BUILD THIS motor sailer and take your own dream cruise down the Mississippi and into the Gulf

By WILLIAM D. JACKSON

Sporting an overall length of 27½ feet, Star-Lite accommodates four persons in 6'-4" bunks with enough space for a private head and a working galley. You can live on this boat as we did on our trip down Ol' Man Mississippi (see preceding article) and during 18 weeks of sailing in the Gulf of Mexico.

Star-Lite is a proven design, improved slightly from the first ship built (Tabu out of Michigan City, Indiana) and tested in Lake Michigan, the Mississippi River and the Gulf. She is a stiff and able sailer, good for anything from an afternoon's sail to a 3-month stop-and-go trip around tropical isles. Every nook provides storage space for clothing, wet weather gear and food supplies. A 30-gal. tank under the aft cockpit stores fresh water. Interior space and accommodations are close to those found in the usual 34-ft. sailer because of the short forward overhang.

Since Star-Lite is primarily a sailing ship, you'll need only a small (and economical) auxiliary engine—not to exceed 100 cu. in. displace-
ment. Tabu uses a Universal Twin, 12 hp, and I used a Michigan Marine, Senior Twin developing 15 hp in Star-Lite. Anything over 20 hp would be wasted, as her sailing lines can't efficiently use more power. A slow-turning engine will prove the most economical and dependable over the years. Both Star-Lite and Tabu were built with laminated plywood planking that doesn't creak in rough weather and is easy to keep dry.

Building a big boat like Star-Lite is an ambitious undertaking, and, unless you have built several boats before or have access to frequent professional advice, you'll find a book on the details of boat building helpful. The wood you use for framing will depend on where you live—white oak in the North, pine in the South and fir in the West. Actually white oak is the material I've found best over the years for strength and durability, and that's what I used in building my Star-Lite. Regardless of the kind of wood you use, she'll last up to five times as long by using seasoned lumber, fitting joints closely and treating all underwater surfaces with Cuprinol-Green and Kuhl's 3-Way Preservative for out-of-water surfaces.

Before starting actual construction, it's absolutely necessary to lay out the lines full size on a floor large enough to work freely. In case your floor space is rough or concrete, lay down some of the plywood sheets you'll use later in planking and nail them together enough to form a platform and keep them from shifting. Unroll red rosin paper (from lumber yard) and lay out the lines from the dimensions of Fig. 1. You'll waste much time later and possibly valuable lumber unless you start from a full-size, accurate layout of the lines.

Getting Started

To get started building the frames, make up patterns on red rosin paper for the frames at all stations from #1 to #9. Since the layout indicates the lines to the outside of planking, you can pick off the allowances for beveling. Plainly mark this beveling allowance on each member. Frames are built up from two bottom members and two side members directly on the patterns. At the bottom, join the two pieces with a floor gusset and at the joints between bottom and side pieces, with chine gusset (Fig. 8). Use 3/4 x 3½-in. galv. carriage bolts at the floor gusset and chine gusset joints and
leave side frames an inch higher than deck line for later trimming. Attach temporary 2 x 4's across the tops to prevent spreading. Mark an exact centerline on these 2 x 4 crosspieces, so you can align the frames later. Accuracy here will pay off later.

Transom can be built of two layers of 3/8-in. plywood glued together or an outer covering of 1 1/2 x 8-in. oak or mahogany planks screwfastened to an inside oak frame (Fig. 8). Rough out notches in the frames for chines, keel and clamps; you'll fit them more closely during final assembly.

The keel assembly, like all big ships, is the first piece of Star-Lite's back-bone to be laid down. Using the line on top of the ballast and bottom of the #1 piece as a level, build up the assembly on its side over full-size plans. The shaft log is built in two pieces, #5 & #6 (Fig. 5), and joined with wood alignment splines (Fig. 4) to eliminate the long drilling for the drive shaft. Only the horn timber (#8, Fig. 5) need be bored with brace and bit in line with the shaft alley between parts #5 and #6. The keelson extends aft only to the shaft log, and cheek pieces for attaching planking are fastened to the sides of the shaft log (Fig. 5) back to the transom. When the keel assembly pieces are fitted, coat all contacting surfaces with Kuhl's Bedlast, clamp together and join with bolts or drift pins. Drift pins are driven in lead holes drilled 3/16 in. under-size and bolts are driven in a distance equal to their diameter.

