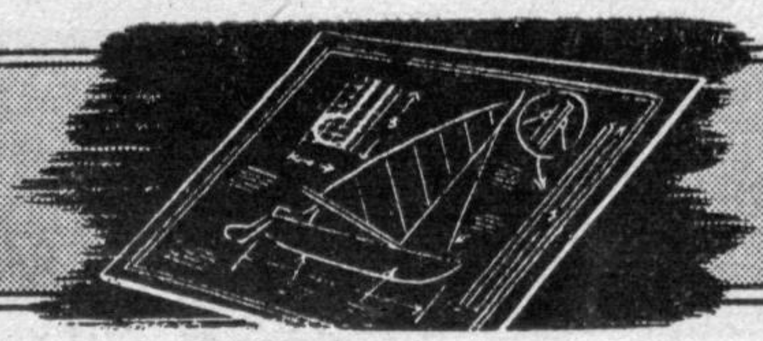
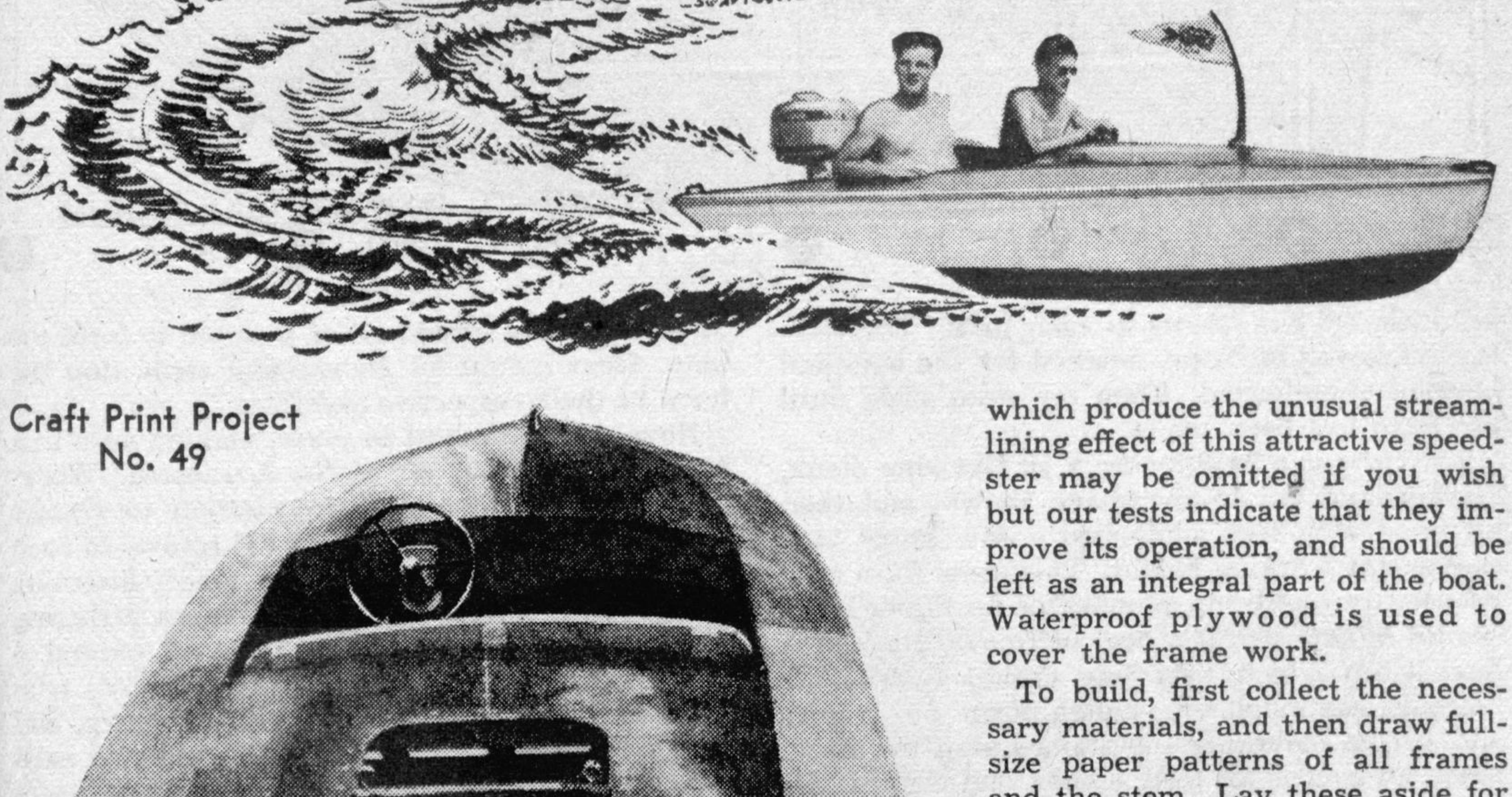
