit I can assume that birch or basswood dowels were probably supplied for all of the masts and spars. Taper the appropriate diameter dowel on both ends to match the plans provided. But before doing so, drill a small hole into the ends of each yard arm. It will be easier to locate and drill these holes now while the dowel has much more meat on it. It is less likely to split at this time rather than after tapering the ends down to a much smaller diameter. The outer stuns'l boom irons will be inserted into these holes later.

Whether this is noted on your plans or not, most lower yards for Napoleonic ships were constructed with the center of the yard "octagon-shaped". The eight-sided section of the yard usually covered about one quarter of its length. While shaping your spar, try to avoid tapering this center section. You can place batten strips around the yard to achieve this eight-sided geometry. Not being tapered it will be much easier to prepare and assemble the batten strips around this section of the yard. This section of the yard can be tapered after the battens are added.

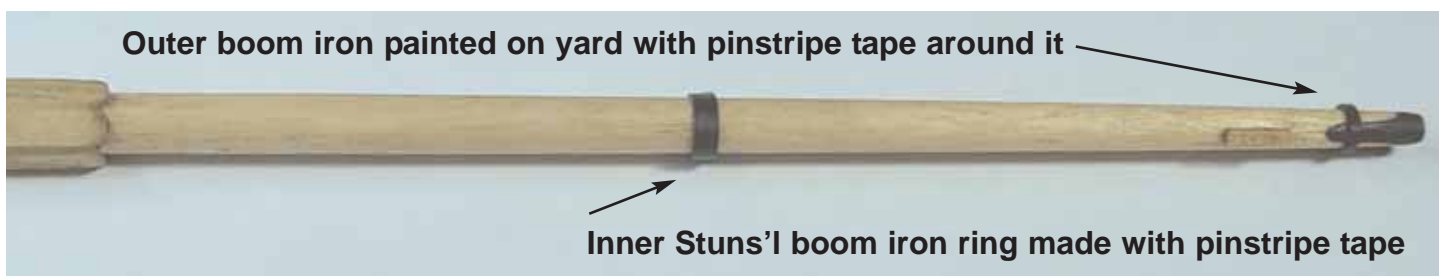
Select some wood strips no thicker than 1/32" for the battens. To help find the correct width for these strips you will need to measure the diameter of the center of the yard. Then divide that by eight. Wrapping a strip of paper around the center of the yard is an easy way to find its diameter and divide up the resulting space. When cutting your strips to the width needed, make them slightly wider. Not by much. Since you are covering a rounded surface, the outside edges of each strip need to be beveled so you get a tight fit around the yard (Hence the need to make them slightly wider). The ends of these battens can also

be rounded off as shown in the photo provided to create some extra detail. Once glued around the center of the yard any small gaps can be filled with wood filler and sanded.

Two cleats called "sling cleats" were positioned in the center of the yard. These kept all of the rigging gear contained to the center of the yard. Additionally, two "yard arm" cleats were positioned at the end of each yard arm as shown in the diagram provided. These cleats should be shown thin and slender. I often see them modeled too thick and chunky for the scale being worked. In most cases 1/32" thick will work just fine for the yard arm cleats while the sling cleats should never exceed 1/16" thick (probably closer to 3/64"). These measurements would work fine for the typical frigate built to 1-64 scale.

Working with such small finicky pieces can get frustrating. Shaping them in hand usually ends up with me on all fours trying to locate them on hard wood floors of the same color. To avoid this predicament I might suggest simply cutting the yard arm cleats to length and gluing them on as is. Then shape them after they are on the yards. Both cleats will now be in close proximity to one another which aids in producing a similar shape for the pair.

The course and topsail yards for a larger ship such as a frigate would have carried stuns'ls. Four stuns'l boom irons were fitted to the yards for their use. There was a pair of inner and outer boom irons. The inner boom iron was positioned about 1/3 the distance from the end of the yard arm. This boom iron was a simple fitting with one iron band around the yard. This band had a second one attached to it with a short rod connecting them. The stuns'l boom was slid through this iron ring which was made slightly larger for this purpose. In some cases the ring was hinged so it could be opened but I am getting ahead of myself. At this point in the yard construction you need only to locate where the inner boom iron would be positioned. Using some black automotive pinstripe tape or black paper strips, wrap a 1/16" wide (or less) strip around the yard to simu-



late this iron band. If you have decided to paint your yards black this would be the time to do it. If not, then some preparation for the outer boom irons can be completed next.