With the keel assembly built up, take off a pattern for casting the keel ballast (Fig. 6). You'll need about 750 pounds of concrete, iron or lead spread over the 10-ft. 8-in. length with some trimming ballast inside the hull to be installed later. If you plan to have the ballast cast in a foundry, allow for shrinkage of approximately 3/8 in. per foot. Lead ballast is the best, but is costly unless you can melt down junk pipe or used batteries. Attach the ballast and the keel shoe to the keel assembly with 3/8 x 20 or 21-in. bolts midway between frame locations (Fig. 5).

One of the most important steps in getting started right is to set up the keel and ballast assembly level with the way Star-Lite will ride in the water. The top of ballast or bottom of #1 piece should be leveled and plumbed. All frames will be plumbed vertical from this line which is 10 in. above and parallel with the base reference line. Block up this keel assembly so it will remain fixed in position as it is the first step in building the backbone. Accurate fitting and assembling of later parts depend on how carefully you plumb and level this keel assembly.

Stem parts are next sawn to shape and fitted,
Approximately 2.6 cu. ft. of concrete needed for keel, total weight of 702 lbs. Cast iron ballast of same dimensions would weigh about 1150 lbs., and lead ballast would weigh about 1846 lbs. No fittings on pipe through ballast needed through the step at the aft end. Space reinforcing as shown.

MATERIALS LIST — STAR LITE

Plywood Required:


Partial Bulkhead—4 pcs. 3/4" x 4 x 7'.

1 pc. 3/4" x 4 x 10' (cabin sides doubled).

Cabin Sides — 4 pcs. 3/4" x 4 x 10' (cabin sides doubled).

Waste from the various pieces of plywood is used to make cabinets, shelves, table, and the various joinery work required in STAR LITE. 20 goms 3-1/2" x 3-1/2" x 3/8" galv. (in screws).

100 5/16" x 4" galv. carriage bolts.

100 3/4" x 8" galv. carriage bolts.

100 3/4" x 12" galv. carriage bolts.

(Got to size needed for drill pins.)

Misc. bolts for keel.

Chimes 2 pcs. 1/2" x 3/4" x 24'.

Chans 2 pcs. 1/2" x 3/4" x 28'.

Note: If such lengths are unobtainable simply bolt with joints of wood or laminate from 3/4" material two layers glued with PENAGOLITE or GASCOPER, glue or laminate the pieces directly upon the boat's framework. Use seasoned timber to prevent deformation.

Chine Fillers 4 pcs. 1/2" x 2 1/2" x 14'.

Chine Knees 3 pcs. 1 1/2" x 6" x 15'.

Frames 16 pcs. 1 1/2" x 4 1/2" x 16'.

Floor Frames 2 pcs. 1 1/2" x 10" x 16'.

Cabin Carlings 6 pcs. 3/4" x 1 1/2" x 12'.

Keel 15 pcs. 4 x 8" x 12'.

Apron 1 pc. 3/4" x 9" x 18'.

Transom-Breast hook and Engine Beds 1 pc. 2 1/2" x 12" x 12'.

Molding 4 pcs. 1 1/2" x 2" x 16'.

Bottom and Side Battens 8 pcs. 1 1/4" x 3/4" x 12'.

Cabin Side Supports 4 pcs. 1 1/2" x 3/4" x 12'.

Cabin and Deck Beams 12 pcs. 1 1/2" x 12" x 12'.

coating contact surfaces first with Cuprinol and, when thoroughly dry, Kuhl's Bedlast. Bolt stem pieces together with 1/2" galv. bolts and rabbot the stem, except the last 18 in. nearest the keel, to receive the planking (Fig. 4). Pick up this rabbot line from your full-size layout. Bolt the stem assembly to the keel with 1/2" galv. bolts.

Now you're ready to mount the transom and all frames (Fig. 3). Brace frames in position with 2 x 4's nailed to floor and ceiling or from stakes driven into the ground if you are building out-of-doors. Attach the frames to keelson and lower assembly with 1/2" galv. drift pins driven through floor gusset into keel assembly in holes 3/16 in. undersize. Frames over the shaft log are attached with two drift pins, one on each side of the shaft alley. Align all frames exactly perpendicular to base and water lines with plumb bob.
Deck beams are installed after planking is complete.

Half-station frames and aft hatch framing at cockpit. Note inside framing of transom.