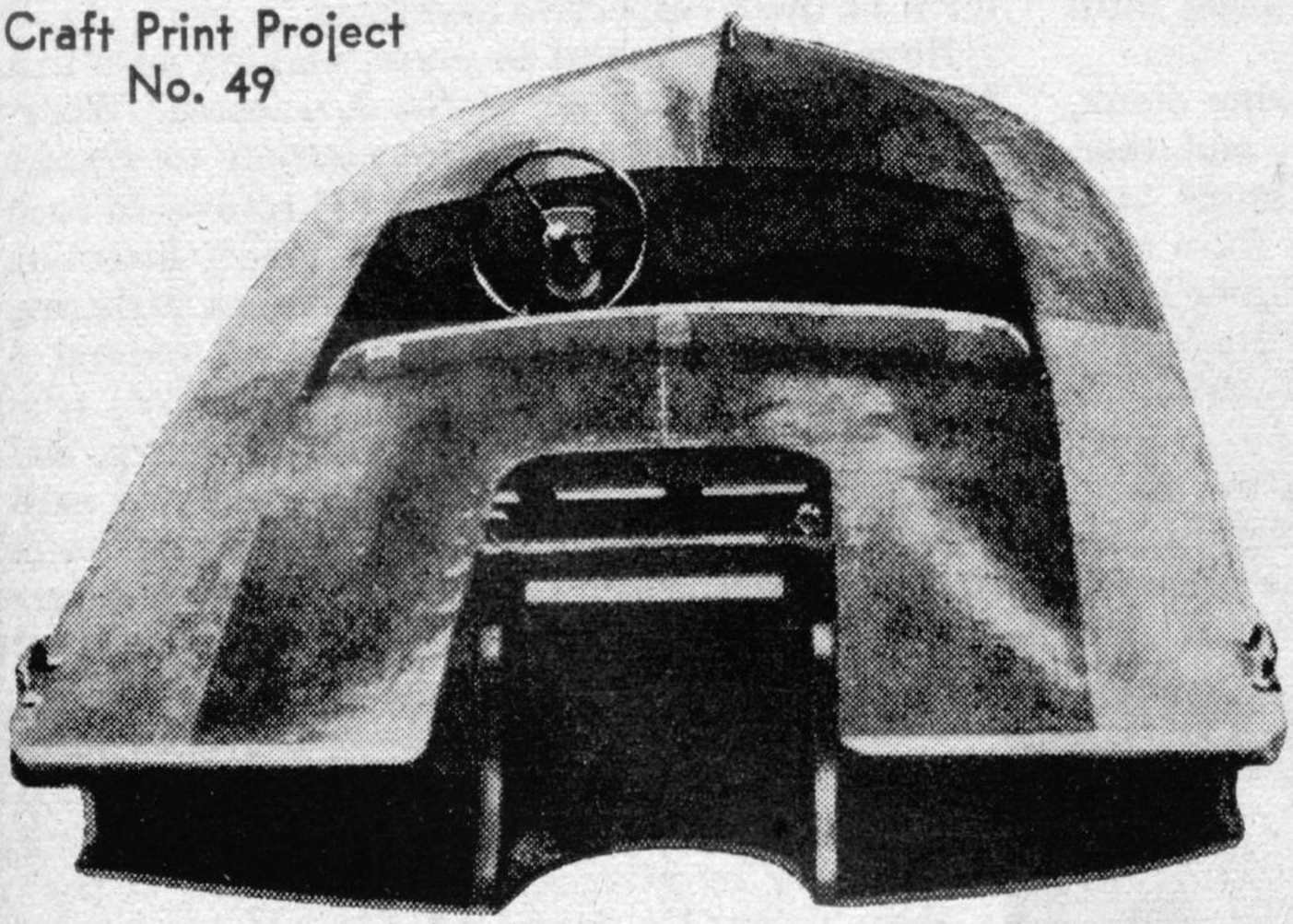
BOATS



