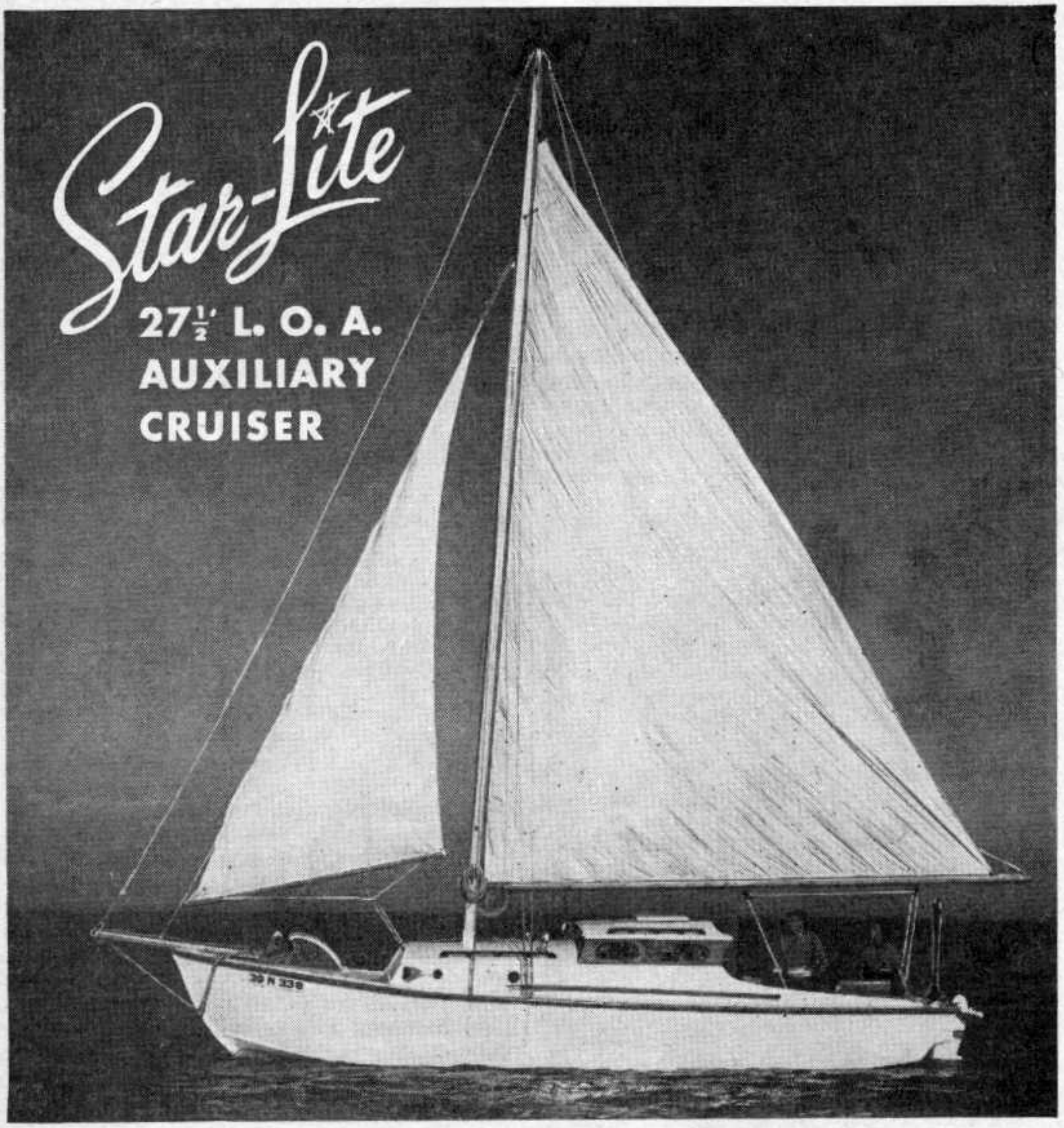


Build this motor sailer and take your own dream cruise down the Mississippi and into the Gulf

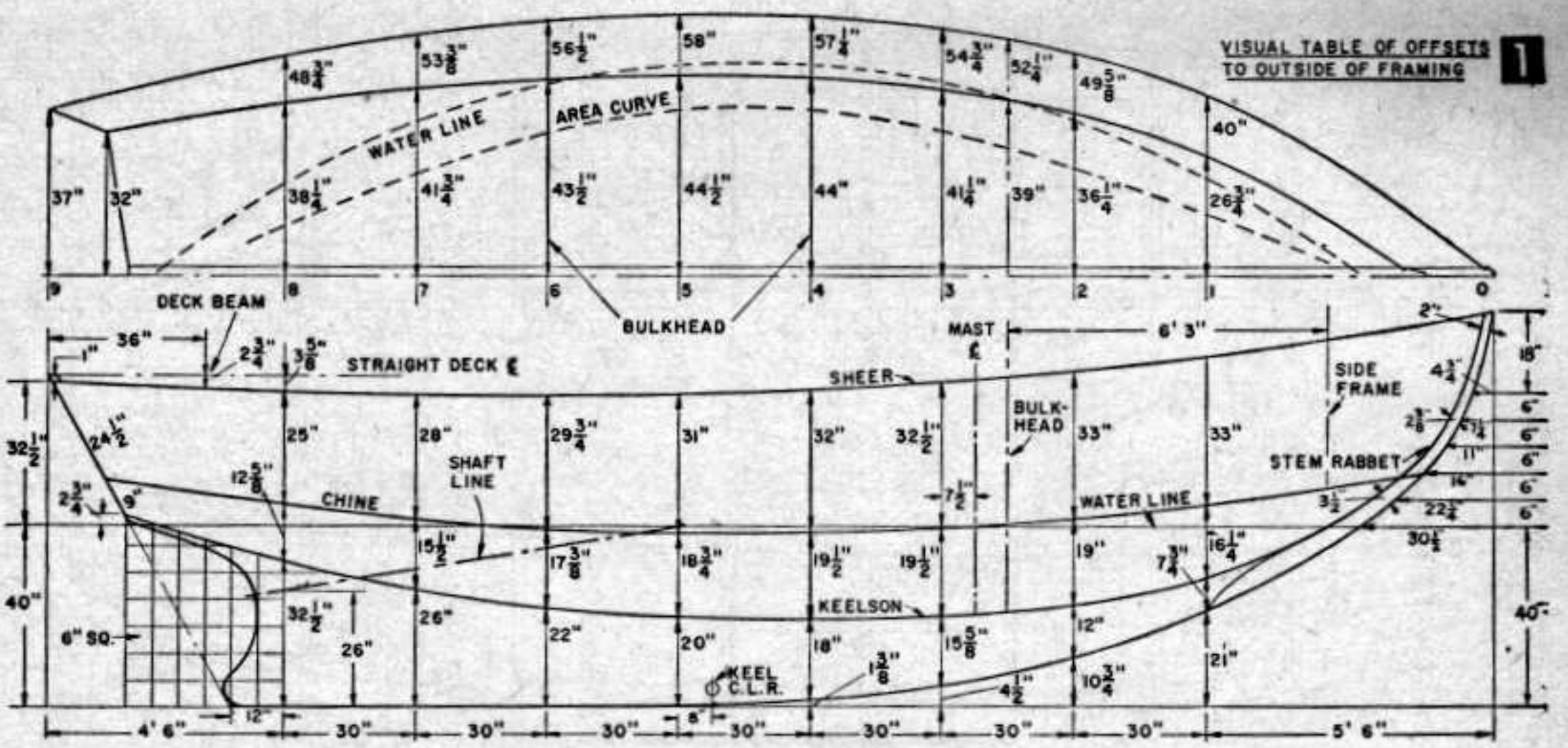
By WILLIAM D. JACKSON

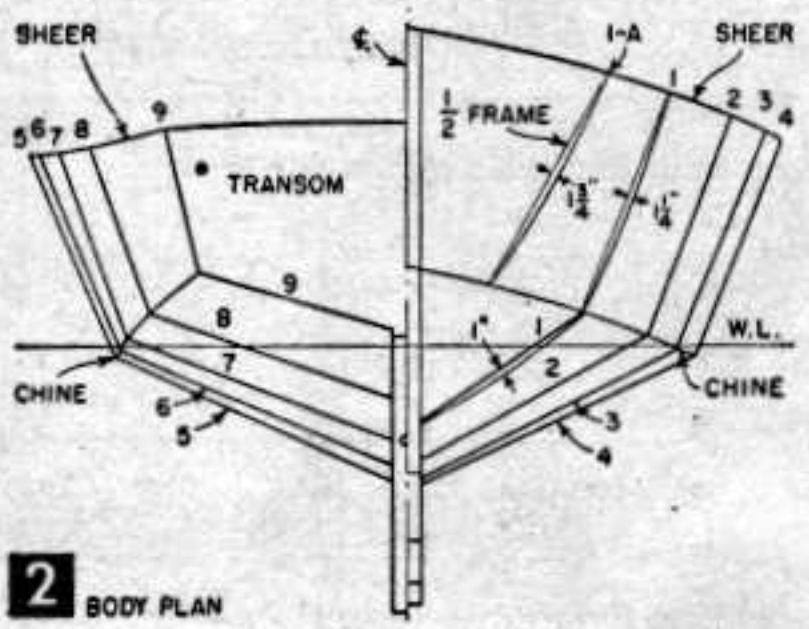
SPORTING an overall length of 27½ feet, *Star-Lite* accommodates four persons in 6'-4" bunks with enough space for a private head and a working galley. You can live on this boat as we did on our trip down Ol' Man Mississippi (see preceding article) and during 18 weeks of sailing in the Gulf of Mexico.

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-

Craft Print Project No. 188





2 BODY PLAN

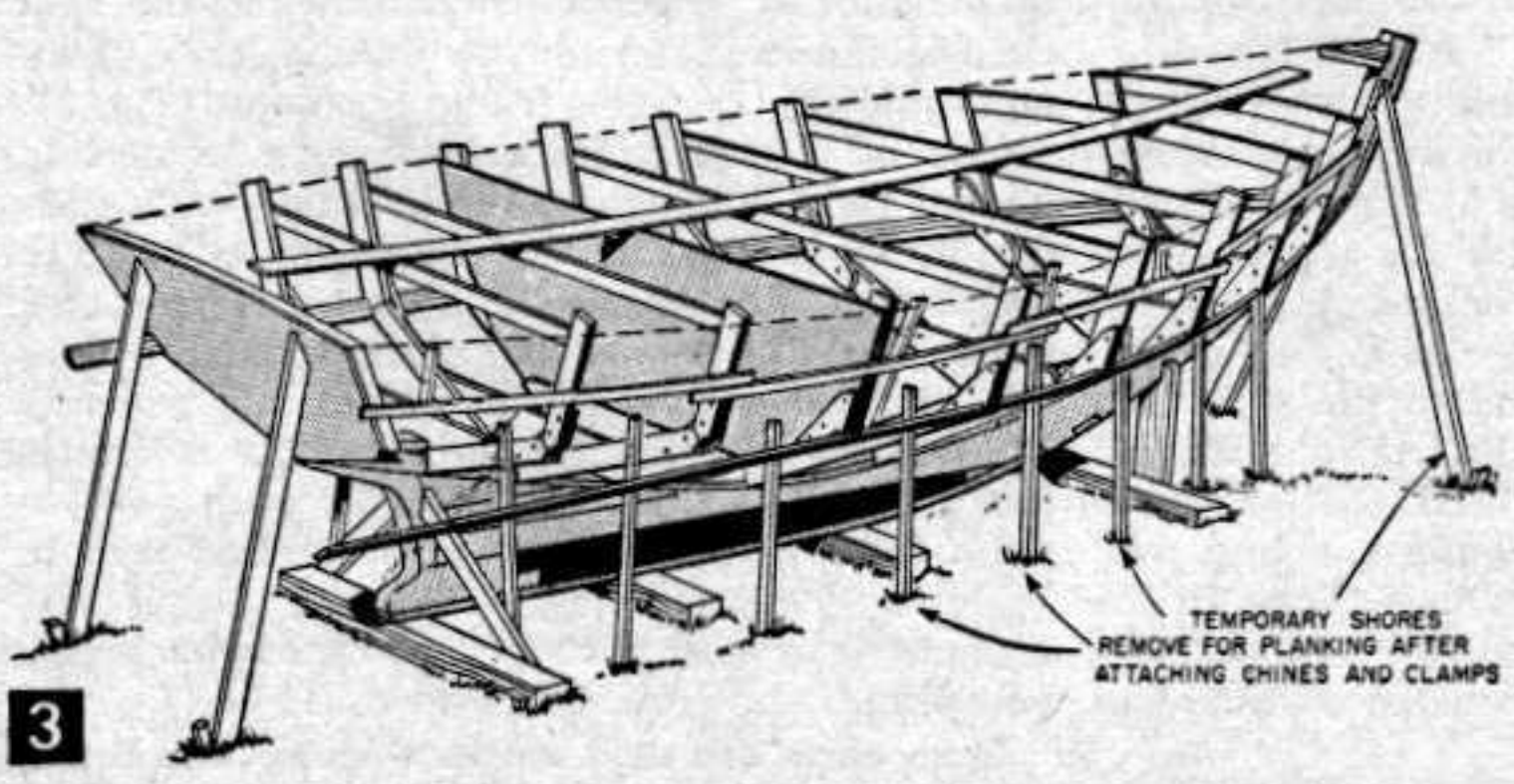
ment. *Tabu* uses a Universal Twin, 12 *hp*, and I used a Michigan Marine, Senior Twin developing 15 *hp* in *Star-Lite*. Anything over 20 *hp* would be wasted, as her sailing lines can't efficiently use more power. A slow-turning engine will prove the most economical and dependable over the years. Both *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 Kuhls *3-Way Preservative* for out-of-water surfaces.

