POPULAR SCIENCE

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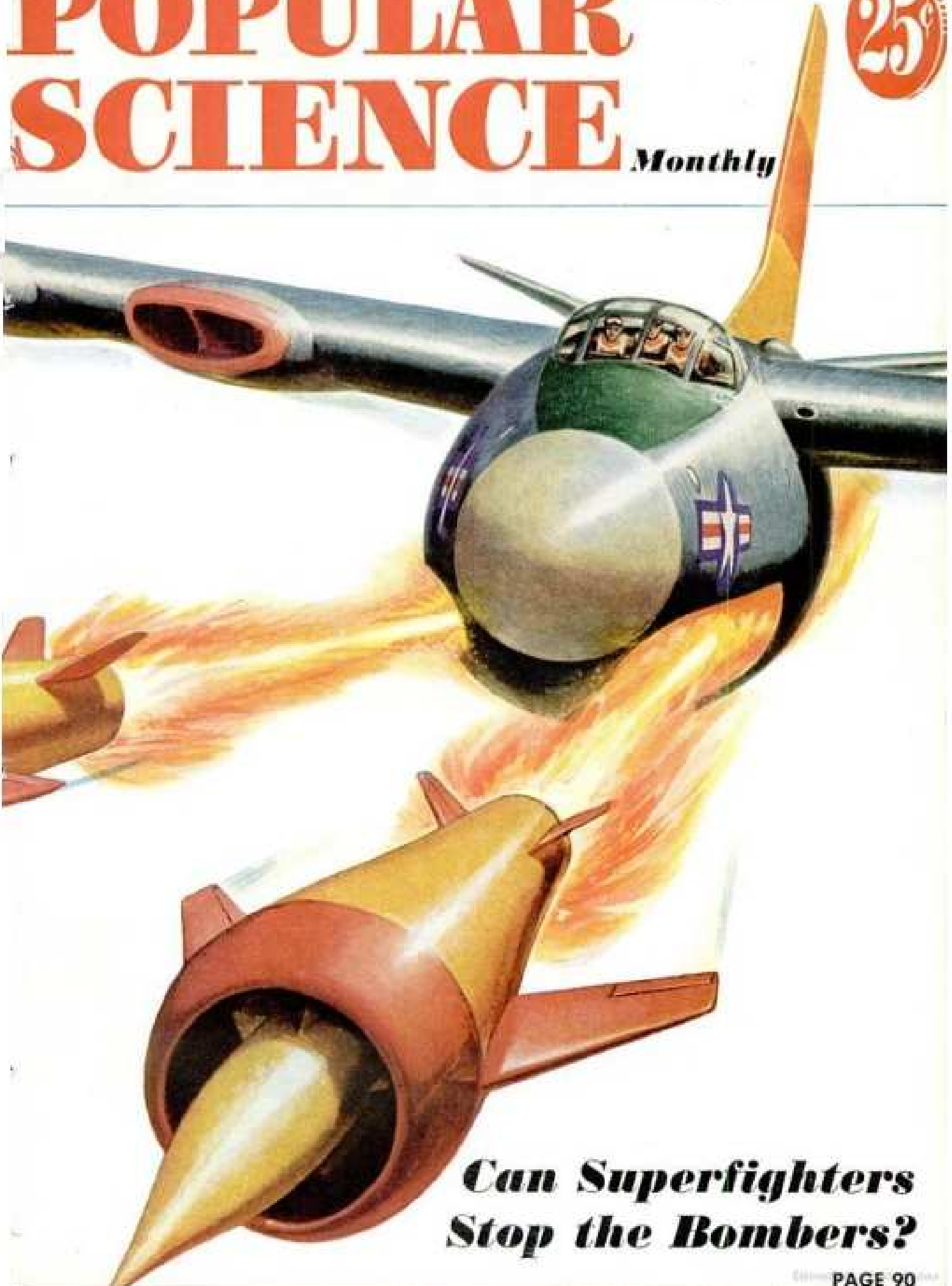

Can Superfighters Stop the Bombers?

