



A leisurely trip around the lake is the order of the day. Folding chairs and the built-in seats accommodate five.

SEA SURREY

A NEW TYPE OF CATAMARAN

You can have a picnic aboard this 20' pleasure barge.

With no bilges to pump, you sit back and concentrate on having fun afloat

BY GORDON P. MANNING

IF YOU'VE EVER WANTED to build your own boat but hesitated because of the difficulty of making it watertight—here's the craft for you. There are no complicated underwater joints to make, because it floats instead on four large blocks of Styrofoam, the miracle flotation material.

With few underwater parts to concern you, the job consists mainly of building the plywood deck, floats, rails, canopy and control box. It's a cinch, because you do straightforward hammer-and-saw carpentry most of the way.

The finished catamaran, measuring 20' long by 8' wide, is a wonderful pleasure barge for use in protected waters. You just can't beat it for fishing, swimming, sunning yourself,

family picnics and the like. Drawing only 10" of water, it goes anywhere and can be run right up onto the beach. It will take any outboard motor from 10 to 40 hp. The 10-hp Evinrude we used on the pilot model was just perfect, pushing her at an estimated 7 to 8 mph.

The complete boat will weigh about 1200 lbs., so you can trail it anywhere with a two-wheel trailer. And remember, cats like this sell on today's market for two to three times what this one will cost you.

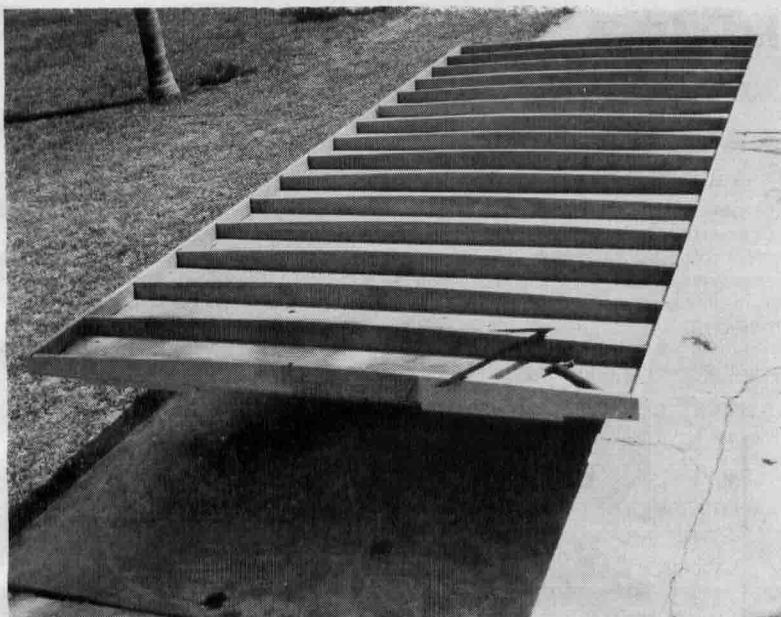
Building the Floats

Perhaps the first thing to start on is the wooden saddles that notch into the top of the Styrofoam blocks to

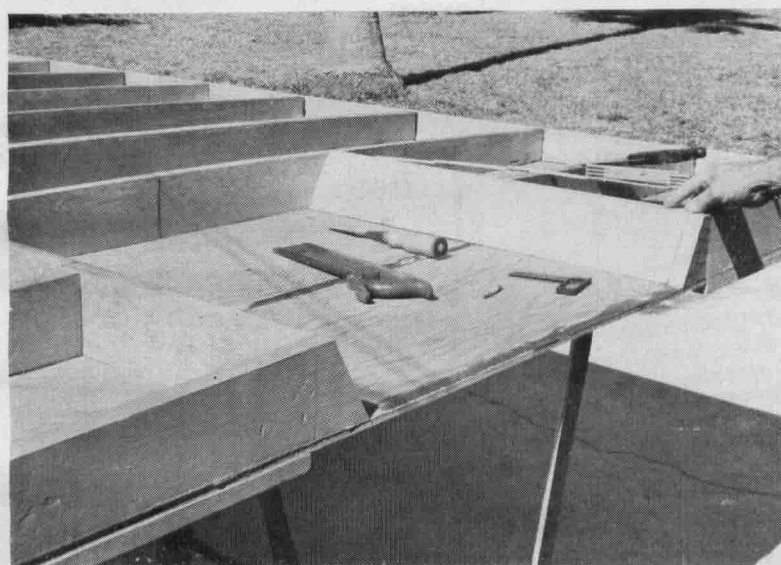
provide support for the deck. There are ten of these to make, of 1" full-thickness mahogany. As shown, the three pieces fasten together with 1/4" galvanized bolts.

Note that the No. 1 saddles are slightly different from the others. They are narrower and must be notched for chine and sheer. Also, to give a better bottom support, we ran the sidepieces down the full 20" to the bottom, instead of the distance shown. Two 3/8"x6" carriage bolts are driven up through the top pieces of all saddles, ready to attach to the deck.

Next on your assembly list will be the two bow pieces, or noses. They are made of waterproof plywood and slip back over the front

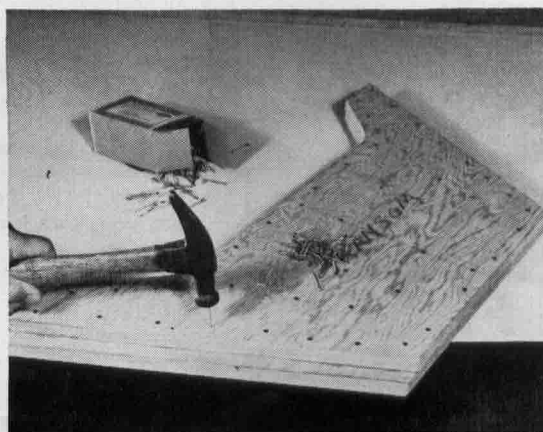


The $\frac{3}{8}$ "-plywood bottom (five pieces) is completed, giving us the main deck assembly 8'x20'. Note the slight crown in deck beams for strength.