The outer boom irons consisted of an iron ring to support the boom also. A metal rod was also attached to it. This time however it is bent to form a goose neck. The end of the goose neck had iron jaws which were slid onto the yard arm. The jaws were usually let into the yard arm and bolted on. The outside surface of the jaws was more-or-less flush with the surface of the yard arm. One or two iron bands were wrapped around the jaws and yard arm to help strengthen the whole assembly.

To simulate the jaws simply paint them onto the ends of the yard arms. Since they were let into the yard arm this makes perfect sense and is a much simpler solution than creating an actual set of metal jaws. No soldering or complicated metal work is needed. Once finished wrap some pinstripe tape or paper around the jaws to simulate the iron bands securing them. These bands should not be as wide as the one used to simulate the inner boom iron. I made them no wider than 1/32". See the photo provided that shows the yard arm at this stage of construction.

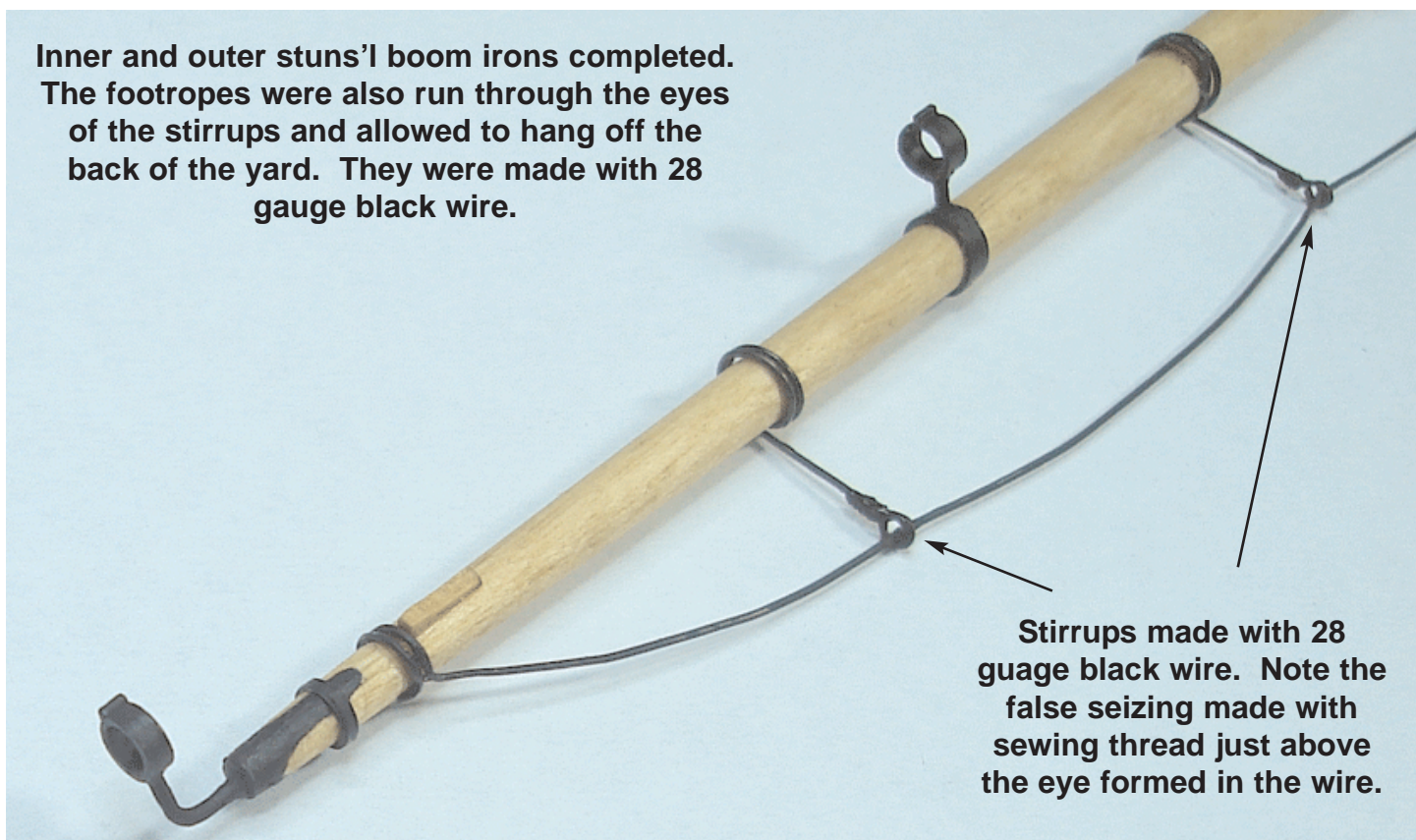
Foot ropes were hung from the yard so the sailor could have a place to stand while working the sails. They were hung from lengths of rope wrapped three times around the yard arm called "stirrups". The stirrups had an eye or thimble worked into the lower end and the footropes would be strung through them. As many as four stirrups were used on the yards of larger ships but as few as one or two for