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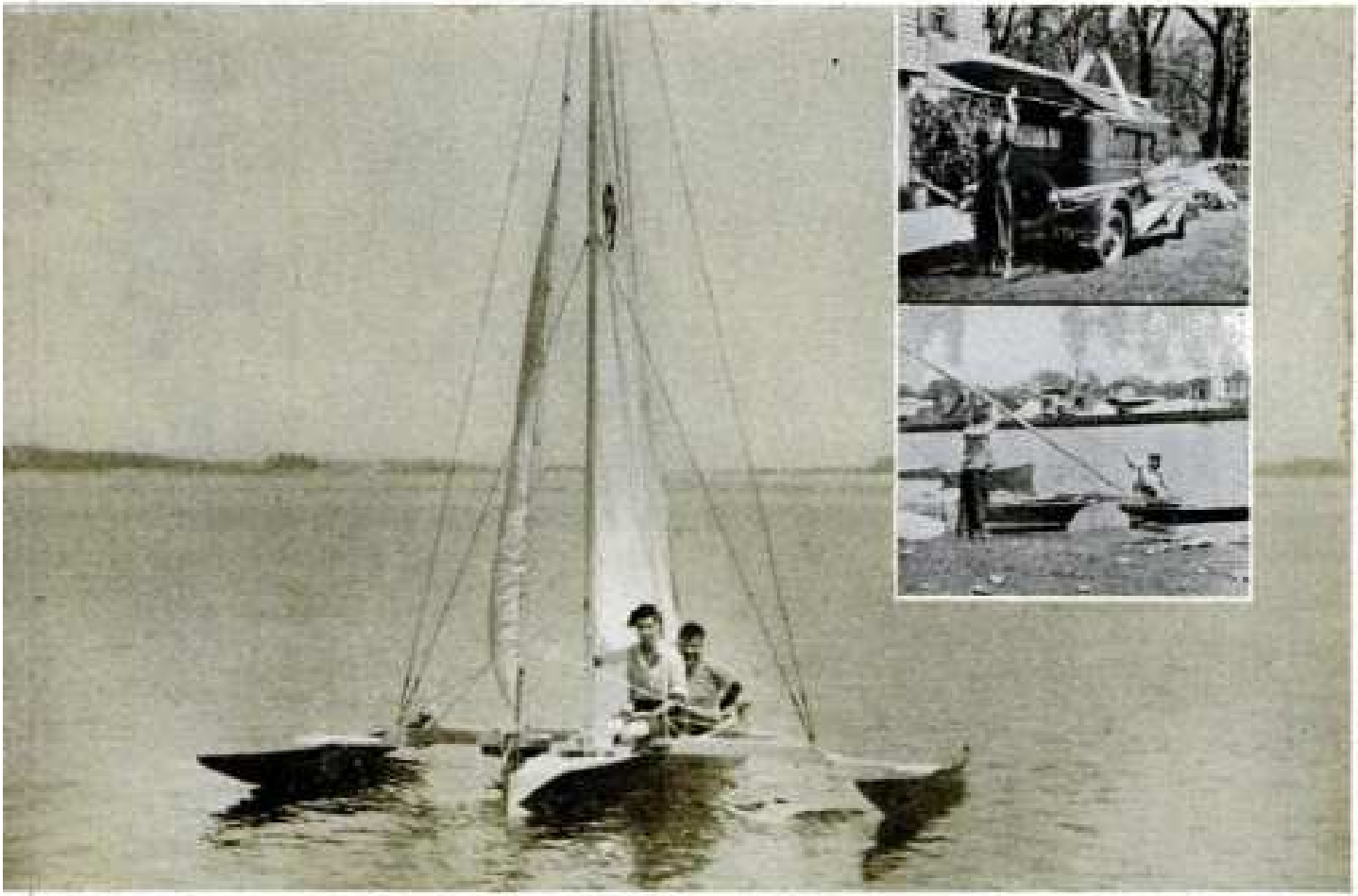


Light and fast, this three-hulled craft will quickly put you under sail, whether you live near salt water or fresh. Built for easy dismantling, she can be carried for miles on a car.