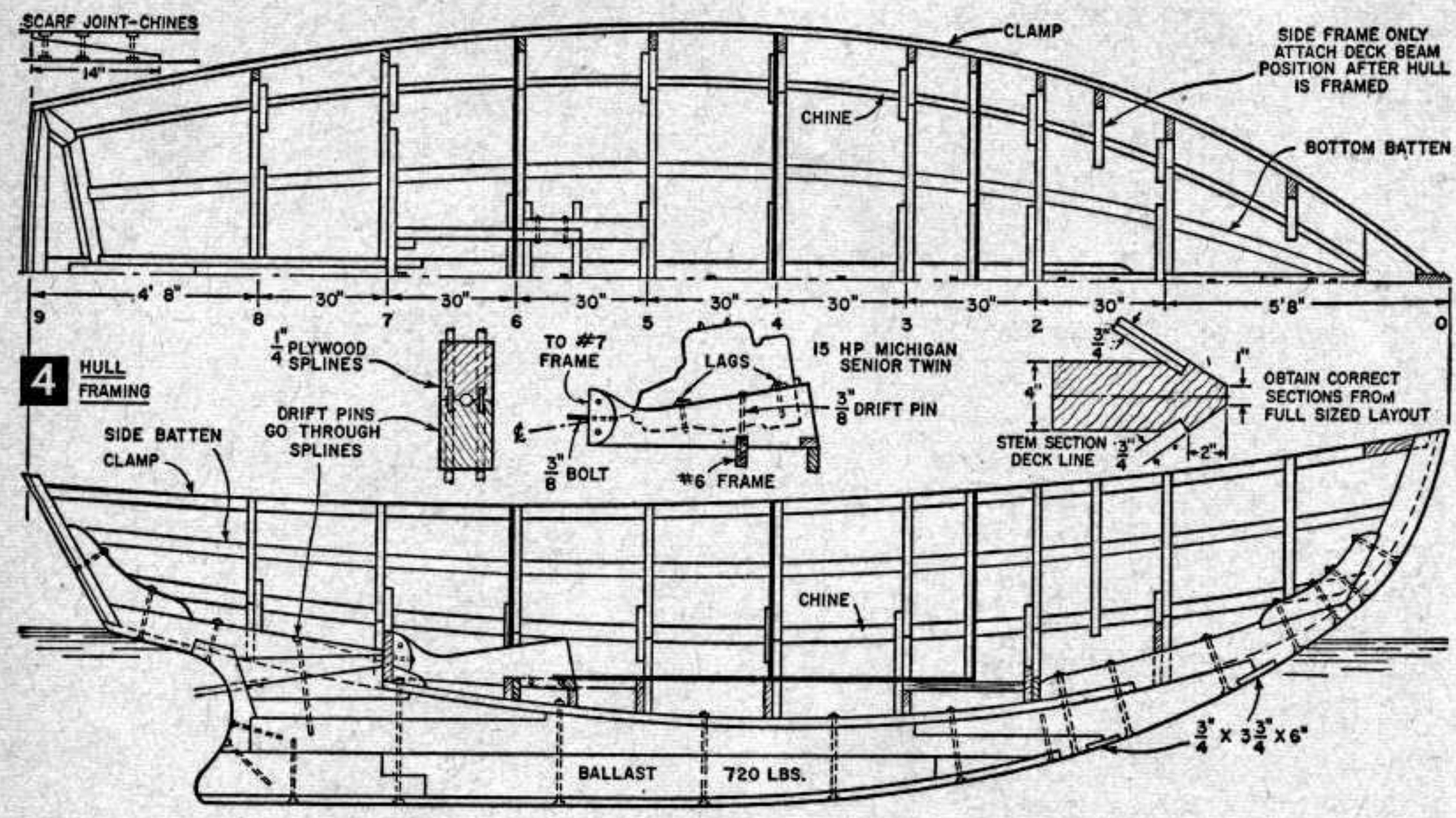
Before starting actual construction, it's absolutely necessary to lay out the lines full size on a floor large enough to work freely. In case your floor space is rough or concrete, lay down some of the plywood sheets you'll use later in planking and nail them together enough to form a platform and keep 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 ¼ x 3½-in. galv. carriage bolts at the floor gusset and chine gusset joints and

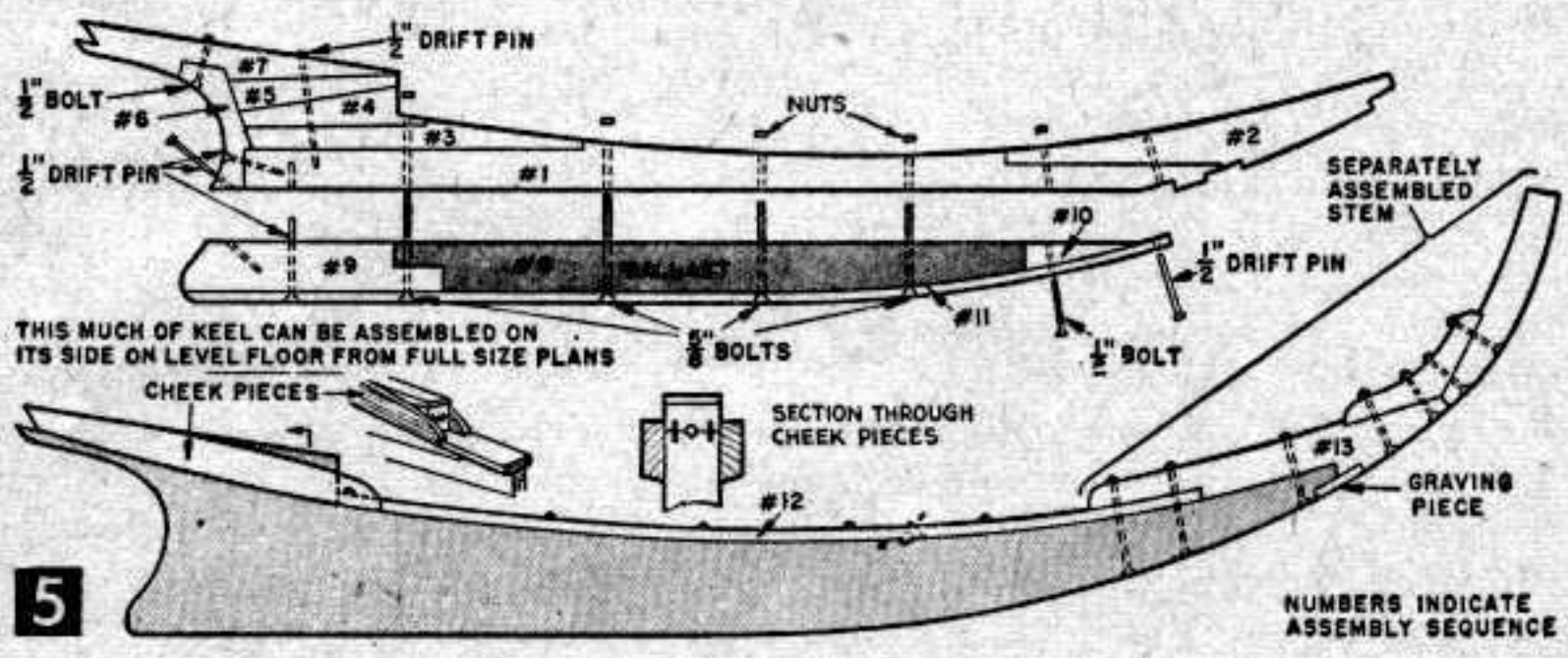


3



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 5/8-in. plywood glued together or an outer covering of 1½ 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.

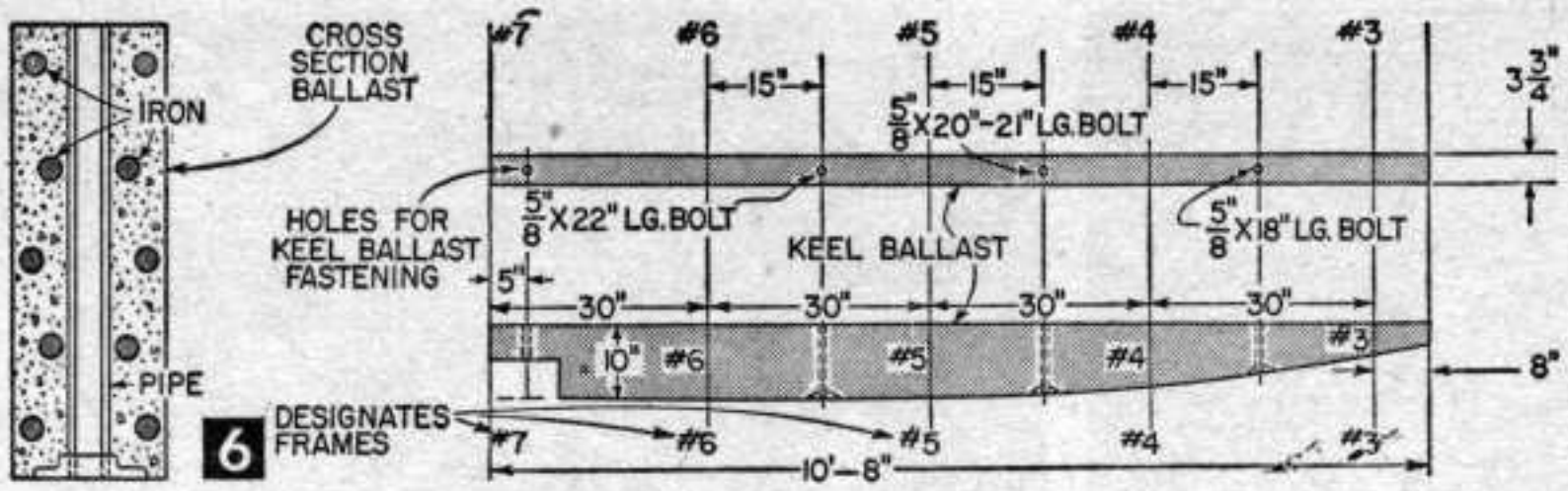


The keel assembly, like all big ships, is the first piece of *Star-Lite's* back-bone to be laid down. Using the line on top of the ballast and bottom of the #1 piece as a level, build up the assembly on its side over full-size plans. The shaft log is built in two pieces, #5 & #6 (Fig. 5), and joined 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 Kuhls *Bedlast*, clamp together and join with bolts or drift pins. Drift pins are driven in lead holes drilled 1/16 in. undersize 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 1/8 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 5/8 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,



6

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 flange on pipe through ballast needed through the step at the aft end. Space reinforcing iron as shown.

MATERIALS LIST — STAR LITE

Plywood Required:
Planking—2 layers 3/8 x 2 3/4" thickness. Bottom & Sides —28 pcs. 3/8" x 4 x 8' EXT-DFPA—AB grade waste makes plywood deck gussets, glued together, and some sheathing for inside. 2 layers requires 5 gals. PENACOLITE G-1131 glue or ELMER'S WATER-PROOF GLUE (CASCOPHEN). Three thicknesses 1/4" plywood requires 10 gals.
Partial Bulkheads—4 pcs. 5/8" x 4 x 7'.
#6 Bulkhead—1 pc. 5/8" x 4 x 10'—1 pc. 5/8" x 4 x 8'.
Cabin Sides—4 pcs. 3/8" 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 gross #12—#14 x 1 3/4" galv. fh screws.
100 5/16 x 4" galv. carriage bolts.
100 3/8 x 8" galv. carriage bolts.
100 1/2 x 12" galv. carriage bolts.
(Cut to size needed for drift pins.)
Misc. bolts for keel.

Chines	2 pcs. 1 1/2 x 3 3/4" x 24'
Clamps	2 pcs. 1 1/2 x 3 1/4" x 28'

Note: If such long lengths are unobtainable simply butt with joints aft of amidships or laminate from 3/4" material two layers glued with PENACOLITE or CASCOPHEN, glue or laminate the pieces directly upon the boat's framework. Use seasoned timber to prevent delamination.

