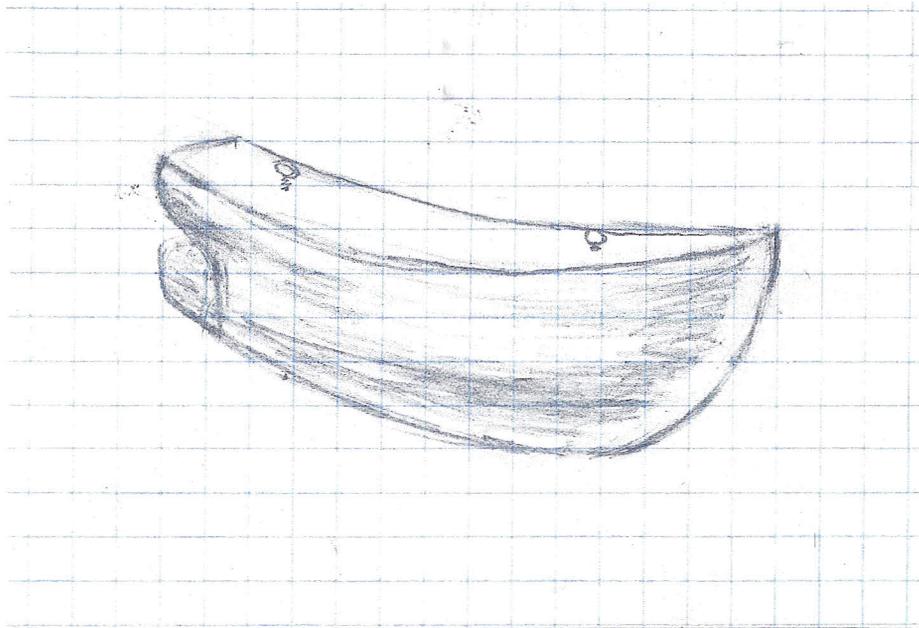


HALF HULL CARVING



Rivers West Workshop

At the Boat Shop

October 5 & 19, 2013

Time: 9AM-3PM

Instructor: Mike Simmons

HALF HULL MODEL CARVING WORKSHOP

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A Little Background

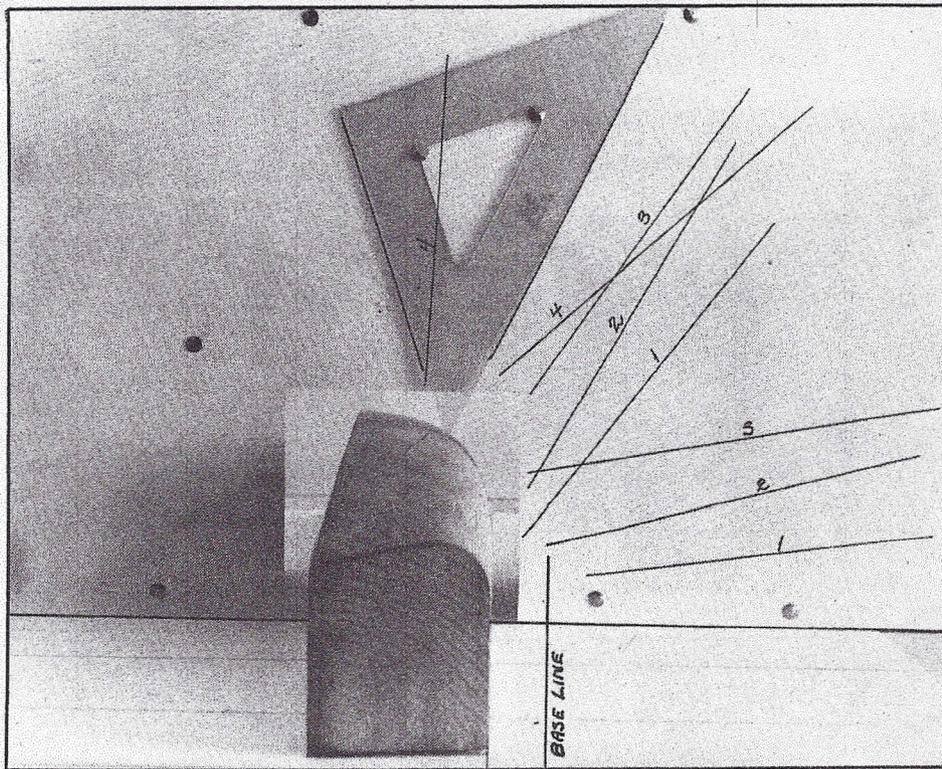
According to Grimwood, "lift" or "waterline" models as design tools, were made in this country as early as 1790. This profile of the hull is made up of layers that join at the waterlines as represented in the vessel's plan. The usual plan drawings are made up of a sheer or profile drawing (side view); a body plan divided vertically at the centerline to show the (front view) on one half and the rear view) on the other half; and the half breadth plan showing the vessel's lines on one side and deck details on the other side (top views). Any drawings used will be reviewed during the workshop.

