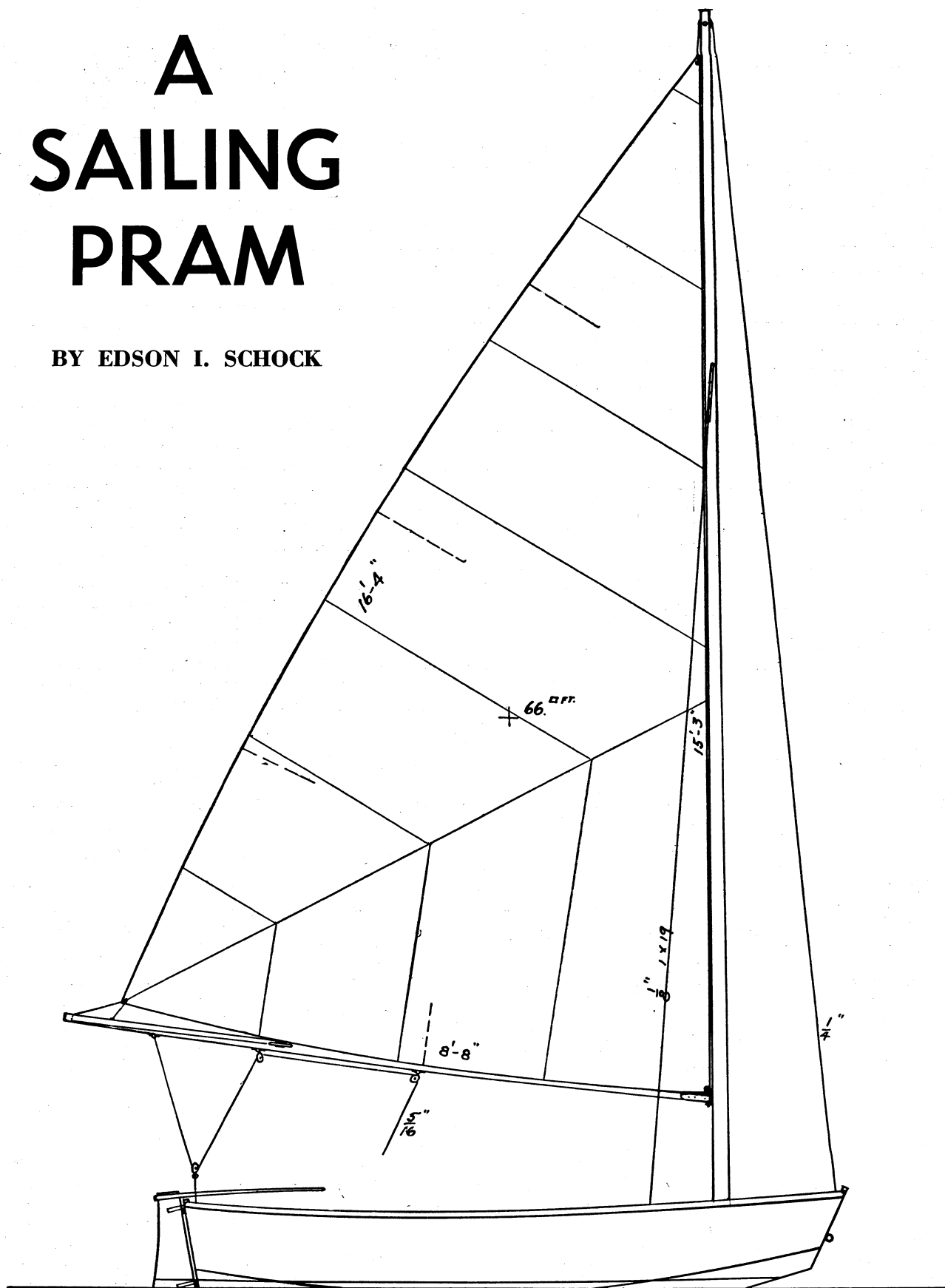


A SAILING PRAM

BY EDSON I. SCHOCK



— NO. 259. —

— SRIL —

— E.I. SCHOCK, KINGSTON, R.I. —

Length overall9'8"
 Beam4'8"
 Sail area66 sq. ft.

THIS BOAT IS SUITABLE for construction by boys of high school age, and if all the work is done by the owner the cost will be quite moderate.