After the plywood bottom is in place, the angled deck transom stringers (shown by hand) are nailed in. The plywood in the opening may then be cut away, preparatory to the setting in of the motor well and transom.

The transom is built up with two thicknesses of $\frac{3}{4}$ " plywood. Join them by using waterproof glue and nailing annular-ring nails every few inches.



ends of the Styrofoam to provide protection and a sharp entering edge. You make these 10" wide by 20" high, so by notching the sides of the billets slightly you have an almost flush joint all around.

Start by cutting out your upper bow plywood panel from a piece of $\frac{3}{8}$ " stock 10" wide by 48" long. A light batten will help you make the smooth curve shown on the print. After cutting this, you can get out the other three needed, using it as a pattern.

Cut the oak stems to proper bevel by taking the angle off the plywood pattern just used. A power saw will speed up these cuts tremendously, enabling you to run out the full length of the 4' piece before cutting them apart.

Now you want to get out your bow chine and sheer pieces, following the curve of your panels and notching them for the verticals of the No. 1 saddles. An easy way to hold the stem in position during the work is to first cut out your stem knees and fasten them to the stem. In turn, the knees can be screwed to the lower panel so that the chine pieces may be fitted and fastened readily in place.

Be sure that all of your plywood and other lumber is painted as you go along, so that there will be no unprotected wood left anywhere. Although not called for on the plan, we put another $\frac{3}{8}$ " bolt up through the top knee to bolt into the deck, for additional bow rigidity. After your bolts are all in place, the sides may be fastened on. They are attached with those remarkable threaded boat nails.

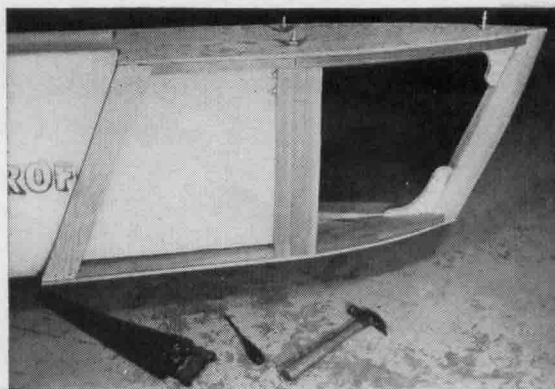
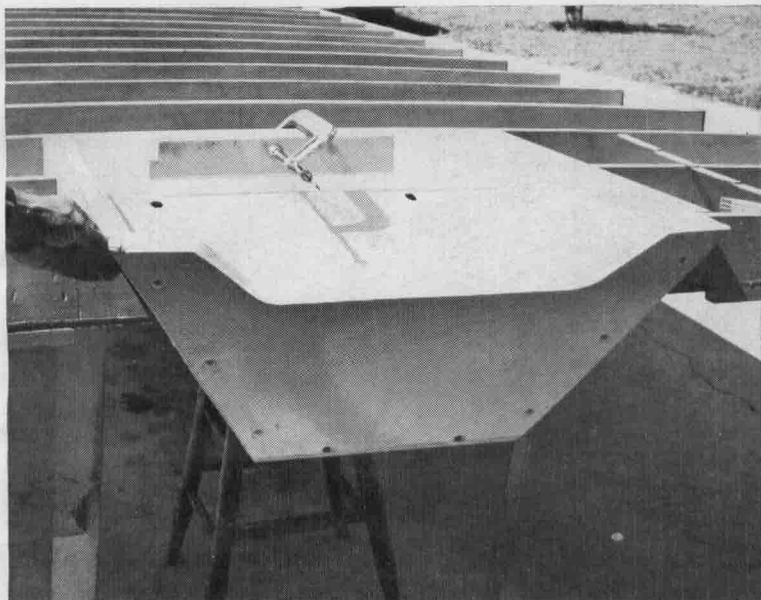
Working with Styrofoam

Now mark on the forward Styrofoam billet the final position and angle of the nose piece. Trim the material to fit. You will be surprised how easily it cuts with a regular handsaw. Some other notching at the end will also be necessary to allow the nose to slip all the way on.

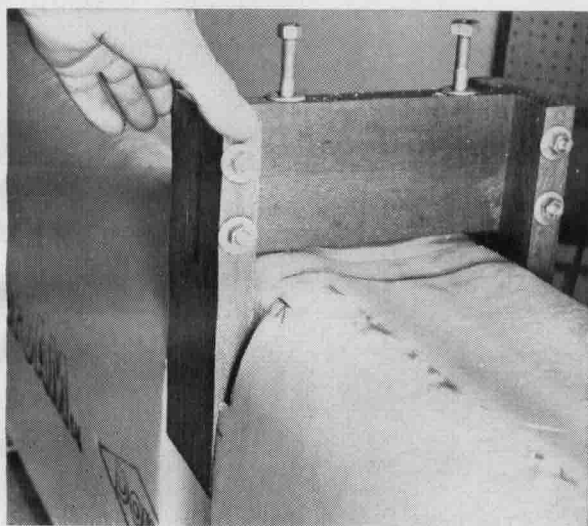
Temporarily clamp the after billet in position behind the front one, so that you may locate and notch out for each of the other saddles. Get these locations from the plan under "cleat locations." Cut away the necessary Styrofoam to bring the saddle just down flush with the top in each case. A string stretched along the top will help you here. Give each saddle, when finished, a couple of coats of paint, and set them into place.

Now you are going to tie things together with the rub rails, which bolt through each saddle. To make the forward end of these easier to

Fitting the motor well and transom assembly in place is easy, if you have followed the angles and measurements between the two deck stringers. There is wedge action here that provides firm mounting.



The nose section slides over the Styrofoam block for about 24". Material is notched slightly for flush fit. Bolts coming up from saddle and bow knee will later attach float to deck. Note that chines, sheers and verticals are in place.



Shown here is the fitting in place of a mahogany saddle in the top of a block of Styrofoam. These units, which carry the weight of the deck above, are let in flush with the top of the Styrofoam.

