

"DRAGONFLY"

Fast 10-Foot Hydroplane for Outboard Motors

Craft Print Project No. 100



Extended motor wells permit quick planing action and sharp turns, when the happy owner of the "Dragonfly" speeds her gaily across the water.



Built for all classes of outboard motors, the "Dragonfly" is safe and efficient at top speed.

"DRAGONFLY" is a hydroplane that is adapted to all classes of outboard motors from the 4 hp. row-boat motor to the largest racing engines. Streamlined in design, the constructional features are unique and present such developments as extended motor wells for quick planing action, and a combination of vee and convex bottom for safe and super-efficient high speed operation with low and high powered outboard motors.

Construction is simple. It calls for three transverse frames, and a plywood covered hull, offering a boat that is fast in operation, extremely strong, and light in weight. The removable motor board affords a means of adapting the hull to various motors while easily made plywood stabilizers provide safe turns at high speed. The cost of building "Dragonfly" will vary, but should not exceed \$15.

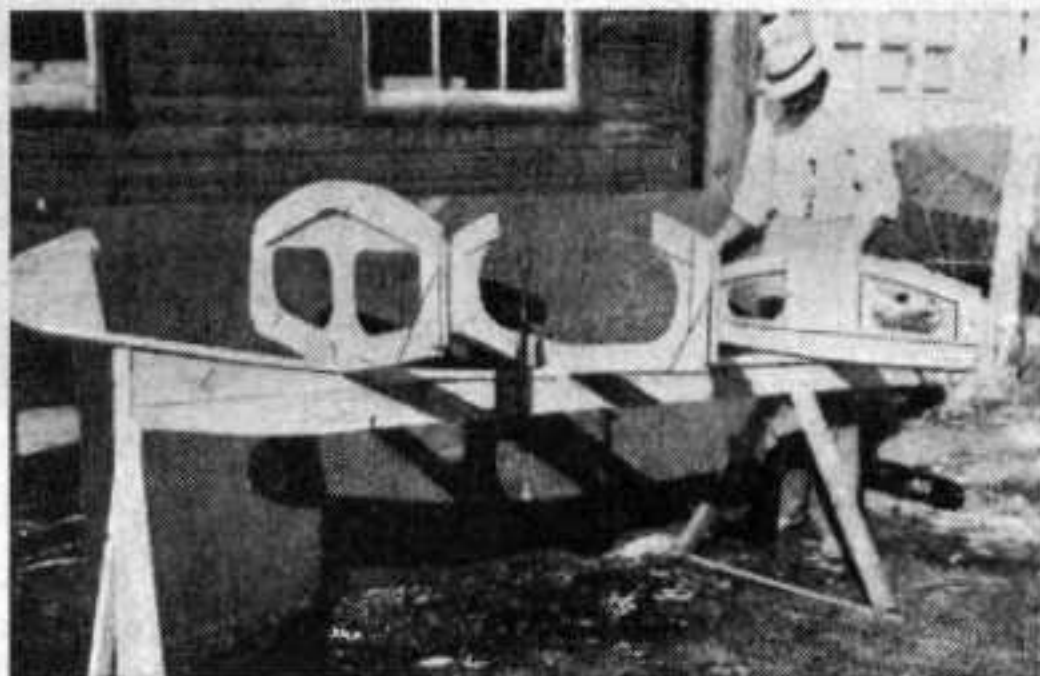
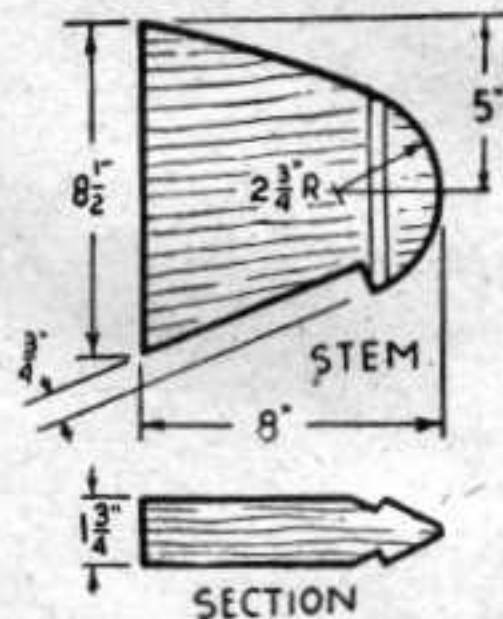
The hull is built right side up and for this purpose a form is constructed consisting of a 2" x 4" mounted upon legs similar to a saw-horse with an additional curved piece nailed to top side forward, serving to properly shape the keel.