Mr. Anthony Robinson's class in woodworking at South Kingstown (R.I.) High School is building a number of these prams. One boat is completed and a second started at the time of writing. Several should be in use next summer.

Building

Make the separate parts first, then assemble them as soon as possible, before they have a chance to warp.

Keel

Have the top and bottom of the board planed smooth. On the bottom, lay out the center line and the frame stations as shown on the drawing above the lines. Leave stock at each end to be trimmed off later.

Cut the rabbet on a circular saw or jointer. The angle of the rabbet is the same as the bottom of the frames.

Cut out the centerboard slot, 1½" wide. It starts at Station 2 and goes aft 3'. Note that the ends are vertical after the keel is bent.

Frame 4

Draw the lines of the side and bottom pieces of the frame on paper or on a board. Dimensions are on the Frame 4 detail. Lay your stock on the edge of the bottom and mark the center line and the outboard end. Cut to size. Fit and cut sidepiece. Notch for chine and inwale.

Lay the stock for the floor timber on top of the frame drawing and mark the shape. Cut to size and notch for the keel. Do the same for the gusset at the chine.

Assemble the parts with glue and screws. Make sure the finished shape exactly fits the drawing when placed on top of it.

Frames 1 & 2

These are the same as Frame 4.

Frame 3

This is like the others except that it has to be in two pieces to fit against the centerboard box.

Where the floor timber fits against the bed logs, glue and screw on a little block ⅞"x⅞", as shown on the centerboard-box construction detail. This is later screwed to the bed log to hold the inboard end of the floor and frame.

Bow Transom

Lay out the shape from the detail drawing right on your wood. Cut out, and notch for chines and keel. Glue and screw ¾"x¾" strips along the edges to take the planking fastenings.

Stern Transom

Same as the one at the bow.

Frame and Transom Bevels

The outboard edges of the frames, and the bottom edges, must be beveled to fit against the planking.

Some builders do this after the frames are set up, and they can bend a batten around the boat to get the exact bevel, while others plane the bevel on each piece as it is made, before it is assembled into a complete frame.

The second method is easier. You can put the little pieces into a vise and work with them, whereas a complete frame is big and clumsy. The bevels are approximate, as they have to be taken off the lines as shown at Station 3 of the Lines Plan. You will find these angles very close to the exact bevel.

Be sure to make the bevels right and left.

Transom Knees

The bow and stern knees holding the transoms to the keel should be natural crooks if you can get them.

Hackmatack is the best wood, but it is hard to get, and you will probably use oak. Get crooked-grain pieces if possible, so that the little ends will not try to split off.

Fasten with 1½" screws through the transom into the knee and through the keel into the knee.

Centerboard Box

Have the bed-log stock planed on two sides. Rabbet the top edge to take the ¼"-plywood box sides.

Plane the bottom edge to the curve of the keel, and plane it square across. You will have to make a full-size drawing of the curve of the bottom of the keel from the lines and offsets. (Use the heights given for the center line—⅞" on Station 1, 4½" on Station 2 and so forth.)