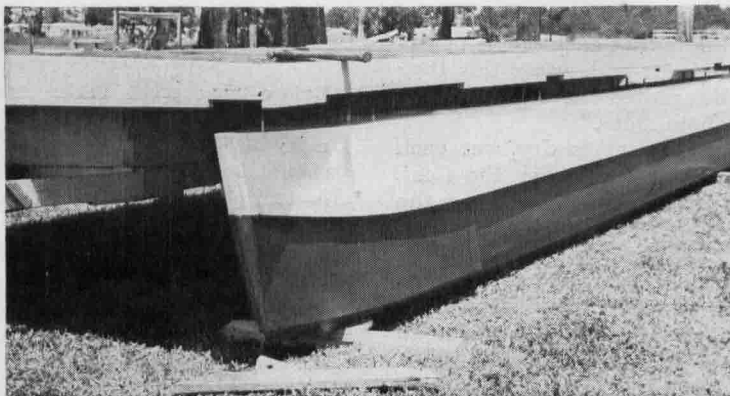
bend, taper the front 20" in both width and thickness. Spring the ends into place against the plywood sides of the nose, and hold them there with a $\frac{1}{4}$ " bolt right through the whole assembly. Later you can bend the rails back against the Styrofoam, drilling and bolting through each saddle as you go. Countersinking the heads will make for a better appearance later on.

Styrofoam, incidentally, takes most nonmetallic paints very nicely. Now is a good time to put several good coats of paint on your floats. We used Woolsey's red antifouling bottom paint, which is quite compatible

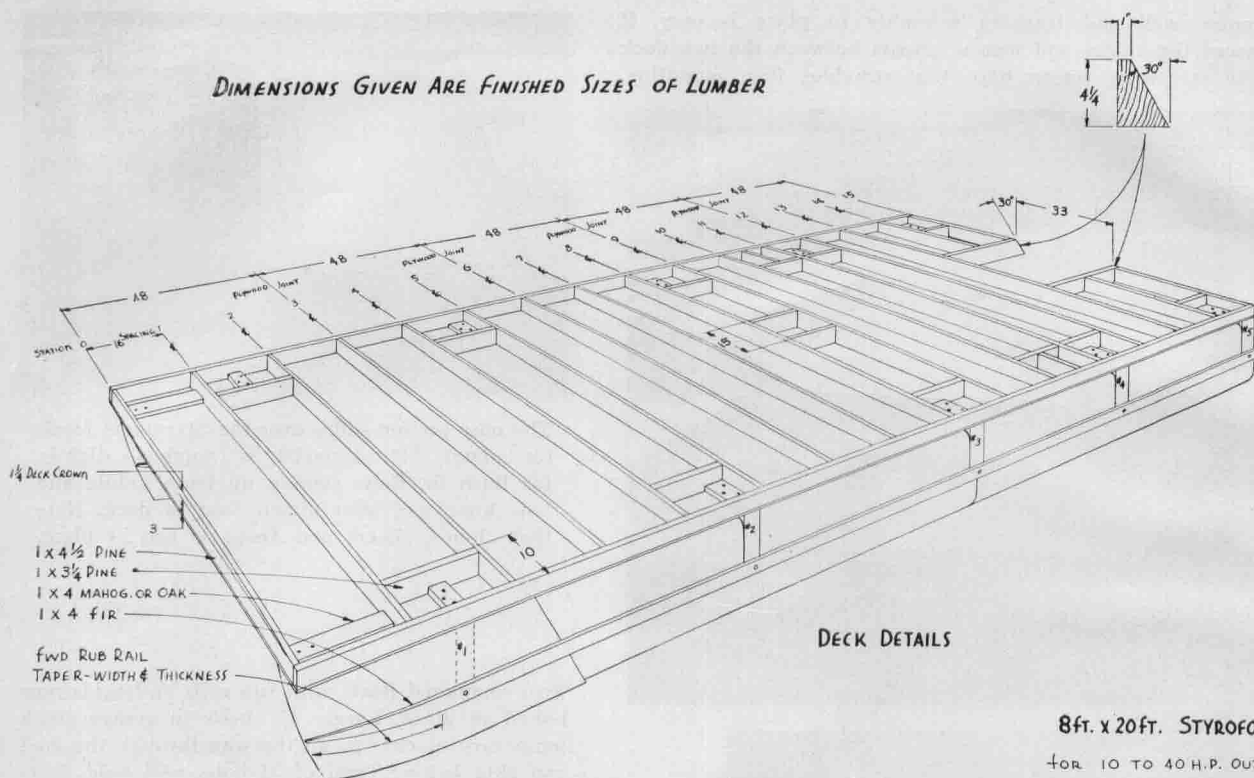
Two completed floats with rub rails and skids now bolted in place. Larger $\frac{1}{2}$ " bolts in center (with temporary blocks) go all the way through the float and skid below. Total of 32 bolts will hold floats to deck. Note the slight projection of each saddle at the corners where the Styrofoam is rounded off.



Getting ready to fasten the floats to the deck. Each float is brought up into position under deck, and bolt holes are marked. After holes are drilled all the way through, the deck is then let down into position. Apparent irregularities on bottom edge of deck are $\frac{3}{4}$ "-square battens fastened to support rub rail.



