

CASTABOUT

For the beginning boat builder here's an easy-to-build utility boat which can be equipped with a plastic shelter

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Craft Print Project No. 21

YOU don't have to wait for this boat to swell after you put her over. She's dry from the minute she touches the water, and she stays dry because every seam is permanently sealed whether the boat is left at a mooring or on a hot, dry beach. The seams are bonded with resorcinol resin glue that doesn't let go even if you boil the joints made with it. This type of glue consists of two separate parts, a liquid and a powder, which you mix together when you're ready to use the glue. Be sure to use either a resorcinol resin (such as Cascophen) or phenol resorcinol type (such as U.S. Plywood's Phenol resorcinol adhesive).

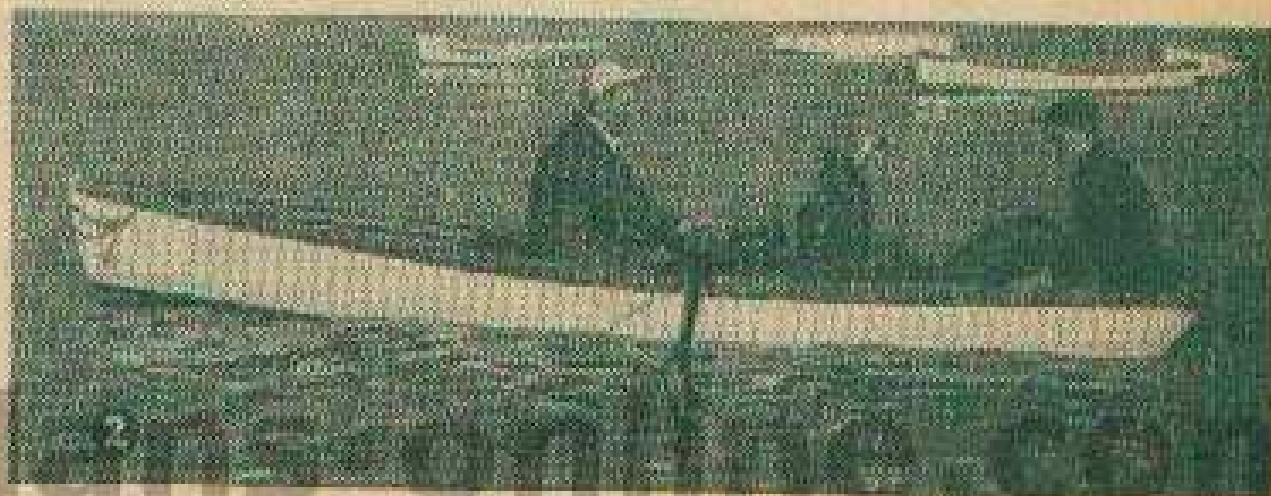
The boat shelter (Fig. 1) is made from the type of yellow flexible sheet plastic used for shower curtains. When not in use, the shelter folds into a roll that is strapped inside the boat under the sheer stringer. But if you get caught in a shower while you're fishing, you can erect the shelter in about 2 minutes and keep dry.

To build the boat, first set up the mold form from rough 2 x 8 or 2 x 6 ft. stock, built up to the dimensions given (see drawings). If your shop has a wooden floor, nail base plank directly to it, leaving nail heads protruding enough to pull later. If the floor is cement, nail two 4 ft. cross-pieces across base plank to keep mold from tipping over while you're working. Fasten stem, transom, and center mold in place with two nails apiece, leav-