Deck beams around cockpit at half and full stations.

Framing for forward hatch between deck beams.

and square with the axial centerline. Nail 3/4 x 2-in. battens temporarily to sides and bottom of frames to hold them in alignment once set. Align the stem and brace it securely so it won't be wrenched out of position when springing chines, clamps and planking in place. Install bulkhead and side frames forward before chines are attached so you'll have space to work.

The hull begins to take shape when you add the chines. If full-length material is not available, splice two lengths aft of amidships in a scarf joint 30 in. long glued over the whole area. Clamps may also be spliced, locating the joint between frames other than where chine joints are located. Clamp each chine in position and fit it to the notch at each frame by sawing alongside the chine. Fasten chines to frame knees with 3/8-in. galv. carriage bolts with heads well countersunk to allow for later fairing. Chine ends at the stem are beveled to fit just aft of planking rabbet and screwfastened with two #14 x 2 1/2-in. fh screws in each joint.

Spring clamps in position, moving them up or down slightly to insure fair deck line. Fit them into notches as you did the chines and fasten to each frame with one 3/4-in. galv. carriage bolt. Locate these clamp bolts near the bottom of the clamp to prevent interference when trimming deck line later. Bevel ends of clamps to fit stem and screwfasten with two #12 x 2 1/2-in. fh screws at each joint.

Position side battens equidistant between clamps and chines, and bottom battens equidistant between keel and chine. Notch battens flush into frames and fasten with two #14 x 3-in. fh screws at each joint. Bevel ends of battens to fit stem and screwfasten with two #12 x 2 1/2-in. fh screws.

The entire framework is now trimmed and fairied so plywood planking, when applied, will lie evenly at all frame contact points. Trimming white oak can be a tedious and laborious job, so if you can lay your hands on a portable electric planer, it will save time for you on this and other trimming jobs about the boat. An adze will do much of the rough work if you do the fairing by hand, but an adze can become a weapon if not handled carefully. Bring frame down to final finish with wood rasp and jack plane in progressively smaller steps.

Both hulls, Star-Lite and Tabu, were planked with plywood. Instead of a single thickness, it's better to apply two or even three thicknesses of
plywood because a single thickness is built up from only five plies. Two layers of 3/8-in. plywood includes six plies and three layers of 1/4-in. plywood totals nine plies. Thinner plywood are much easier to handle and develop greater total strength when bonded together as they are applied. I used two layers of 3/8-in. fir plywood and covered the whole framework with one thickness before starting with the final planking. Buy only plywood branded EXT-DPFA along edges to be sure plies will not delaminate in the water. You can use AB grade with the two poorer surfaces glued face to face. Screwfaster the first layer to the framework with 1/4-in. anchor nails spaced 5-6 in. Fit 3/4 x 3-in. oak seam battens behind each point. Start the final layer working from the aft end and staggering seam joints between joints of first layer. Coat both contacting surfaces of the planking with a resorcinol resin glue and screwfaster outside layer into framework at all points with #12 x 1/4-in. fl screws spaced at 3 in.

To insure a tight bond between layers of planking, work only when temperature is around 70° F. Bonding on the outside layer when it's too cold will not develop full strength at the bonding surface, while too high a temperature will set the glue too fast.

You won't be able to work fast enough to keep ahead. Coat both adjoining surfaces and use only a resorcinol resin glue such as Casco-Poxy or Penocote G-1131.

By glue-bonding plywood layers together, you can use 8- to 10-ft. lengths, staggering the butts systematically on bottoms and sides. About 5 gals. of glue are required.

When the plywood planking is finished, sand joints smooth with a power sander. Hand sanding won't touch the glued joints. Now mark the opening for the chine filler along chine joints for the width of the filler. Saw out slots along each side from stem to transom for the chine filler using an electric hand saw. This slot should have straight edges, so the filler strip can be fitted more easily. Insert the chine filler in the slot and check for an even fit along entire length of each side. All fitting should be done dry, then both filler and slot liberally coated with Kuhl's Bedlast. Return the fillers to slot and fasten securely with #12 x 1/4-in. fl screws spaced about 5 in. apart. Apply two coats of Cuprinol Green to the bottom and sides up to water line and two coats of Kuhl's 3-Way Preservative-Clear above the water line. Paint the plywood with three coats of Firezite and follow with marine enamel in your choice of colors.