Templates are needed from an existing build; either taken from the designer's drawings or directly from another model or from a full size hull. The profile drawing shows the profile of the hull, showing the sheer, stem, keel rabbets, stern post, rudder and the developed view of the transom if possible. The half body plan provides outer hull contours at designated stations perpendicular to the centerline. The half breadth plan shows the top view of the hull, giving hull widths at designated stations and the outer curve of the hull.



Posterboard templates for shaping a solid half model. From top to bottom: numbered sectional templates; sheer halfbreadth with section lines marked; profile template with section lines and load waterline.

John Gardner showed a simple bridge to pick off lines of a model hull in his article in *The National Fisherman 1985 Yearbook*.



Bridge for taking off sectional shapes. The model is resting on its back on its profile view, which has been traced out on the horizontal drawing board. The bridge is set up on one of the extended section lines.

Now for the project at hand.

Our workshop is adapted from a little monograph by David King, last published in 1996 by the Maine Maritime Museum. There are two models from which to choose one for construction during the workshop: an 11-1/2' Herreshoff dinghy or a Muscongus Bay sloop (a forerunner to the friendship sloop). Construction procedures are the same for both models. The construction information is clearly laid out in the monograph. You will also be provided with a simplified procedure outline.

Lifts for one model (contrasting fir and cedar lifts milled to 1-3/4" thickness) will be provided. Copies of the plans, to be glued to poster board and cut out, will also be provided. Some sandpaper will be provided as well. 30 and 50 grit will be available for shaping. Finer finishing is up to you. I like to use up to 320 grit wet and dry sandpaper for smoothing.

Although the dimensions for mounting boards are provided, I usually prefer to mount the hulls that I construct without them. Hulls may be left unfinished, waxed or finished with your favorite finish. Shellac or one of the "Watco" oils are among my favorite choices. To increase contrast between the two lifts, one of them may be stained a contrasting color to the other.

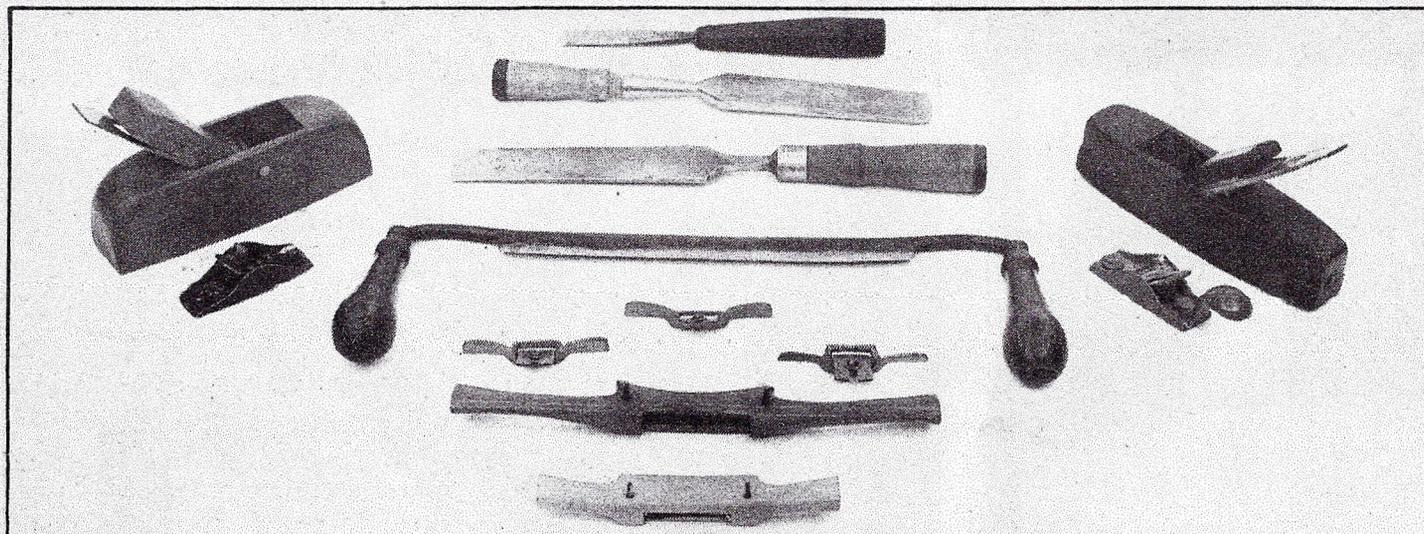
Tools needed for the project:

1. 18" straight edge.
2. #2 pencil and eraser.
3. Basic bench chisel set (paring chisels would also be useful.)
4. Combination square.
5. A small plane (Stanley 101 or equivalent would be good.). A block plane would work.
6. Basic carving gouges (A 3/4" dowel with some 30 and 50 grit sandpaper works.)
7. Scissors
8. A good mat knife
9. A good carving knife or jack knife would be useful.
10. A 10" or 12" half round bastard file (a must have).
11. C-clamps or F-clamps for clamping carving stand to bench top.
12. A long Styrofoam sanding block.

Other tools that may come in handy:

1. Spoke shave.
2. A small draw knife.
3. Various model making and Luthier planes.
4. A small tape measure or folding ruler.
5. French curves, ships curves, dressmaker's curve for working drawings or cleaning up lines on templates.
6. Battens (can be useful in fairing the hull). In our case, the sense of touch and sight will work very well.
7. A good compass.
8. T-pins.
9. You may have other favorite layout or carving tools---bring them.
10. Your sharpening kit to keep these tools as sharp as possible.

(Note: We are not drawing plans during this workshop.)



Helpful tools for making half models, including carver's gouge, pairing chisels, draw knives, metal shaves and both thumb and smoothing planes.

Construction Procedure Outline

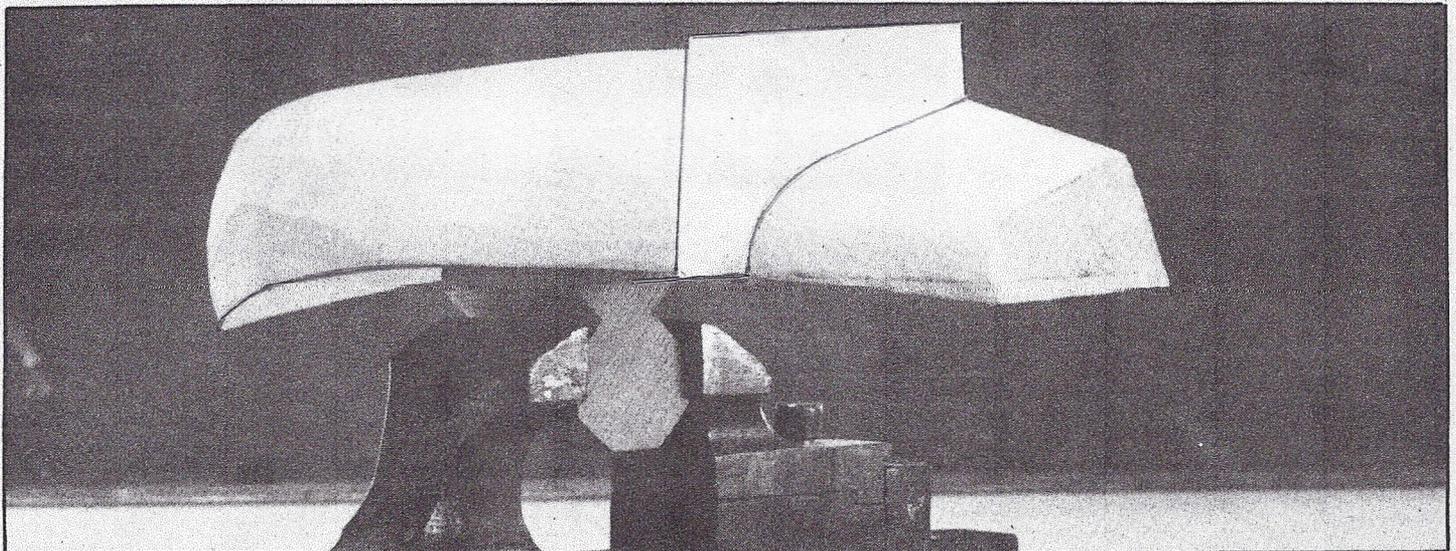
Day one:

1. Glue or screw the prepared lifts together and check for squareness.
2. Construct the hull templates.
3. Draw the station lines perpendicular to the centerline all the way around the hull blank.
4. Trace the half breadth plan on both the top and bottom of the blank.
5. Slice 1/16" piece off of the outer block edge for keel piece on the sloop only.
6. Trace the profile plan onto both vertical sides of the blank.
7. Cut out the sheer and rocker.
8. Tack the cutout pieces back onto the block and cut out the half breadth contour.
9. Redraw the section lines around the hull. Be sure that each station is numbered on the back of the block.
10. Draw the section contours at their correct locations on the back of the block.
11. Draw a line 1/16" from the center line along the bottom, stem and stern post location.
12. Attach the hull to the holding jig.
13. Start carving at the midship section (sometimes called the "midship bend" or "dead flat"). Move forward to each section as each correct contour is approximated. Then work back from the midship section toward the stern.

Day two:

14. Clean off the excess material between the sections. Remember to leave the 1/16" flat along the centerline of the hull blank.
15. Refine the hull surface to attain a smooth form. A batten can be useful here, but the sense of touch may prove more useful.
16. Attach the stern post, keel, and stem on the sloop. This is not necessary on the dinghy hull.
17. Finish the hull to taste.
18. Drill two holes into the back of the hull for mounting, or mount as you wish.