Chine Fillers	4 pcs. 1 1/8 x 2 1/2" x 14'
Chine Knees	3 pcs. 1 5/8 x 6" x 16'
Frames	16 pcs. 1 5/8 x 4 3/4" x 16'
Floor Frames	2 pcs. 1 3/4 x 10" x 16'
Cabin Carlins	6 pcs. 3/4 x 1 1/2" x 12'
Keel	3 pcs. 4 x 8" x 16'
Apron	1 pc. 1 3/4 x 8" x 18'
Transom-Breast hook and Engine Beds	1 pc. 2 1/2 x 12" x 12'
Moldings	4 pcs. 1 1/2 x 2" x 16'
Bottom and Side Battens	8 pcs. 1 1/4 x 3 1/4" x 14'
Cabin Side Supports	4 pcs. 1 5/8 x 2 1/2" x 12'
Cabin and Deck Beams	12 pcs. 1 5/8 x 12" x 12'

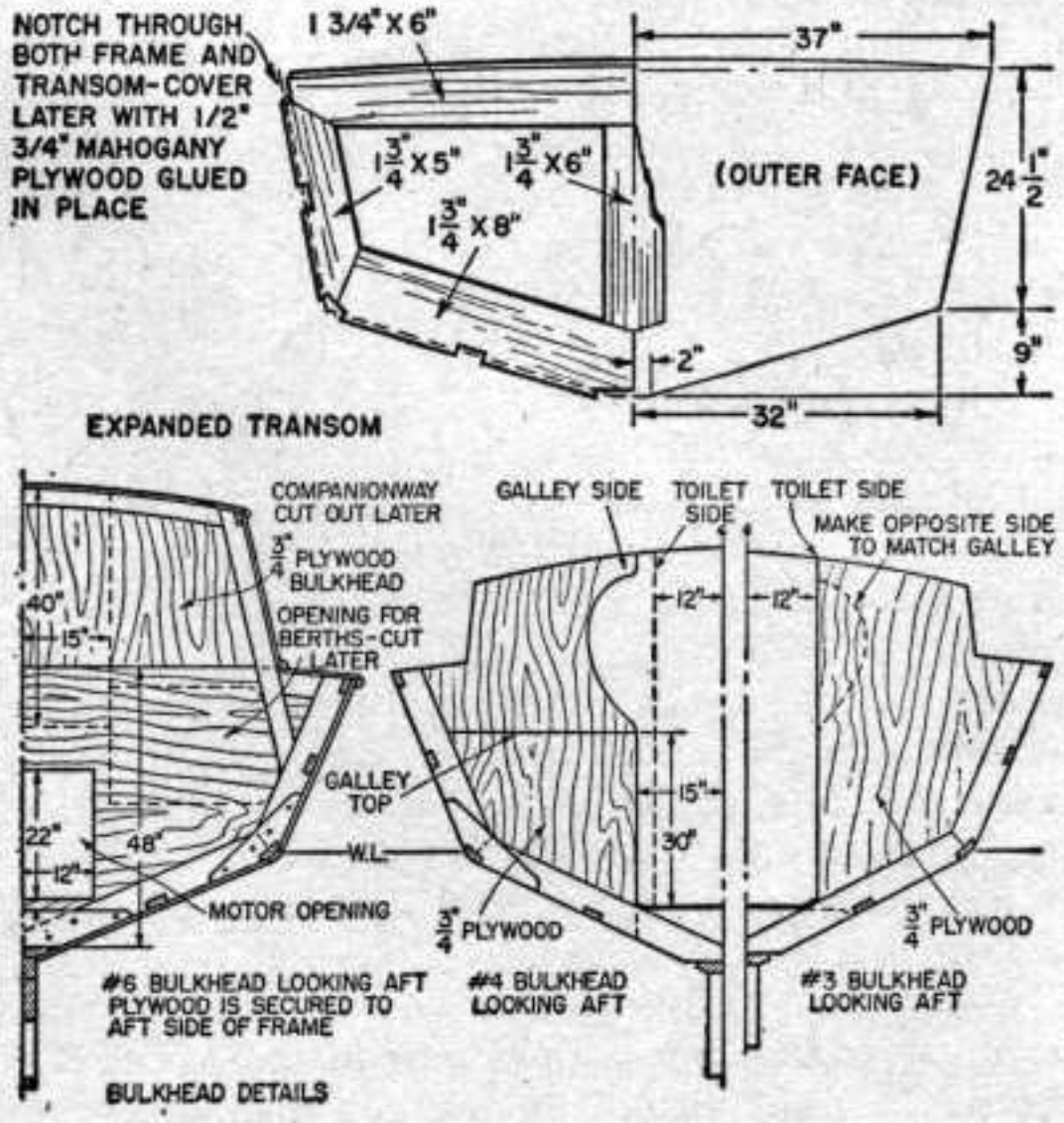
coating contact surfaces first with *Cuprinol* and, when thoroughly dry, Kuhls *Bedlast*. Bolt stem pieces together with 1/2-in galv. bolts and rabbet the stem, except the last 18 in. nearest the keel, to receive the planking (Fig. 4). Pick up this rabbet line from your full-size layout. Bolt the stem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

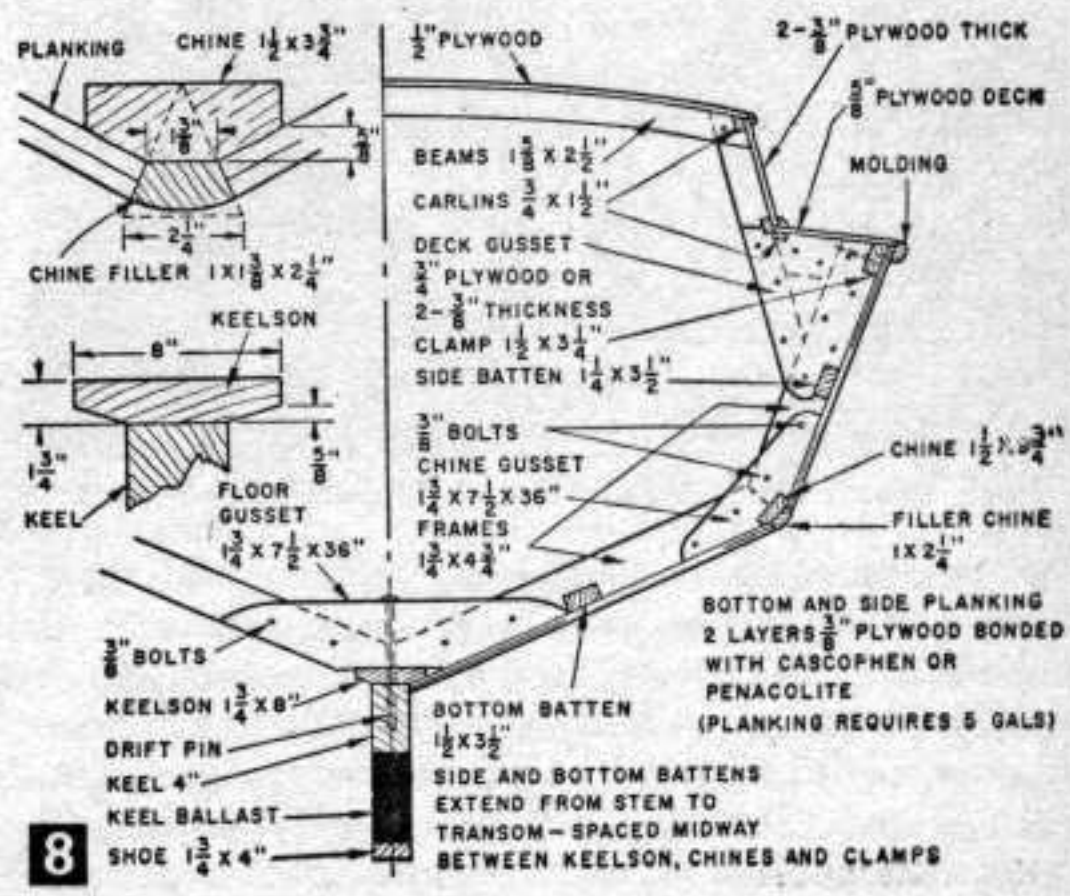
Now you're ready to mount the transom and all frames (Fig. 3). Brace frames in position with 2 x 4's nailed to floor and ceiling or from stakes driven into the ground if you are building out-of-doors. Attach the frames to keelson and lower assembly with 1/2-in. galv. drift pins driven through floor gusset into keel assembly in holes 1/16 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



7

Star-Lite with first layer of planking in place.

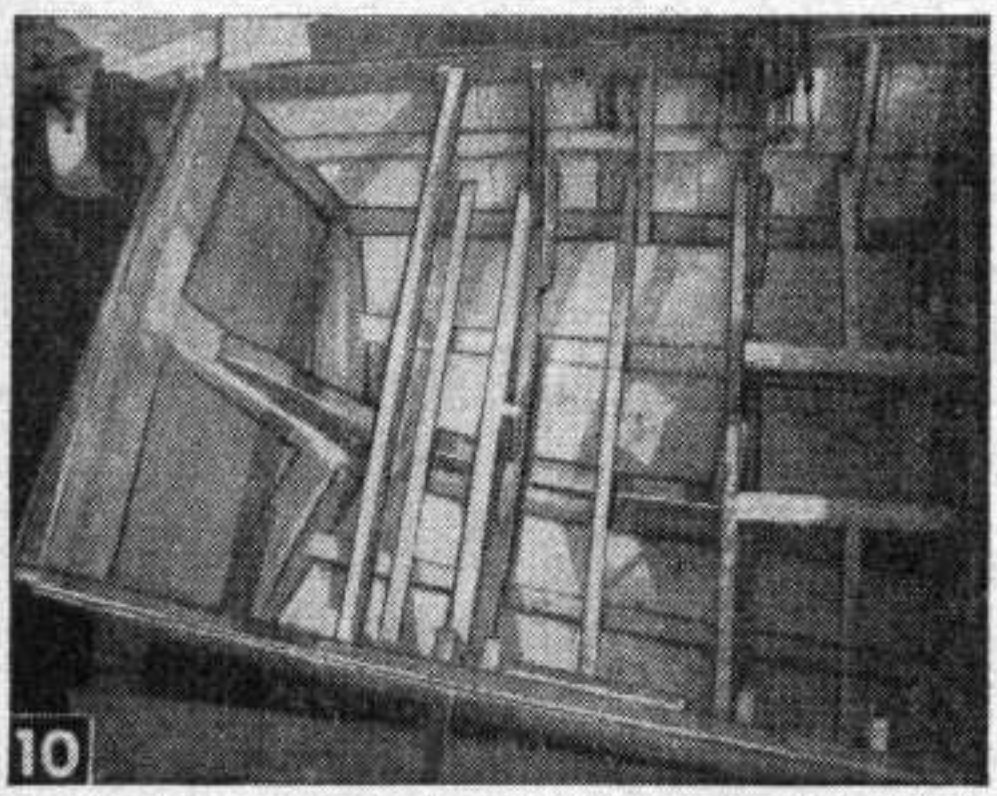




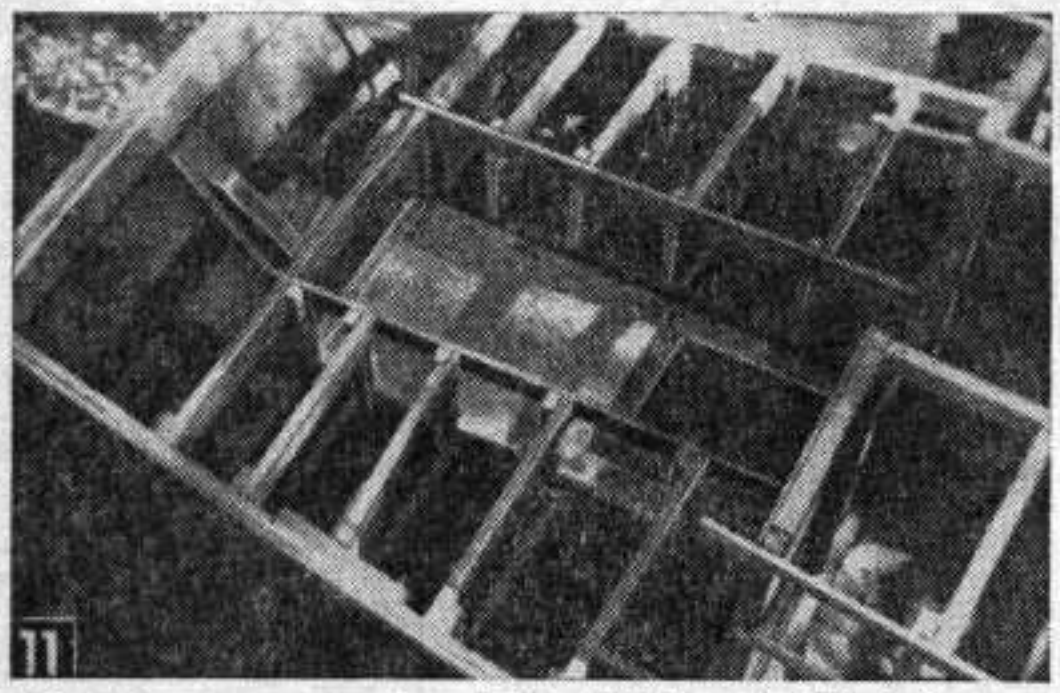
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Deck beams are installed after planking is complete.

