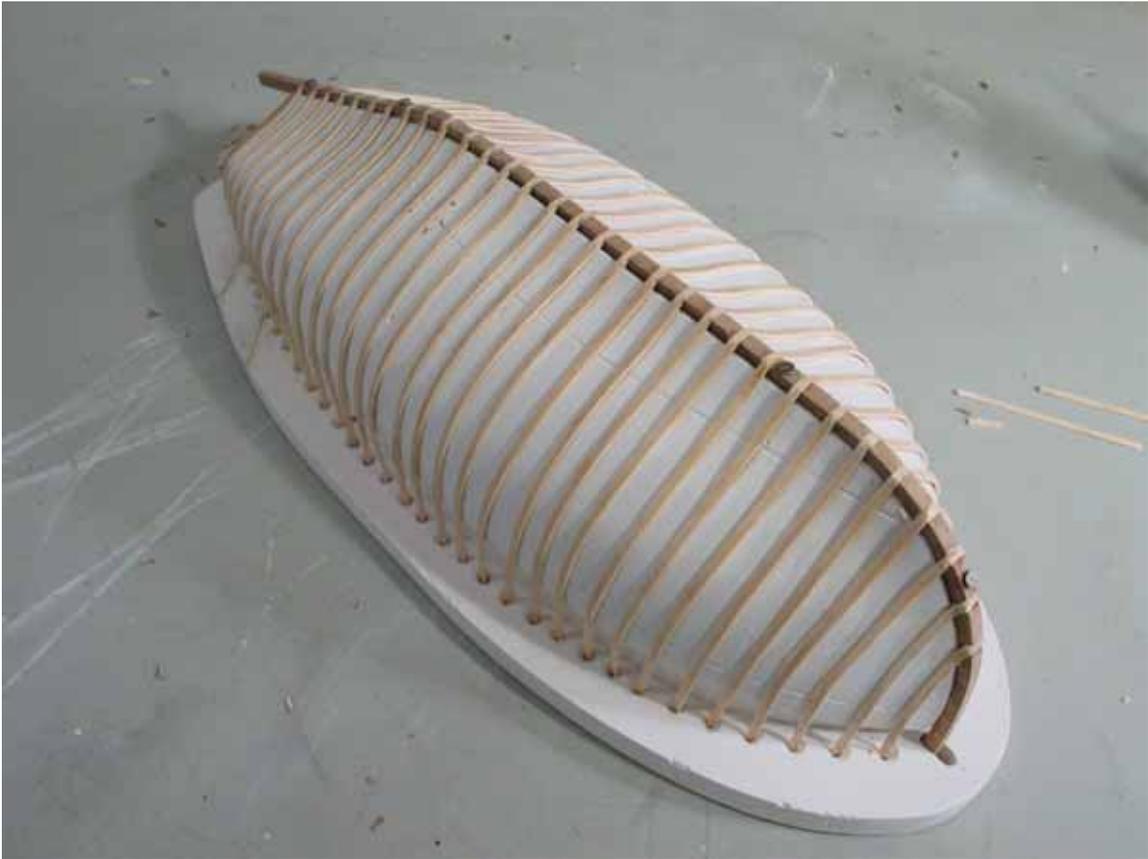


Modeling The Duke William

Chapter 1



A Practicum by Robert E. Hunt

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1. The Basic Framework

Welcome to the Duke William practicum. This practicum is an alternative to the Freshman course of the College of Model Shipbuilding, Armed Virginia Sloop. The Duke William practicum is based on the kit by Kammerlander of Germany. This is a new approach to kit construction. Instead of the traditional bulkheads used to form the hull, true frames are used but bent from thin stock rather than built up as true ships frames were constructed. Although this method is not historically correct, it is a good stepping stone to actual ship construction and produces an unique and pleasing looking model. The open framework allows for additional details in the interior of the model as well as planking options to show these details and the basic framework. We will cover the construction completely in this practicum including the masting and rigging with sails.

1.1 Introduction

First, let me say welcome to all who are participating in this practicum. Together we will build a very unique modeling with real frames instead of bulkheads as most American and European kits are designed.

This practicum is an alternative to the first in a series of six practicums I have been writing. These six practicums make up what I call *The College Of Model Shipbuilding*. Each of these practicums is designed to teach the modeler new skills and techniques. Each practicum delves more into the art of scratchbuilding and this practicum is unique in that it is a simple model yet shows basic hull framework.

The kit this practicum is based on is the Kammerlander kit, Duke William. We will be building the model just as the kit was designed with no modifications. Only basic hand tools are required such as a ruler, Exacto knife, pin vise and drill bits, small files and sanding paper. You will also need the 30-watt soldering iron with special framing tip from Kammerlander (#3003).

A private forum has been set up on my website for this practicum. This forum is for participants in the practicum and is an unmoderated forum so you may post your questions, comments or methods there so that other participants may benefit from them as well. To join the forum, go to <http://www.lauckstreetshipyard.com/forum.html> and register.