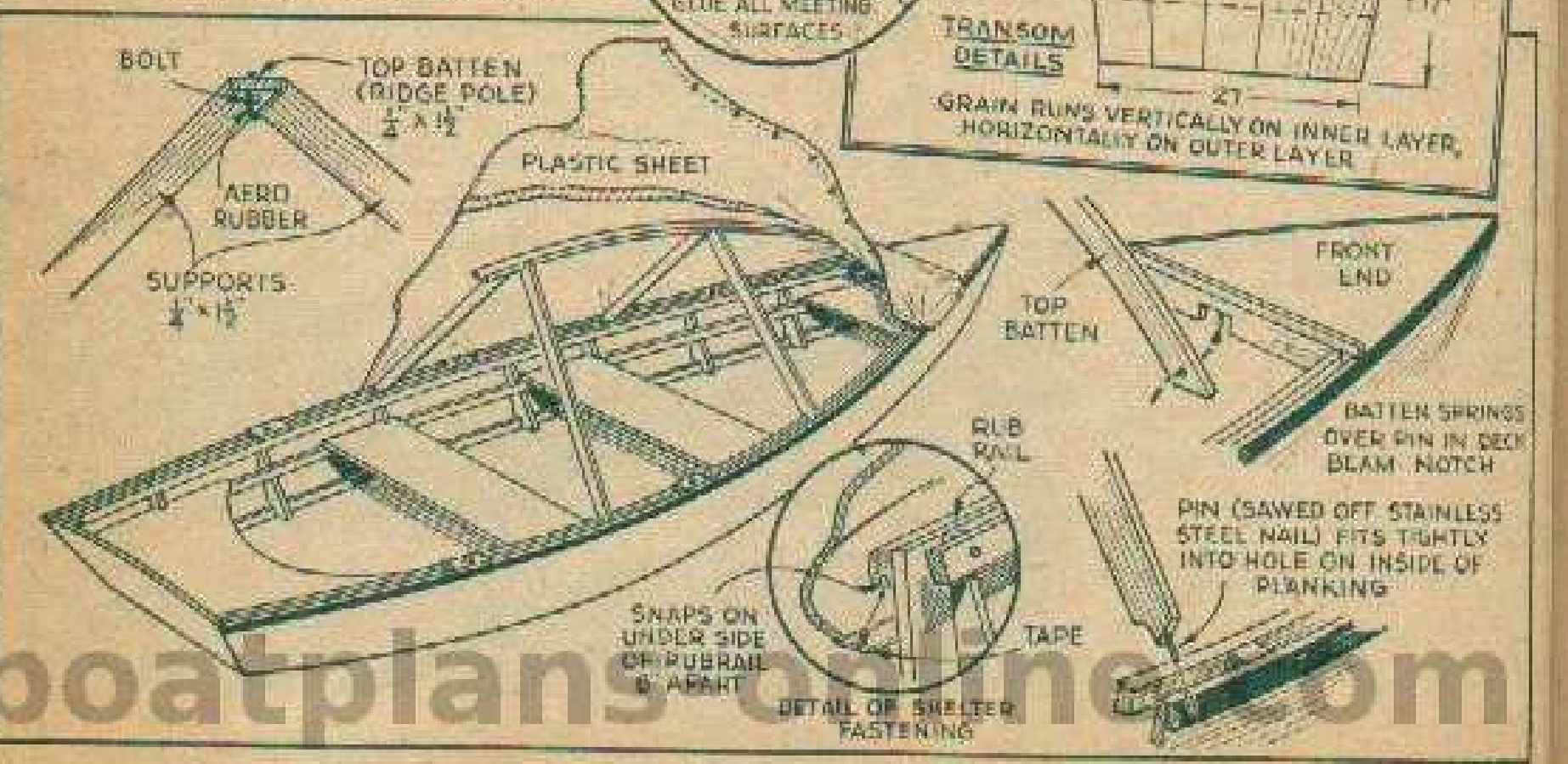
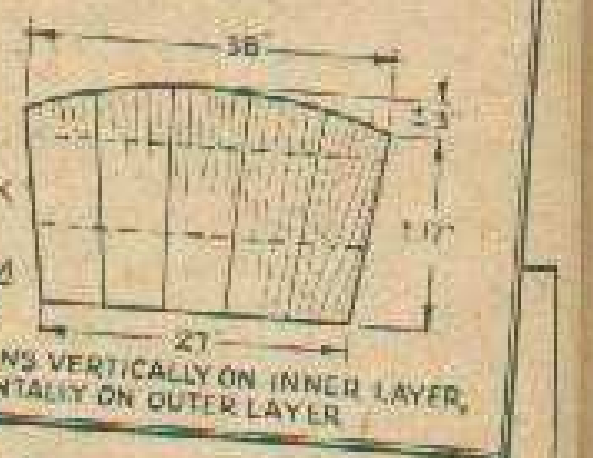
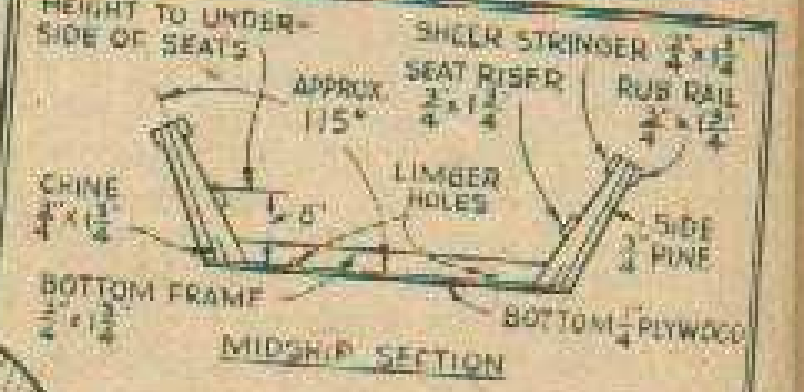
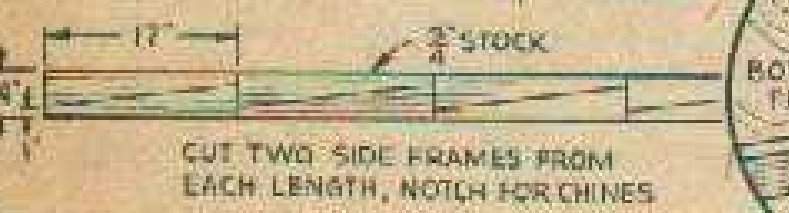
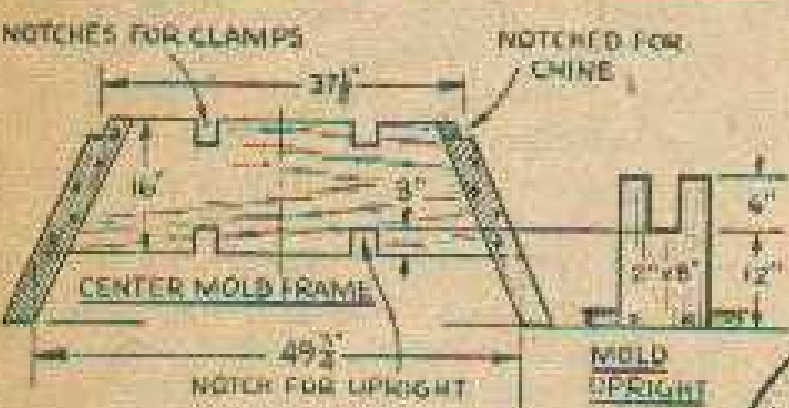