DOODLE BUG



Craft Print Project
No. 49

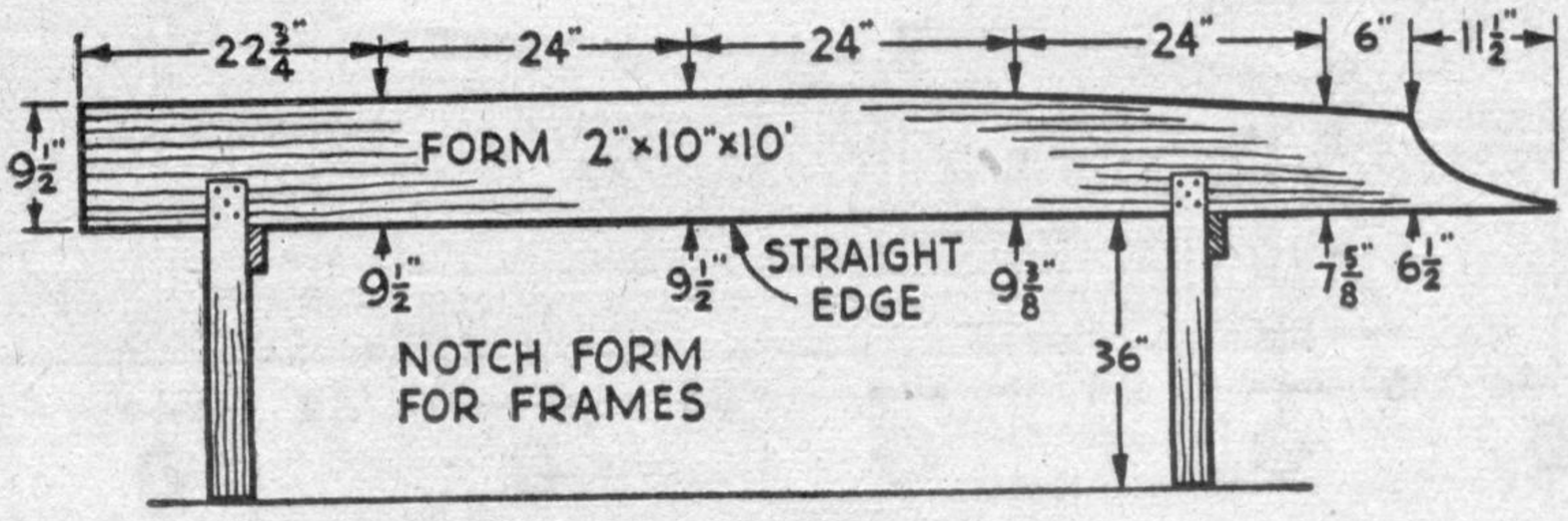


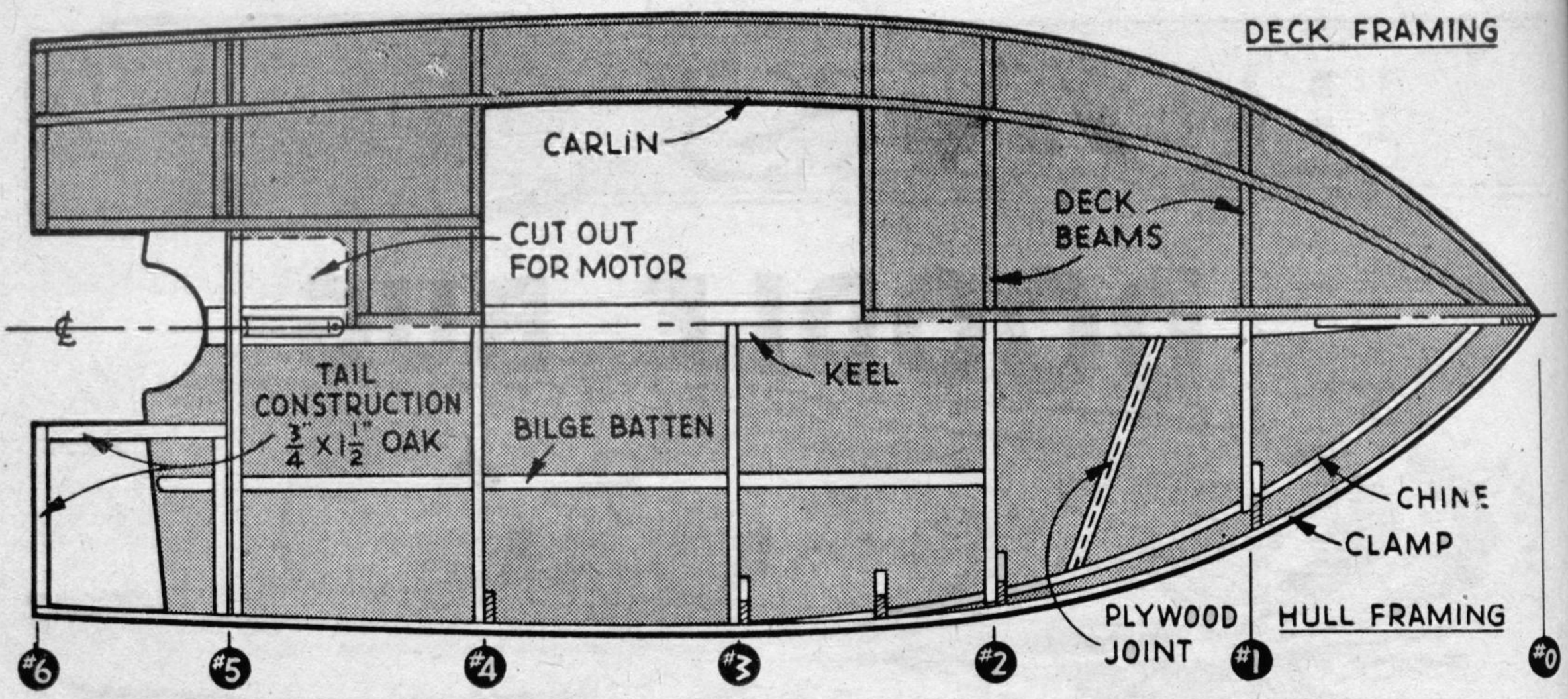
By WILLIAM D. JACKSON

DOODLE BUG is a trim, single cockpit, outboard hydroplane with a new type of convex bottom and non tripping chines which combine to produce a remarkably fast boat with excellent maneuverability. Any outboard motor from 9 to 25 h.p. can be used to power *Doodle Bug* for thrilling speeds, miles faster than most present day factory made craft. The design was evolved by selecting the best points from a series of small hydroplanes and building them into this one boat. And, before offering the boat to SCIENCE AND MECHANICS readers, we built and tested two of them, both of which perform beautifully.

The tails at the transom which produce the unusual streamlining effect of this attractive speedster may be omitted if you wish but our tests indicate that they improve its operation, and should be left as an integral part of the boat. Waterproof plywood is used to cover the frame work.

To build, first collect the necessary materials, and then draw full-size paper patterns of all frames and the stem. Lay these aside for the time being, as it's much easier to draw the frame outline directly upon 1x6 boards, cut to shape and then assemble frames upon patterns. The frame of the transom, chines, clamps and keel should be of oak; frames Nos. 1, 2, 3, and 4 are *fir* or oak. Beginning with *transom,* mark on a piece of 5/16 inch plywood the outline of the transom No. 5. Then saw it to shape and provide an oak frame around this plywood transom as shown. Next coat contact surfaces with Ferdinand's Resin Glue and screw-fasten plywood to frame with 1 inch #8 FH screws. Now with all frame parts for frame Nos. 1 through 4 cut to shape, lay the respective members on the pattern outline, coat contact surfaces with resin glue, and screw-fasten joints with two