Outrigger Sailboat Built in Week End

By George Daniels

HERE'S a fast little boat you can stick together in a couple of days. The secret of the speedy job is a synthetic-resin adhesive. This provides a bond stronger than the wood itself and so waterproof that you could boil the joints all day without causing them to weaken.

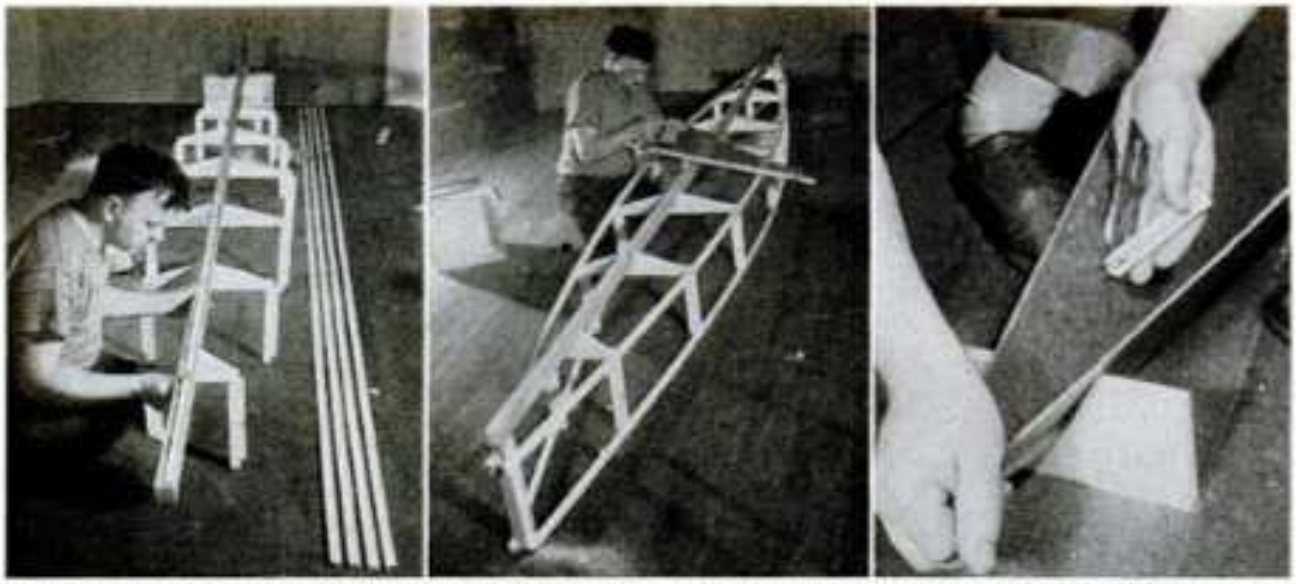
The boat belongs to the class of fast sailing craft sometimes dubbed trimarans. She's so light a mere whisper of a breeze is often enough to move her. In a really good breeze, you'll streak along like a speedboat—without heeling more than a few degrees. If becalmed, the boat's light enough to paddle.

Little work space is needed. The hulls are so narrow you can build them in the house, upstairs or down, and slide them out the window. I worked in our living room, winding up the entire job in one week end.

Several waterproof adhesives suitable for boat work are on the market. Mix just before use and apply with an inexpensive paint brush, coating both of the surfaces that are to be joined. When you are through, wash the brush in cold water.

At ordinary temperatures, the glue will set hard overnight. But you can speed up the job by putting the glued parts in a room heated to 85° or 90°. For instance, the main hull frames for this boat were cut and glued in the morning, hardened in a hot kitchen during the day, and fastened to the lengthwise pieces—the keel, chines, and stringers—in the evening.