If you encounter problems or don't understand a particular part of the practicum, post a question in the forum so that it benefits others. I will do everything I can to assist you and help you in building this model.

1.1.1 Format of This Practicum

I will be using a special format throughout this practicum. First, each chapter will be broken down into sections and sections will be broken down into subsections. For example, Chapter 1 is on **The Framework**. That chapter is broken down into several sections:

- 1.1 Introduction
- 1.2 The Keelson
- 1.3 The Frames

Sub sections will be numbered according to their section numbers:

- 1.1.1 Format of This Practicum
- 1.1.2 A Word About Tools
- 1.1.3 Some Supplies you will need

At the end of each sub section, a summary will be provided with checkboxes that you can use to check off the construction as it is completed.

Summary

- Remove all of the parts indicated on sheet 1 of your plans.
- Surface glue each pair of parts and clamp with office clips.
- Lay clamped parts on a level surface to prevent warpage.

This will enable you to first read the section/sub section to understand what you must do, and then keep track of your completion as you progress. It is hoped that this format will help to simplify the complexity and completeness of this practicum.

Should you encounter a problem or have a question you wish to post in the forum for the groups benefit, or to me directly, you can then reference the section or sub section by number making it easier to know exactly what area of the practicum you are having trouble with.

1.1.2 A Word About Tools

I guess I should say something about tools. Over the years I have accumulated a number of tools and have become accustomed to their use. That is not to say that the list I'm going to give you is gospel. These are tools I like to use and it took me years to acquire them. I am not saying you need to rush out and buy all of these tools before starting this practicum. As I said earlier, basic hand tools are all that will be needed for this particular practicum. If you've been building model ships for a while, you probably have a lot of these tools or equivalents. Some of these tools are a must, some make the job go much easier. So I only list these because many modelers have asked me what tools I use to build my

models. Where possible, I list the Micro Mark catalog numbers as I find that source to be invaluable to the modeler. You can reach Micro Mark at (800) 225-1066 or <http://www.micromark.com>. I am in no way affiliated with Micro Mark nor do I receive any benefits from them by mentioning them in this practicum.

Here are the tools that I've acquired over the years and use frequently:

1. No. 5 Exacto knife handle (Micro Mark #36117).
2. No. 2 or equivalent Exacto knife handle (Micro Mark #14351 or 70233).
3. #10, #11 and #22 Exacto blades (Micro Mark #14360, 36102 and 36113).
4. Micro Saw Blades (Micro Mark #14346)
5. Dremel Rotary Tool (Micro Mark #82592)
6. Helping Hands (Micro Mark #21120)
7. Single edge razor blades
8. Office clips, small and medium size
9. Weldbond white glue. (Home Depot or Lowes)
10. Zap A Gap mid cure super glue (Micro Mark #80877 or 80878)
11. Z Ends for Zap A Gap (Micro Mark #80890)
12. Five minute epoxy (Home Depot or Lowes)
13. Swiss style watchmakers tweezers (Micro Mark #19101)
14. Deluxe pin vise (Micro Mark #82110)
15. Dimensioned mini square (Micro Mark #82147)
16. Steel machinist square (Micro Mark #10117)
17. Angled high precision micro shear (Micro Mark #80334)
18. Tweezer nose pliers (Micro Mark #80338)
19. Mid size file set (Micro Mark #81063)
20. Stainless steel 6" ruler (Micro Mark #10114)
21. True Sander (Micro Mark #14475)
22. Micro drill bit set (Micro Mark #60362)
23. Delta Scrollsaw or Jewelers Saw (Micro Mark #22105)
24. Byrnes Miniature Table Saw (Jim Byrnes)
25. Ponce wheel (Micro Mark #15200)
26. 3" Toolmakers angle plates (Micro Mark #60626)
27. Pan vise (Micro Mark #21123)
28. Delta bench top mini disk/belt sander (Micro Mark #82218)
29. Preac tablesaw
30. Preac thickness sander
31. 9" bandsaw
32. Mini wood lathe with duplicator
33. Turbo carver with all available bits and compressor
34. Pasche single action air brush with compressor

There are probably other tools I use infrequently and did not mention. For this course you will need items 1 – 22.

1.1.3 Some Supplies You Will Need

There are several items I use regularly in the practicum that do not come in your kit. So that you will be prepared when the time comes, here is a list of certain supplies you will find yourself using routinely:

- Weldbond White Glue
- Zap A Gap Super Glue
- Z Ends
- Five Minute Epoxy
- Thirty Minute Epoxy
- Tracing Paper
- Thick Card Stock
- #10, 11, 22 Exacto Blades and Knife
- 100, 150, 220, 330 and 400 Grit Sandpaper
- Polyurethane Satin, Wipe On Poly or Sanding Sealer
- Toothpicks
- Office Clips
- Rubbing Alcohol

Other items may be needed as we progress and I will try and give some advance notice of these items when they come up.