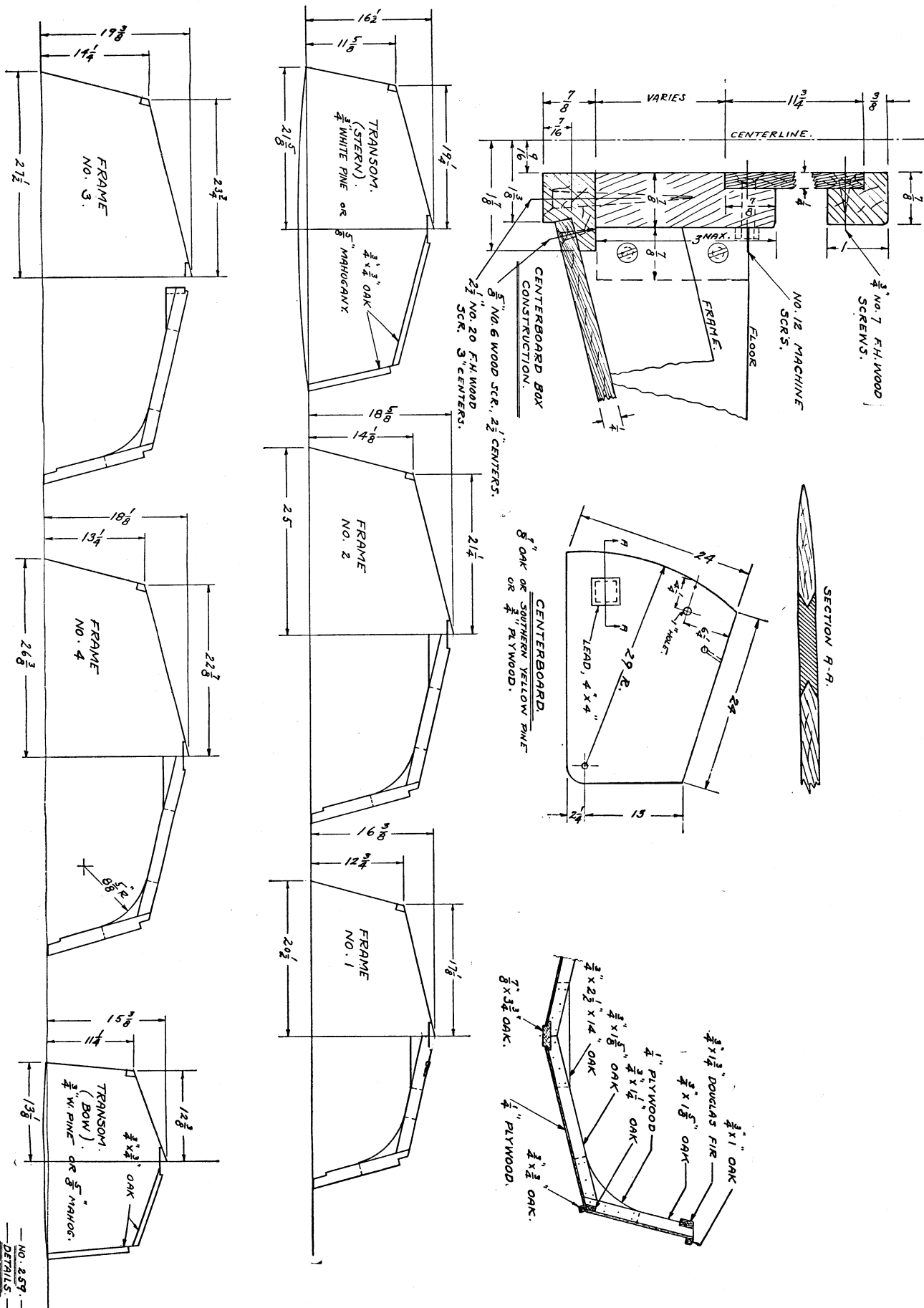
Plane the part of the top edge not cut out by the rabbet. Plane the headledge stock on four sides.

Glue and screw the plywood sides to the bed logs. This joint must be made watertight on the first try, as it is inaccessible after the box is completed.

Glue and screw the headledges in place on one side, allowing them to extend sufficiently below the bed logs to go through the keel. Put on the other side.

Use great care in making the centerboard box, because a poor one will give you more trouble than

		Lumber
Keel	Oak	⅞"x3¾"x9'6"
Inwales	Douglas fir	¾"x1¾"x10", 2 pc.
Guard	Oak	¾"x1"x10", " "
	"	¾"x¾"x10", " "
Transom	White pine	¾"x18"x44"
	" "	¾"x16"x28"
Frames	Oak	¾"x1½", 6 pc. 23" long
		2 " 17" "
		8 " 15" "
Floors	Oak	¾"x2½"x14", 4 pc.
	White pine	¾"x2½"x14", " "
Knee	Oak	⅞"x7"x7"
		⅞"x8"x8"
Thwarts	White pine	¾"x5"x3'3"
		¾"x9"x4"
Headledges	Oak	1⅞"x1¾"x16", 2 pc.
Risings	White pine	¾"x1¾"x24", " "
Knees	Oak	¾"x8"x9", " "
Ceiling	White pine	¾", about 28 bd. ft.
Centerboard	Waterproof fir plywood	¾"x24"x32"
Rudder	Hard pine (yellow pine)	⅞"x10"x34"
Tiller	Oak	1"x2¼"x36"
Mast	Sitka spruce	2"x2½"x19'
Boom	Fir	1¾"x1¾"x9'
Planking	Waterproof Douglas fir plywood	¼"x48"x10', 2 pc.
Gussets	Scrap from planking	
Transom frame	Oak	¾"x¾"x12", 2 pc.
		¾"x¾"x19", " "



anything else in the boat.