Cut the hull frames as the first construction step. You'll note from the drawing on the facing page that two frames of each size are required, except in the case of the middle



Glued frames for the main hull are spaced at 24" intervals along keel (above left). Guide cuts for beveling the keel and chines are made with a saw (center). Battens are clamped to the sides of the saw to keep it from cutting too deep. V notches cut at a 60° angle in several pieces of scrap stock (right) keep the pontoon planks aligned while glue is setting.

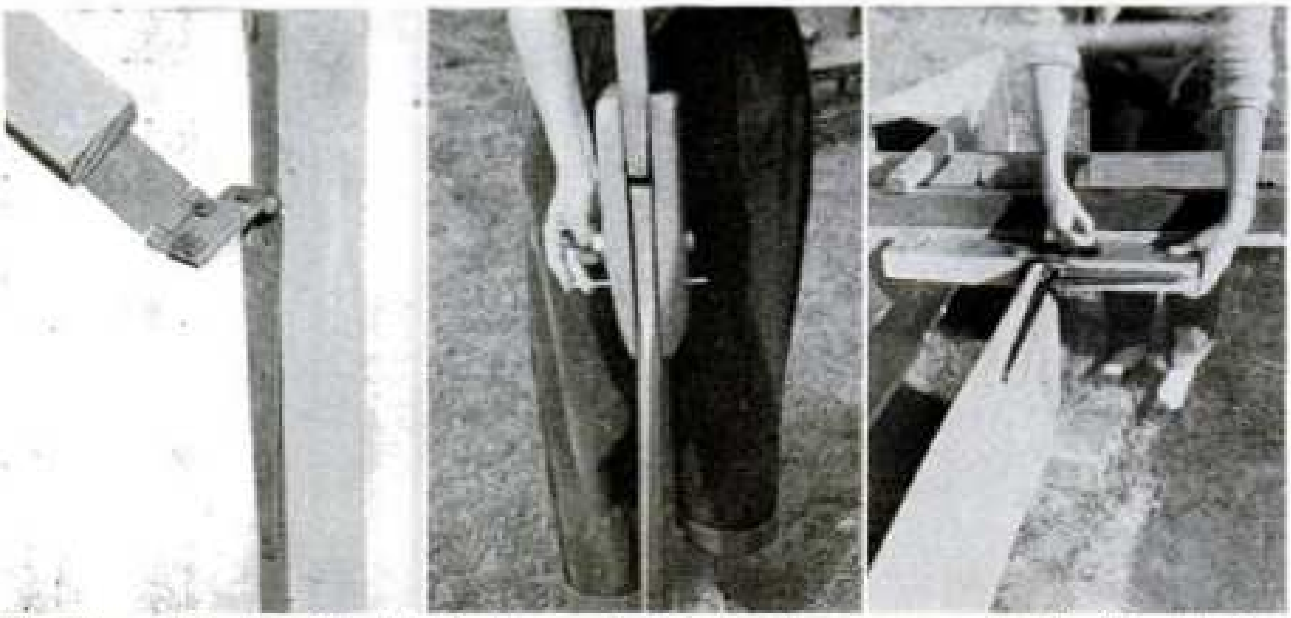
one. For the latter only, use side members 2½" wide.

Clamp the parts together until the glue has set. If you haven't enough clamps, drive a brad or two through the pieces. You can pull these out later if you wish.