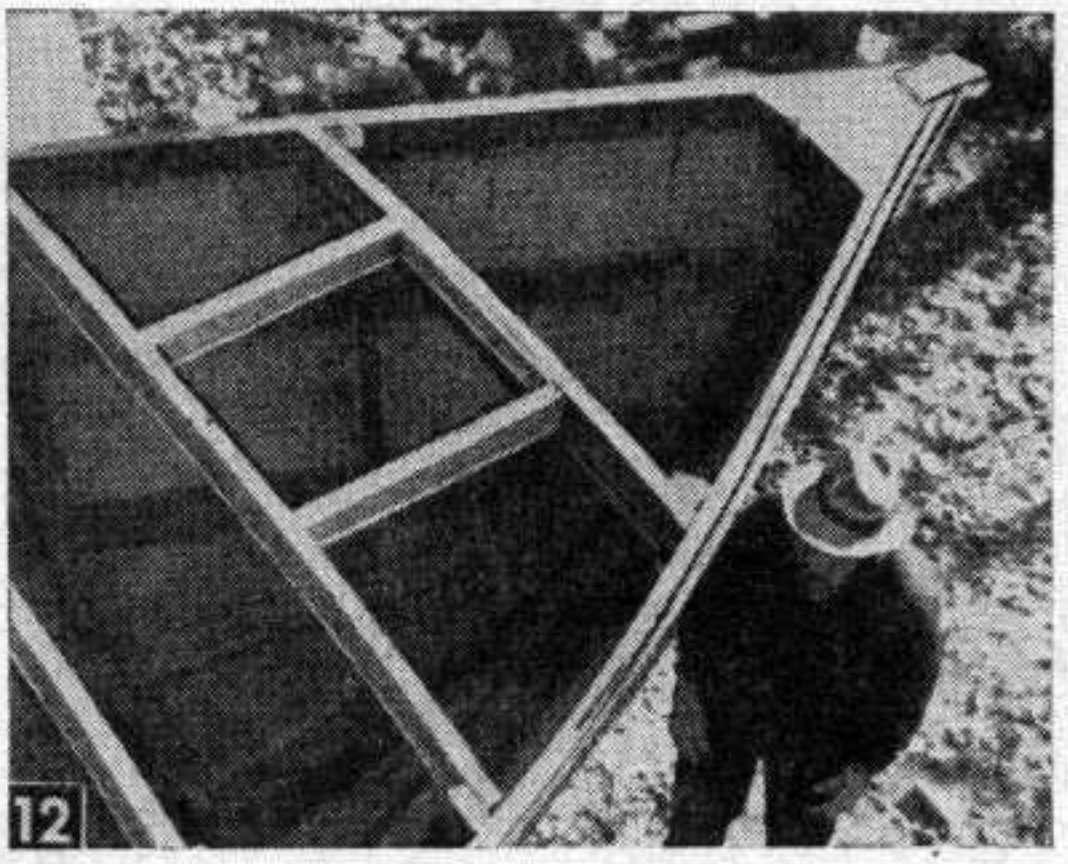


Half-station frames and aft hatch framing at cockpit. Note inside framing of transom.



Deck beams around cockpit at half and full stations.

and square with the axial centerline. Nail ¾ 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.



Framing for forward hatch between deck beams.

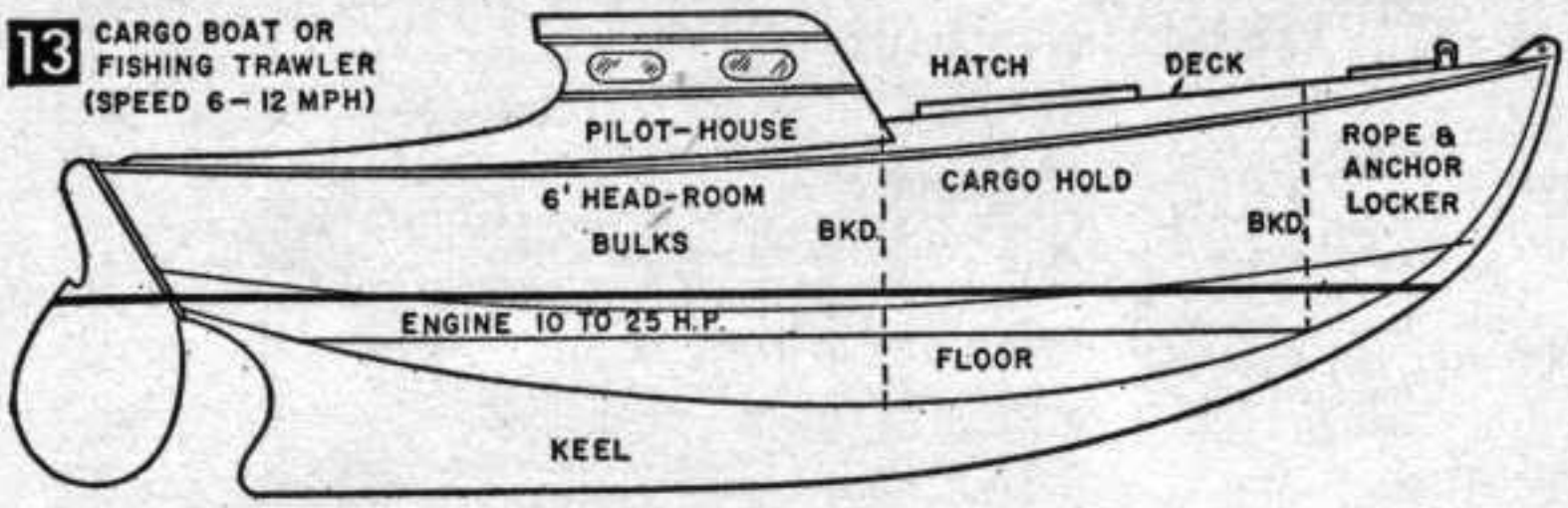
The hull begins to take shape when you add the chines. If full-length material is not available, splice two lengths aft of amidships in a scarf joint 30 in. long glued over the whole area. Clamps may also be spliced, locating the joint between frames other than where chine joints are located. Clamp each chine in position and fit it to the notch at each frame by sawing alongside the chine. Fasten chines to frame knees with 5/16-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 2½-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 ¼-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 2½-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 2½-in. *fh* screws.

The entire framework is now trimmed and faired 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



Same basic hull design for Star-Lite can also be adapted to a coast wise working or fishing boat. Hull is simple, strong and seaworthy.

plywood because a single thickness is built up from only five plies. Two layers of ⅜-in. plywood includes six plies and three layers of ¼-in. plywood totals nine plies. Thinner plywoods are much easier to handle and develop greater total strength when bonded together as they are applied. I used two layers of ⅜-in. fir plywood and covered the whole framework with one thickness before starting with the final planking. Buy only plywood branded *EXT-DFPA* 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. Screwfasten the first layer to the framework with 1¼-in. anchor nails spaced 5-6 in. Fit ¾ 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 screwfasten outside layer into framework at all points with #12 x 1¾-in *fh* 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.



Start of framing for cabin using beams at stations.

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 *Cascophen* or *Penacolite 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 Kuhls *Bedlast*. Return the fillers to slot and fasten securely with #12 x 1¾-in. *fh* 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 Kuhls *3-Way Preservative-Clear* above the water line. Paint the plywood with three coats of *Firzite* and follow with marine enamel in your choice of colors.

To start the deck structure, cut and fit the fore and aft deck beams and attach side plate gussets with ¼-in. galv. bolts (Fig. 8). Be sure that all bulkheads are in position and bolted (¼-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 ¼-in. bolts. Cut and install the cabin beams, bolting them to the top of cabin uprights with ¼-in. galv. bolts to form a fair top surface.

The carlins are notched flush into deck gussets and screwfastened with one #10 x 2-in. *fh* screw. Trim and fair sheer edges of plywood planking and all cabin framing for decking. 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. *fh* screws, well countersunk.

Before installing the decking, 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 ½-in. galvanized drift pins and bolts. Notches to be cut out of the #6

MATERIALS LIST—STARLITE

No. of Pieces	Dimensions	Use
	Top Side Plywood	
2	3/8" x 4' x 8'	rudder
1	1/2" x 3' x 4'	cockpit floor
2	1/2" x 30" x 8'	cockpit sides
6	3/8" x 4' x 8' Ext-DFPA-AB or AC grade	interior cabinets and sheathing
4	1/2" x 4' x 8'	cabin roof
5	5/8" x 4' x 8'	decking
	Frame Parts	
1	4" x 4" x 8' oak	mooring bitt
1	2 1/2" x 8" x 8' oak	bowsprit
2	3/4" x 8" x 12' oak	rudder
	Mast and Boom	
1	1 5/8" x 4 1/2" x 20'	mast
1	1 5/8" x 4 1/2" x 18'	mast
2	1 5/8" x 4 1/2" x 14'	mast
1	1 5/8" x 4 1/2" x 12'	mast
80 lineal ft.	3/4 x 2 1/2"	mast
80 lineal ft.	3/4 x 3 3/4"	mast
2	3/4" x 2 1/4" x 20'	boom
2	1 5/8" x 3" x 20'	boom
1	1 3/4" Square 10' long round and taper	jib boom

Motor and Rigging Equipment

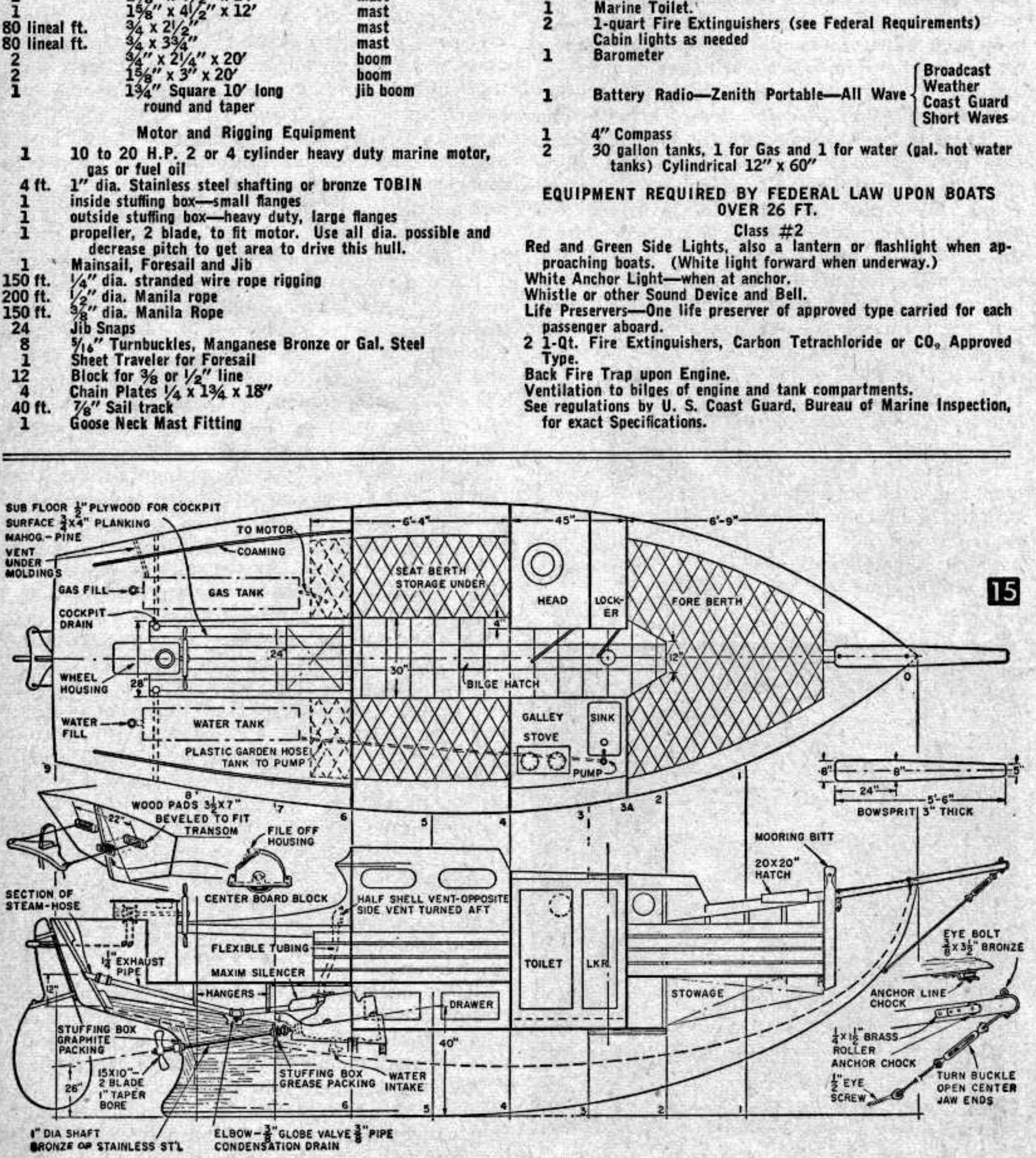
1	10 to 20 H.P. 2 or 4 cylinder heavy duty marine motor, gas or fuel oil
4 ft.	1" dia. Stainless steel shafting or bronze TOBIN
1	inside stuffing box—small flanges
1	outside stuffing box—heavy duty, large flanges
1	propeller, 2 blade, to fit motor. Use all dia. possible and decrease pitch to get area to drive this hull.
1	Mainsail, Foresail and Jib
150 ft.	1/4" dia. stranded wire rope rigging
200 ft.	1/2" dia. Manila rope
150 ft.	3/8" dia. Manila Rope
24	Jib Snaps
8	5/16" Turnbuckles, Manganese Bronze or Gal. Steel
1	Sheet Traveler for Foresail
12	Block for 3/8 or 1/2" line
4	Chain Plates 1/4 x 1 3/4 x 18"
40 ft.	7/8" Sail track
1	Goose Neck Mast Fitting