To start the deck structure, cut out and fit the fore and aft deck beams and attach side plate gussets with 1/4-in. galv. bolts (Fig. 8). Be sure that all bulkheads are in position and bolted (1/4-in. bolts) to the frames. Cut the cabin uprights and align them to produce a fair curve, attaching them to the deck beams and gussets with 1/4-in. bolts. Cut and install the cabin beams, bolting them to the top of cabin uprights with 1/4-in. galv. bolts to form a fair top surface.

The carlings are notched flush into deck gussets and screwfastered with one #10 x 2-in. fl screw. Trim and fair sheer edges of plywood planking and all cabin framing for deckings. Frame around aft hatch at frame #6 and forward hatch forward of frame #1 (Figs. 11 and 12). Cut and fit the cockpit beams. Before you can attach these beams, you'll need to make up side frames between each main frame in the cockpit section (Fig. 10). Fasten these side beams to clamp, batten and chine with #14 x 3-in. flk screws, well countersunk.

Before installing the deckings, make a full-size outline of the engine you plan to use or obtain an installation print from the manufacturer and draw or place templates in position on the profile of the engine beds. From this layout, shape the engine beds (Fig. 18) to suit your engine and fasten them in place with 1/4-in. galvanized drift pins and bolts. Notches to be cut out of the #6
MATERIALS LIST—STARLITE

<table>
<thead>
<tr>
<th>No. of Pieces</th>
<th>Dimensions</th>
<th>Use</th>
<th>No. Req.</th>
<th>Description</th>
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<tbody>
<tr>
<td>2</td>
<td>36&quot; x 4 x 8'</td>
<td>Top Side Plywood</td>
<td>1</td>
<td>Rudder</td>
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<td>1</td>
<td>1/2&quot; x 30&quot; x 8'</td>
<td>cockpit floor</td>
<td>4</td>
<td>8&quot; Cleats</td>
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<tr>
<td>2</td>
<td>1/2&quot; x 30&quot; x 8'</td>
<td>cockpit sides</td>
<td>2</td>
<td>Boom Straps</td>
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<tr>
<td>6</td>
<td>3/4&quot; x 6' x 8'</td>
<td>Interior cabinets and sheathing</td>
<td>2</td>
<td>Fittings and gudgeons</td>
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<tr>
<td>4</td>
<td>Ext-DPFA-AB or AC grade</td>
<td>cabin roof</td>
<td>150 ft.</td>
<td>Anchor line 3/8&quot; Manila</td>
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<td>5</td>
<td>1/2&quot; x 4 x 8'</td>
<td>Frame Parts</td>
<td>2</td>
<td>25-ft. 3/8&quot; mooring lines</td>
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<tr>
<td>2</td>
<td>1/2&quot; x 4 x 8'</td>
<td>bow sprit</td>
<td>2</td>
<td>24&quot; Steering wheel or tiller</td>
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<td>3</td>
<td>3/4&quot; x 8' x 12'</td>
<td>rudder</td>
<td>1</td>
<td>25 ft. 1/2&quot; flexible steering cable</td>
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<td>Mast and Boom</td>
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<td>4</td>
<td>Blocks for steering gear</td>
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<td>1/2&quot; x 30&quot; x 16'</td>
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<td>1</td>
<td>Bow sprit and bob stay fitting</td>
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<tr>
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<td>boom</td>
<td>2</td>
<td>Battery Radio—Zenith Portable—All Wave</td>
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<tr>
<td>1</td>
<td>1/2&quot; x 30&quot; x 20'</td>
<td>boom</td>
<td>1</td>
<td>Broadcast Weather</td>
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<tr>
<td>1</td>
<td>1/2&quot; Square 10' long round and taper</td>
<td>jib boom</td>
<td>1</td>
<td>Coast Guard Short Waves</td>
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<tr>
<td>Motor and Rigging Equipment</td>
<td>10 to 20 H.P. 2 or 4 cylinder heavy duty marine motor, gas or fuel oil</td>
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<td>4 ft.</td>
<td>1/8&quot; dia. Stainless steel shafting or bronze TOBIR</td>
<td>inside stuffing box—small flanges</td>
<td>1</td>
<td>Mainsail, Fore and Jib</td>
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<td>inside stuffing box—heavy duty, large flanges</td>
<td>propeller, 2 blade, to fit motor. Use all dia. possible and decrease pitch to get area to drive this hull.</td>
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<td>150 ft.</td>
<td>3/8&quot; dia. Manila rope</td>
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<tr>
<td>2</td>
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<td>Jib Snaps</td>
<td>24</td>
<td>Jib Snaps</td>
</tr>
<tr>
<td>3</td>
<td>3/8&quot; Turnbuckles, Manganese Bronze or Gal. Steel</td>
<td>Sheet Traveler for Fore &amp; Jib</td>
<td>1</td>
<td>Sheet Traveler for Fore &amp; Jib</td>
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<tr>
<td>12</td>
<td>3/8&quot; Block for 3/4 or 1/2&quot; line</td>
<td>12 Block for 3/4 or 1/2&quot; line</td>
<td>4</td>
<td>Chain Plates 1/4 x 1/4 x 18&quot;</td>
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<td>40 ft.</td>
<td>3/8&quot; Sail track</td>
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<td>1</td>
<td>Goose Neck Mast Fitting</td>
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EQUIPMENT REQUIRED BY FEDERAL LAW UPON BOATS OVER 26 FT.