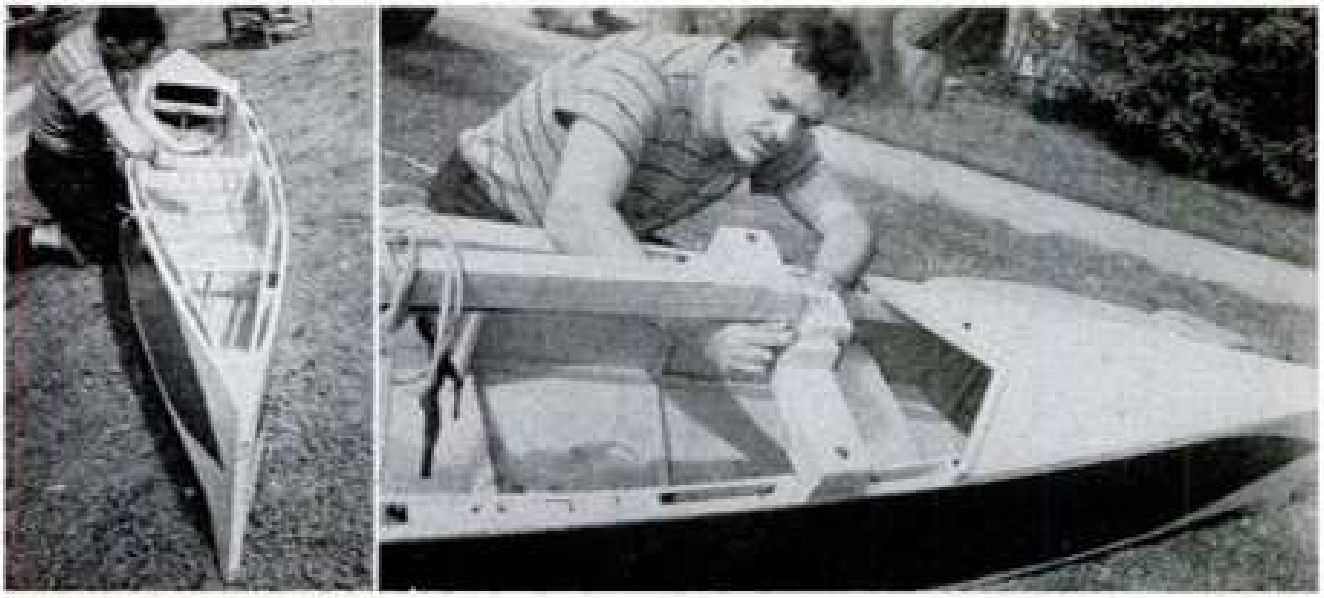
In assembling the hull frames, align the upright members and the bottom piece carefully with a try square. This is important, for after the glue has hardened it won't be possible to make changes. Use newspapers to keep the glued parts from sticking to the floor or workbench.

When the frames have set, glue them and the two stems to the pine keel. For added strength, join the stems to the keel with ¼" dowels, or perhaps simply a nail driven through the keel into the base of each stem. Also glue the chines and stringers in place, tying them and the frames with heavy cord until the glue has set. Be sure all elements are properly aligned before setting the hull frame aside to dry.

Then turn to the pontoons. Use battens to lay out the side and top planking to the dimensions given on page 186. In the origi-



Two hinges bolted together join the boom and mast (left), allowing the boom vertical and horizontal movement. A plastic drink stirrer (center) serves as shear pin for the rudder. Leeboard cross arm, a length of two-by-four, is marked (right) for two brass door hinges that hold it to the outrigger beam. Here the leeboard is seen in the up position.



Main hull presents trim appearance as it nears completion (left). Note the large screw eyes in stern. A pin dropped through these and two mating eyes in the rudder hold rudder-tiller assembly in place while boat is in use. Mast is mounted on its step with a hinge (right), permitting mast to be walked up. Two bolts in the step allow removal of hinge and mast.

nal boat, these parts were cut from ¼" mahogany veneer, but ¼" waterproof plywood could be used just as well.

With a block plane, bevel the bottom edges of the sides to about 60°. You don't need to worry about the bevel being exact since the glue will fill in small gaps. Also cut the nose blocks and the two 60° bulkheads on which the outrigger beam is to be mounted.

Coat the beveled surfaces of the sides with glue and join them by driving in a few brads. Cut 60° V notches about 3" deep in several blocks of scrap wood and rest the glued sides in these. Glue in the nose blocks and two center bulkheads.

Other frames for the pontoons are simply cut to length and stuck in place with glue. It's not necessary to notch or fit them. The gap-filling qualities of the adhesive will take care of this.

When the sides have set, plane off the upper edges so the top panels will lie flat for gluing. You will notice at this point that the top edges have a definite upward curve near the ends. The top planks will easily conform to this curve if drawn down at the center with cord.