NATIONAL FISHERMAN YEARBOOK 1985 105



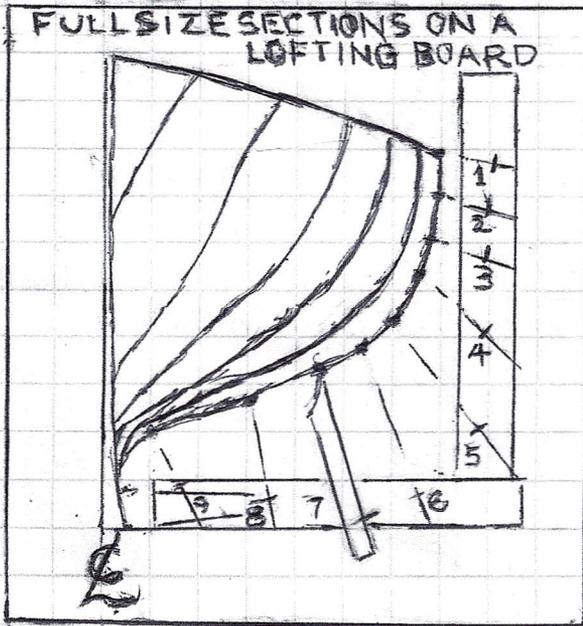
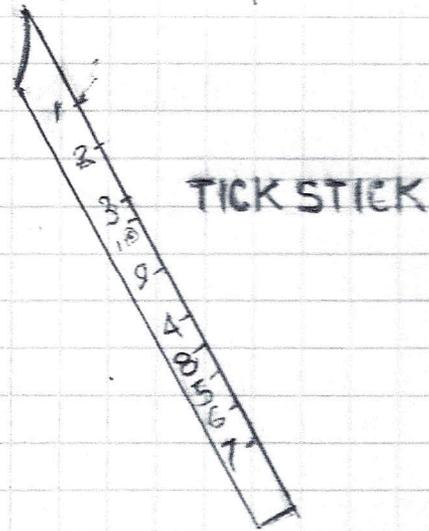
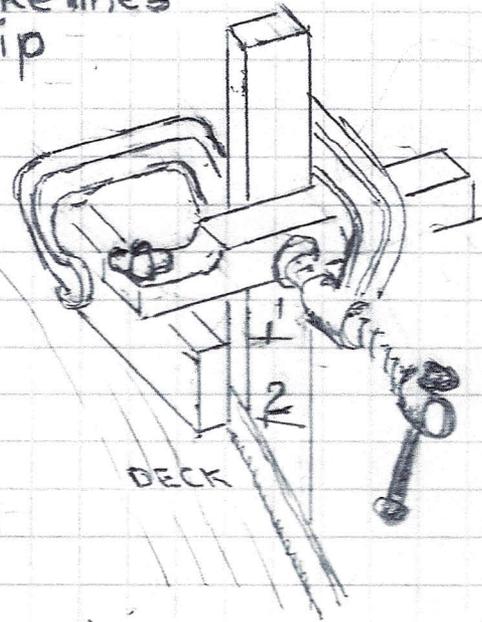
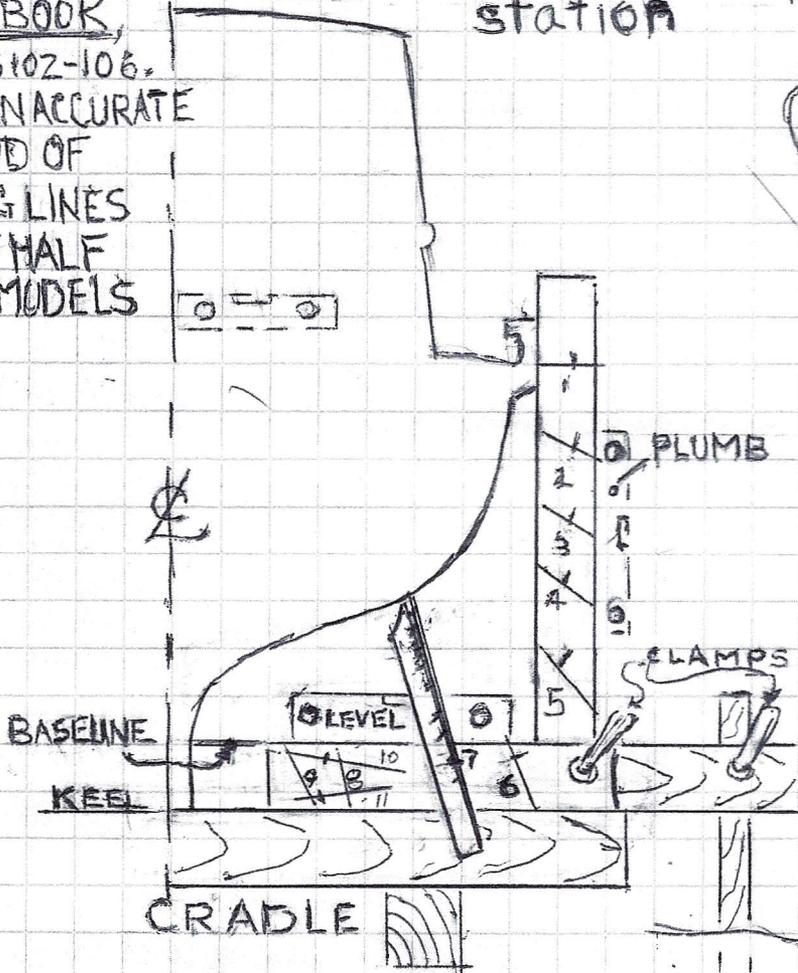
Solid half model in process of being shaped on iron swivel vice. Note the gripe screwed to the top of the model and the template used to test the shape.

WOODEN BOAT #115, DEC. 1993

"TAKING THE LINES OFF A BOAT," by Barry Thomas with Clark Posten & Bret Laurent, pages 71-73

See John Gardner's article in 1985 NATIONAL FISHERMAN YEARBOOK, PAGES 102-106. FOR AN ACCURATE METHOD OF TAKING LINES OFF OF HALF HULL MODELS

Set up to take lines off the midship station



MEASURE THE HULL AT EVERY PLANK SEAM.

- DIRECTLY YIELDS FULL SIZE BODY PLAN
- THE PLANK LINES ARE RECORDED
- THE SHAPE IS SAVED

TAPE PAPER STRIPS TO STRAIGHT EDGES. TAPE THEM TO THE LOFTING BOARD TO TRANSFER MEASUREMENTS

Finally:

Gardner stated that completed half models have a variety of practical uses. Among them are ; layout of planking lines, to set up spiling shapes, to set up plank widths, as well as frame and mold bevel setups. He also listed preferred scales for working lift models as: 1 ½"/1' for hulls around 20' LOA; ¾"/1' for a 40' hull; ¼"/1' for ships (160' hulls would be 40" long). The scales as you might read them on a kit box would be 1/12, 1/16, 1/48.

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