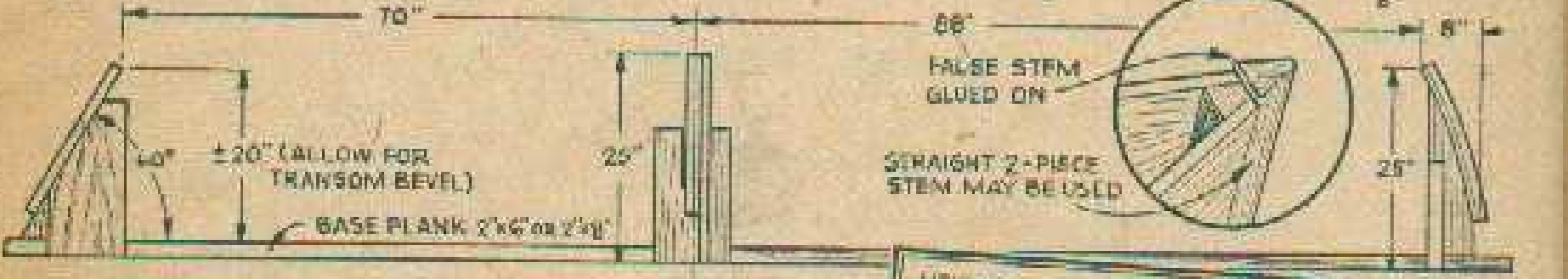
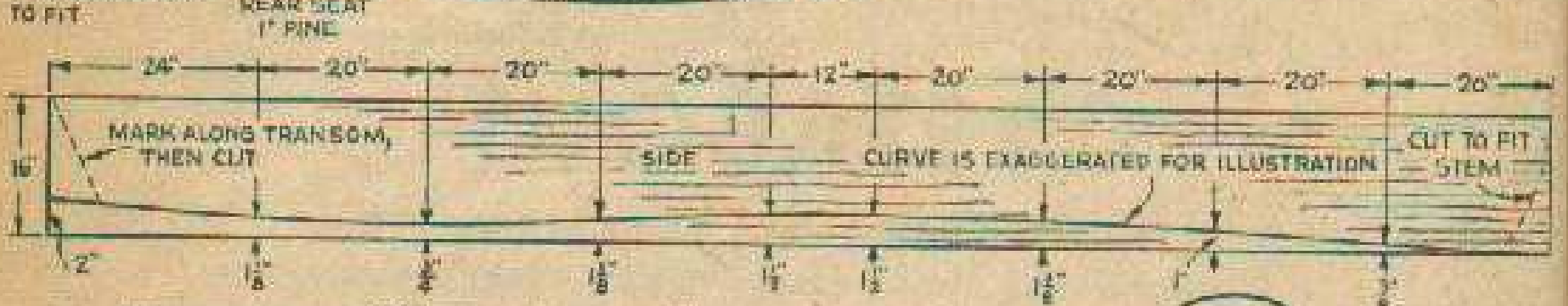
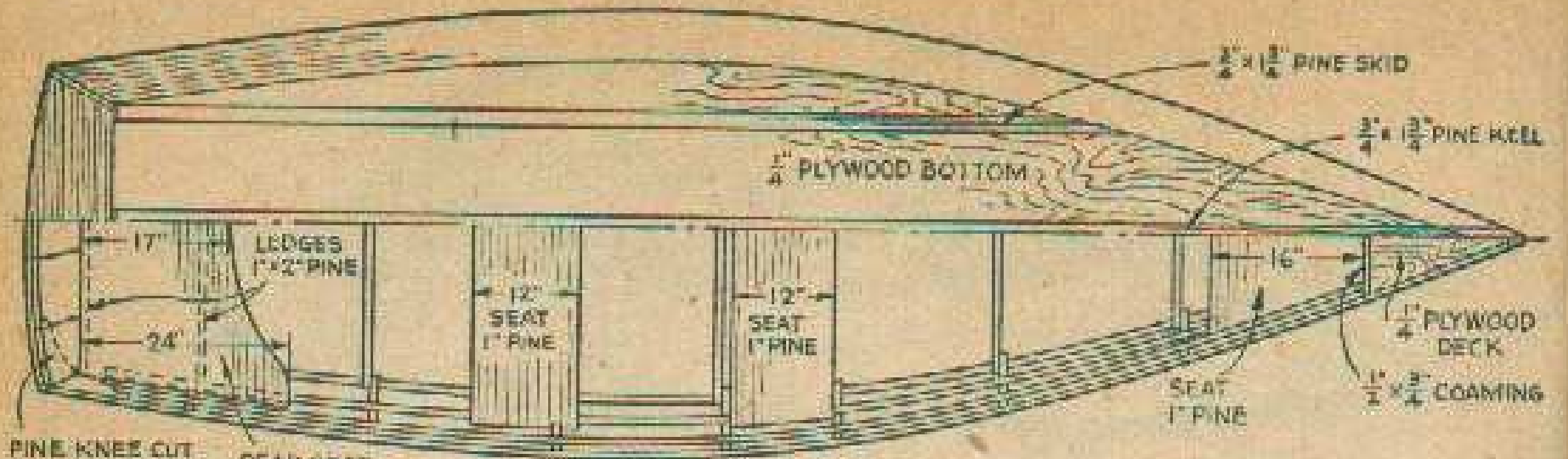
ing the heads protruding for easy pulling later. Also nail side planks temporarily to center mold.