1.1.4 Copyright Notice And License Notice

All writings, drawings, photographs or plans provided in this practicum are protected under Copyright laws. Reproduction of any part of this practicum, other than for personal use, is strictly prohibited. Distribution of this practicum to others without the author's permission is strictly prohibited and a violation of the author's copyright.

All files on these CD's are also protected under copyright law and are not to be copied or distributed to others. They may be printed by the subscriber for personal use only. Printed copies of these files may not be copied and distributed to others.

When you purchase this practicum, you purchase it for life. It is not like a book that you can read and then later discard by passing it along to someone else, or selling it through eBay or by any other means. The practicum is **software** and is being **licensed** to you as part of a teaching course. You are **licensed** to use the practicum to help you build the subject model but the **license is not transferable. By accepting this practicum, you agree and consent to abide by the license.**

Ok, that's the legal mumbo jumbo. It is hoped that you all understand that to build a model ship is no easy task. To build the model and go into descriptive

detail with photos to explain the entire process is even more work and challenging. I do hope that you all will respect these copyrights and this license agreement and abide by them. If you find it absolutely necessary to not adhere to them, please contact me first and explain your situation. I'm pretty darn easy to get along with if I understand the problem. Thank you.

1.1.5 Summary

In summation, I hope that you will find this practicum useful and wish you success in completing the model. I will attempt to steer you clear of problem areas and keep the sequence of construction in a meaningful and useful fashion so that we don't paint ourselves into a corner and accept mistakes that could have been avoided.

Good luck and thank you for subscribing.

Bob Hunt

1.2 The Keelson And Transoms

We start construction by mounting the precut keelson to the plaster mold that came in your kit. To mount the keelson, you will need some small nails with a head on them. Photo P1.2-1 shows the kind of nails I used.



P1.2-1

You can see from the size of the Exacto knife that the nails are about 1 1/4" long and about 1/16" in diameter.

Locate the precut keelson. It is on a piece of brown card stock labeled #1 and fit it to your plaster mold in the groove provided. Photo P1.2-2 shows how I first drilled a hole through the keelson and into the plaster mold. The holes can be located anywhere but must be between the etched frame lines on the plaster mold. This is so that they do not interfere when the frames are added later.



P1.2-2

One thing you might notice in this photo is that at the bottom of the picture, you can see where my mold was broken. I used some 5 minute epoxy to glue the pieces back in place. This did not cause any problems when I framed the model. If this has happened to your mold, just be sure that you do not clog up any of the holes when you glue the pieces back together.

You want to be sure and drill your holes centered side to side in the keelson and deep enough for the nails to go all the way in. I first drilled the holes just slightly narrower than the nails were so that they would grip the plaster when tapped into place. But before I inserted the nails, I re-drilled the holes in the keelson slightly larger than the nail so that the nail would slide freely through the keelson but grip the plaster mold.

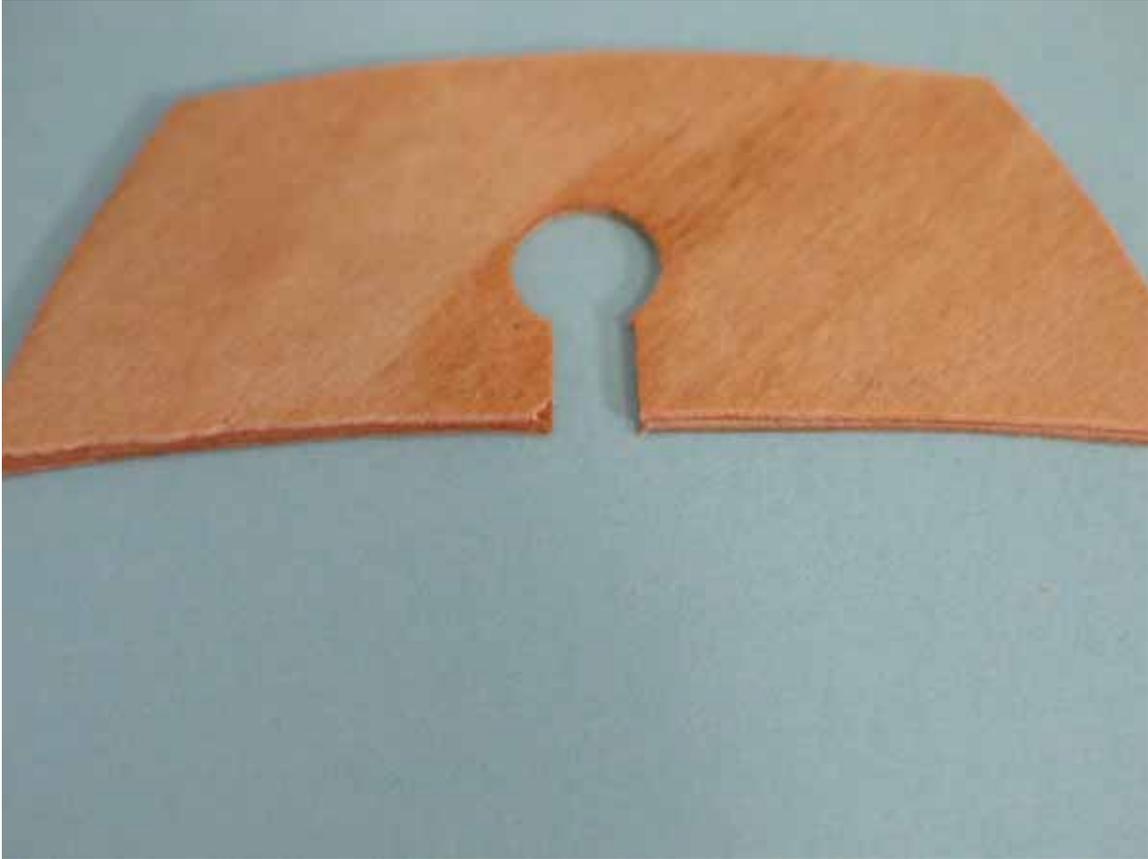
Place at least 4 nails into your keelson, one at the front, one at the back and two in between. You want the keelson held tightly in place on the mold while you frame the model.