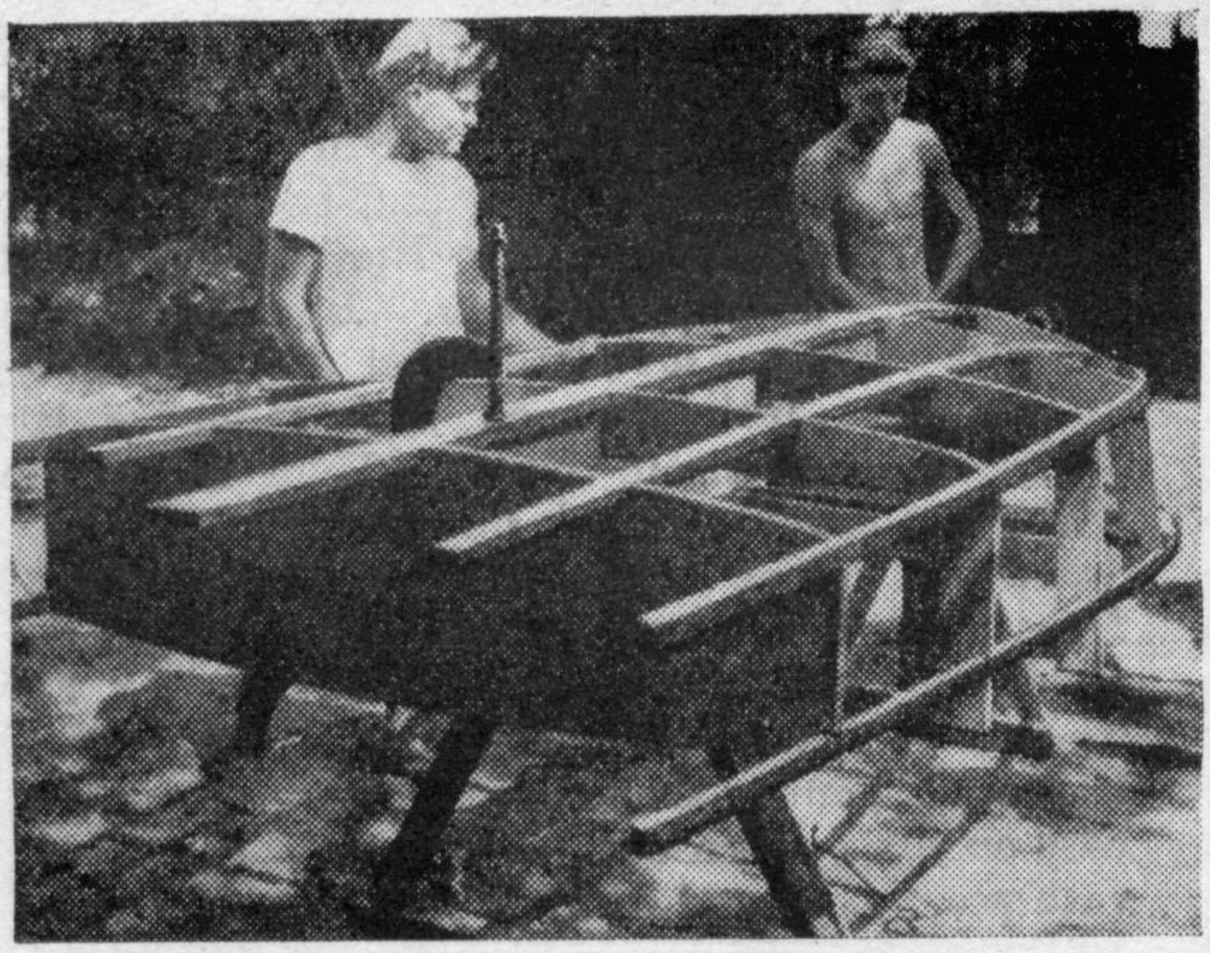


1½ inch #8 FH screws to each joint. The *stem* is next sawed to shape, notched for the keel and beveled as indicated. Then lay stem aside until the form has been made.

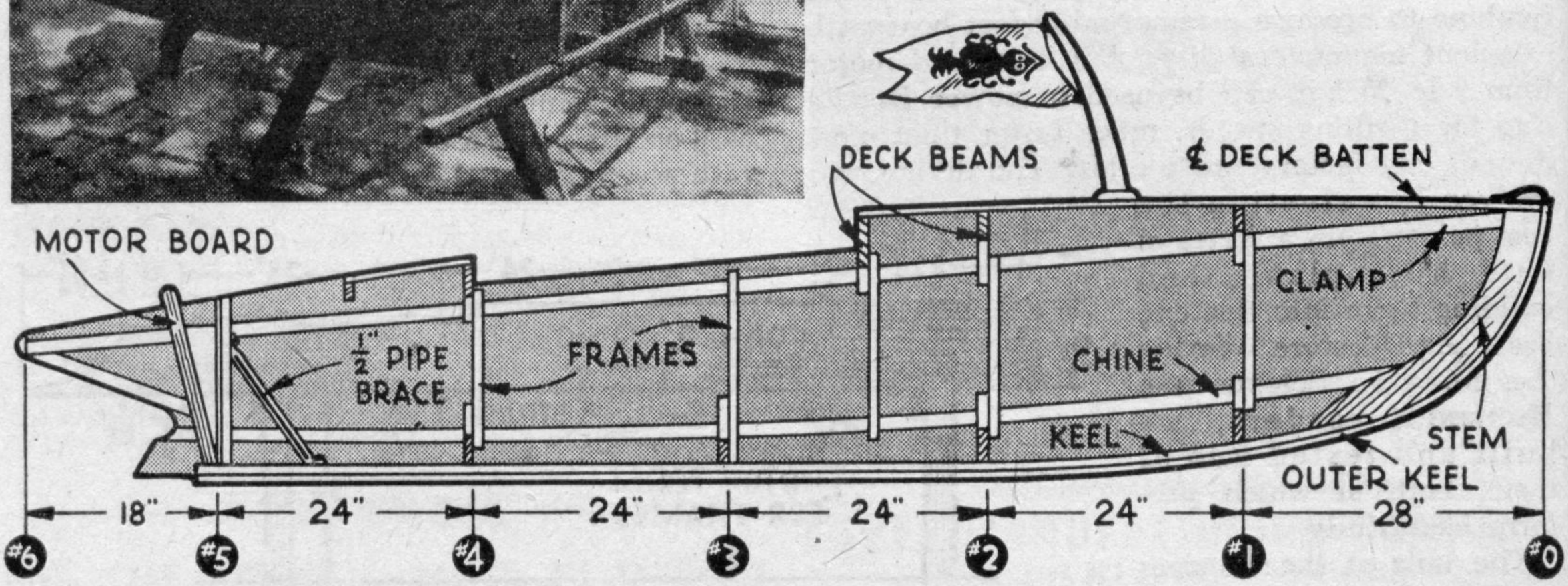
The *form* is a 2x10 inches x 10 foot pine plank, marked and cut to the shape shown, and then mounted atop legs similar to a saw horse at a convenient working height. This same form may be used to build any number of boats over and should be retained if a fleet of *Doodle Bugs* or a Boat Club which uses one design hydros for races is contemplated. Notch form for frames and before mounting the frames atop the form, notch all frames for keel, chines, and clamps. Be sure to notch all the way through the transom as all members extend aft of transom to form the tails. Next mount all frames and stem atop the form in their respective positions.