For the sides of the hull, use pine, cypress, or cedar; if you can't get the full width, make it up from 2 or 3 narrower pieces, edge-glued after they're bent in place. Begin by cutting curve shown along the bottom edge. Leave the sheer as is for easy construction. After cutting (a rip-saw will work because of the gradual curve) set bottom edges of plank in place at the transom and center mold, fastening them with a twisted rope at the stern, and clamps and partly-driven nails at the center mold. Mark stations or frame positions on both sides of both planks before bending.

Note that side planks are slightly over length when you bend them in to the stem; this excess permits you to use a ready-made curved stem which can often be bought at lumberyards handling marine supplies. Adjust excess plank length so an equal amount will be removed from both ends. Although the original boat has a



Here's the craft being taken on a trial spin.



MATERIALS LIST—UTILITY BOAT WITH SHELTER

Side planks—3 pc. $\frac{3}{4}$ " x 16" x 15' pine, cypress, or cedar. (Can be made up of 8" widths to make 16".)

Bottom—1 panel $\frac{1}{4}$ " exterior plywood, 48" x 15'. If this length panel is not locally obtainable, bottom may be made by joining 2 shorter panels with a 6"-wide butt-strip of $\frac{1}{4}$ " plywood inside the boat. Fasten butt-strip with glue and screws.

Side frames—12 linear feet of $\frac{3}{4}$ " x 4" pine

Bottom frames—24 linear feet $\frac{3}{4}$ " x $1\frac{1}{4}$ " pine (commonly called shingle lath or stock 1 x 2)

Seat risers, sheer stringers, chines, keel, and rubrails—1 pc. $\frac{1}{4}$ " x $1\frac{1}{4}$ " x 14' pine

Decks—2 pc. $\frac{1}{4}$ " x $1\frac{1}{4}$ " x 10' pine

Stem—1 pc. 2" x 2" x 20' oak

False stem—1 pc. 2" x 3" x 20' pine

Transom—14 linear feet of $\frac{3}{4}$ " x 10" pine (or equivalent in narrower widths)

Seats—16 linear feet 1" x 10" pine. ($\frac{3}{4}$ " stock may be used if vertical supports are provided under centers of the two rowing seats.)