Draw the outline of the mould frames No. 1, No. 2, and No. 3 directly upon $\frac{1}{4}$ " plywood sheets, sawing to shape. A $\frac{3}{4}$ " x $3\frac{1}{2}$ " frame is secured around edges of the mould frames, glued and screw-fastened in place with 1" No. 8 f.h. screws. In addition, mould frame No. 3 has an

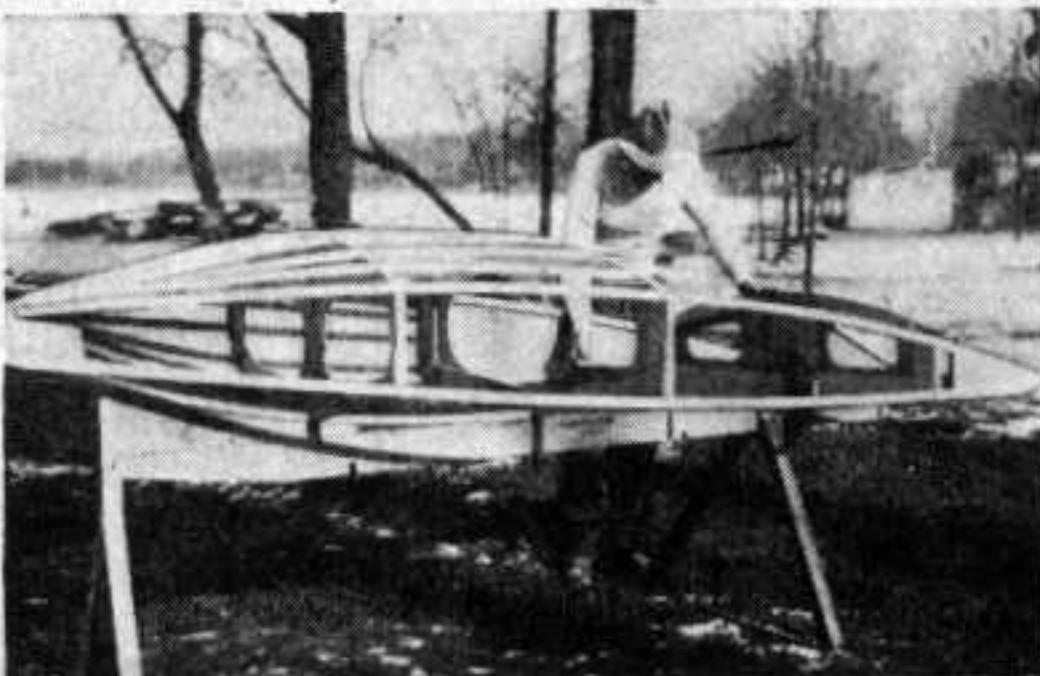
inside and outside $\frac{3}{4}$ " thick motor plate similarly fastened in place.

Secure corners of mould frames at chines with tri-cornered plywood gussets, glued and screwed in place. Saw the stem to shape and rabbet with a straight saw cut each side, then chisel. At this point, saw the tail well pieces to shape. Prepare to assemble framework after notching out mould frames for chines, clamps, and keel.

Mould frames No. 1, No. 2, and No. 3 are now attached to the $\frac{3}{4}$ " x 2" keel. The aft end of the



The hull is built right side up on a form, as shown above and in the plans.



Keel, chines, clamps, and deck beams are strongly braced when set in forms and stem, as here shown.