Before gluing on the top panels, apply a good boat paint to the inner surfaces of the top and sides, leaving unpainted strips where glue must be spread. Glue on the 1" by 12" by 38" tongue for the outrigger beam at the same time you are attaching the top panels.

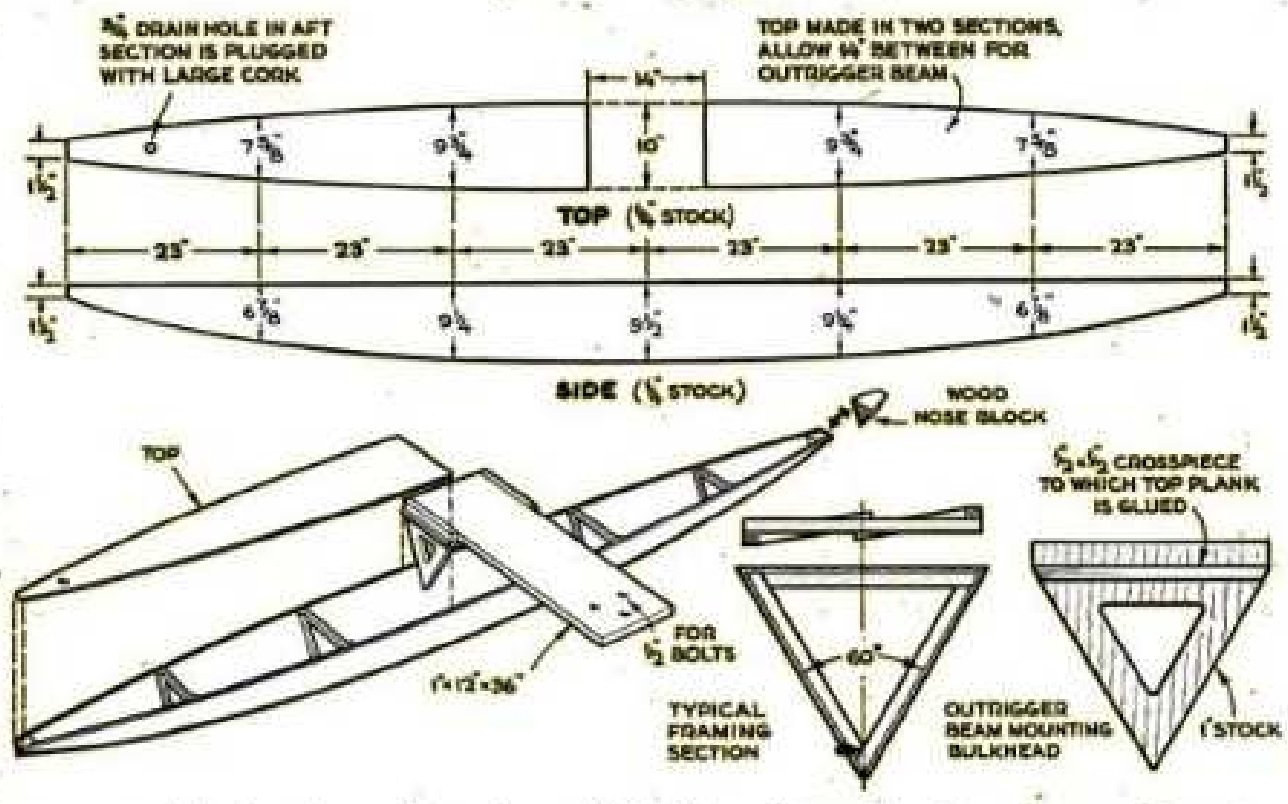
By now the main hull frame should be fully dry. The side planks go on first. These are straight lengths of ¼" mahogany 12" wide in my boat, but ¼" waterproof plywood could be used. Since the curve of the sides is so slight, very little beveling is necessary on the edges of the frames. Here again, the glue saves you time by making an exact fit unnecessary.