MOLD FRAME MATERIAL (SECOND-HAND LUMBER OR SCRAP STOCK)

Base plank—1 pc. 2 x 8 (or 2 x 6) 18' long

Center mold—1 pc. 2 x 18 (or equivalent) 54" long

Side pieces of center mold—4 linear feet 2 x 4 or 2 x 3

Supports for center mold, transom, and stem—12 linear feet 2 x 8

PLASTIC SHELTER

Supports—4 pcs. $\frac{1}{4}$ " x $1\frac{1}{2}$ " x 36" pine

Edgepole—1 pc. $\frac{1}{4}$ " x $1\frac{1}{2}$ " x 9' pine

Covering—7 yds. plastic shower curtain sheeting, 36" wide

Fastenings—3 doz. snap fasteners (from auto top supplier)

MISCELLANEOUS

Glue—2 qts. Cascophen glue (Sold at most hardware stores, manufactured by The Borden Co., Chemical Division, 350 Madison Ave., New York 17, N. Y.)

Nails—1 $\frac{1}{2}$ lb. galvanized shingle nails

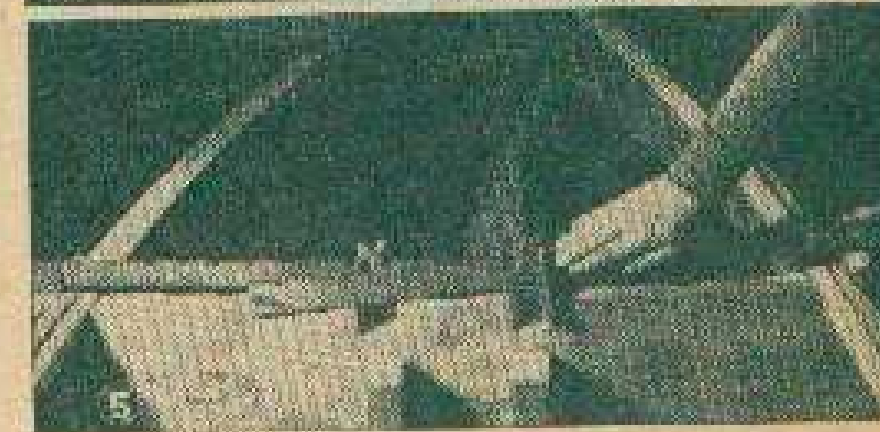
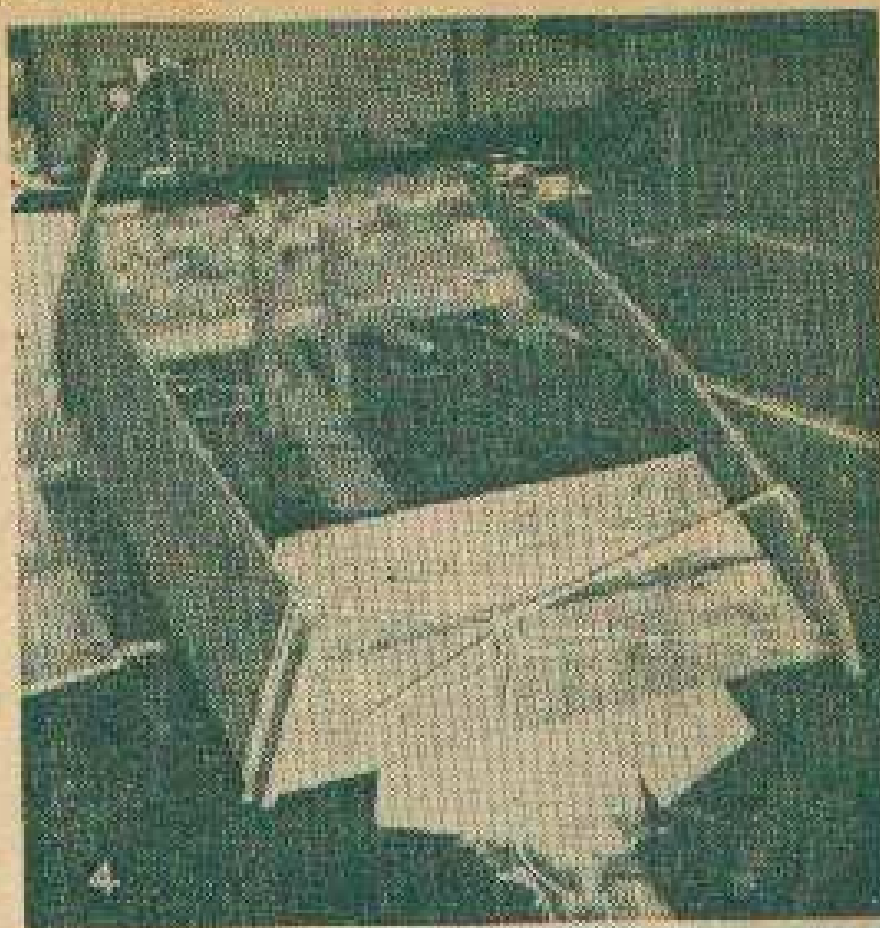
Screws—1 doz. $1\frac{1}{2}$ " # 10 flathead, galvanized. If seats are not made removable 1 doz. is enough.