DIMENSIONS GIVEN ARE FINISHED SIZES OF LUMBER

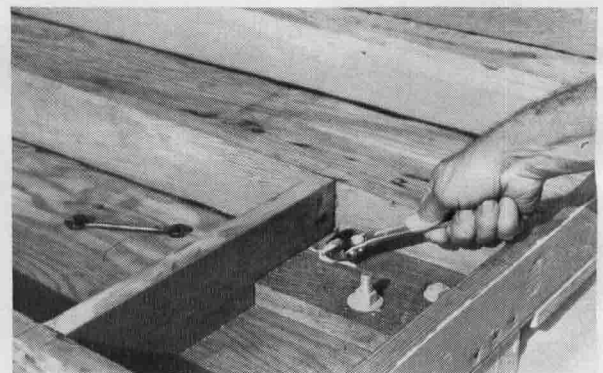
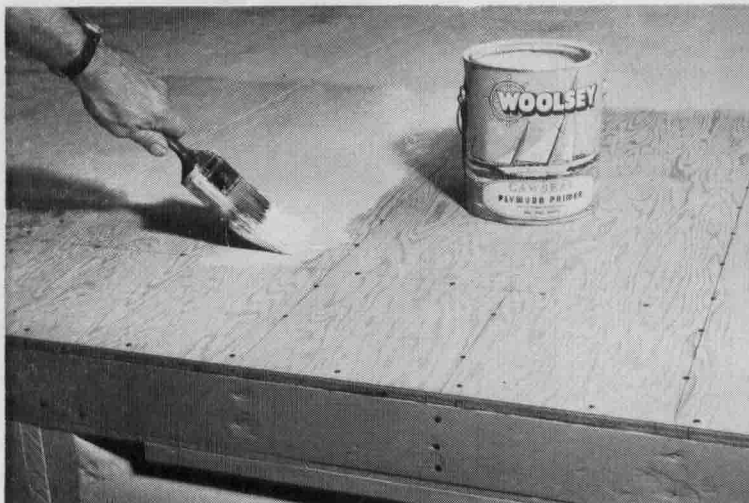


DECK DETAILS

8ft. x 20ft. STYROFOAM CRUISER

FOR 10 TO 40 H.P. OUTBOARD MOTORS

The wild grain of fir plywood sometimes comes through painted surfaces. It is smart to apply a special primer made for purpose of taming grain before giving deck its final two coats of paint.



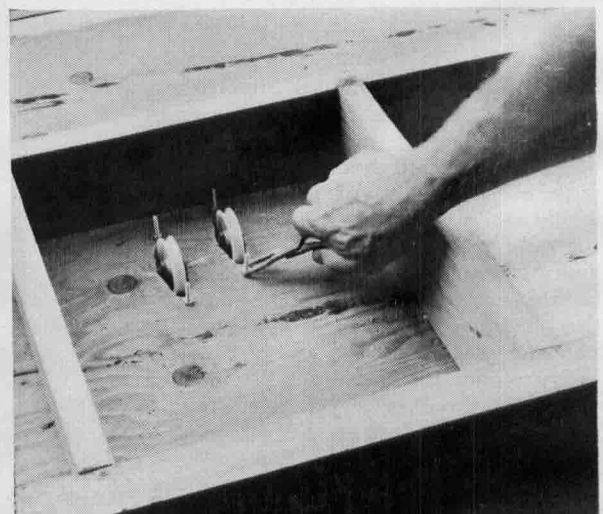
The floats are bolted to the deck saddle cleats. Two smaller bolts attach to the saddles; the larger center one comes all the way from skid, through Styrofoam.

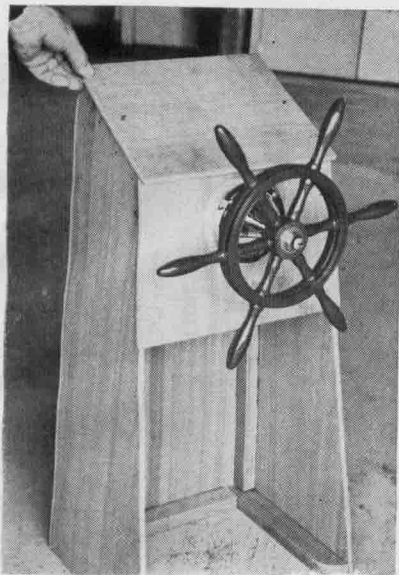
with Styrofoam and is ideal for salt water.

The skid pieces will go on next. You will note that each one is pointed at the front end. After this they should be coated with antifouling paint on both sides.

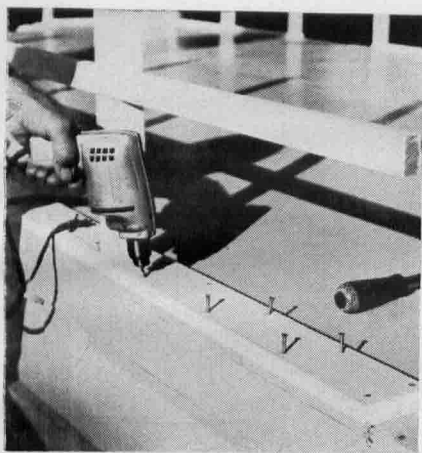
When the paint is dry, set each piece into position under the float. The skid bolts, which go from the deck cleats down through the Styrofoam and skids, are now put in. I found that drilling down from the top, with a long 1/2" electrician's bit, was easiest. By having someone to guide me, I was able to come out about in the center of the skid every

Before closing in deck, the coaming pulleys that carry the steering cables should be located in the bottom plywood and then installed. Don't forget to make limber holes in all beams and carlings, for draining out moisture.





Days you can't work on deck or floats can be used to build control box and seat. $\frac{3}{8}$ " mahogany-faced plywood and small batten strips make it enjoyable.



Attach railing around catamaran with screws, for sturdiness. Front end is somewhat long, for trimming after the next cross-section piece is in place.

time. Insert the bolts from the bottom, and draw the nuts up good and tight on top.

Building the Deck Assembly

One of the nice things about this catamaran is the rigidity of the deck. This is achieved by the use of a plywood sandwich, which has a slight crown in the top side. Note that the deck beams are $1\frac{1}{4}$ " higher in the center than at the ends—giving a truss effect.