Tie the side planks in position temporarily and mark on them the position of stems, side frames, stringers, and chines. Then remove the planks and apply glue both to the framework and planking. At this point, it's best to have a helper in applying the glue so it won't begin to dry on any part before the plank is set in place.

If you use partly driven brads to hold the planks to the chines, you will find it possible to apply the bottom planking before the sides have set. Bevel the lower edges of the side planks and the keel so the bottom planks will fit flat. Try these in place before applying the glue, and be prepared with enough clamps to hold the twisted portions at each end of the boat.

If your bottom planking is not plywood, the stresses may cause it to develop a split or two. But don't let minor splits worry you. A little glue will seal them. As the final step in the planking job, glue on a rub strip, holding it in place with partly driven brads. When the glue has set, pull these out and plane down the strip.

Then turn the hull over and glue in ½" by ½" reinforcing ribs midway between the frames. Floor the boat with slats or plywood, glue in a seat cut from ¼" stock, and



Pontoons are bolted to the outrigger beam. This allows dismantling boat into smaller units.

follow with blocks for mounting the mast step and outrigger beam. Install a 2″ by 2″ crosspiece at No. 4 frame for the pulley block, and add the inner stringers. The forward deck can be glued on, but you may prefer screws to give access for seasonal painting.

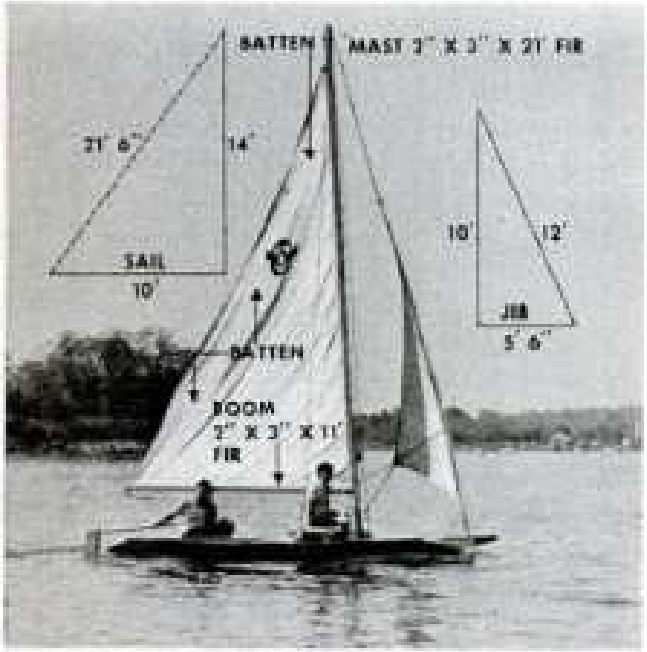
Glue up the outrigger beam, using two lengths of 2″ by 3″ fir for the side members. This beam allows some flexing, preventing any excessive twisting on the lightweight hulls. Like the mast step, the beam is attached with bolts for easy removal. Removing these parts allows the hull to rest flat on the car top.

Shape the leeboard and rudder from 1″ white pine. Only one leeboard is used, since this kind of boat doesn't heel enough to lift out of the water to any appreciable extent. In the original boat, the leeboard was mounted on its oak crosspiece with heavy shelf brackets. If the boat is to be left in the water, however, it would be advisable to use straps of ¼″ bronze bent to a right angle instead of steel brackets.

If you find it necessary to splice a mast, take special pains with the joint. Cut the two pieces at an angle and clamp firmly while the glue is drying.

The finish consists of clear varnish on the main hull sides and on the pontoons, yellow enamel on the bottom, trim, and the spars. A secondhand Comet sail will serve very nicely if you are not prepared to buy a new one this season.

One advantage of the boat is its portability, allowing you to pick and choose sailing locations. The main hull weighs only 75 lb., the pontoons less than 30 lb. each. Dismantled, the boat has often been carried 50 miles atop a car. END



Boat is rigged like this. The jib is run up on the forestay. Stays are stainless steel sash cable. Three battens are used in the sail.