I used a small hammer as shown in photo P1.2-3 to tap my nails into place. You do not want to tap the nails very hard or you may break the plaster mold. If you are encountering too much resistance, you probably need to drill your holes deeper or slightly wider or both.



P1.2-3

After attaching the keelson, locate the transom. It is in bag #1, card #4. It is a plywood piece that fits the stern of the ship as shown in photo P1.2-4.



P1.2-4

Also locate the wing transom in that same bag. Both the transom and wing transom must also be nailed to the plaster mold and glued to each other. Look at photo P1.2-5.



P1.2-5

Here you see the transom (top piece) and wing transom (bottom piece) nailed to the plaster mold. The transom sits in a groove in the plaster mold. The forward edge of the wing transom needs to be beveled to match the angle to the transom and it is glued with super glue to the backside of the transom. The transom also has a notch, which fits the keelson and is glued. Be careful that you do not glue these parts to the plaster mold. I used a #75 drill bit and some small brads I purchased at an arts and craft shop to nail the pieces to the plaster mold. Later the extra part of the keelson will be cut off so that the sternpost can be installed. But don't worry about that just yet.

Another piece in bag #1 is the deck transom, which attaches to the remaining part of the plaster mold and is glued to the wing transom. Photo P1.2-6 shows this piece in place.



P1.2-6

Once these pieces are in place, we are ready to start our framing.

Summary

- Locate your precut keelson and fit it to the plaster mold.
- Drill 4 holes along the keelson and into the plaster mold so that nails can be inserted to hold the keelson tight against the mold.
- Gently tap the nails in place.
- Locate the transom, wing transom and deck transom.
- Using a #75 drill bit and small brads, attach these parts to the plaster mold and glue them to each other making sure you don't glue them to the plaster mold.

1.3 The Frames

We are now ready to install our frames. All of the frames are made from strips of 1mm x 2mm x 250 mm maple and are labeled #2 on your brown card stock parts holder.

The frames have to be soaked in **cold** water for **only 5 minutes**. I found that I could soak one frame for 5 minutes, take it out to be installed on the model while replacing it with the next frame. But the time I got the frame installed, the next frame was ready for installation and the process was repeated.

You also **must use** super glue (CA) to glue the frames to the keelson. The reason is because you are using a hot iron to bend the wet frames and the heat of the iron instantly sets the glue joint. This is all part of the design of the kit and how it is meant to be built. Unless I tell you otherwise, use CA for everything glued in this practicum. For this I use Zap A Gap with a Z End tip. These are listed earlier in the Introduction section of this chapter.

Before you can install a frame, you must cut a notch into the keelson where the frame will be glued. The frame is only glued to the keelson. Photo P1.3-1 shows a frame before it was placed in the water being used to cut the notch in the keelson.



P1.3-1

You can see that the frame is lined up with the double lines etched in the plaster mold. The notch is just deep enough and just wide enough for the frame to fit snugly and flush with the surface of the keelson. It doesn't really matter where you start your framework. I started in the middle as this area had the least amount of bending to it and it gave me a chance to install a few frames and get the hang of the bending first. The frames at the bow and stern have a much more pronounced bend but are all installed in the same fashion.