These deck beams are cut out of clear fir that is a full 1" thick. It seemed desirable to make the four beams that carry the joints between the plywood sheets a little thicker, for better nailing. So these were

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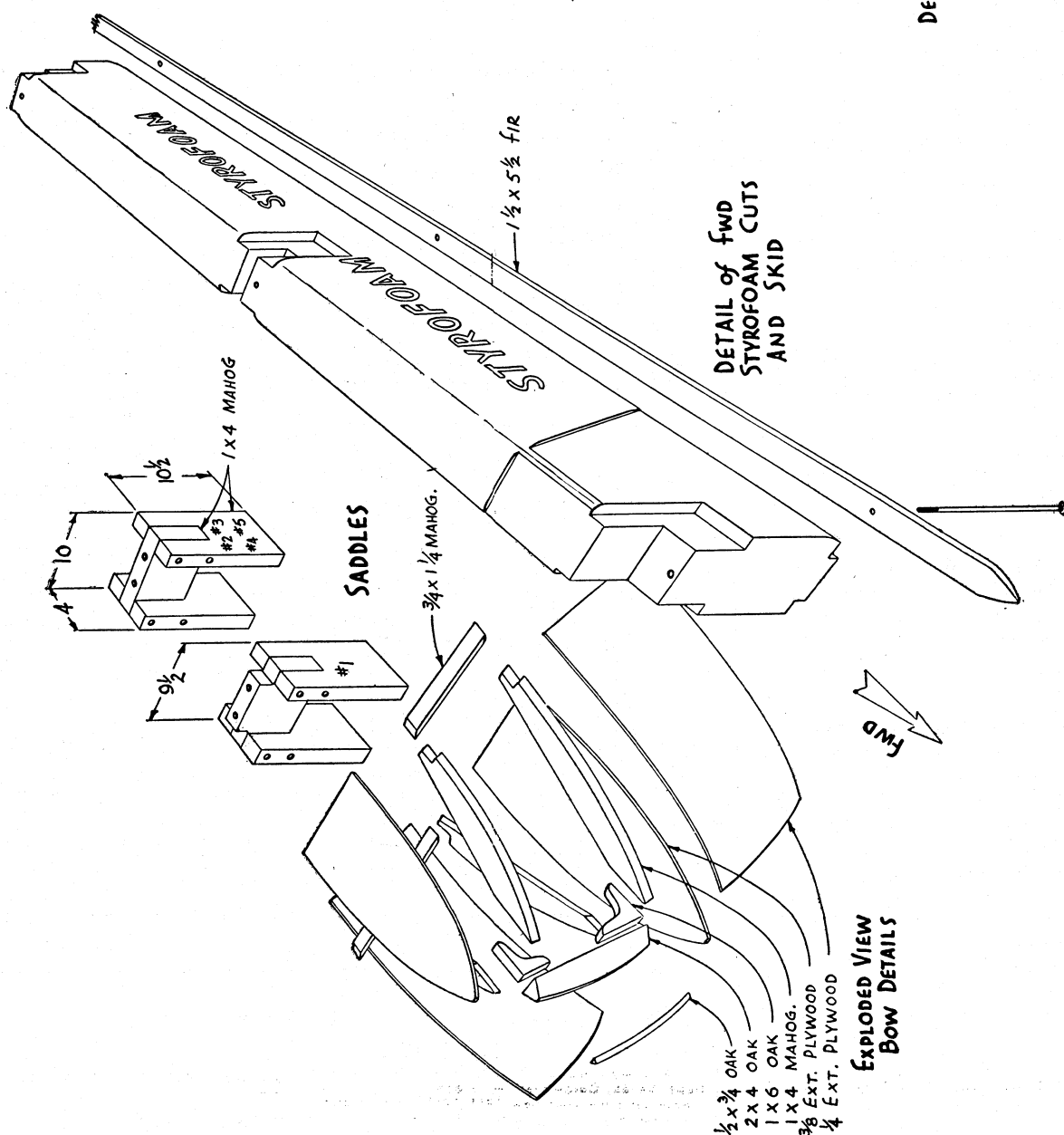
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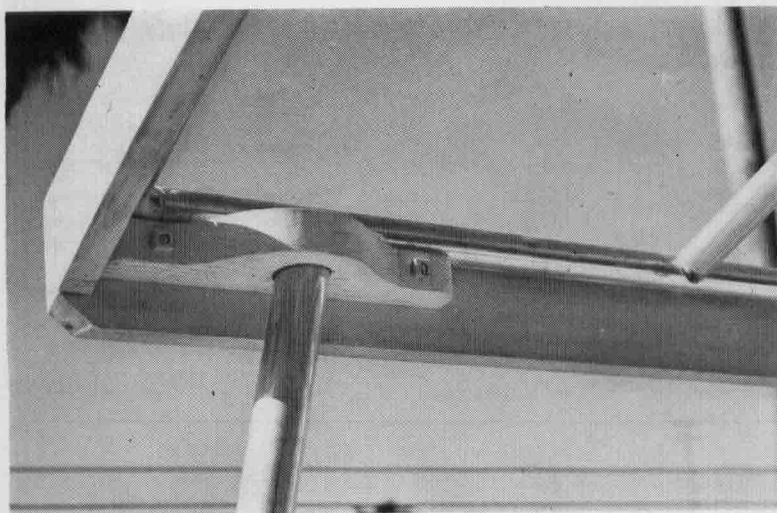
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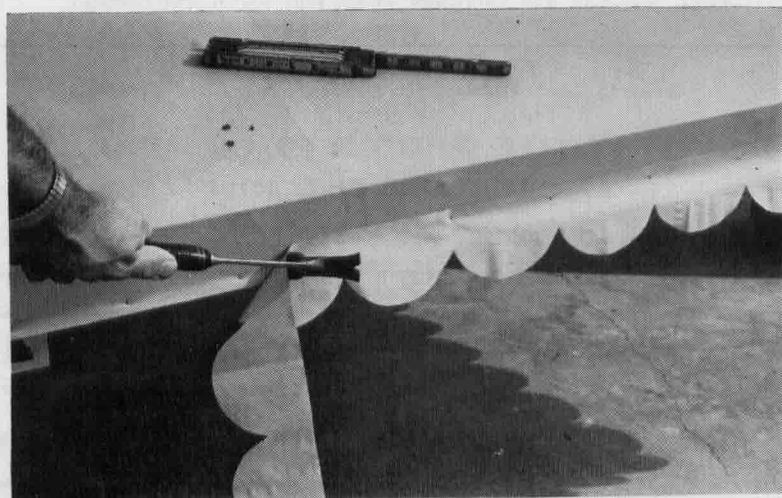
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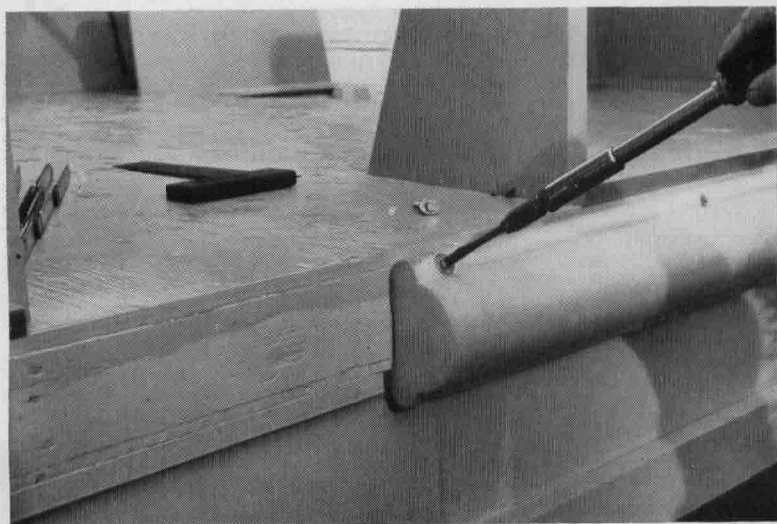