LIST OF MATERIALS

Parts	Pieces	Finished Sizes
Sides	1	1/4" x 24" x 10'
Bottom	1	1/4" x 48" x 10'
Mould Frames, Tails, Flooring, Cockpit Covering and Stabilizers	2	1/4" x 48" x 7'
All of the above parts to be made of fir, three-ply waterproof plywood.		
Motor Face Plates	1	3/4" x 10" x 36"
Mould Framing	3	3/4" x 31 1/2" x 6"
	1	3/4" x 73/4" x 8"
Chines	2	3/4" x 1" x 12'
Clamps	2	3/4" x 1" x 12'
Bilge Battens	2	3/4" x 1" x 8'
Deck Stringers	7	1/2" x 1" x 54"
Inner Keel	1	3/4" x 2" x 10'
Outer Keel	1	1/2" x 3/4" x 10'
Cockpit Railing	2	3/4" x 11 1/2" x 4'
Mouldings	2	1/2" x 3/4" x 12'
Tail Piece and Fairing	1	3/4" x 21 1/2" x 8"
Motor Board	1	1 3/4" x 10" x 36"
Stem	1	1 3/4" x 10" x 12"
Tail Knees	1	3/4" x 5 3/4" x 36"
Well Framing	1	3/4" x 3/4" x 12'

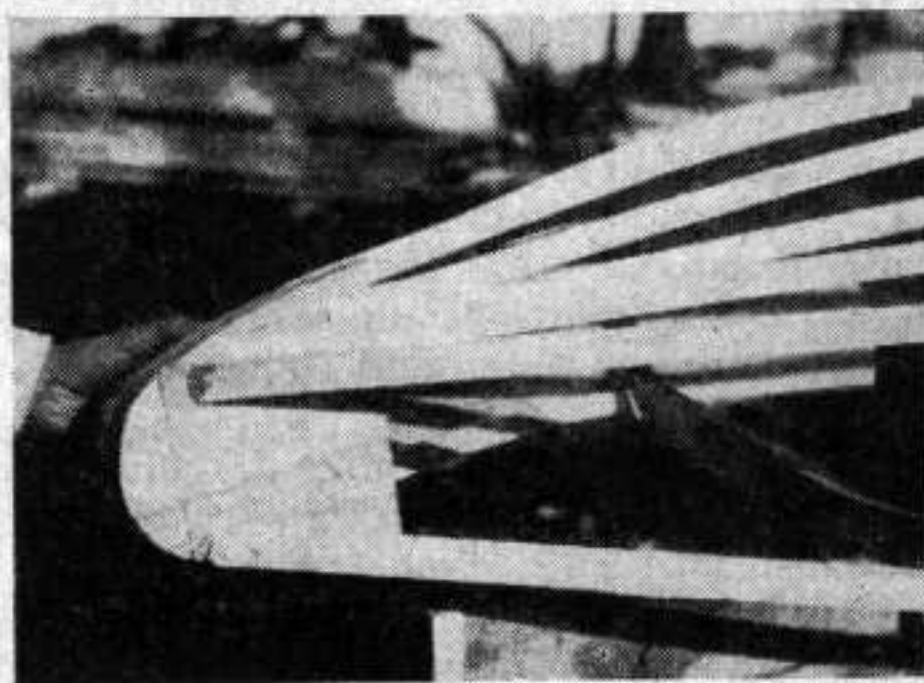
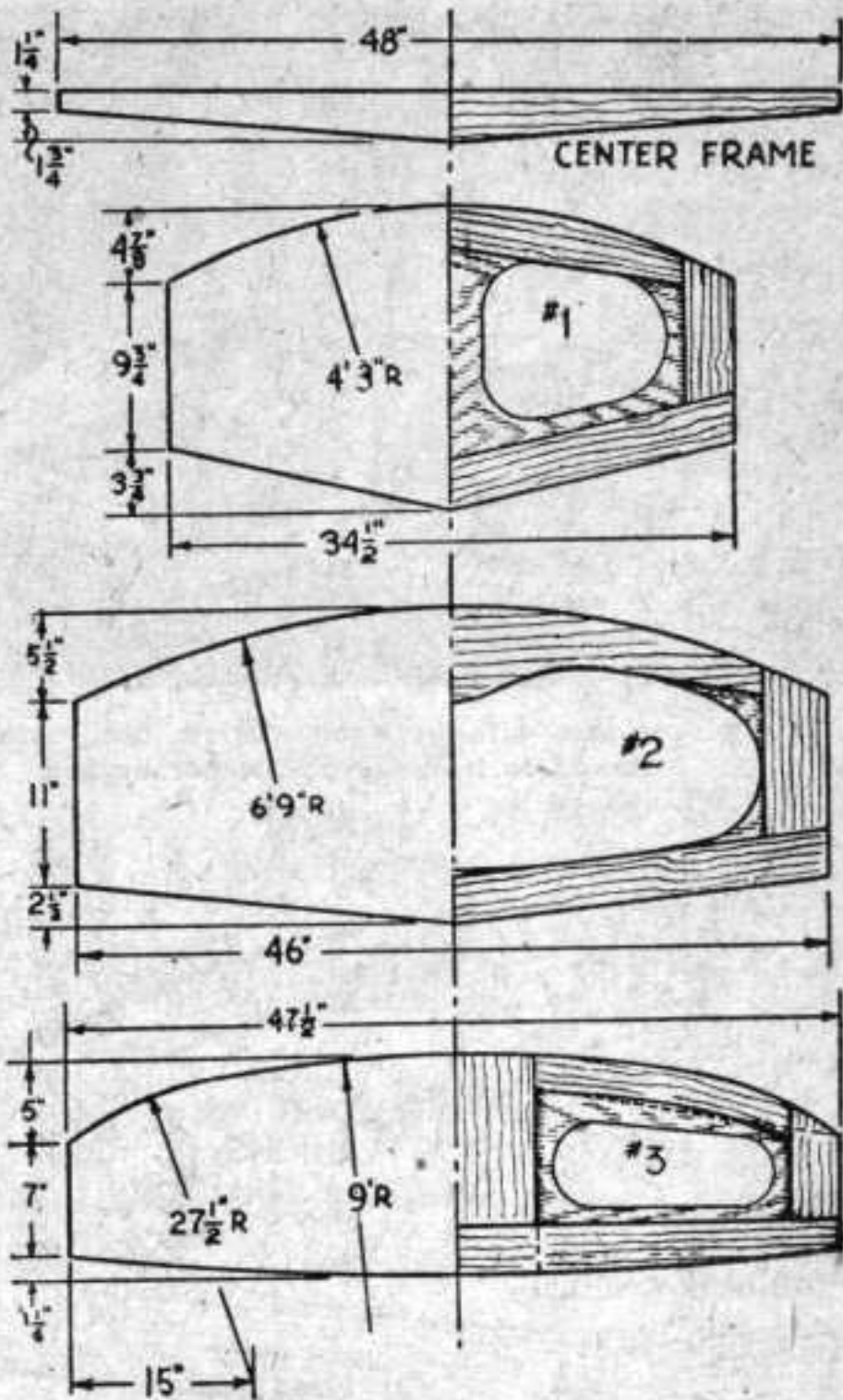
All of the above parts to be made of spruce, fir, yellow pine, cypress, or oak.