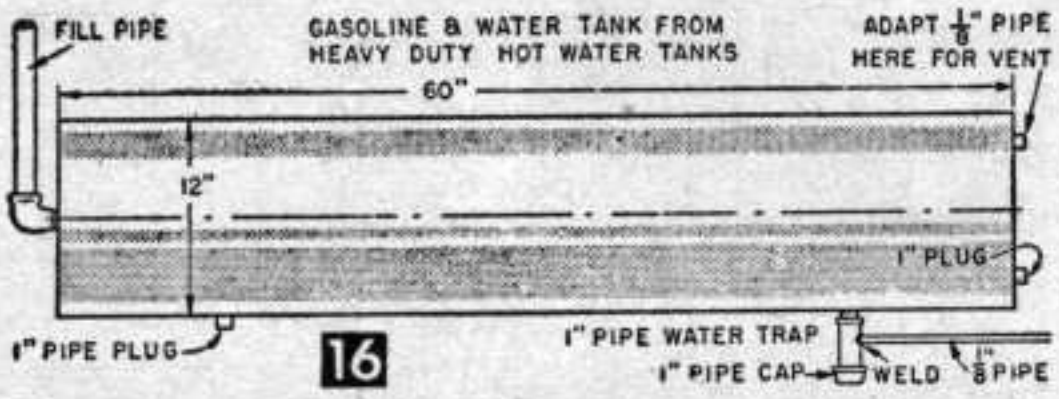
No. Req.	Description
1	Mast Head Sheave 3" dia.
4	8" Cleats
2	Boom Straps
2	Pintles and gudgeons
2	Anchors 1 20-lb. Danforth or Northill and 1 75-lb. Kedge
150 ft.	Anchor line 3/4" Manila
2	25-ft. 3/4" mooring lines
1	24" Steering wheel or Tiller
25 ft.	1/4" Flexible steering cable
4	Blocks for steering Gear
	Bow sprit and bob stay fitting
	Cabin Equipment
1	2 hole pressure Alcohol or Kerosene Stove
1	Galley Sink and Pump
1	Portable Ice Box
4	Inner Spring Mattresses or Air Foam Rubber to fit bunks 30" wide
1	Marine Toilet.
2	1-quart Fire Extinguishers (see Federal Requirements)
	Cabin lights as needed
1	Barometer
1	Battery Radio—Zenith Portable—All Wave { Broadcast, Weather, Coast Guard, Short Waves
1	4" Compass
2	30 gallon tanks, 1 for Gas and 1 for water (gal. hot water tanks) Cylindrical 12" x 60"

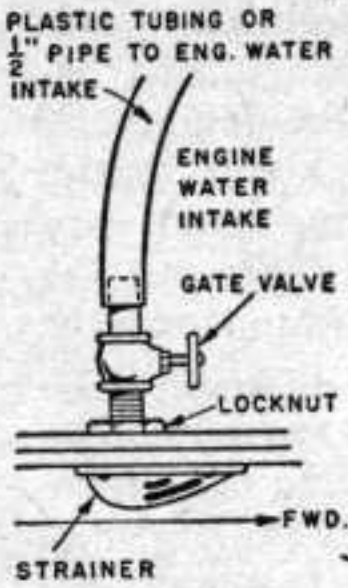
EQUIPMENT REQUIRED BY FEDERAL LAW UPON BOATS OVER 26 FT.

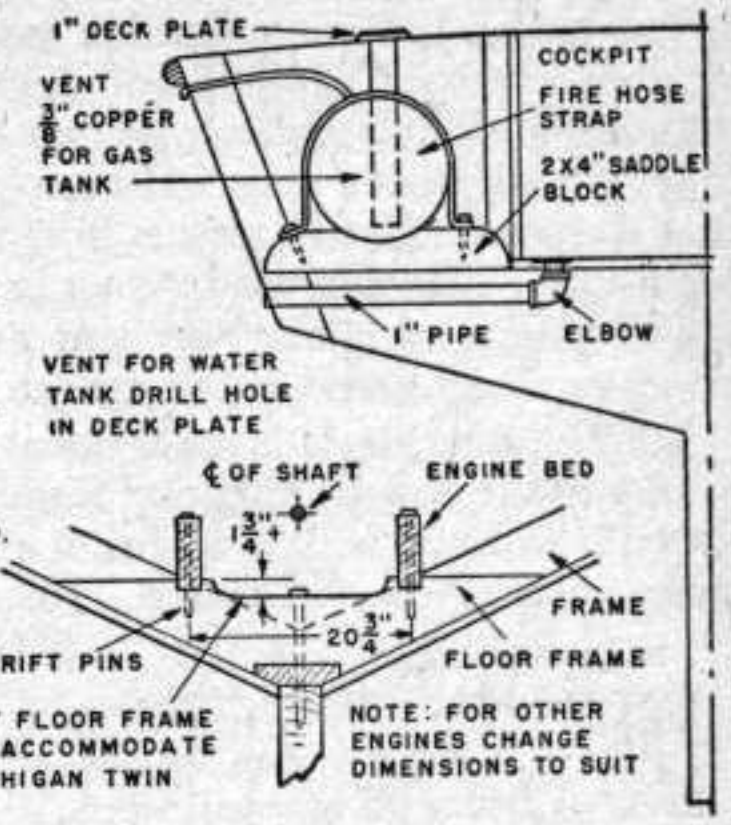
Class #2

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 Preservers—One life preserver of approved type carried for each passenger aboard.
2 1-Qt. Fire Extinguishers, Carbon Tetrachloride or CO_2 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.



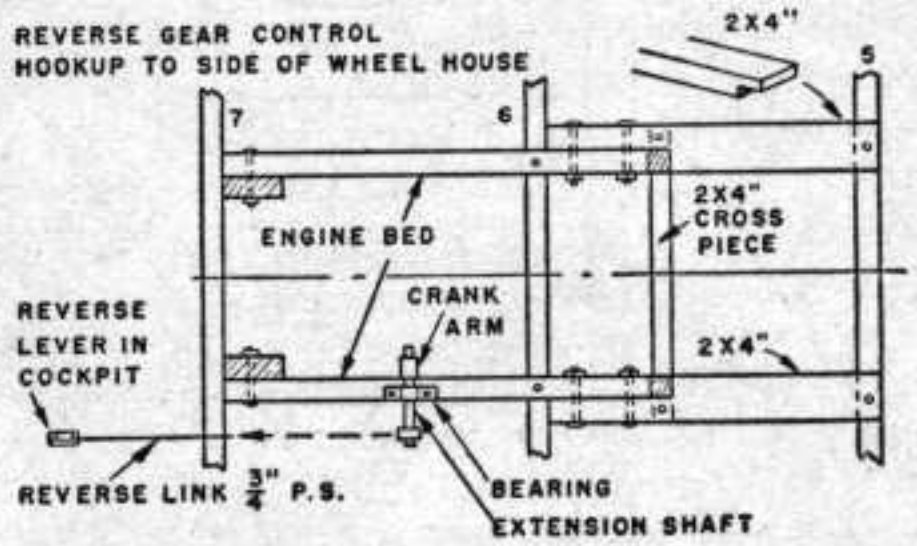








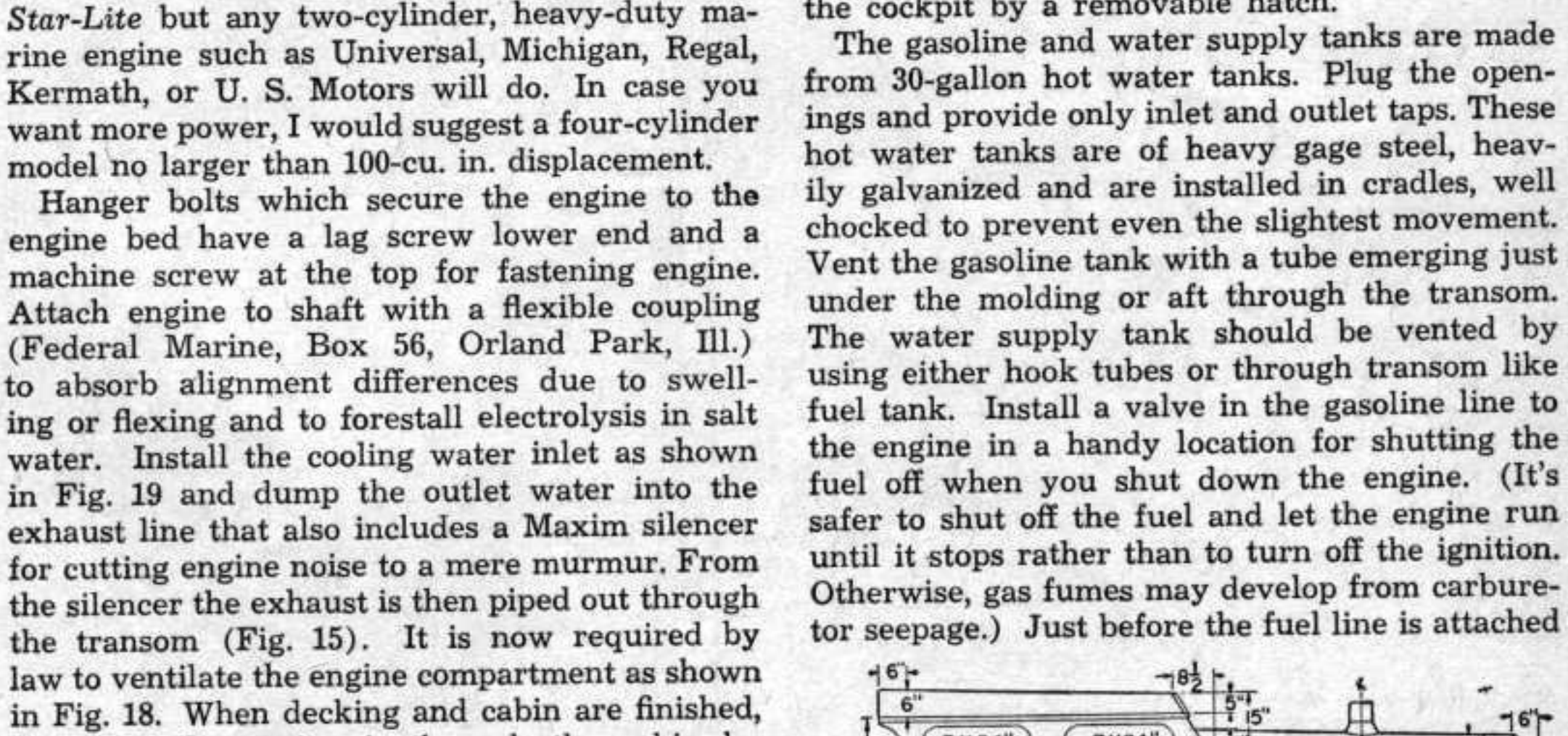
Cabin roof and side structure ready for planking.



floor gusset will vary according to the engine. I used a *Michigan Senior Twin* 15 *hp* engine in *Star-Lite* but any two-cylinder, heavy-duty marine engine such as Universal, Michigan, Regal, Kermath, 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.