smaller yards or vessels. The stirrups and footropes for our exercise could be made from rigging line. It usually results in a maddening session of adjusting and readjusting after they are rigged. Various stiffening agents can be used to process the line so it will lay with a natural swag. Some of the kinks and twists can be worked out of the line ahead of time of course. But as an alternative, 28 gauge black wire can be substituted. It can be used solely for the stirrups or for footropes as well. If bent around the yard and treated as if it were rigging line the results just might surprise you. An eye is formed on the end of the wire with some needle nose pliers. This would normally be sufficient for simulating the eye and thimble on the end of the stirrup. But to push the realism a bit further you could use some sewing thread to create a "cosmetic" seizing above the eye. It serves no purpose but to cosmetically enhance the idea that the stirrup is made from actual rigging line.

According to Steel, the stirrups would hang roughly 3 feet below the yard. At this distance the sailor would be able to rest his stomach on the yard while standing on the footropes. This often looks too long to me and I will at times shorten the distance slightly. Steele's description is worth noting.

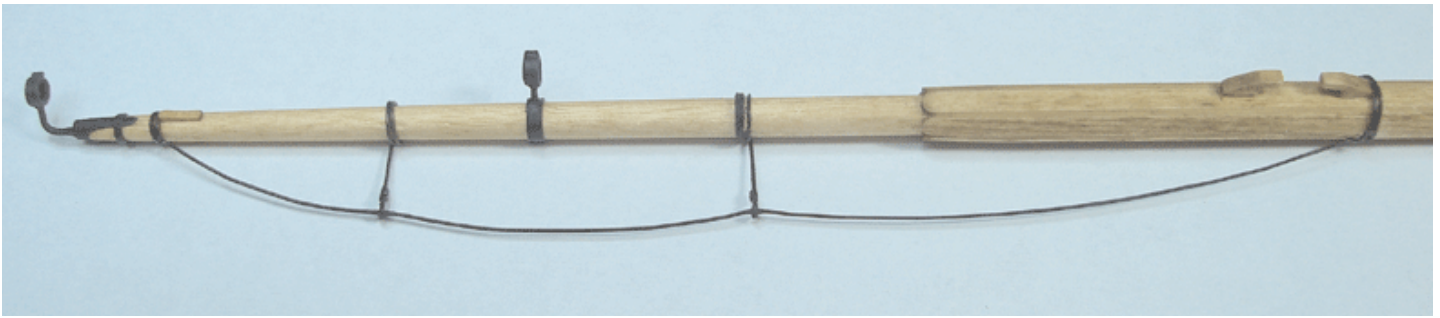
"Horses, prepared on shore, go over the yard-arms with an eye in their outer ends, and stop against the cleats, and hang about three feet below the yard. To keep the horse more parallel to the yard, it is suspended, at proper distances, by ropes, called stirrups, prepared on shore, that have thimbles or eyes spliced in their lower ends, through which the horses pass; the upper ends are opened, plaited, and flattened to the yard with three round turns and nailed."