Form Material	1	2" x 4" x 10'
	1	2" x 12" x 5'

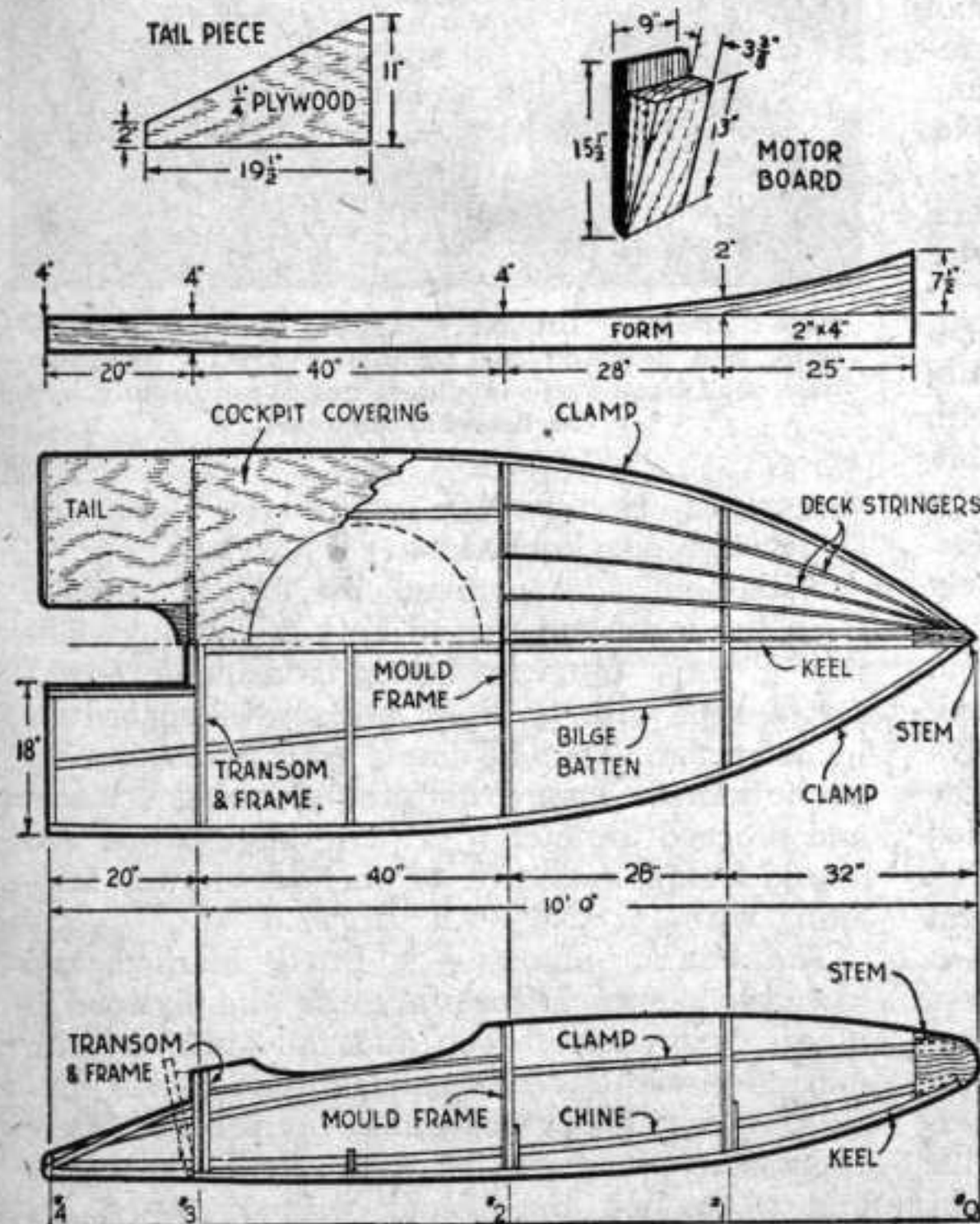
The form may be made of any rough lumber.

FASTENINGS

2 gro. 3/4" No. 8 f.h. screws	1 gal. Airplane wing dope
3 gro. 1" No. 8 f.h. screws	1 pc. Cloth for deck, 54" x 60"
1 gro. 1 3/4" No. 8 f.h. screws	2 ozs. 1/4" tacks
1 lb. Casein glue	Muslin strips
1/2 pt. "C" quality marine glue	Paint and varnish