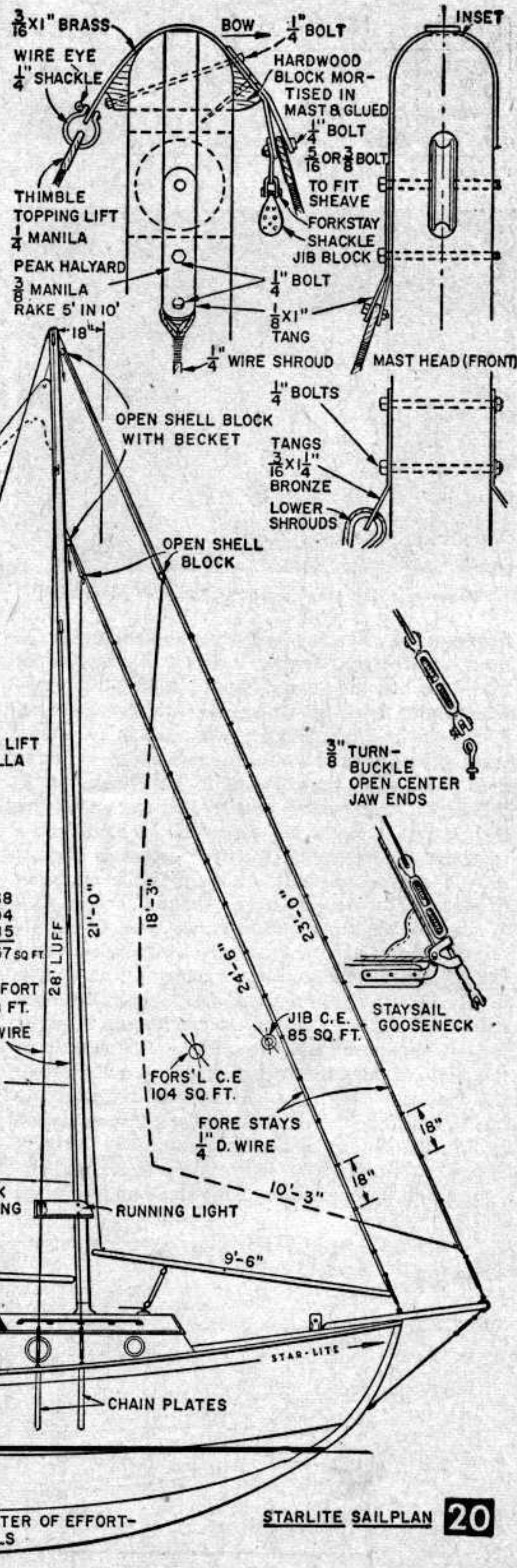
Hanger bolts which secure the engine to the engine bed have a lag screw lower end and a machine screw at the top for fastening engine. Attach engine to shaft with a flexible coupling (Federal Marine, Box 56, Orland Park, Ill.) to absorb alignment differences due to swelling or flexing and to forestall electrolysis in salt water. Install the cooling water inlet as shown in Fig. 19 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-



STARLITE SAILPLAN 20



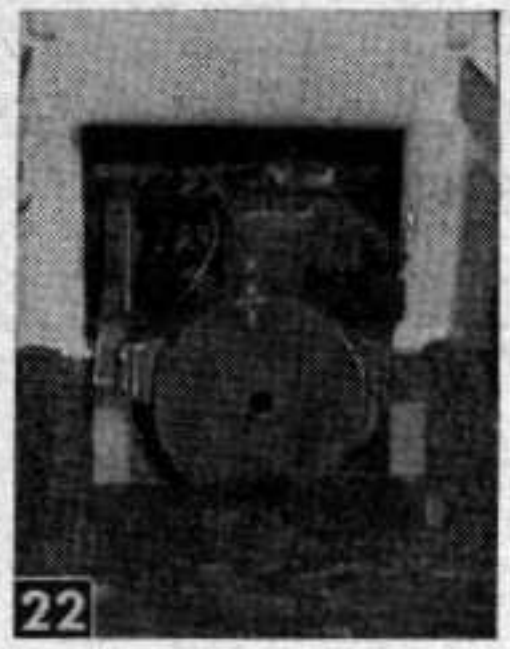
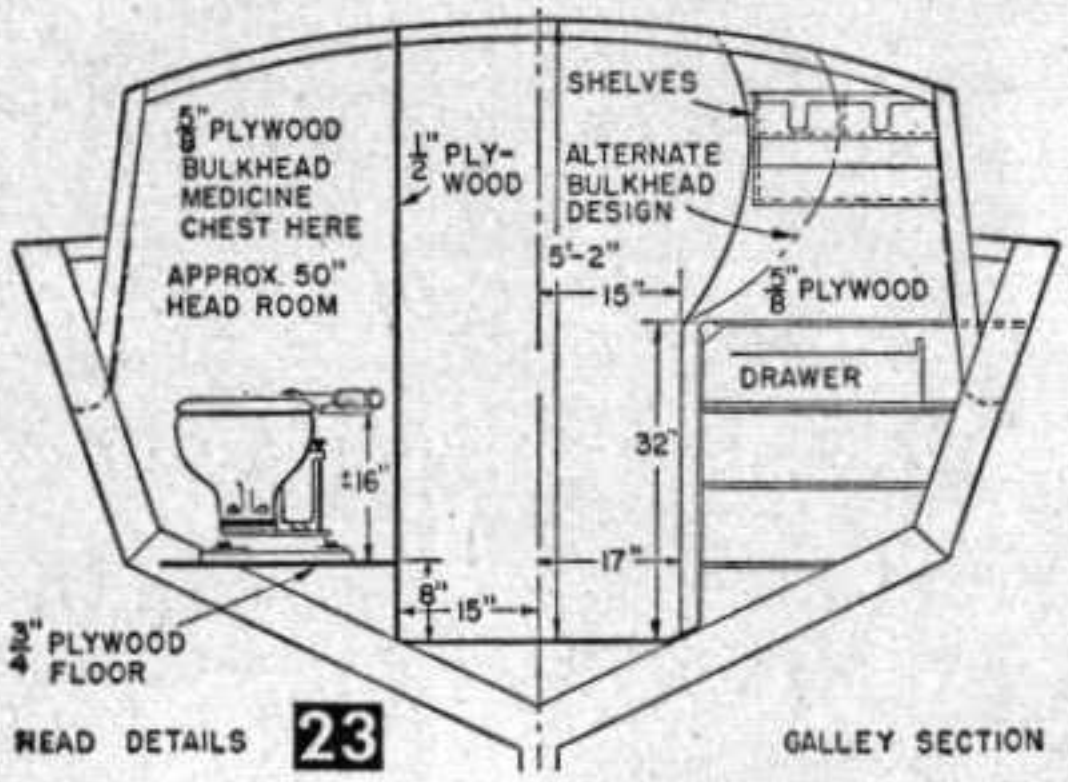


Fig. 21. Steps from cabin up to cockpit cover engine. Note hole in lower step for crank. Fig. 22. Michigan Twin engine with step cover removed.



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 decking and cabin sides and top are covered with exterior grade AA plywood (see materials list). Fasten decking sheets with #10 x 1½-in. *fh* screws at all contact points and with ¾ 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.

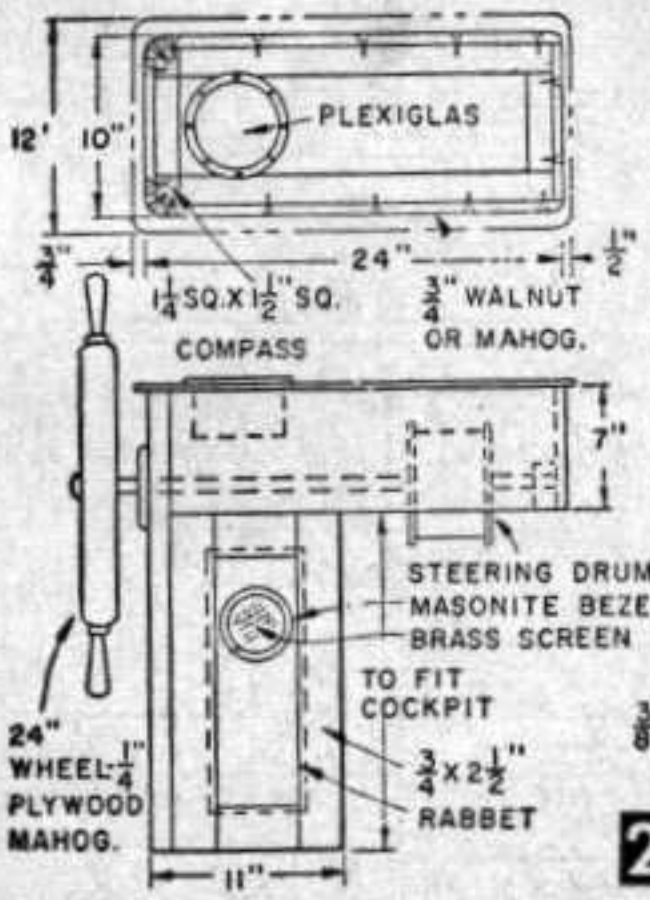
Fitting out the interior is largely a personal matter, but to start, you'll want to lay down some kind of floors. Flooring for *Star-Lite* is ½-in. plywood in both cabin and cockpit. Cut an opening for a motor hatch in the cockpit and an opening 9 or 10 in. square in cabin flooring for access to interior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

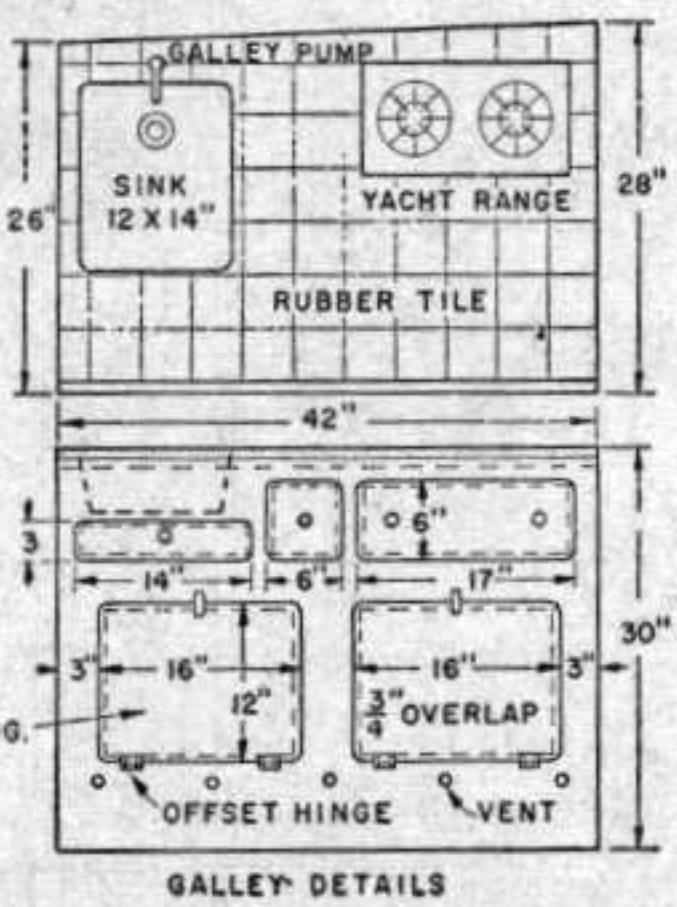
The galley includes a small sink connected to a plastic hose drain that dumps outside the hull. In *Star-Lite*, I used a 2-burner kerosene *Primus* range (#535) distributed by Thermix Co., World Trade Center, San Francisco 11, Calif. You'll want a cowl ventilator (Perkins #513) directly over the galley range to carry off cooking odors and ventilate this part of the hull.

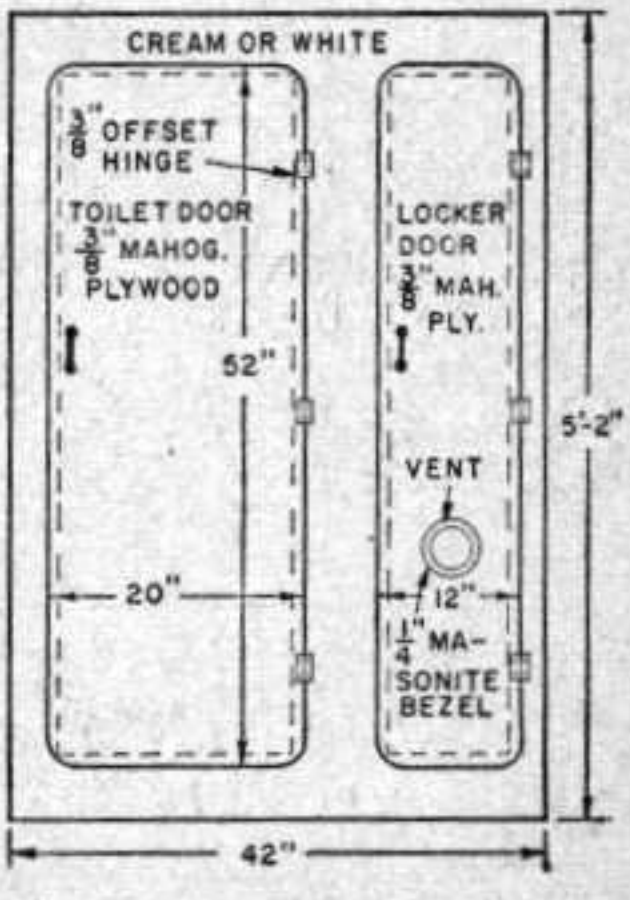
I installed a Perkins #828-A marine closet in the toilet opposite the galley with the intake and outlet equipped with sea cocks that are readily accessible. Install a cowl ventilator in the head like the one over the galley.