Paint the inside as you go along. It is hard to paint when fully assembled. The bottom half of the inside should be copper-painted.

Centerboard

A plywood centerboard is the easiest to make. Saw the shape from a $\frac{3}{4}$ " panel. Cut a hole for the lead, with beveled edges as shown at Section AA of the board. Bore holes for the pin, pennant and hinge pin. The hinge pin may be $\frac{1}{2}$ " brass or 1" oak. In either case, make it a very tight fit in the bed logs and a very loose fit in the centerboard. The 1" hole near the top is for a pin to hold up the board when it is in the "up" position.

Plane the underwater edges to a taper, or streamline, as shown on the AA Section.

For an oak or yellow pine board, use narrow planks doweled together. Reverse the grain in alternate planks to reduce warping. The dowels may be $\frac{1}{2}$ " bronze or galvanized-iron rods or hardwood dowels. Some builders use rods all the way across the centerboard, with nuts on the ends, in place of dowels. The nuts on the lower edge of the board have to be counterbored far enough into the lower plank to allow for planing the streamlining.

Rudder

This can be made from one plank, $\frac{7}{8}$ "x $9\frac{1}{4}$ "x33". Use mahogany, hard pine, Douglas fir or oak.

Band-saw to the shape shown, or something similar, and streamline the underwater part. It is important that the underwater edges be reasonably sharp. A rudder without them will vibrate and cause a lot of drag.

Rudder hardware can be plain pintles and gudgeons or something more elaborate, such as Merriman Fig. 506A or 646.

Tiller

Use oak or other tough, strong wood.

The shape is shown on the tiller drawing. The notch for the rudder-head should be a good fit. The after pin goes through the tiller and rudder, forming a hinge. The forward pin goes through the rudder only and provides a stop for the tiller. Smooth the tiller carefully, and apply five to seven coats of varnish. A nicely finished tiller is pleasant to hold.

Sail

You can make a sail, but a professional sailmaker will make you one that is a lot better. Ratsey & Lapthorn, City Island, N.Y., makes sails

of very fine quality.

Mast

Aluminum-alloy masts are becoming popular, and there are some on the market suitable for this boat. The Al Spar A size or the Zephyr No. 1 could be used. Both are expensive.

For a wooden mast, you need a straight-grain stick 2"x2 $\frac{1}{2}$ " by 19' long. Sitka spruce is the best wood.

The after side of the mast is made straight; the forward side tapers from 2 $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " with a convex taper as shown on the mast detail. The sides each taper from 2" to 1 $\frac{1}{2}$ ". Round the corners just a little; too much weakens the spar.