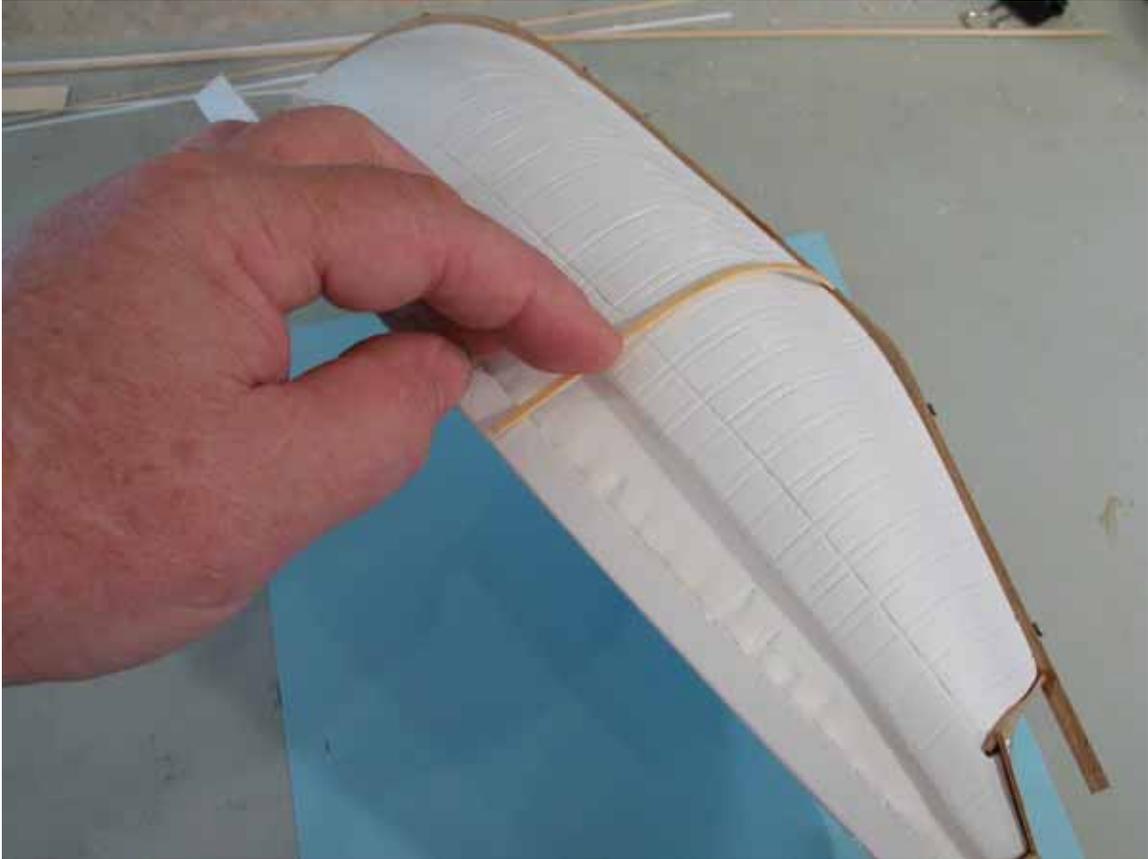
To help explain how the frames are attached using super glue and the soldering iron with framing tip #3003 from Kammerlander, video V1.3-1 is provided.



V1.3-1

Now take the first frame you soaked for 5 minutes and insert it into the hole on one side of the mold and bend it across the keelson fitting it into the notch. Use your hot iron to press the frame against the hull, especially at the keelson working it across and down to where it was inserted into the hole. Then work the iron across the frame on the other side so that you bend the frame to follow the contour of the hull, especially at the keelson. Once bent, lift the frame out of the notch so that you can put a bead of super glue in the notch. Then press it back down with the soldering iron and hold it there for about 10 seconds. This will seal the glue.

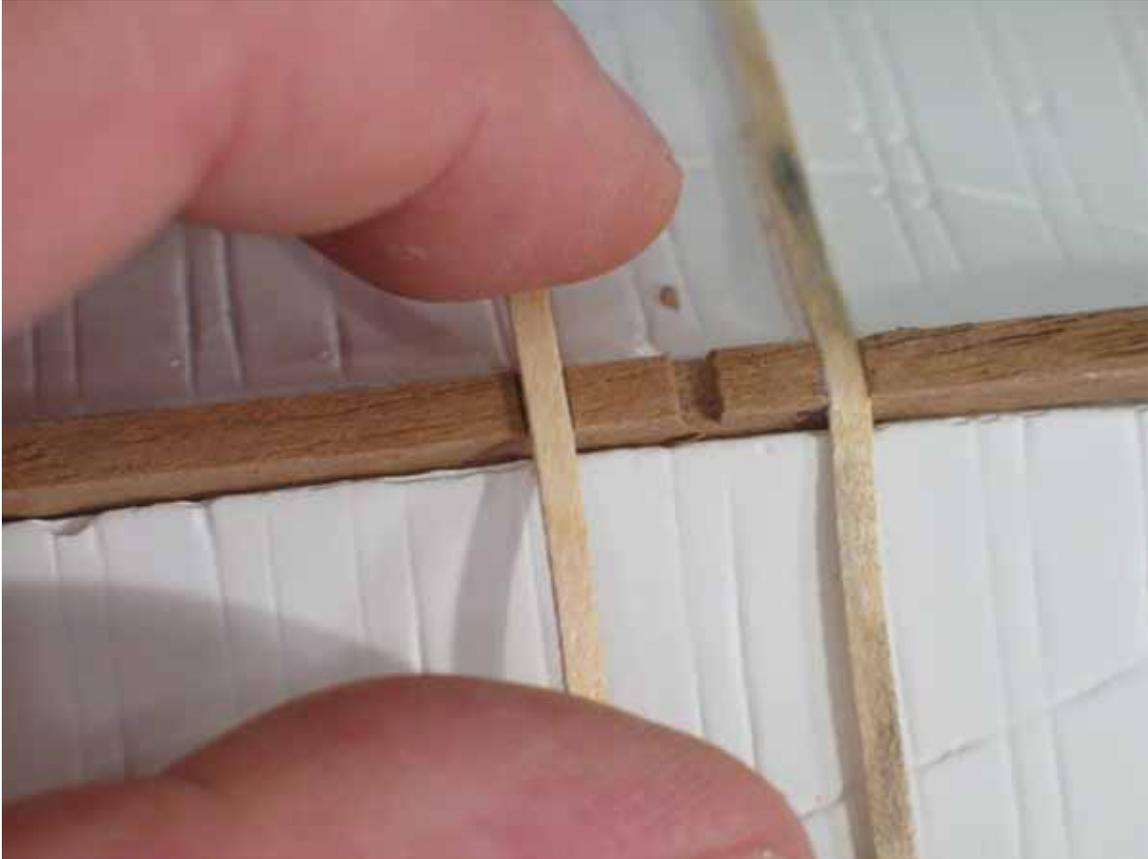
Wrap the frame around to the other side and cut it off at a point about half the thickness of the mold as shown in photo P1.3-2.