- Class 422

Red and Green Side Lights, also a lantern or flashlight when approaching boats. (White light forward when underway.)
- White Anchor Light—when at anchor.
- Whistle or other Sound Device and Bell.
- Life Preserver—One life preserver of approved type carried for each passenger aboard.
- 2 1-Qt. Fire Extinguishers, Carbon Tetrachloride or CO2, Approved Type.
- Back Fire Trap upon Engine.

Ventilation to bilges of engine and tank compartments.

See regulations by U. S. Coast Guard, Bureau of Marine Inspection, for exact Specifications.
Cabin roof and side structure ready for planking.

Floor gusset will vary according to the engine. I used a Michigan Twin 15 hp engine in Star-Lite but any two-cylinder, heavy-duty marine engine such as Universal, Michigan, Regal, Kemath, or U.S. Motors will do. In case you want more power, I would suggest a four-cylinder model no larger than 100 cu. in. displacement.

Hanger bolts which secure the engine to the engine bed have a lag screw lower end and a machine screw at the top for fastening engine. Attach engine to shaft with a flexible coupling (Federal Marine, Box 56, Orland Park, Ill.) to absorb alignment differences due to swelling or flexing and to forestall electrolysis in salt water. Install the cooling water inlet as shown in Fig. 18 and dump the outlet water into the exhaust line that also includes a Maxim silencer for cutting engine noise to a mere murmur. From the silencer the exhaust is then piped out through the transom (Fig. 15). It is now required by law to ventilate the engine compartment as shown in Fig. 18. When decking and cabin are finished, access to the engine is through the cabin by lifting out the companionway steps and through the cockpit by a removable hatch.

The gasoline and water supply tanks are made from 30-gallon hot water tanks. Plug the openings and provide only inlet and outlet taps. These hot water tanks are of heavy gage steel, heavily galvanized and are installed in cradles, well chocked to prevent even the slightest movement. Vent the gasoline tank with a tube emerging just under the molding or aft through the transom. The water supply tank should be vented by using either hook tubes or through transom like fuel tank. Install a valve in the gasoline line to the engine in a handy location for shutting the fuel off when you shut down the engine. (It’s safer to shut off the fuel and let the engine run until it stops rather than to turn off the ignition. Otherwise, gas fumes may develop from carburetor seepage.) Just before the fuel line is attached...
to the motor, provide a flexible gasoline line connection. Include a length of plastic tubing between the cooling water inlet and the engine and a length of steam hose between exhaust outlet and transom. Plastic garden hose makes an easy connection between water supply tank and the galley pump as it may be bent around or over frames. Simply use brass garden hose fixtures.

When under-deck installations are complete, you're ready for decking and building the superstructure. Start with uprights at aft end of cabin, place in position and clamp. Heavy gussets se-
cure these uprights to frames at lower, bottom end. Then place midship and extreme fore end uprights in place temporarily. A light batten tacked to aft cabin, fore and midship uprights will enable you to install all remaining uprights at the correct angle to eliminate dips and hollows. Forward and side deckling and cabin sides and top are covered with exterior grade AA plywood (see materials list). Fasten deckling sheets with #10 x 1½-in. flathead screws at all contact points and with 3/4 x 2-in. butt blocks glued and screw-fastened back of or behind all plywood joints. Plank the sides and deck around the cockpit with the same plywood. Plane off all edges of plywood and round the fore ends of cabin siding.