Large form nails— $\frac{1}{2}$ lb. (For use in mold frame.)

Paint—2 qts. boat paint for topsides and inside of hull. 1 qt. red copper anti-fouling bottom paint if boat is to be used in salt water.

NOTE: Knees at transom corners, and fore deck are made from scrap plywood left after cutting out bottom panel. Supporting beam and coaming at after end of fore deck are made from short length of $\frac{3}{4}$ " x $1\frac{1}{4}$ " pine that will be left over from bottom frame material.

Plastic shower curtain material is available at most dry goods and department stores. It is manufactured by Goodyear and numerous other large companies.



4. Stem, middle mold frame, and partially-completed transom are in place, with side planks bent around them ready for marking. Single long clamp is holding planks to center mold frame. Separate clamps will be used later in notches. 5. Clamps in notches permit side planks to be drawn in tightly while chines are fitted prior to gluing.

planks, and edge grain (the outer layer) for gluing to the bottom. The two layers are, of course, glued together also.

Cut outside layer first, according to outline shown in drawings; the grain of this layer runs horizontally. Next cut pieces for inside of transom. Start with pieces that will run up vertical edges of transom, marking them and cutting them to fit the transom outline. Then cut tapered pieces to fill in between edge pieces. When all pieces are cut and fitted, mix about a cup and a half of the glue, and coat all surfaces of transom that will be glued. Drive a few shingle nails through layers of wood to hold them while glue hardens.

Notches in edge of mold frame being measured are for clamping. Triangular pieces are stem and transom supports. All will be mounted along a 16 ft. base plank.

curved stem, you may use a straight one if you're anxious to save construction time.

Stem need not be hardwood since it will be glue-bonded. Make it in two pieces. Make the inner piece directly from the planks when they are bent together at the bow. Then bevel it with a plane to fit between them. The outer or false stem is attached later with glue, and planed to blend smoothly with sides of hull. Build up transom of two layers of $\frac{3}{4}$ in. pine; the inside layer runs vertically, the outside layer, horizontally. This provides edge grain (the inner layer) for gluing to the side



Be careful not to let parts slide out of alignment while nailing, as the wet glue is rather slippery. Unless wood is warped or cupped, no clamps should be required, since glue develops very great strength even at mere contact pressure. Glued-up transom should be dry before sides are attached to it. Side edges should



bead) brass or galvanized screws to steady both planks to hold them in place while gluing. Then slacken the screws to allow planks to spring out to apply glue to both the edge of the inside surface of the plank and the transom. When both planks are of transom have been coated, do again. The screw holes will align in original positions against the transom. Tighten the screws in tightly, and wipe off any that squeezes out. Follow the same procedure in attaching the side planks to the bow.



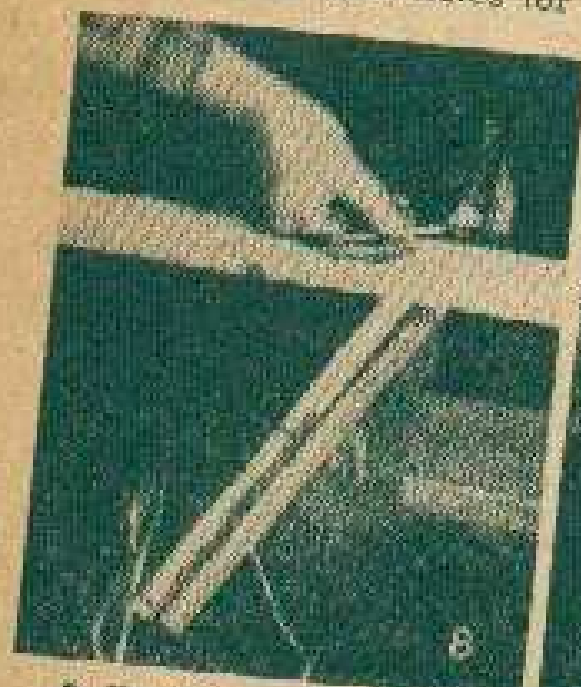
7. Side planks are slid back slightly to permit marking to fit stem after rough cutting. After planks are cut to fit stem, pilot holes are drilled for clamping screws that will align planks and stem after separating them to apply glue. These screws also permit planing plank edges before glue is applied.