**Inner and outer stuns'l boom irons completed. The footropes were also run through the eyes of the stirrups and allowed to hang off the back of the yard. They were made with 28 gauge black wire.**



**Stirrups made with 28 gauge black wire. Note the false seizing made with sewing thread just above the eye formed in the wire.**





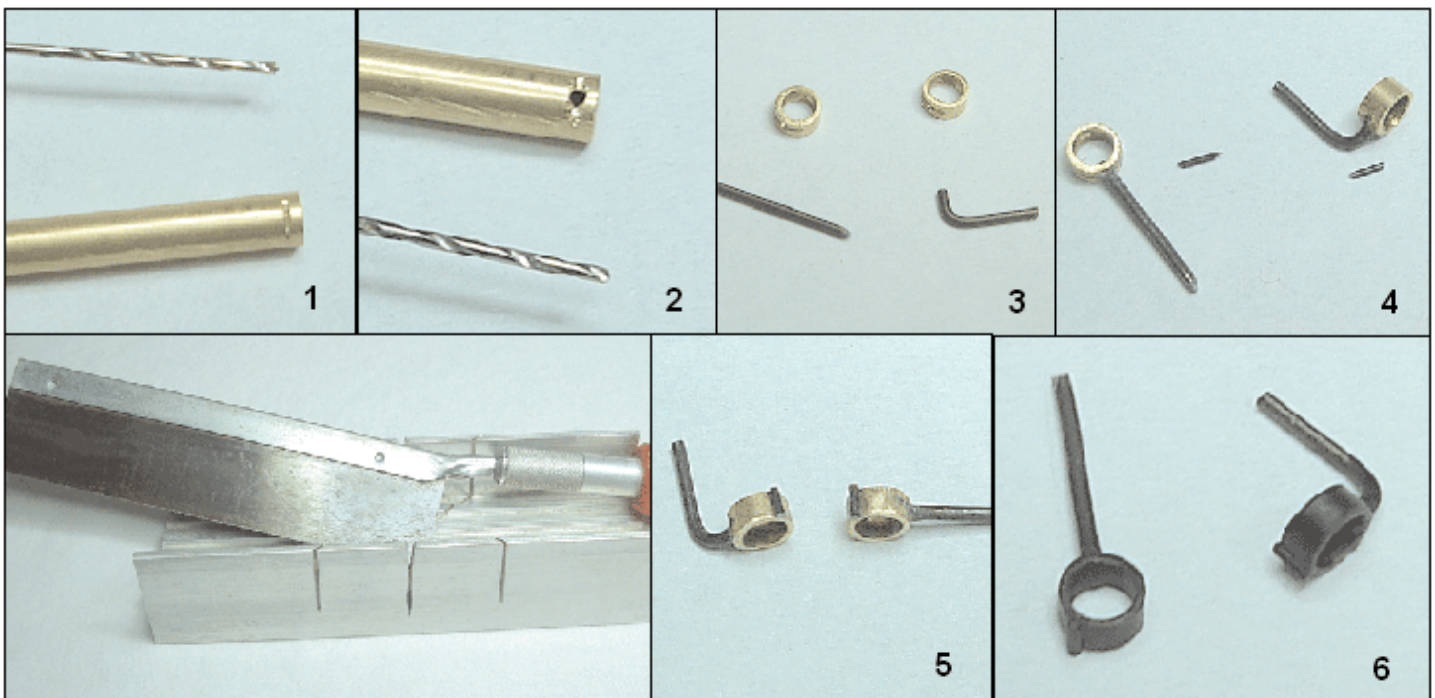
I will create two stirrups on each yard arm as if it were being used to support the footropes for a typical brig of 1800. Hanging them from the bottom/center of the yard can help conceal the fact that they were made from wire. In actual use they would have hung off the back side of the yard. You could use either approach. The footropes (28 gauge wire) is run through the eyes on the stirrups and wrapped twice around the yard on both ends. You can see in the photo provided where each end of the footrope is located. Use a needle nose pliers to create a slight bend in the footrope where it passes through the eye of each stirrup. Then create a natural looking swag between each segment of the footrope by shaping them with your fingers. The trick to using wire is NOT to make the stirrups and footropes hang too perfectly. You might want to actually introduce some "imperfection" to how they hang. This will go a long way in helping push the illusion. Draping them with near perfect hanging swags is something that lends itself to closer inspection. Introducing an ever-so-slight bend now and again will do wonders for the overall affect.