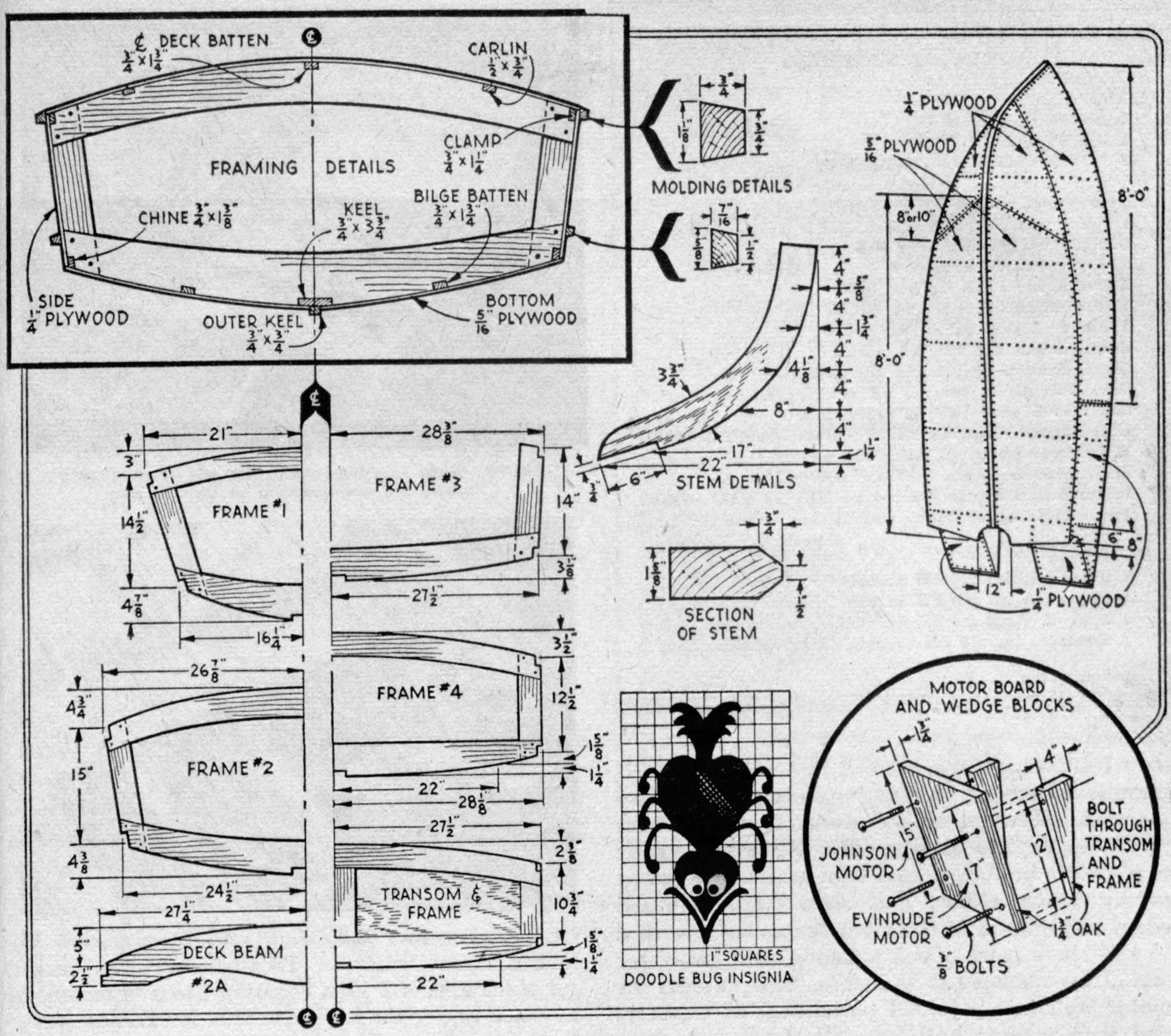
Now attach the keel in place, making sure that it extends 4 inches aft of No. 5 transom. Working forward, fasten keel in position to frames and stem using two 2 inch #8 FH screws to each joint. Next spring chines into place, fastening both chines simultaneously to prevent wringing hull out of shape. Allow chines to extend 6 inches aft of transom. Working forward, trim chine notches to fit evenly where necessary, and fasten them using one 2 inch FH screw to each joint. Then bevel chine ends to fit side of stem and fasten similarly. The *clamps* are next sprung in place on each side. Allow the ends of clamps to extend 18 inches aft of the transom, and work forward, beveling ends to fit stem. Fasten clamps with one 2 inch #8 FH screw to each joint. Finish the framework assembly by attaching the *outer keel* in position, using 1½ inch #8 FH screws spaced about 8 inches apart.

The entire framework of *Doodle Bug* is now trimmed and faired so that all plywood to be



At left, photo showing framing of the Doodle Bug hull.





applied lies evenly at all points. Trim with a jack plane and lay a batten over the joints as you plane to see that surfaces are fair. The *bilge battens* are now attached by notching battens flush into frames and positioning midway between keel and chines. Notch frames Nos. 2, 3, 4, and transom to take bilge battens which extend from frame 2 to 6 inches aft of transom. Fasten them in place using one #8 1½ inch fh screw to each joint.

We are now ready to cover the framework with plywood. If full length plywood is not available, plank sides with ¼ inch thickness marine plywood in two pieces, providing a splice as indicated and coating the splice with Ferdinand's Resin Glue. Starting at the stem, bend plywood in place around sides. Continue aft and mark plywood as shown to form the tails. Then cut plywood to shape, coat all contact surfaces with resin glue, clamp plywood in position on sides, and fasten it with 1 inch #8 FH screws spaced about 2 inches apart. Trim plywood evenly along chines.

The bottom is planked with four pieces of plywood—two 5/16 inch pieces aft and two ¼ inch pieces forward, with a lapped joint between the two thicknesses. You should provide a ¾ inch thick oak batten under this lapped joint to further reinforce it at this point. For a permanently leak proof bottom, coat chines, keel, and transom liberally with Ferdinand's Aviation Glue, lay cloth strips upon glued area, and coat once more before plywood is fastened in place. Beginning at the transom, lay a 5/16 inch x 4 x 8 foot sheet of plywood in place; allow it to extend 8 inches over transom. Then mark and cut to shape. Notch for ends of plywood flush into keel and chines, and fasten in place with 1 inch #8 FH screws at all points, spacing them about 2 inches apart. The fore ends of ¼ inch plywood adjacent to the stem are best shaped by fitting a paper pattern in place and

Short of Lumber?