The canopy is supported by 1 1/4" aluminum tubes, whose upper ends fit in holes in oak support blocks. This makes for quick, easy dismounting.



Scallop pattern of contrasting yellow Herculite was cut out and tacked along bottom edge of canopy. Joint is covered by piece of screen mold.

The new Ethafoam bumper strip was used around the sides. It attaches easily with aluminum screws and washers, placed about every 16", and it makes very fine and highly protective edging for a boat of this kind.



has 16 times the preservative power of the older green liquids.

Attaching the Floats

Before attaching the floats to the deck, it is best to place them in exact position beneath it. The projecting bolts should come up and just touch the plywood, so that you can mark the location of each hole to be drilled. And here you can cheat a little, if you want, by boring 1/2" instead of 3/8" holes through the plywood and cleats. This will give you a little extra room in slipping the bolts up through into place. Now set up the nuts on the washers, pulling the units tightly together.

We can take a few minutes now to let in the two deck transom stringers, those wedge-shaped pieces that support the motor well. Fasten these into the corner between the plywood and the framing, nailing and gluing them rigidly in place. Afterward you can saw out the rectangle of plywood where the motor well will be inserted.

The Motor Well and Transom

This assembly can be built separately or fabricated right on the boat. The latter method is perhaps easier, as you are dealing with a couple of trick angles here.

The beveled deck transom stringers show the slope of the sidepieces. So after cutting these a little full out of 3/4" plywood, tack them temporarily into place. The transom is made up of two thicknesses of plywood, glued and nailed together. When completed, it may be marked and fitted into position quite easily. The 3/8" plywood bottom piece and front-edge strip can then be cut and fitted.

Note that the transom and well are reinforced by bolts through the corner posts. Take the assembly out of the boat, glue all joints and assemble the unit permanently. Remember to cut holes for your steering cables and drain holes at the bottom of the transom before fastening it into final place in the deck. Use plenty of threaded (annular-ring) nails for this, plus glue, and you will be amazed at what a rigid assembly you will have. Again, plywood primer and paint are in order.

Finishing Up the Deck

Now it is almost time to close up the deck by applying the 1/2" plywood. First, however, you have a few things to do. One is to locate and install the coaming pulleys for the steering cable in the bottom, di-

2 x 2 OAK OR MAHOG.
 2 PLYS OF 3/4 EXT. PLYWOOD - GLUED
 1/4 GALV. CARRIAGE BOLTS - HEADS EXTERIOR
 3/8 EXT. PLYWOOD
 1 x 5 1/2 PINE
 3/4 EXT. PLYWOOD