With the footropes completed, I focused my attention on the completion of the stuns'l boom irons. I chose to use a 1/8" brass tube. This was a good size which allowed the stuns'l boom to easily pass through them with room to spare. The iron rings will be slightly less than 1/16" wide

when completed. To start the process I used a simple razor saw available at most hobby shops. Use the saw to create a small cut in the tube. It's more like a "score" than a cut. This score does not have to go all of the way through the wall of the tube. The score was made 1/32" from the end of the tube. The purpose of this score is to provide a means to prevent the drill from slipping off the tube while drilling through it. See the pictures provided. The score is shown in step one.

You could substitute a styrene tube of the same diameter for these rings. Many of you might find it easier to cut and drill through. In fact, this score would not be necessary if you were using a styrene tube. The hole can be drilled through the tube after using the point of an awl to create a starter indentation.

For step two, drill the hole all the way through the wall of tube using the scored groove as a way to keep the drill from slipping. This score will be filled up with CA (super glue) afterwards so don't worry, it won't show up at all when the boom iron is finished. The hole must be the same size as 22 gauge wire. When done, cut the ring off of the tube so the boom iron is 1/16" wide with the hole in the center. You can sand down both edges to make the boom iron slightly less wide than 1/16". This also knocks down the burrs and roughness of the cut edges.



Step three - Bend a piece of 22 gauge wire to form the "goose neck" for the outside boom iron. The inside boom iron only requires a straight piece. Make them extra long so you will have a handle to hold while painting them later.

Step four - Glue the 22 gauge pieces of wire into position. Push them into the holes so the wire protrudes slightly into the tube. Once the glue dries, file the protrusion down flush with the inside wall of the tube. It will be quite sturdy I promise you. Remember, the stuns'l booms will be under no tension what so ever. There is really no need to solder these pieces together. The glue will provide more than sufficient strength here. Cut tiny pieces of 28 black gauge wire in preparation for the next step.

Step five - Glue the tiny lengths of 28 gauge wire to the rings. They will simulate the hinges that are often seen on some boom irons from this time period. You could add more detail if you wish. But this is usually sufficient and produces a nice clean simplified boom iron. File or sand the ends of the wire flush with the width of the tube.

Step six - To complete the boom irons paint them black. See the photos provided.

The boom irons can now be added to the yard assembly. They would have been set to a 45 degree angle above the yard on the fore side. Slide the end of the goose neck for the outer boom iron into the hole you drilled on the end of the yard. Establish the correct angle as noted. The inner boom iron is simply inserted into a hole drilled through the iron band you made on the yard arm earlier. If you used paper or pinstripe tape to simulate the iron band, then you should start the hole with the point of a sharp awl first. This will prevent the tape from twisting around the drill bit as you make the hole. That would ruin the finish and shape of your iron band. Cut the stem for the inner boom iron to length and insert it into the hole. Touch up any areas that need some attention with black paint and the process is completed. One thing I will caution folks on would be to avoid positioning the rings of the boom irons

too far away from the yard arm. I would suggest they be placed no further than 1/16" in 1:64 scale.