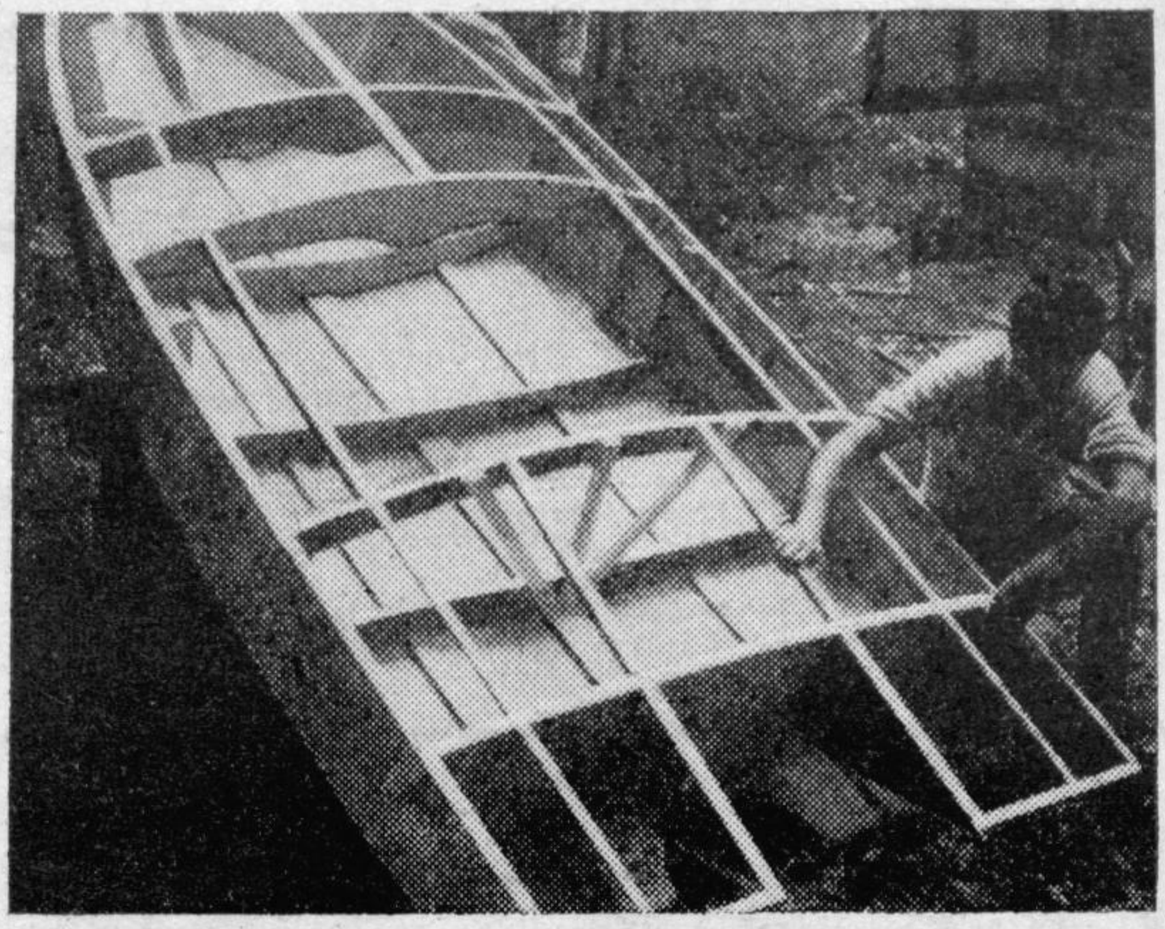
● If you have trouble getting the necessary lumber to build your boats, Mr. Jackson can furnish you with timbers or knock-down frames and full-size pattern drawings. For further information on this, write to Boat Editor, SCIENCE AND MECHANICS, 49 E. Superior Street, Chicago 11, Illinois.

LIST OF MATERIALS

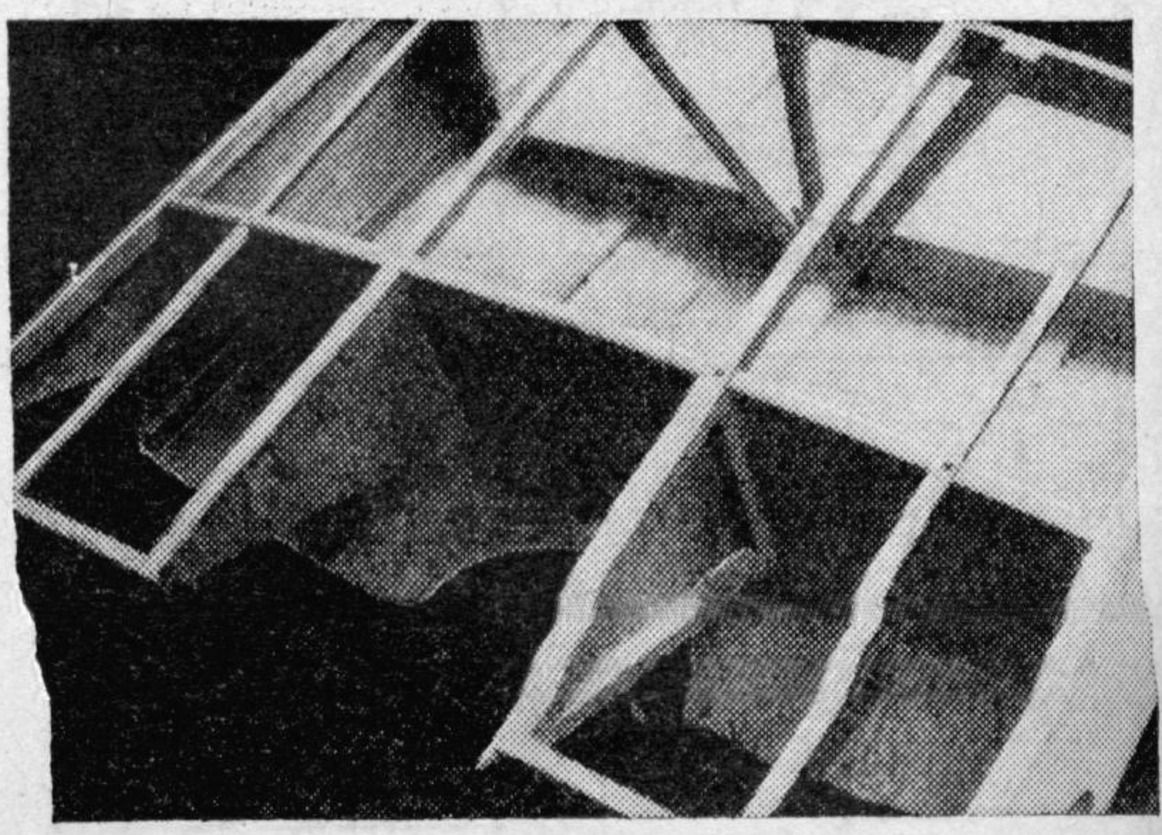
Plywood
- 3 pieces 1/4 in. 4x8 ft.
- 2 pieces 5/16 in. 4x8 ft.
- 2 pieces deck 3x5 ft. mahogany