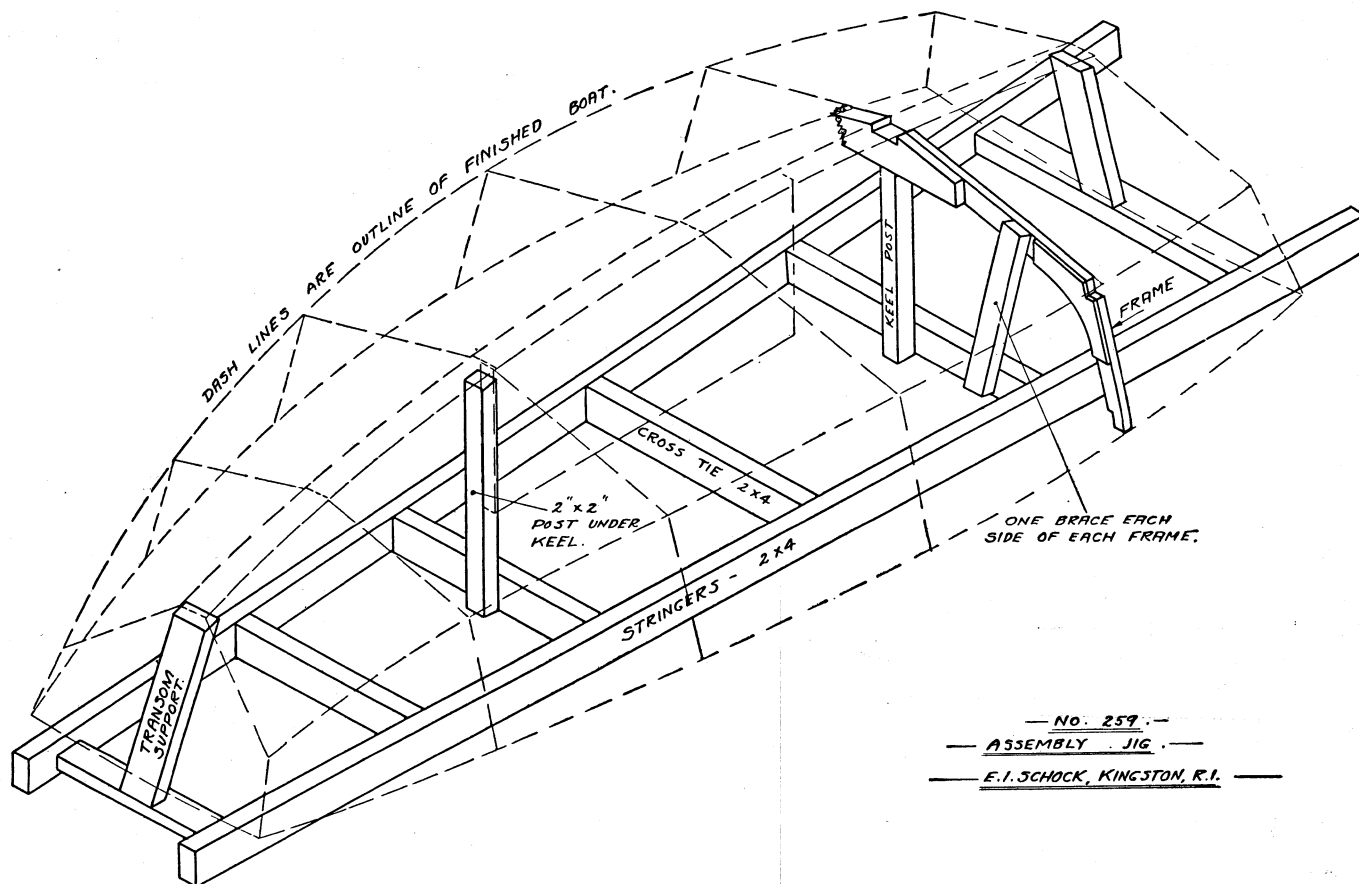
Boom

The boom stock may be spruce, fir, yellow pine or any other reasonably strong lightweight wood. It is 1 $\frac{3}{4}$ " in diameter at the middle, tapered as shown to the ends. Length is 9'6".

Both spars are planed, sanded and varnished. Five coats of spar varnish with light sanding between coats should produce a good, durable finish.

Rigging

The shrouds are $\frac{1}{8}$ " 1x19 stainless-steel wire, with a tang at the mast and Merriman underdeck stay ad-



— NO. 259 —
— ASSEMBLY JIG —
— E. I. SCHOCK, KINGSTON, R. I. —

The halyard is used as a head stay, leading over a block at the masthead and one at the stem to a cleat on the mast thwart.

The centerboard pennant is $\frac{3}{8}$ " Manila with a good-size rubber ball on the end as a stop.

The outhaul goes through a hole in the end of the boom and forward to a cleat on the boom.

Assembly

The boat is assembled over a framework of two-by-fours. Each boatyard has its own name for this structure—"jig," "jack" and so on; but whatever you call it, it is simply a strong, stiff frame to hold the parts in place while you plank the boat.

The one shown in the sketch has two longitudinal two-by-fours about 12' long, separated by crossties.

Space the stringers 18" apart at the bow transom and 30" at the stern. Put in a crosstie at each frame.

Put 2"x2" posts under the keel to get the correct curve (drawn full size when you made the centerboard box), omitting them in the area of the centerboard box.

This framework will need more bracing than is shown on the sketch, which was drawn to give the general idea. Make it stiff.

Now assemble the backbone.

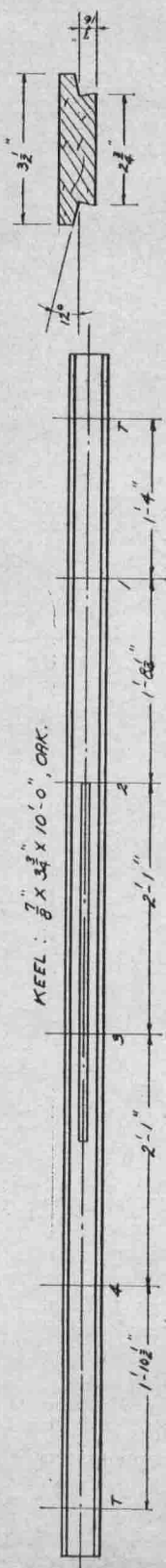
Screw the centerboard box to the keel, or bolt it with 1/4" bronze bolts through the keel and bed logs. Put a gasket of muslin buttered with white lead paste or bedding compound between the keel and logs. Make a good watertight joint. Set the bolts or screws up tight.