Decking and cabin tops are canvas covered with 8-oz. canvas duck cemented to the plywood with Kuhl's Canvas Cement. When all canvas is in place and tacked along edges with copper tacks, thin some of the Canvas Cement according to directions on can and apply like paint to the canvased surface. Before painting the canvas, wait about one month to allow cement under and over canvas to set. Attach moldings later.

Fitting out the interior is largely a personal matter, but to start, you'll want to lay down some kind of floors. Flooring for Star-Lite is ½-in. plywood in both cabin and cockpit. Cut an opening for a motor hatch in the cockpit and an opening 9 or 10 in. square in cabin flooring for access to interior and to remove bilge water that might accumulate. Complete the bulkheads and install a door on the head (Fig. 24).

The galley includes a small sink connected to a plastic hose drain that dumps outside the hull. In Star-Lite, I used a 2-burner kerosene Primus range (#555) distributed by Thermix Co., World Trade Center, San Francisco 11, Calif. You'll want a cowl ventilator (Perkins #813) directly over the galley range to carry off cooking odors and ventilate this part of the hull.

I installed a Perkins #828-A marine closet in the toilet opposite the galley with the intake and outlet equipped with sea cocks that are readily accessible. Install a cowl ventilator in the head like the one over the galley.

Bunks and berths are built along the sides and over storage areas to make the maximum use of all the space possible. If your pocketbook will stand the strain, I'd suggest equipping the berths with foam rubber mattresses as they are particularly immune to the troubles of a sea-going home.

Hardy souls may enjoy standing up to a tiller, but I personally prefer a steering wheel. Build up a wheel housing for mounting the wheel and enclosing the cable drums according to Fig. 24. Ports are used to light and ventilate the fore
cabin, but in the doghouse, use ¼-⅜-in. plate glass mounted permanently in place and caulked against the weather. Or better still, install a marine window (Perkins #796) which can be thrown open for ventilation, but is absolutely water tight when “dogged” down. Other than these basic needs, fasten fittings which improve appearance or utility are most easily determined by what’s left in the exchequer.

Since Star-Lite is primarily a sailer, let’s tackle the mast, boom and sailing equipment. For the mast, select well seasoned spruce, hemlock or fir lumber with spruce preferred. A spruce mast will weigh approximately 90 lbs., hemlock 115 lbs., and fir 125 lbs. The mast on Star-Lite is strong enough without spreaders or back stays because there’s no use of building a lightweight mast and adding a maze of spreaders and back stays.

The mast is built on blocks over a floor spaced at 2-ft. intervals (Figs. 31 and 32). The reason for blocks is to be certain the tops lie in a perfectly straight line — if the floor is uneven, weld or cut the blocks until tops are straight. Check the tops with a chalk line stretched tight.

The track or aft side of the mast is straight throughout its entire length, so this side rests on the block tops during construction. All tapering of parts as the mast becomes smaller near the top is done in the starboard and port quarters and the
fore side. You'll find the work goes easier if you build the mast in sections, roughly the lower two-thirds first and the topmost one-third last. Lay out the parts from Fig. 31, cut to size and rabbet where necessary with circular saw or jointer. Scarf joints must be staggered at unequal portions along the mast so that no two joints fall in the same area to weaken the structure. When parts are all cut, assemble them without glue first to make sure they all fit snugly together.

Waterproof resorcinol or urea resin glue for fabricating the mast is the same used for planking the hull. For a really stout glue job, coat all contact surfaces lightly, then wait about ten minutes until the glue is absorbed. Apply a second heavier coat and begin clamping parts together immediately. In hot weather the glue sets fast, so don't cover more area than you can assemble without rushing. Wait for weather that averages about 75°F as the glues will not set properly at cool temperatures.

To prevent the mast from gluing itself to the building blocks, insert pieces of newspaper between mast and blocks. Sufficient clamps (spaced at 12-15 in.) should be used to insure all surfaces are firmly in contact. For a mast this long, that's a lot of clamps, and you can make up make-shift extras with two boards and two bolts ahead of time. Don't forget to insert the mast plug in the bottom so it can be stepped.

Let the mast set and dry for three days in average temperatures before removing clamps and resting the mast evenly on four sawhorses. If you wait too long after the glue dries before starting the job of planing and sanding, the excess glue