P1.3-2

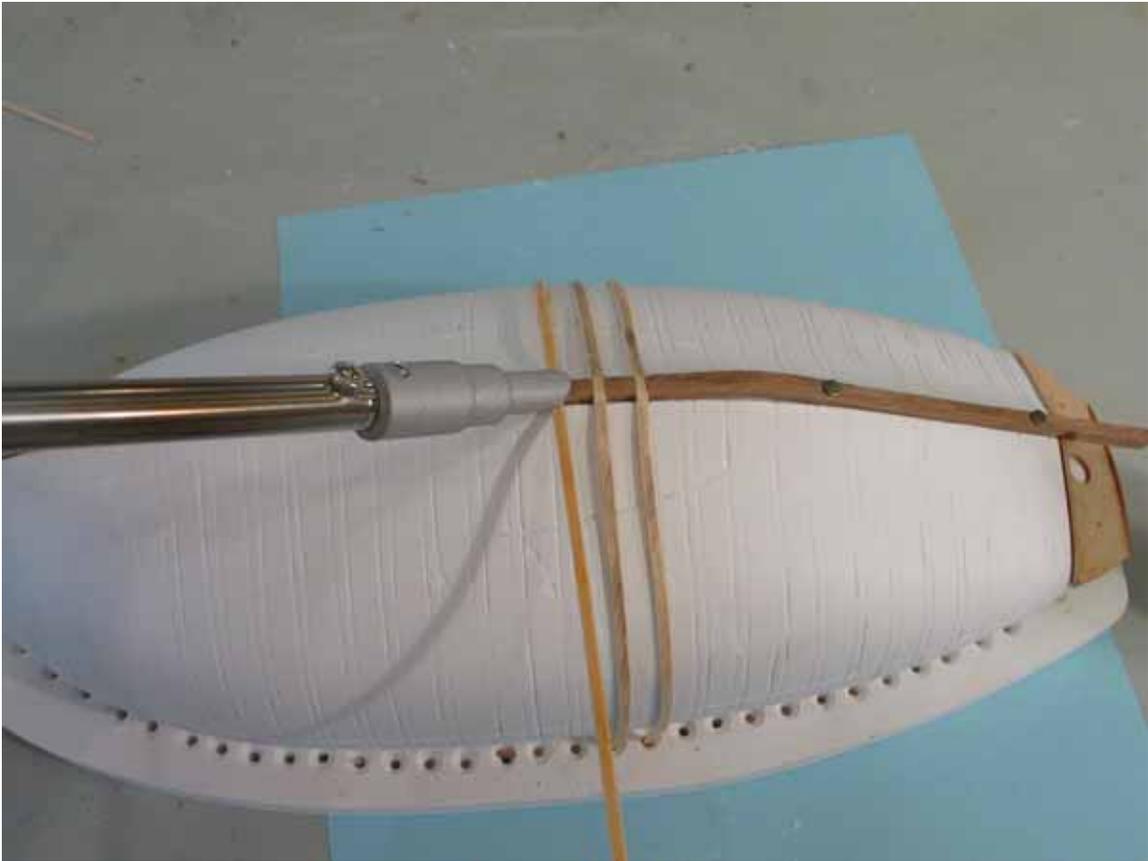
Then insert it in the hole on that side. Continue to iron the frame against the mold with the soldering iron.

Photo P1.3-3 shows the first frame in place, a notch cut for the second frame and marking the location for the notch of the third frame.