Screw the bow and stern transoms to the keel with the knees holding them at the right slope. The keel is made long and will extend beyond the transoms. It can be trimmed off later. Bolt the mast step to the keel.

Bend the keel, box and transoms over the assembly jig, and tie them down. The keel may resent this procedure and require considerable force to convince it that it should really be bent this much. Clamp the transoms to the braces.

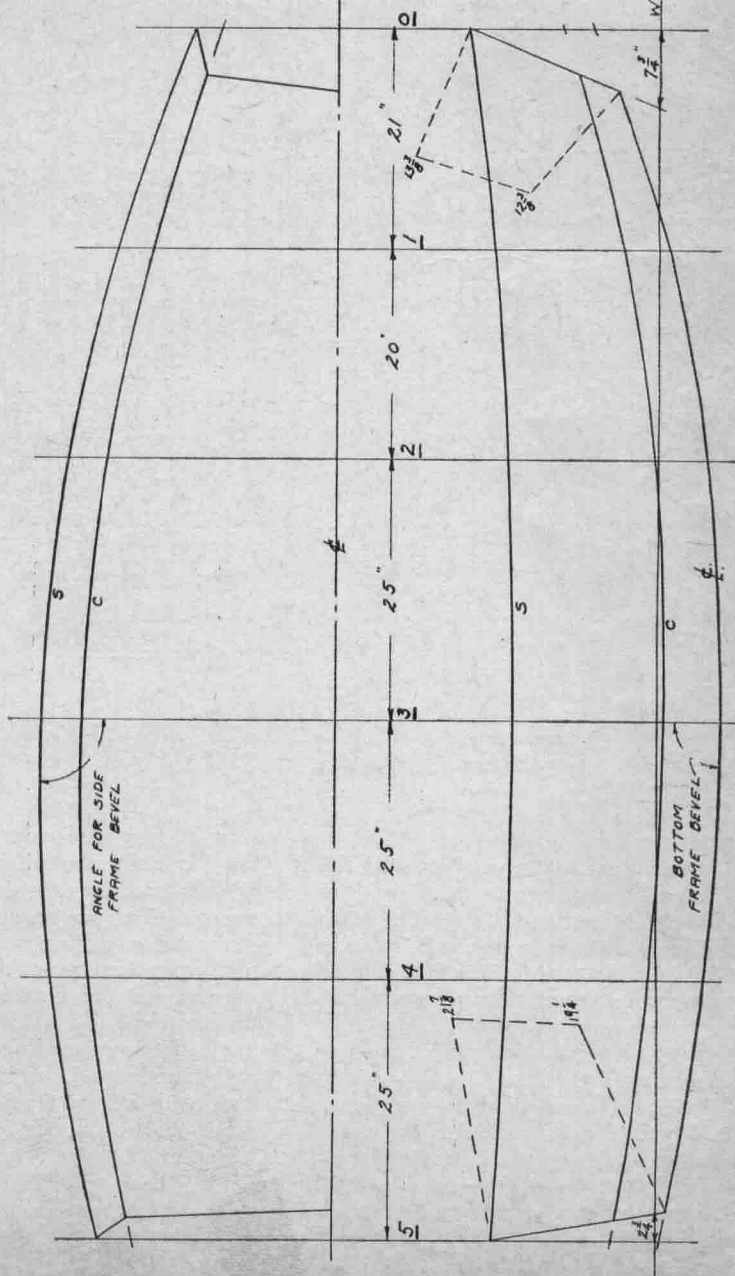
Bolt Frames 1, 2 and 4 to the keel with $\frac{1}{4}$ " bolts through the keel and floors. Screw Frame 3 to the bed logs.