Frame Work Wood
- Chines—2 pcs. 3/4"x1 3/8"x12' } Oak
- Clamps—2 pcs. 3/4"x1 1/4"x12' } Oak
- Keel—1 pc. 3/4"x3 1/4"x10' } Oak
- Outer keel—1 pc. 3/4"x3/4"x10' } Oak
- Transom frame—1 pc. 3/4"x8"x5' } Oak
- Frames—2 pcs. 3/4"x8"x12'—Fir
- Stem—1 pc. 1 5/8"x10"x3'—Oak
- Bilge Battens—2 pcs. 3/4"x1 3/4"x8' } Fir
- Deck beams—2 pcs. 3/4"x8"x12' } Fir
- Carlins—2 pcs. 1/2"x3/4"x12'—Oak
- Coamings—2 pcs. 3/8"x2"x3'—(Mahogany, Walnut)
- Moldings—2 pcs. 3/4"x1 1/8"x12'—Oak
- Motor Board—1 pc. 1 5/8"x12"x16"—Oak
- Motor Board Angle Pcs.—1 pc. 1 5/8"x6"x12"—Oak
- Paint Moldings—2 pcs. 1/2"x5/8"x12'—Oak

Fastenings
- 6 Gross—1 in. #8 FH Screws } Gal.
- 4 Doz.—1 1/2 in. #8 FH Screws } Gal.
- 4 Doz.—2 in. #8 FH Screws } Gal.
- 1 Gross—1 in. #6 FH Screws—Brass for decking



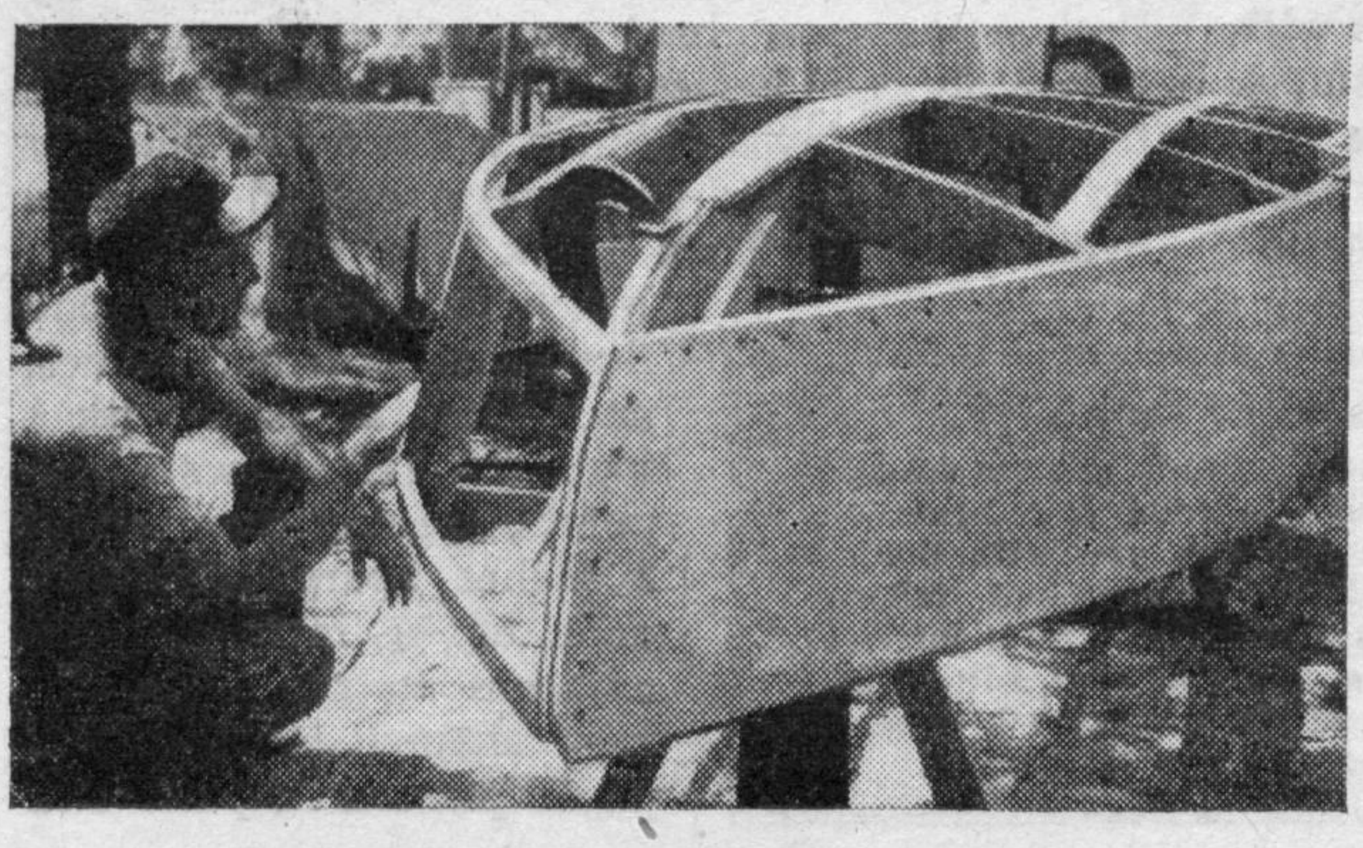
Above, deck framing ready for plywood decking. Below, tail construction of Doodle Bug.



then transferring the pattern to the plywood. It may be necessary to dip the ends of these fore pieces of plywood in hot water to make them pliable enough to bend readily. Fasten fore ends of plywood similarly, then trim edges of plywood evenly along chines and stem. The exposed edges of plywood at the stem are covered with a 1/2 x 1 1/2 inch piece of oak softened with hot water and screw-fastened to the stem. Saw cutouts for motor well into plywood bottom aft of transom, and then remove hull from the form.