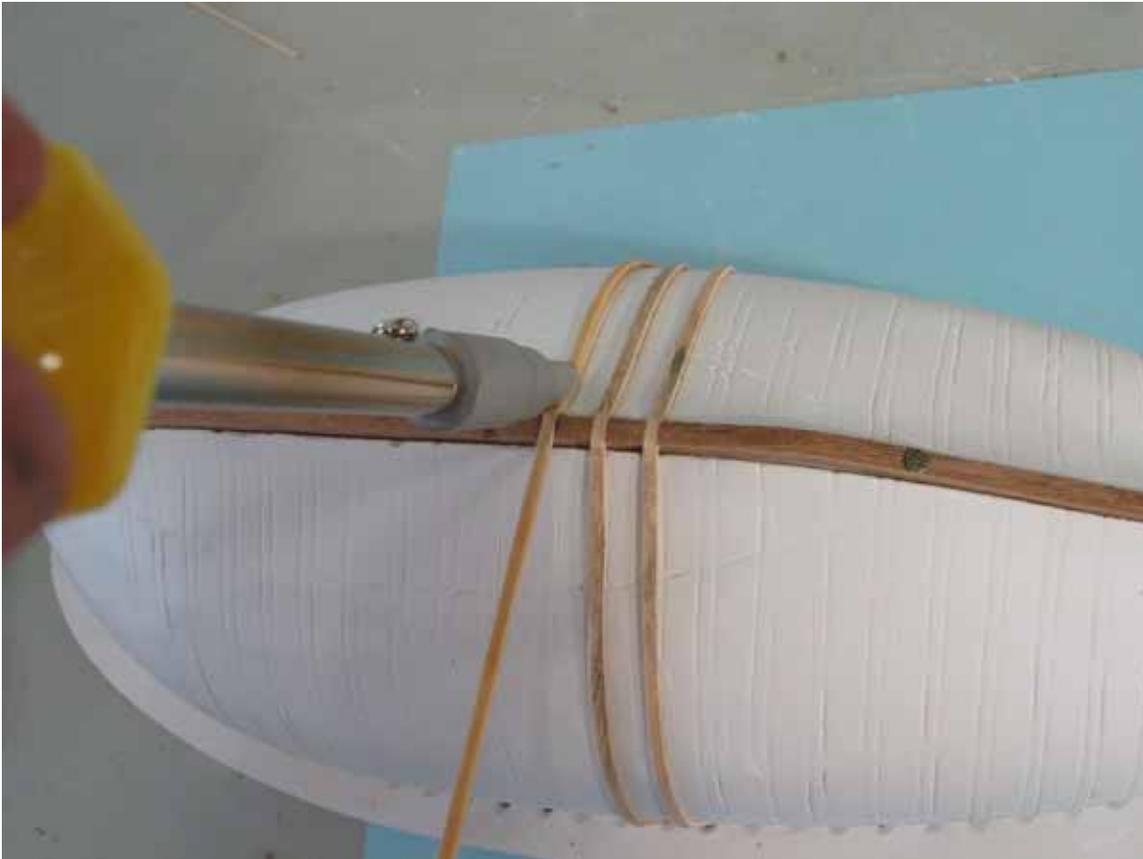
P1.3-3

Photo P1.3-4 shows two frames installed and the third being heated at the notch to glue it in place. I tried a different method this time starting at the notch first and then bending the frame on each side with the soldering iron after the frame had been glued to the notch. It worked just as well this way as the manner shown in the video clip. I think you'll find that it's quite easy to bend the frames into place.



P1.3-4

Photo P1.3-5 shows ironing the frame on one side after gluing it to the keelson.



P1.3-5

At the bow, the frames take on a bend across the keel but are also bent to follow the lines on the mold. They will split some when you make these bends and it's best to glue them back at the split with super glue before the break completely in two. Photo P1.3-6 shows the bow frames.



P1.3-6

The wood is soft and will bend pretty easily but as you can see, the bend at the keelson is pretty acute.

The stern is not too difficult. There is one very short frame that connects to the wing transom. You will have to cut a small notch into the wing transom first. Photo P1.3-7 shows this area of framing.



P1.3-7

Photo P1.3-8 shows the completed framework at this stage.



P1.3-8

After framing, wait at least 24 hours. Then come back with an eyedropper and apply water to the frames at the keelson and iron them down again. You want to get them to adhere to the shape of the mold as much as possible with little or no gap between the frames and the plaster mold. When you're satisfied with the fit, you are ready to move on to the next step.

Summary

- Use 1mm x 2mm x 250 mm maple for your framing.
- Soak one frame at a time in water for 5 minutes.
- Cut a notch in the keelson where the frame crosses and within the double lines that show the placement of the frames.
- Insert one side of the frame into the hole in the mold and bend over the keelson using your soldering iron to iron the frame down against the mold following the contour of the mold.
- Glue the frame to the keelson with super glue and iron for 10 seconds to get the glue to stick.
- Cut the frame off 1/2 the thickness of the mold after bending it over and ironing it on the opposite side, then tuck the end into the hole provided in the mold.

- Repeat this process for every frame depicted on the mold. Add a small strip at the wing transom and cut a notch in the transom to fit the frame into.
- Allow 24 hours for the frames to dry.
- Use an eyedropper to wet the frames again and continue to iron trying to get the frames as close to the plaster mold as possible.