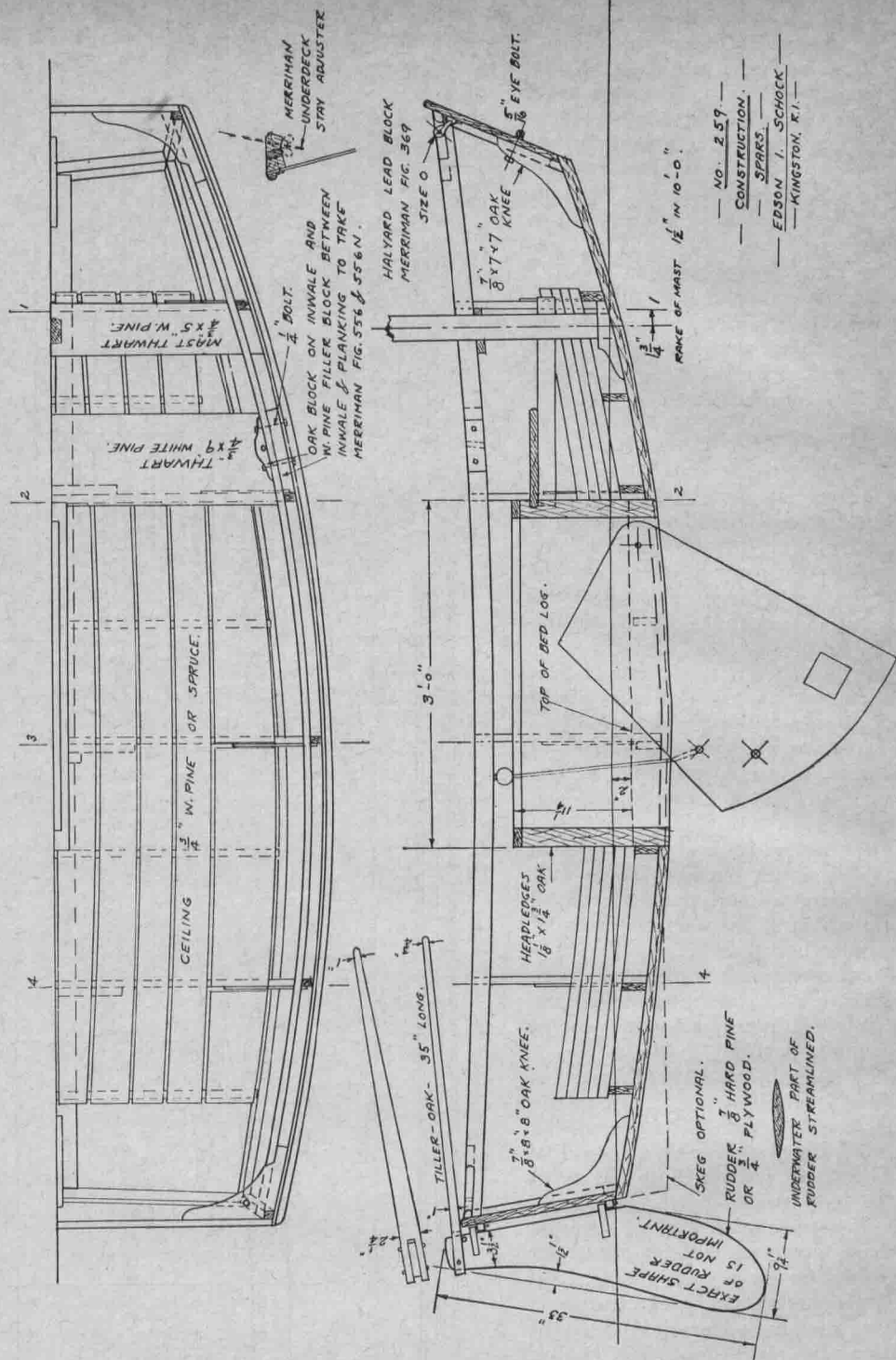
Check the structure to see that it is the same on both sides. Brace the frames to the jig. Keep the whole works square and level and the



FRAME STATION.	HEIGHTS FROM W. L. HALF BREADTH.			
	♂.	C	S	C S
0	6 1/2	0 3/8	17 3/8	11 13 3/8
1	7 1/8	2 3/8	15 3/8	17 1/2 20 3/8
2	4 1/2	1 1/4	14 3/8	21 1/2 25 1/2
3	5 3/8	- 1/2	13 3/8	24 27 3/8
4	4 3/8	3/8	14 1/2	25 1/2 26 3/8
5	6	4	15 1/2	18 3/8 21 3/8

NOTE: OFFSETS FOR O AND S ARE USED ONLY FOR FAIRING.





SPORTS AFIELD