Turn hull right side up on saw horses and prepare to install *deck beams*. Measure, saw to shape, and fit and fasten deck beam Nos. 1, 2, 2A, and 4 in place using two 1 1/2 inch #8 FH screws to each joint. From deck beam 2A forward to stem notch, flush a 3/4 x 1 1/2 inch batten and screw-fasten to the beams. This batten receives center joint of plywood decking. A 1/2 x 3/4 inch *oak carlin* is now notched flush into the deck beams at *points indicated, and is extended* 18 inches aft of transom. To further stiffen cockpit sides a 3/4 x 2 inch *coaming piece* is fastened in place under the carlin so that it extends from beam No. 2A to No. 4, and screw-fastened with 1 1/2 inch #8 FH screws. The tail assembly is constructed as shown. For a sprightly appearance use two different kinds of plywood (mahogany and birch or mahogany and fir plywood) on the deck. Make the covering board of lighter colored wood and the decking of the darker mahogany. Fit the separate pieces in place with the aid of paper patterns. Mark the various deck pieces to shape and saw, trimming the edges carefully. Then screw-fasten in place with 1 inch #6 FH brass screws spaced about three inches apart. Finish the decking by trimming the edges evenly. The moldings are cut as shown and fastened to sides of the boat with 1 1/2 inch #8 FH screws spaced about 8 inches apart. The paint strips along the sides are fastened in place from the inside with 1/2 inch #6 FH screws. Trim edges of cockpit evenly and fasten 3/8 x 3 inch coamings in place with 1 inch #8 FH screws.

We are now ready to apply the finishing touches to *Doodle Bug*. Coat entire



Placing side planking of plywood on the frame of the Doodle Bug hydroplane.

hull inside and out with Firzite and, when dry, paint the inside any desired color. All screw heads should be puttied smoothly on sides and bottom. Next apply another coat of White Firzite on the sides and bottom. Then apply two or three coats of white outside on the sides, down to the paint strips, and two coats of green or red enamel below paint strip on the bottom.

• Craft prints in enlarged size for building hydroplanes are available at 25¢ a set. Address Craft Print Dept., SCIENCE AND MECHANICS, 49 East Superior Street, Chicago 11, Illinois.

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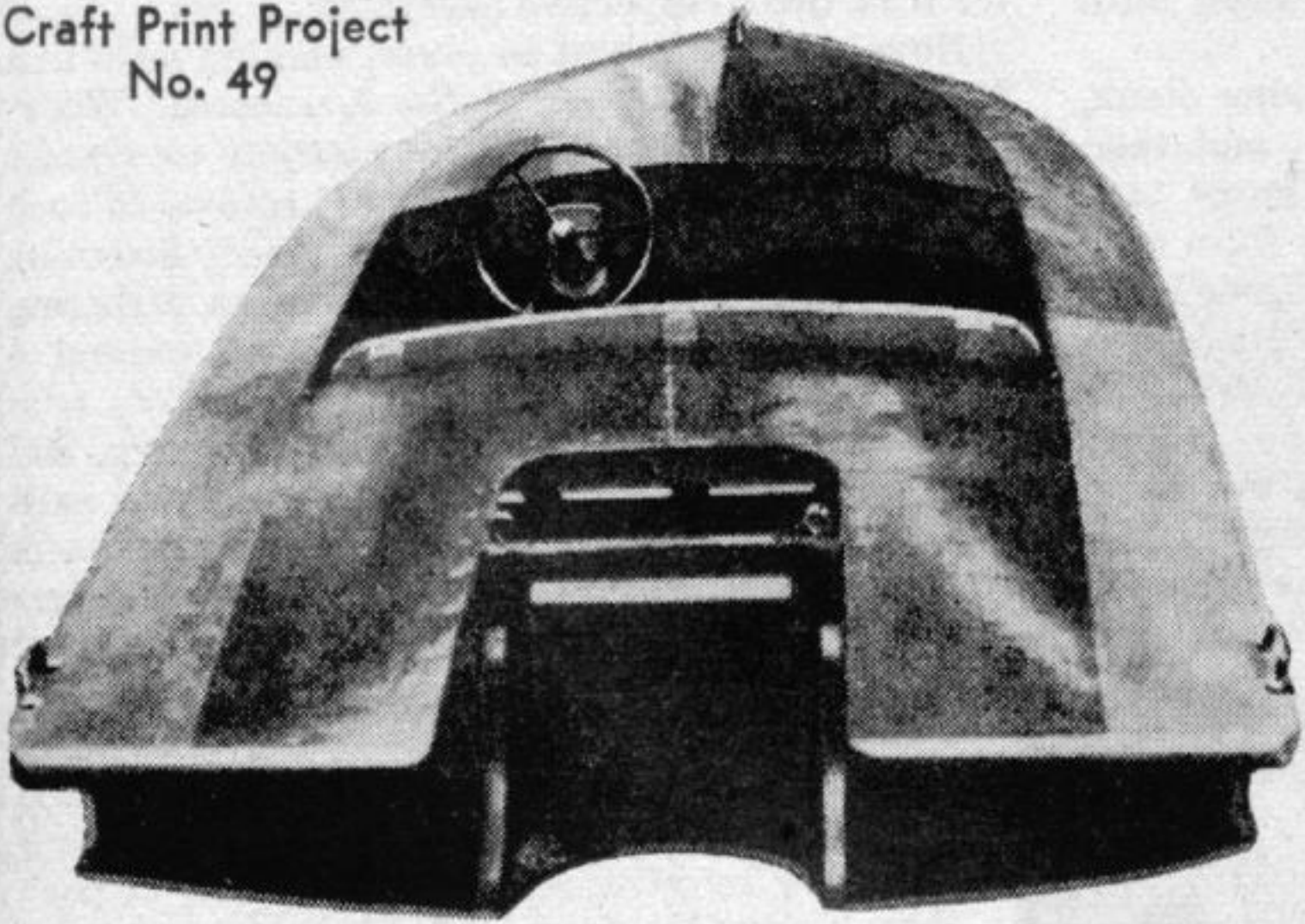

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