1.4 The Stem, Sternpost, Deadwood And Keel

Once you've attached all of your frames and ironed them real well, lightly sand the surface of the keelson and frames to make sure it is a smooth, flat surface.

Next, locate the stem in your kit. It is also in bag #1 and is precut. You will now need to remove the nails from the keelson. I used my angled cutters to pry them up and pull them out. Do not remove the framed keelson. Leave it all in place still.

Test fit the stem to the keelson. Mine needed a little bit of trimming and sanding to get a good fit. There is a notch in the plaster mold that the stem fits into.

To form a rabbet, use a sanding stick and sand the edge of the keelson and frames from the point where indents at the bow to about frame 7. Photo P1.4-1 shows the beveled edge on the keelson. Do this on both sides.



P1.4-1

The keel needs to be trimmed and fitted to the scarf joint on the keel before the keel is attached. The keel is also on the first card stock labeled #1 and is 4mm x 7mm x 240 mm. Photo P1.4-2 shows how the two fit together.



P1.4-2

You can see that the keel is beveled slightly to fit the stem. Once you've got a good fit and the stem fits well to the keelson, glue the stem with Weldbond holding it in place tightly with your fingers and a tack of super glue at the thin end where the scarf joint is. Photo P1.4-3 shows the stem attached.



P1.4-3

After the glue has set on the stem, we turn to the sternpost. The sternpost is in bag #1 of Card #4. It has a notch in it. The notch sits on top of the keelson as shown in photo P1.4-4.



P1.4-4

The narrow end fits in the notch in the wing transom and it is glued to the outside of the transom. Glue this in place with Weldbond.

Now we add the stern deadwood. This is a piece of plywood found in bag #1 of card #4 also. First, test fit this piece to the sternpost and the keelson. I found that my keelson was thicker than it should be and had to trim mine down the thickness of one hull plank. If you plan to plank both sides of your model, you will want to trim the deadwood down some on both sides so that when it is centered on the keelson, it is slightly thinner than the sternpost and keelson. When the planking is added to the hull, the planks will be glued directly to the deadwood and bring the thickness flush with the keel and sternpost. Photo P1.4-5 shows the stern deadwood attached to the keelson and up against the sternpost. You may need to sand the edge some to get a good fit against the sternpost.



P1.4-5

You can see in this photo that my sternpost is too tall. Must be a defect in the kit. Yours may or may not fit correctly. But it's an easy thing to correct. I used a ruler aligning it with the deadwood and drew a line across the sternpost, then cut it off with a #13 Exacto saw blade.

You can also see in this photo that I had not yet thinned down my stern deadwood. It is still the same thickness as the sternpost, keel and keelson. I think this might also be a slight design flaw unless I'm misunderstanding the intentions of the designer when it comes to planking. Normally the deadwood is thinner and forms a "L" shaped rabbet joint with the keel because the planks lay flat in a vertical orientation and sit atop the keel with their bottom edge glued to the keel and their inside surface glued to the deadwood. This is how I planked my model so you should thin your deadwood as explained earlier.

Now we're ready to add the keel, which connects at the scarf joint to the stem and is glued to the keelson and deadwood locking the frames in place. I used Weldbond to glue the keel in place. Photo 1.4-6 shows the keel in place.



P1.4-6

Note also that I had not thinned down my deadwood. Matter of fact, I didn't thin it down until I got to the planking stage and it was much more difficult to do so at that time. I strongly suggest than you thin your deadwood before you install it if you intend to plank the lower hull.

And that completes the basic construction of the framework. You should lightly sand the surface of the frames with 150 grit sandpaper to smooth out any splinters caused by the bending. You may have to cut off any excess keel that extends past the sternpost. Make sure you keep a smooth, straight line that is an extension of the sternpost aft edge though.

Summary

- Use a sanding stick to bevel the outside edges of the keelson from the point where there is an indentation in the mold to frame 7.
- Remove the nails holding the keelson to the plaster mold.
- Locate the precut stem and test fit it to the keelson. Make any adjustments by trimming and sanding to get a good fit.

- Locate the keel piece and bevel one end to fit the scarf joint in the stem.
- Glue the stem in place.
- Locate the sternpost and glue it to the transom fitting it in the notch in the wing transom.
- Add the stern deadwood after thinning on each side by one hull plank thickness.
- Trim the sternpost if necessary and attach the keel to the keelson, scarf joint at the stem and the stern deadwood.
- Cut off any excess of the keel making it even with the sternpost.
- Sand the frames lightly with 150 grit sandpaper.

1.5 Chapter Summary

We're off to a good start after completing our first chapter. We've framed the ship and you've learned about the keelson, keel, stem, deadwood and sternpost and how they all act to lock the frames in place. Later when we build the Hannah from scratch, you'll already be familiar with how all of these parts come into play.

In our next chapter we'll start planking the hull and once that's complete, we can remove the framed hull from the plaster mold.