For the chines, coat both surfaces and slip chines down into place in center mold frame. (Cover notches with several layers of newspaper to prevent glue from being glued into the hull.) Use nails to hold chines while glue dries. Both side planks and chines protrude above the mold to permit beveling to bottom. Stem should be long enough to project slightly below the bottom so it can be flush with the beveled planks. Now cut a straight edge to make sure bottom of transom and bottom edges of a plank are straight, particularly at the corner joint on them, with a plane or cut off any unevenness with a long block of net paper wrapped around a long block.

Trim bottom of stem off flush. Then bottom from a 4 x 14 ft. sheet of 1/4 in. marine or waterproof plywood, lay it on hull and be sure it lies flush all around. Drive a short nail part way into bottom and another into transom to keep plywood from slipping. Then mark plywood for cutting. Try this without the two nails. It can slip if you're marking it and spoil the job.)

After bottom panel is cut out, apply glue to both surfaces to be joined and set both in place. Space short, galvanized nails 8 or 10 in. apart to hold it while glue dries. Glue at corners and along bottom panel must cover area where

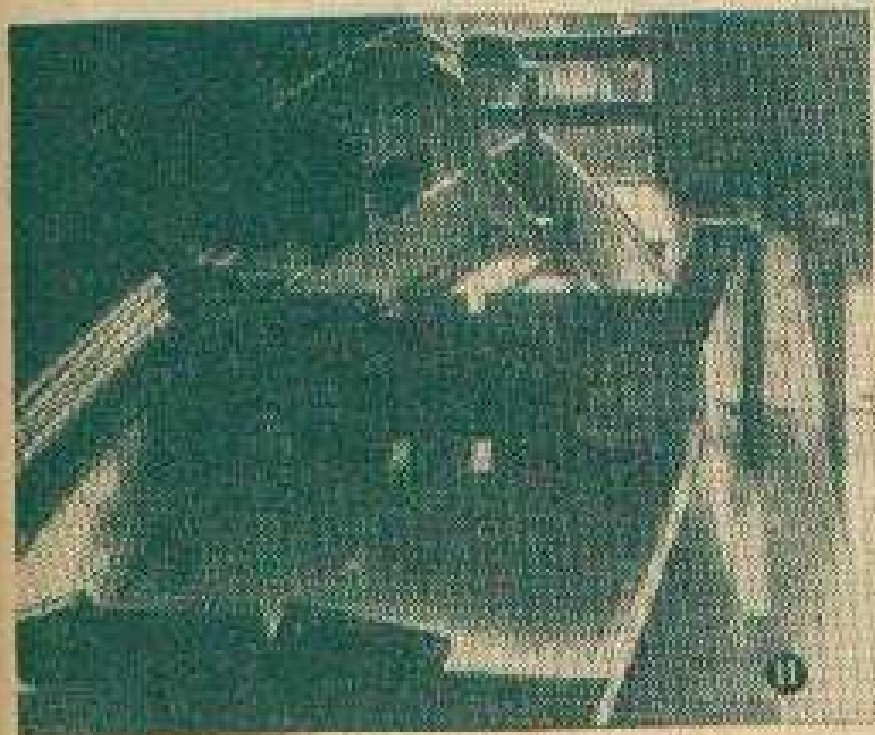
be about 18 in. long to allow for trimming. With stem and transom in place, and side planks clamped against them, mark planks for cutting to fit. If you're a beginner, cut planks a little over length the first time (you can always make a second cut, but you can't lengthen them if you cut them too short). If you use a 2-piece stem, the marking is simpler and the fitting job is eliminated. After cutting the plank ends, drill 2 pilot holes for 1 1/2 in. #10 th (flat-