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







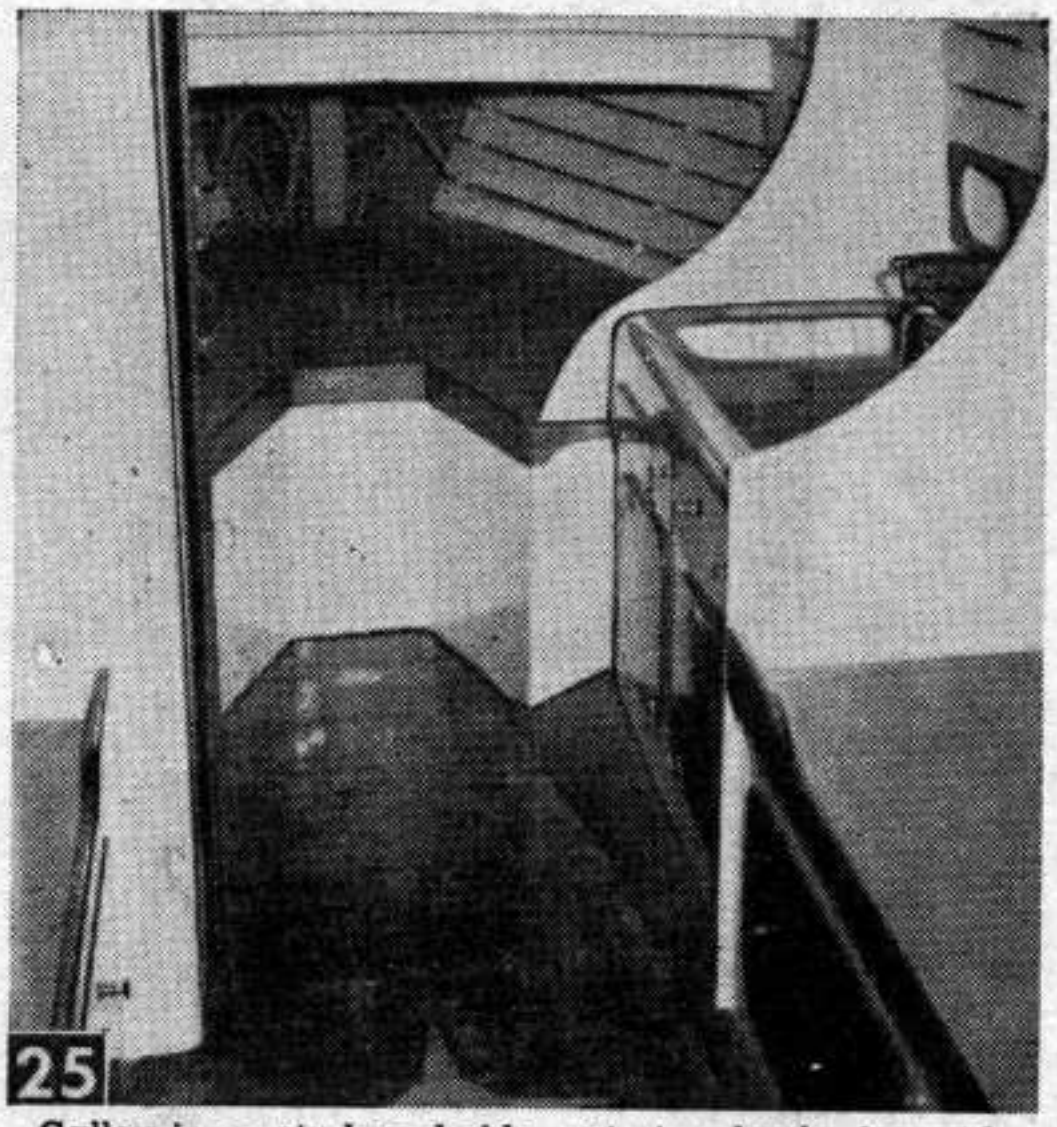
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cabin, but in the doghouse, use ¼-⅜-in. plate glass mounted permanently in place and caulked against the weather. Or better still, install a marine window (Perkins #796) which can be thrown open for ventilation, but is absolutely water tight when "dogged" 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.

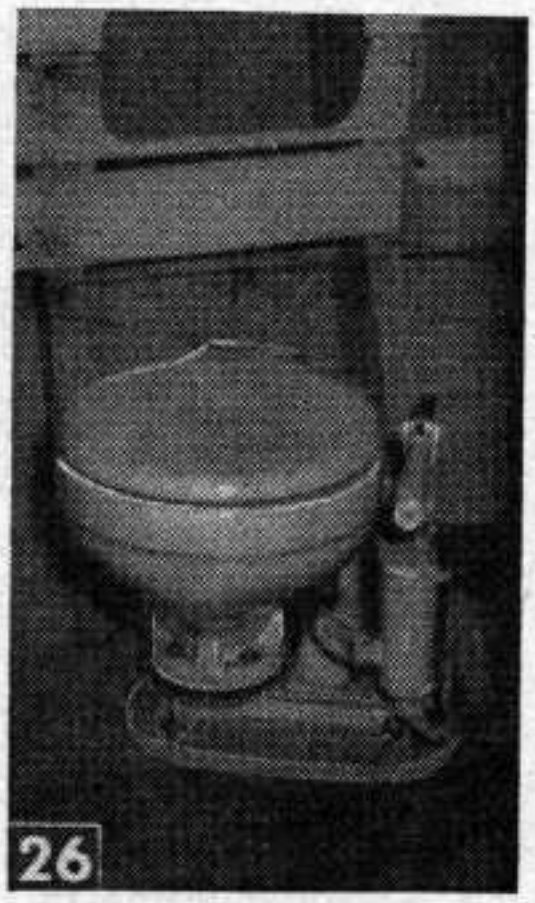
The mast is built on blocks over a floor spaced at 2-ft. intervals (Figs. 31 and 32). The reason for blocks is to be certain the tops lie in a perfectly straight line—if the floor is uneven, wedge or cut the blocks until tops are straight. Check the tops with a chalk line stretched tight.

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



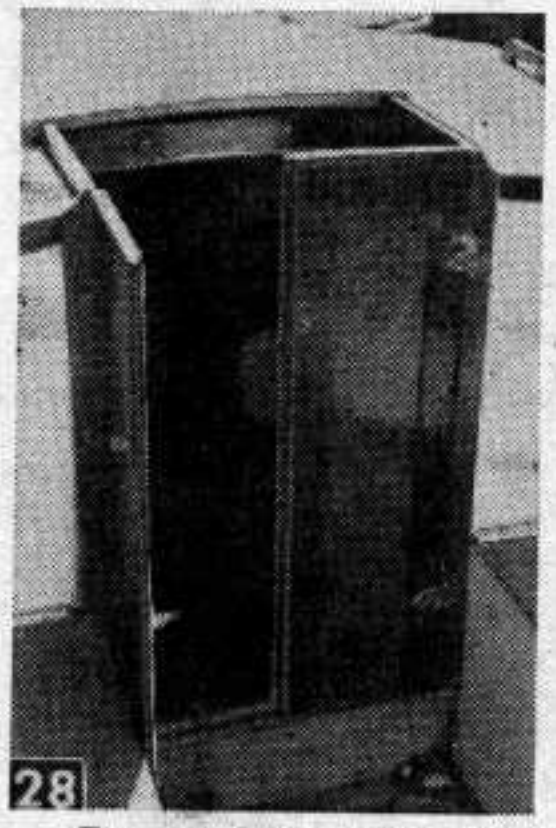
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Galley is on starboard side, note two bunks forward.

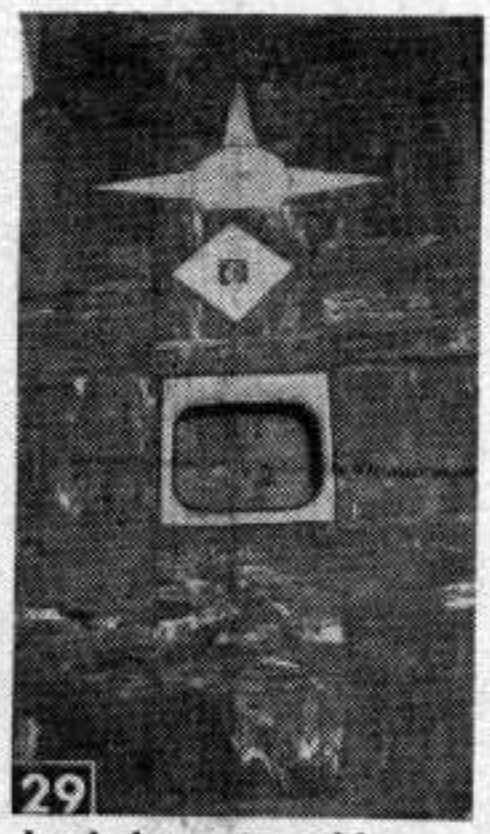


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Toilet is set in a separate compartment opposite galley and between portside bunks.

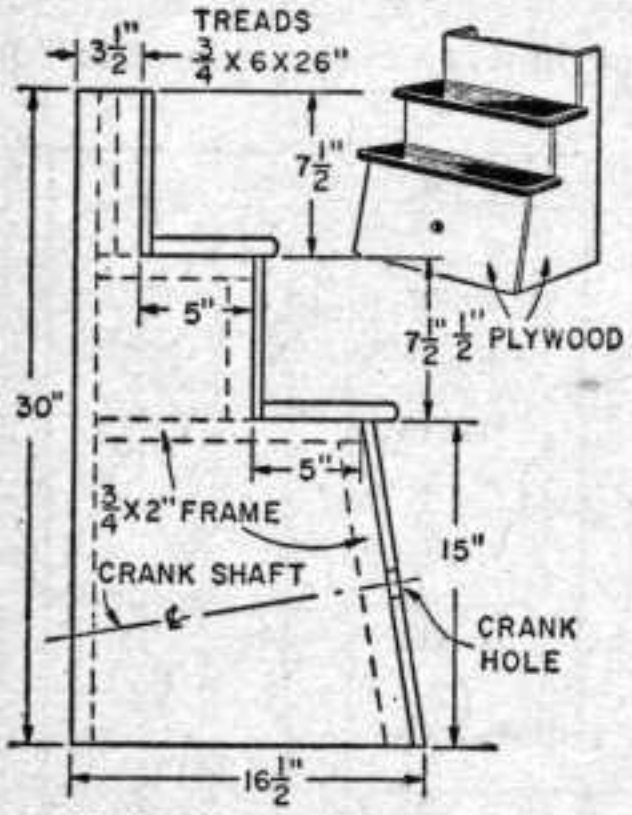


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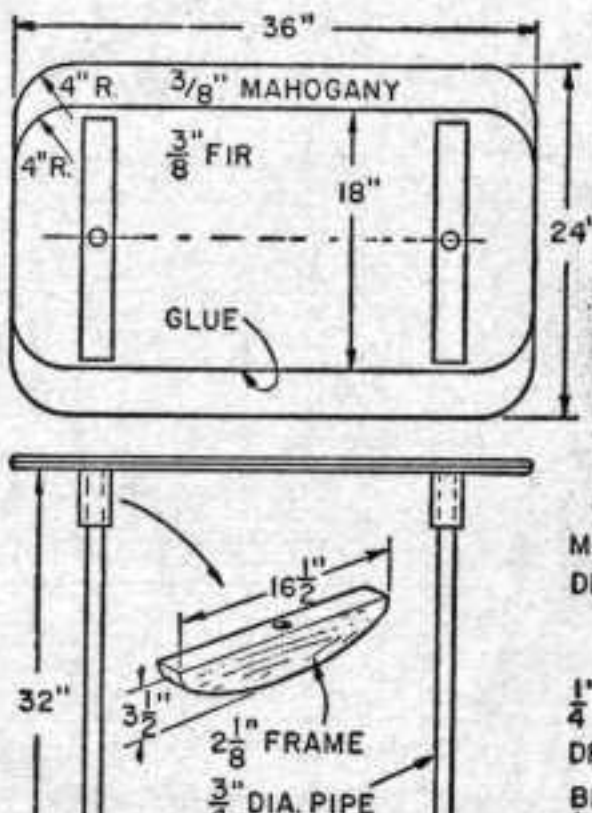


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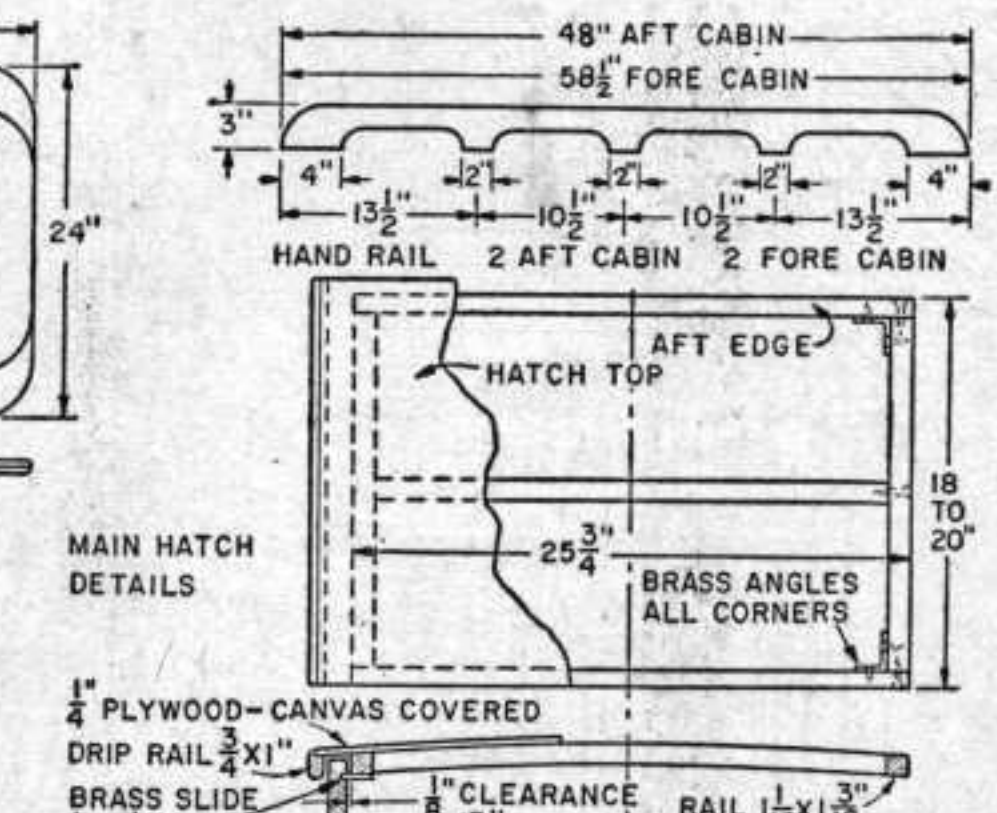
Fig. 28. Two narrow doors lead down to cabin.
Fig. 29. Removable hatch in cabin floor leads to bilge.