SECTION

CABLE CONTROLS THRU HERE

34

30°

45°

3

4

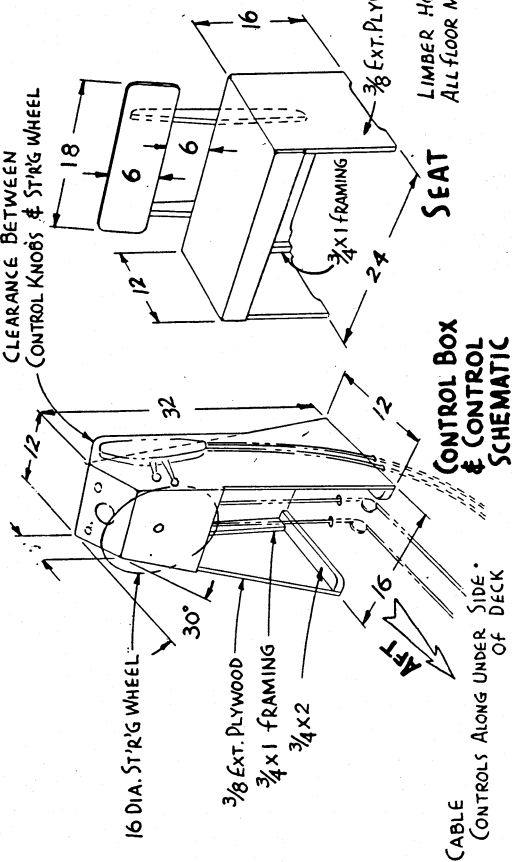
16

1/2

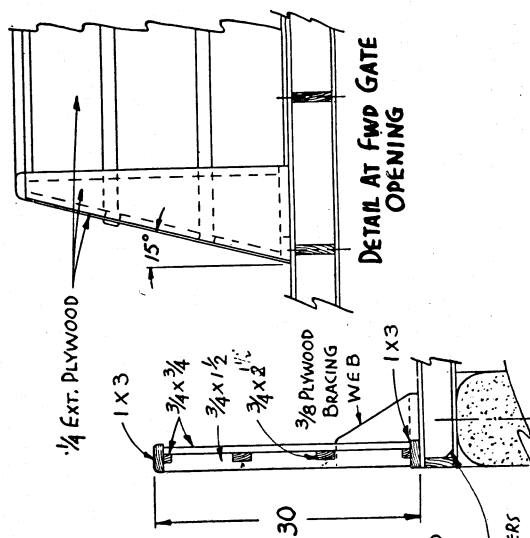
15°

34 1/2

EXTEND FOR CONTROL
MOUNT - LEAVE 2 IN.
CLEARANCE BETWEEN
CONTROL KNOBS & STRG WHEEL



DETAIL of RAIL AT GATE OPENINGS





Completed *Sea Surrey* sits on her two-wheel trailer, ready to go. Total weight of boat runs about 1200 pounds.

rectly below the control box. This will take a bit of careful measuring.

And before putting down the deck plywood, you want to coat the underside with wood preservative. While you still have the brush in your hand, go over the whole inside deck area looking for spots you've missed or newly cut wood.

Now you can lay the deck. Coat each deck beam and plywood contact area liberally with waterproof glue before laying it into position. Using the threaded nails, you can actually get the sheet nailed down before the glue has a chance to set—which isn't always true when you are fastening with screws.

I set the nails slightly below the surface to give the putty a better hold. After putting on the plywood primer, we puttied up all the nailheads with vinyl-plastic surfacer. It makes a nice surface that can be sanded smooth, ready for a couple of coats of your favorite deck paint.

Building the Rails

Here you have an opportunity to follow your own ingenuity; or you can take the suggestions on the plan. We followed the plan, using $\frac{3}{4}$ " x $1\frac{1}{2}$ " posts that had $\frac{3}{4}$ "-square strips nailed on the inner edge, after the horizontal stringers were notched in. Since all of the railing components are made of $\frac{3}{4}$ " dressed lumber, we merely ripped the necessary widths out of wide boards.

It was found easiest to make up whole sections of railing (minus the cap), attaching them to the boat in complete form. Make each section slightly longer on one end than needed, and cut the proper angles where indicated after the sections are in place. Considerable strength is obtained when the $\frac{1}{2}$ "-plywood panels are fastened into each corner, as shown. Three-quarter-inch stringers are added for some, as shown on the plans. The panels go on after the

rail cap itself has been nailed into place. Round this nicely on top for a smooth grip.

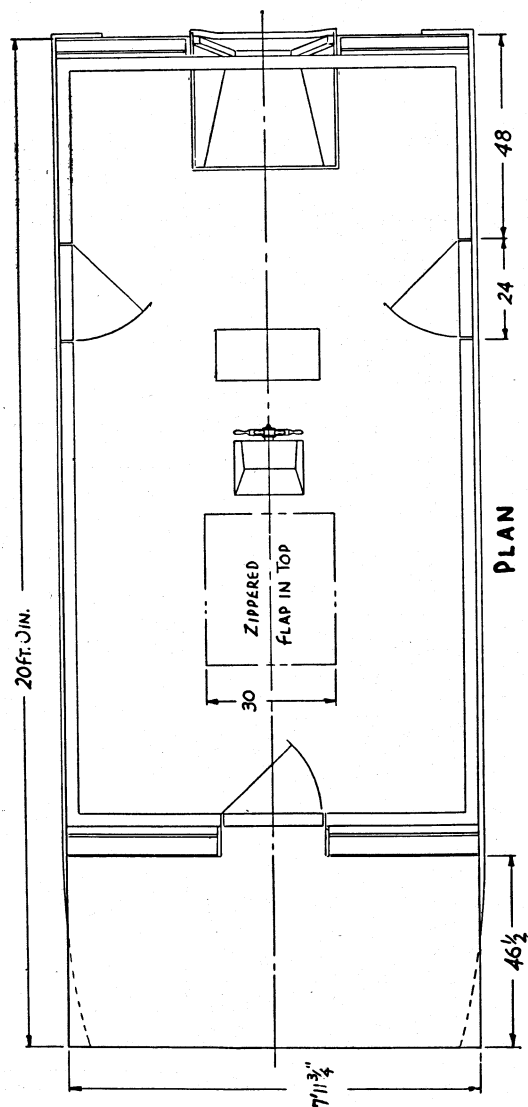
Building the Control Box and Seat

Every pleasure boat should have some brightwork or varnished surfaces to please the eye. On *Sea Surrey*, the ideal place seemed to be in the control box and seat. So we made these of $\frac{3}{8}$ " mahogany-faced waterproof plywood. When they were filled and given three coats of varnish, they just sparkled! We put on Woolsey's new polyurethane varnish, which is supposed to stand up about twice as long as old-time varnishes.

The general measurements given on the plans are just about right for these items—although we did make the seat slightly larger, with a hinged top, to provide enclosed storage space for life jackets and the like.

Make the top panel of the control box removable, so that you will have

**PARTY
BARGE
(8' x 20')**



relatively new product called Herculite. It consists of vinyl-coated nylon, in a sandwich effect. This fabric, less than half as heavy as canvas, is several times as strong and is 100 percent waterproof. It is ideal for boat tops, tarpaulins and outdoor coverings of all sorts. A special adhesive makes joints and seams just as strong as the original material.

After making up a piece of green material big enough to extend several inches over the edges of the top, we tacked it down all around with aluminum tacks. Strangely enough, Herculite contracts when it gets hot. So if you fasten it down in the cool of the morning, it will always be drum-tight during the heat of the day. A piece of bright-yellow Herculite was cut in scallops and tacked around the bottom, and the joint was covered by a piece of screen mold-ing to finish it off.