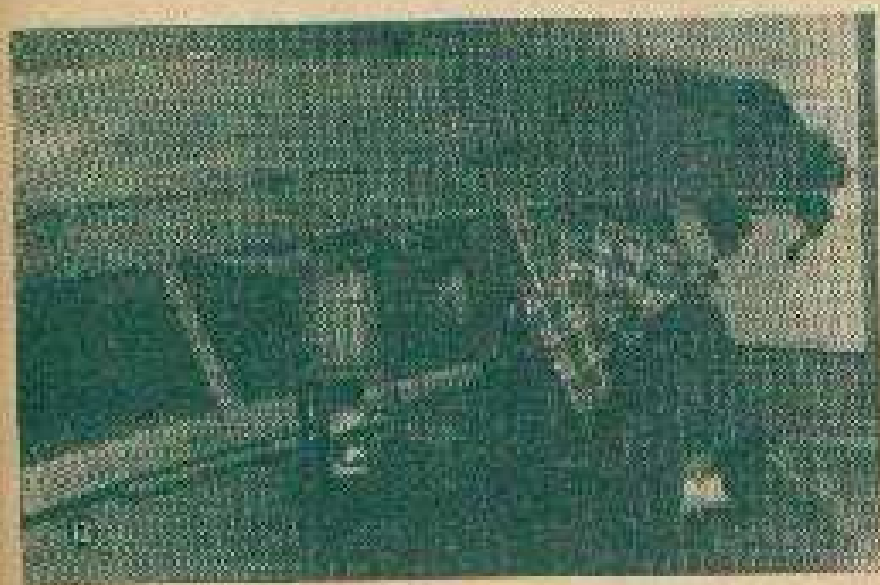
8. Use chine as guide in marking mounted transom for bevel on bottom and sides. Variation in bending of planks may require deviation from heights from base plank indicated. 9. Plane bottom edge of transom to bevel indicated by pencil line drawn along guide batten or chine. Plane from sides toward center. 10. Bevel sides of transom with saw. Draw lines down length of cut inside and outside of transom as guides to proper bevel.

edge of side planks and chines will contact the bottom. Next use a few nails to hold skids while you glue them. Since skid nails will penetrate bottom, use as few as possible and clip them off or clinch them when hull is turned right side up.

If temperature in the room is lower than 70° F. use space heaters or a small camp oil stove under the inverted hull, to bring it up to that temperature, which must be maintained while



11. Turn hull right side up with center mold frame in place. Any interior seams that need attention can be taken care of with glue-filler at this stage. 12. Keep glue temperature at 70°. If necessary, use space heater.



glue is hardening (Fig. 12). Keep a pot of water on the stove to get the best heating efficiency and to keep from overheating the portion of the boat directly above it. When glue has set, remove nails from center mold frame (where it is anchored to mold-upright) and nails holding transom and stem to mold frame. Now lift and turn the hull right side up, with the center mold frame still held in it by nails partly-driven through the side planks.

Next cut the permanent frames, which must be beveled to fit inside of planking, since the bottom frame members will be glued across later. Glue side frames in place, fastening each one with a single screw. Bottom frames come next, with two lumber holes in each one. Then come the seat risers, sheer stringers, knees, seats (see

drawings). All parts are glued and clamped in place, or held with screws or nails while glue dries. Fasten rubrail with screws only if the use to which the boat will be put is likely to make frequent rubrail replacement necessary. Before painting the hull, check all seams carefully. If any portion of a seam doesn't appear to be tight enough, make a filler by mixing some of the glue with fine sawdust, and apply it with a putty knife.

The plastic shelter should be tailor-made to the height of the occupants the boat will usually carry. Sit in middle of forward rowing seat, and measure distance from gunwale to a point about 2 in. above your head. (If you do your boating on windy waters, you can base this on your height sitting on the floor—so as to lower the overall size of the shelter.) Make 2 supporting frames from $\frac{1}{4}$ x $1\frac{1}{2}$ in. stock; one frame should fit just forward of rear rowing seat, the other (the same height) should set midway between aft support and rear of front deck.

Cutting the Plastic

To plan the cut of the flexible sheet plastic, erect the two supporting frames and bend ridge-pole batten in place; fasten all members as shown in drawings. Next fasten an edge of plastic along underside of one rubrail with thumb-tacks, pull it taut, and fasten it in the same way along the top batten. Do the same for the other side, and then cut plastic to size, allowing an excess for a double felled seam at the top. Provide edges that attach to underside of rubrails with snaps fastened through cloth tape which is stitched on. To erect shelter, start snapping at the bow, unrolling plastic as you work aft. If your snaps are properly matched for spacing along the plastic and underside of rubrail, you should have this job done in about half a minute. Now duck under plastic, unfold supports (with top batten in place) and push up the supporting framework—setting all pins in the holes provided for them. This draws plastic tight, and you're ready to sit out the shower without a drenching. If weather looks suspicious when you start out, you can save time by snapping plastic on part way back while you're still at the dock.

If any of your passengers are landlubbers, leave forward portion of the shelter unsnapped as shown. Little rain can enter through the opening, and the steady flow of fresh air will help keep inexperienced stomachs on an even keel.

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