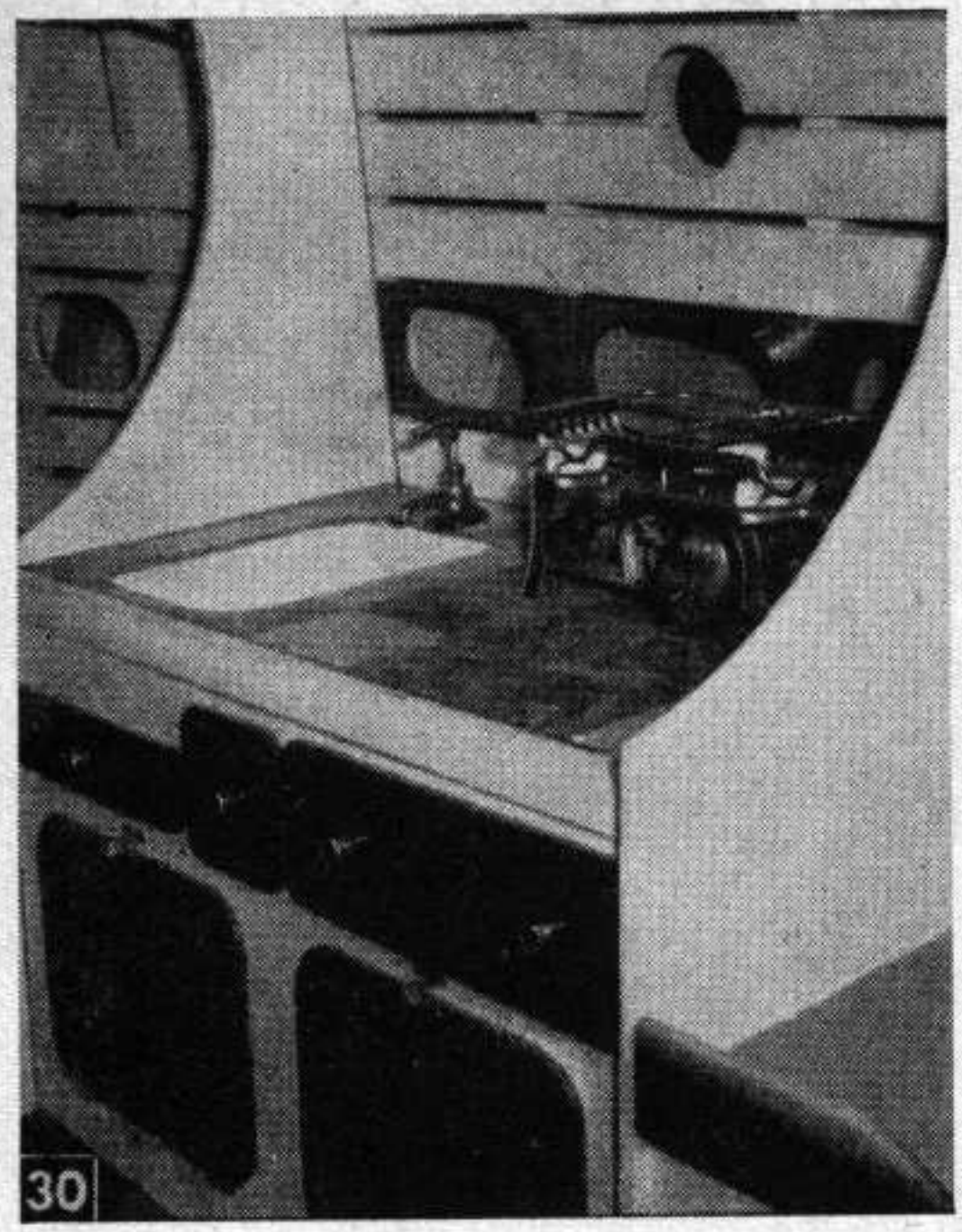
COMPANIONWAY STEPS (ADJUST DIMENSIONS TO SUIT ENGINE)



REMOVABLE CHART TABLE



27



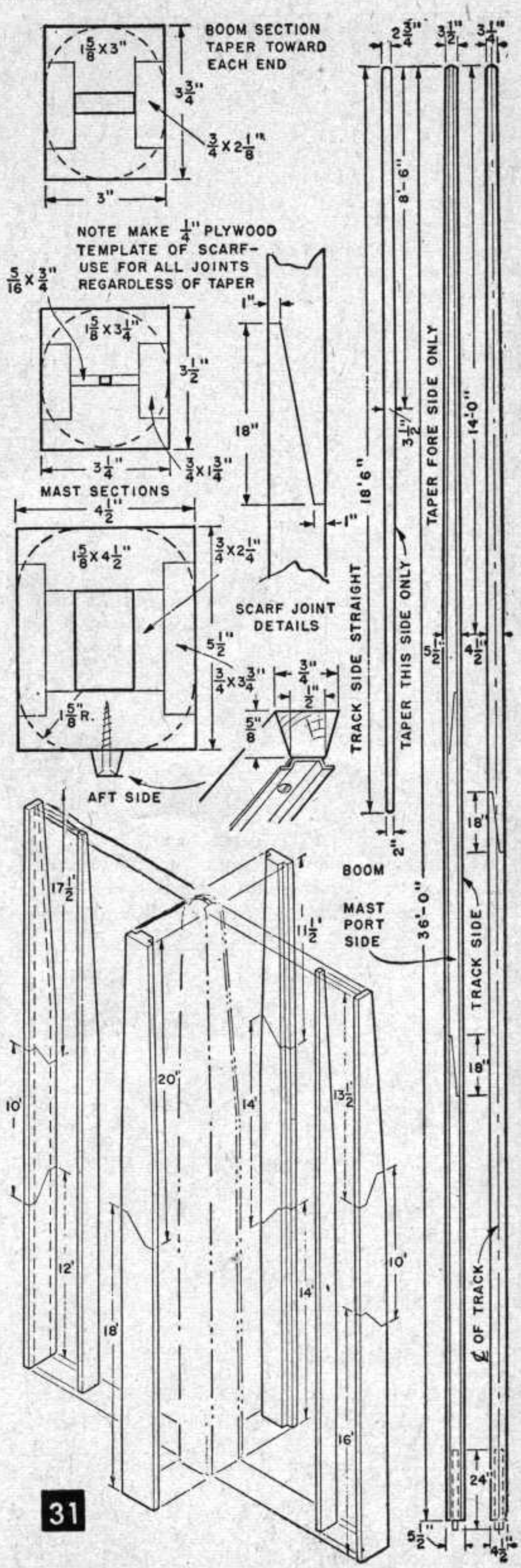
Galley includes sink, 2-burner stove and work space.

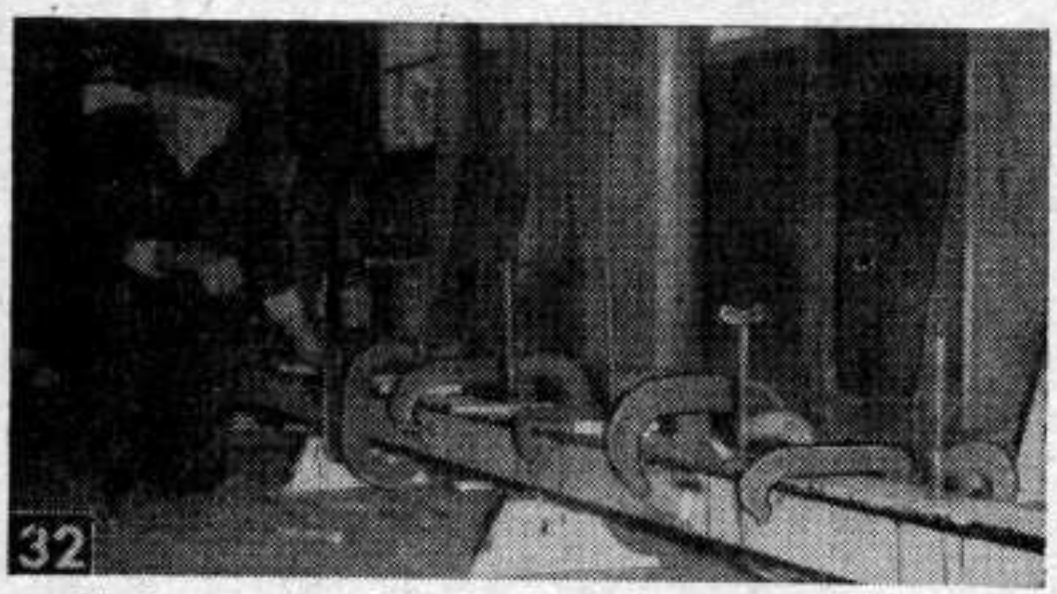
fore side. You'll find the work goes easier if you build the mast in sections, roughly the lower two-thirds first and the topmost one-third last. Lay out the parts from Fig. 31, cut to size and rabbet where necessary with circular saw or jointer. Scarf joints must be staggered at unequal portions along 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





Gluing mast on blocks leveled over work floor.

becomes so hard it will rapidly dull plane edges. Rough out the mast's shape with a draw knife, then working down to finer tools through a spoke shave, jack plane, block plane and sandpaper. Always sand with long even strokes, finishing with #1 garnet paper. Take a deep breath after the long sanding job before applying four coats of clear *Firzite* with several days' drying time between each coat. Sand each coat lightly with 6/0 garnet paper, then finish with two coats of marine spar varnish.

The sheave for raising the sail is mortised into the top of the mast. Bolt the tangs to the mast for securing stays (Fig. 20). Step the mast at the lower end to fit the mast step. It will be necessary to attach the mainsail and hoist it to position before the exact location of the boom goose neck fitting can be established. Use ¼-in. bronze bolts to fasten stay tangs and the boom gooseneck. Screwfasten the ⅝x1-in. batten to the aft (hoist) side of the mast with #6x1¼-in. *fh* screws spaced at 3 in. and screw the sail track to this batten.

The mainsail boom and staysail boom are built up box sections like the mast according to Fig. 31. You can use the same block set-up for aligning and gluing the booms that you used for the mast.

Sails and rigging for *Star-Lite* are shown in Fig. 20. A suite of sails of the size required for *Star-Lite* should be "tailor made." Alan Clarke Co. of 75 Chambers St., Suite 1253, New York 7, N. Y. made the sails for *Star-Lite* and already have the specifications for duplicating them. A good suite of sails should draw uniformly and will add miles to the cruising range. Rigging parts and equipment are available from Merriman Bros., Inc., 185 Amory St., Boston 30, Mass.

When the hull is finished, you will need a launching cradle. Make two runners of 4x6 in. x 16-ft and cross pieces of 2x8-in. x 5-ft planks, spacing about six of these under runners. Cut ends of runner planks with an upsweep, so rollers of 2-in. pipe may be set down upon a plank track and rollers will then easily engage the runners. Shore the hull on the cradle before knocking out your building supports, blocking up the fore end if necessary. Chocks, 4x4 in., are drift pinned to cradle cross pieces to support the hull.

If you build *Star-Lite* at any great distance from navigable waters, the best idea is to hire a boat or house mover to get you close enough to launch her, otherwise she might present quite a moving problem.

● Craft Print No. 188 in enlarged size for building Star Lite is available at $2. Order by print number. To avoid possible loss of coin or currency in the mail, we suggest you remit by check or money order (no CODs or stamps) to Craft Print Div., SCIENCE and MECHANICS, 505 Park Ave., New York 22, N. Y. Please allow three to four weeks for delivery. Special quantity discount! If you order two or more craft prints (this or any other print), you may deduct 25¢ from the regular price of each print. Hence, for two prints, deduct 50¢; three prints, subtract 75¢, etc. Now available, our new illustrated catalog of 212 do-it-yourself plans, 25¢ (refundable, first order).