Hardware Trim and Painting

Another of the happy products we used on *Sea Surrey* is Dow Chemical Co.'s new Ethafoam rub strake. This expanded-polyethylene product, in 4"x8" lengths, was held in place by 13/4" aluminum screws with washers, spaced about 16" apart. Ethafoam is flexible enough to be bent right around a corner and offers a service-able, quickly applied rub strake for any small craft.

For mooring and towing hardware, we used one of Perko's cast-bronze mooring bitts, mounted on the forward deck. Four 6" Perko bronze cleats were mounted as shown in the plan for dock and spring lines. Back aft, Perko's tiller-rope pulleys, clamps, tightener and flange eyes completed a conventional outboard steering installation. (Note: A few tiller-rope guides under the deck will keep the cables out of the water.)

As for painting, it is assumed that all parts have been properly primed and given two coats of the marine paint of your choice. On *Sea Surrey* we used Woolsey paints throughout, making the rails and panels a two-tone light and dark green.

The rail cap was painted semigloss white for contrast. For the decks, motor well and topsides we used gull gray, which is very serviceable and which picked up the gray color of underside of the canopy. The dark red of the Tradewinds bottom paint shows slightly, up as far as the bot-tom of the rub rails, complementing the other colors on the craft.

When *Sea Surrey* is finished, you will have a craft that can give you, your family and your friends many happy hours afloat on lake, river or bay.

LIST OF MATERIALS

Woods				
ITEM	LUMBER	PIECES	SIZE	
Crossbeams	Clear fir or white pine	4	2"x6"x8'	
"	" " " "	6	1 1/4"x8"x14'	
Deck sides	" " " "	2	1 1/4"x4"x20'	
Rub rails	" " " "	2	1 1/4"x8"x20'	
Deck transom stringers	" " " "	2	3 1/2"x4 1/4"x32" (dress to size)	
Skids	Construction fir	2	2"x6"x20'	
Deck saddle cleats	White oak	1	1 1/4"x6"x8'	
Stems	" "	1	2"x4"x4'	
Carlings, saddles, sheer and chines	Mahogany (dress one side for maximum thickness)	4	1"x10"x8'	
" " " " "	Mahogany (dress one side for maximum thickness)	2	1"x6"x6'	
Railing and so forth	White pine	7	1"x12"x12'	
Railing panels	Weldwood Royal	4	1/4"x4"x8'	
Bow transom, webs	Marine fir plywood	1	3/8"x4"x8'	
Transom	Weldwood Royal	1	3/4"x4"x8'	
Control box, seat	Marine fir plywood	1	3/8"x4"x8'	
Top deck	Mahogany-faced 5-ply	5	3/8"x4"x8'	
" "	marine plywood A-A	5	1/2"x4"x8'	
	Bottom-grade 5-ply			
	Weldwood			
	Weldwood Royal Marine			
	fir plywood A-C			

NOTE—All lumber should be straight-grain and clear (or with minimum-size knots, splits and pitch pockets), suitable for boatbuilding.

Flotation			
ITEM	DESCRIPTION	QUANTITY	SIZE
Floats	Styrofoam	4	10"x20"x9'
Rub rails	Ethafoam bumper strip	7	4"x8'
Fastenings			
Stronghold nails	For 3/8" plywood	3 1/2 lbs.	1 1/4"x.083"
" "	" 1/2" "	3 1/2 lbs.	1 1/2"x.109"
" "	" 1/4" "	1 lb.	1"x.083"
" "	" 3/4" "	1/2 lb.	1 3/4"x.109"
" "	For framing	1 1/2 lbs.	2 1/2"x.120"
Galvanized carriage bolts with nuts and washers	Skid bolts	10	1/2"x24 1/2"
Galvanized carriage bolts with nuts and washers	Saddle bolts	40	3/8"x4 1/2"
Galvanized carriage bolts with nuts and washers	Saddle to deck	20	3/8"x6"
Galvanized carriage bolts with nuts and washers	Rub-rail bolts	10	1/2"x12 1/2"
Galvanized carriage bolts with nuts and washers	Transom bolts	6	1/4"x3 1/2"
Galvanized carriage bolts with nuts and washers	" "	6	1/4"x4"
Fittings			
Steering gear	Red	1	Perko Fig. 695
Coaming pulleys (No. 2)	Bronze	2	" " 617
Tiller rope pulleys	With strap	2	" " 565
" " "	With snap	2	" " 634
" " clamps	"	2	" " 377
" " guides	Brass	6	" " 932
" " tightener	"	1	" " 732
Cleats (6")	Polished brass	4	" " 544-A
Mooring bitt (No. 2)	Polished bronze	1	" " 608
Canopy			
O.d. tube (1 1/4")	8"x.058"	4	Reynolds Fig. 10-A
O.d. tube (1")	8"x.049"	12	" " 9-A
Tube splicers	For 1" tube	2	" " 89
Elbows (90°)	" " "	4	" " 55
T-butt connectors	" " "	14	" " 52
Covering fabric	Green, 54" wide	8 yds.	Herculite Marine DR
" "	Yellow, " "	2 yds.	" " No. 20
Paints and Varnishes			
Antifouling bottom red		2 qts.	Woolsey Fig. 705
White plywood primer		1 1/4 gal.	" " 745
Wood preservative		1 1/2 gal.	" " 731
Vinyl-plastic surfacer		1 pt.	" " 8P3
White undercoater		2 qts.	" " 763
Gull-gray deck paint		1 gal.	" " 737
Semigloss white paint		1 qt.	" " 761
Super-luster varnish		1 qt.	" " 475

NOTE—Styrofoam and Ethafoam are products of the Dow Chemical Co., Midland, Mich. Stronghold silicon-bronze nails are made by the Independent Nail Corp., Bridgewater, Mass. Perko refers to Perkins Marine Lamp & Hardware Corp., Miami, Fla. Reynolds is a division of Reynolds Aluminum Co., Richmond, Va. Herculite Protective Fabrics Co. is in Newark, N. J. All these products are available from most marine dealers.