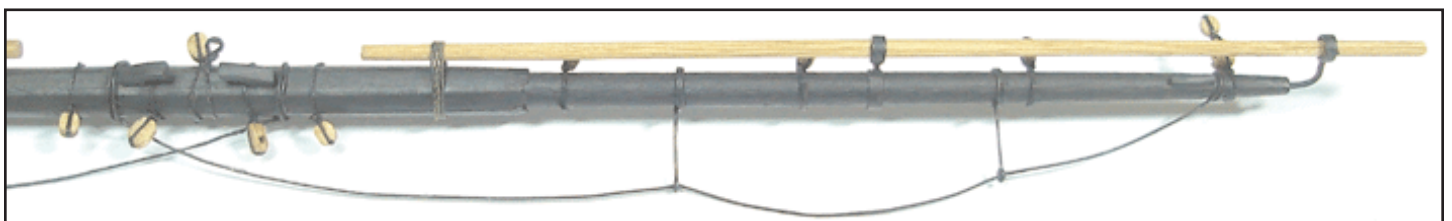
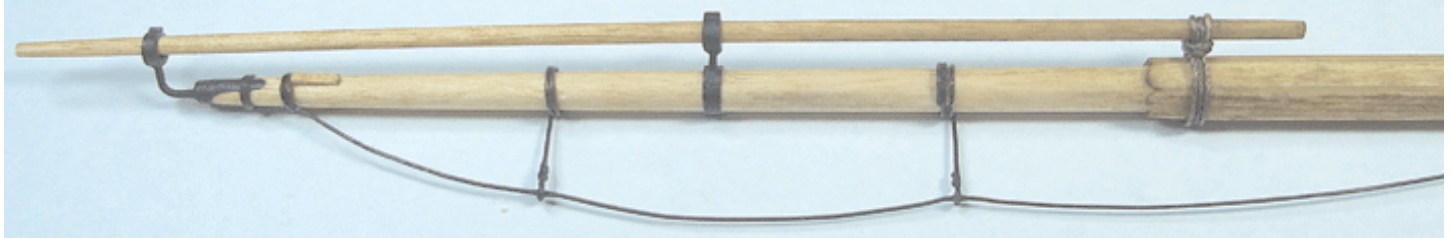
The stuns'l booms were made from a 3/64" diameter dowel. The outer ends were tapered. The inboard ends were not. In fact, you could sand the inboard end to an octagon shape. This was sometimes done with the stuns'l booms and it adds a nice touch to an otherwise plain stick. Slide them through the boom irons and add a drop of glue to prevent them from shifting out of position.

This completes the construction of the yard. At this point you can rig all of the various blocks to yard using your rigging plan as a guide. If you have decided to show buntlines and leech lines these blocks should be rigged towards the top-front of the yard as this rigging hung down the front side of the sail. The clue lines are rigged on the back side of the sail therefore those blocks should be rigged under the yard and positioned towards the aft side.

The lower yard around the turn of the 19th century had the topsail sheet block and lift block stropped together. These two blocks were rigged to the end of the yard arm against the cleats you shaped earlier. You can see them in the diagram provided at the beginning of this article. The block for the topsail sheet gives you the opportunity to improve the look of your model further. In most kits you would probably be instructed to use a larger single block for the topsail sheet and strop a slightly smaller one on top of that for the lift block. If you examined the drawing closely you would see that the sheet block has a distinct shape. There is a small lip on the inboard side of the block. Showing this detail would be easy to do. It shows that you put as much thought and detail into the masting and rigging as you did for the hull and deck fittings.

I usually start with a slightly larger kit-supplied block than called for in the instructions. I always take the time to pre shape all of the kit supplied blocks before using them. A crude square-shaped block is typically supplied with most kits. It is dead give-away for anyone with a little knowl-

**Yard arm completed with stuns'l boom lashed to the yard. Version below it shows painted yard with blocks attached. Stuns'l boom was left bright.**





edge of the hobby. It's not fun work, but rounding off your blocks will instantly improve the look of your model. I often re-drill and re-file the sheave holes and strop grooves also. Seeing as how I do all of this anyway it isn't that difficult to give the topsail sheet block its distinct shape while improving them. I take the larger block and cut the lip into the inboard side of it with a sharp Xacto blade. Then I round off all of the edges as I normally do for the other blocks. You can see the block in the photo provided to the right.

I included an additional photo of my latest model where you can see that I painted all of my yards black while leaving the stuns'l booms bright. I used all of these techniques on this model of the US Brig Syren (1803). I believe they did a good job of increasing the level of detail for the yards. I am satisfied with the results and hope that you might give these techniques a try on your next model.



**Topsail sheet block and lift block**