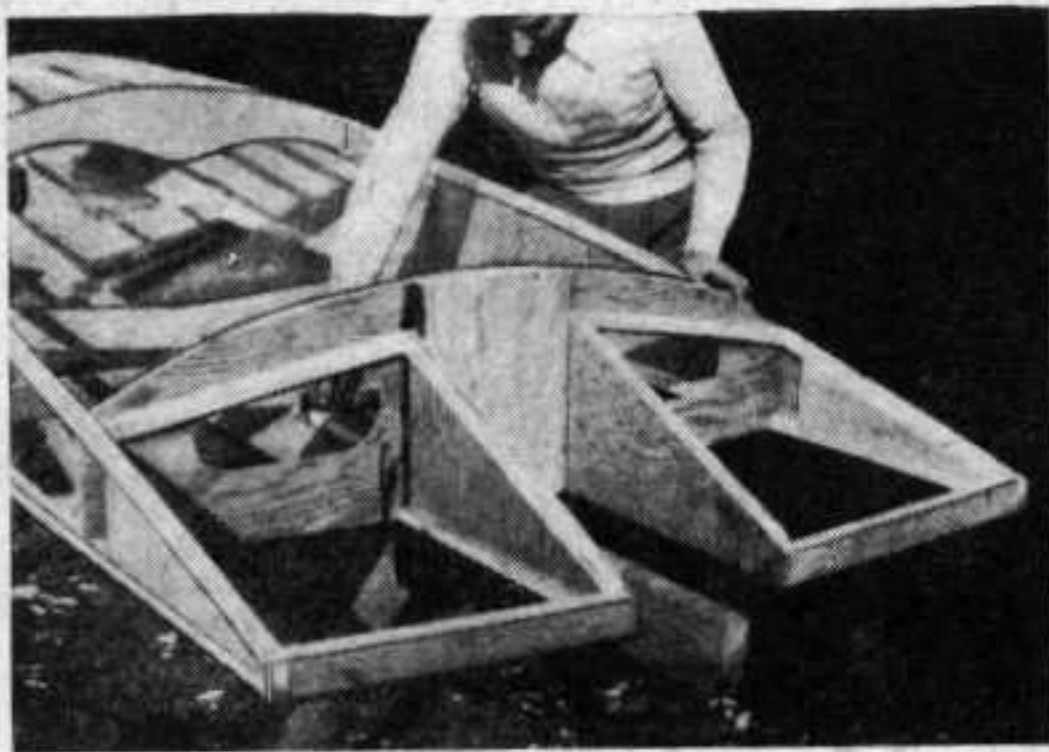


Deck battens must be beveled accurately and ends made secure against the stem.

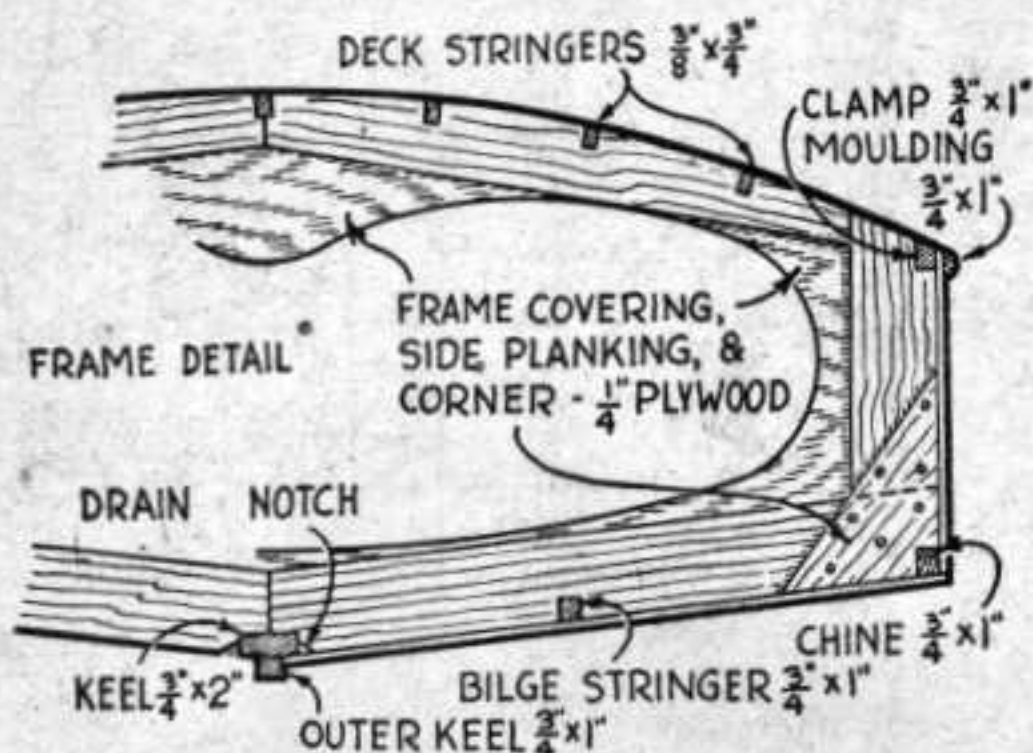


keel is set flush with No. 3 frame and the keel secured to each frame with two 1 3/4" No. 8 f.h. screws. Screw fasten the stem to forward end of keel similarly and place the assemblage of keel, mould frames and stem upon the form clamping or screw fastening temporarily in place. Beginning at aft face of No. 3 mould frame, attach tail boards to motor plate with 1" No. 8 f.h. screws, first daubing joining surfaces with "C" quality marine glue.

The clamps and chines are attached, starting at the stem the ends of chines are beveled to fit stem, just aft of the rabbet and the chines are fastened to stem and frames with 1 3/4" No. 8 f.h. screws. Fasten both chines and clamps similarly. Let



Tail pieces are strongly constructed and securely fastened to transom and motor base.



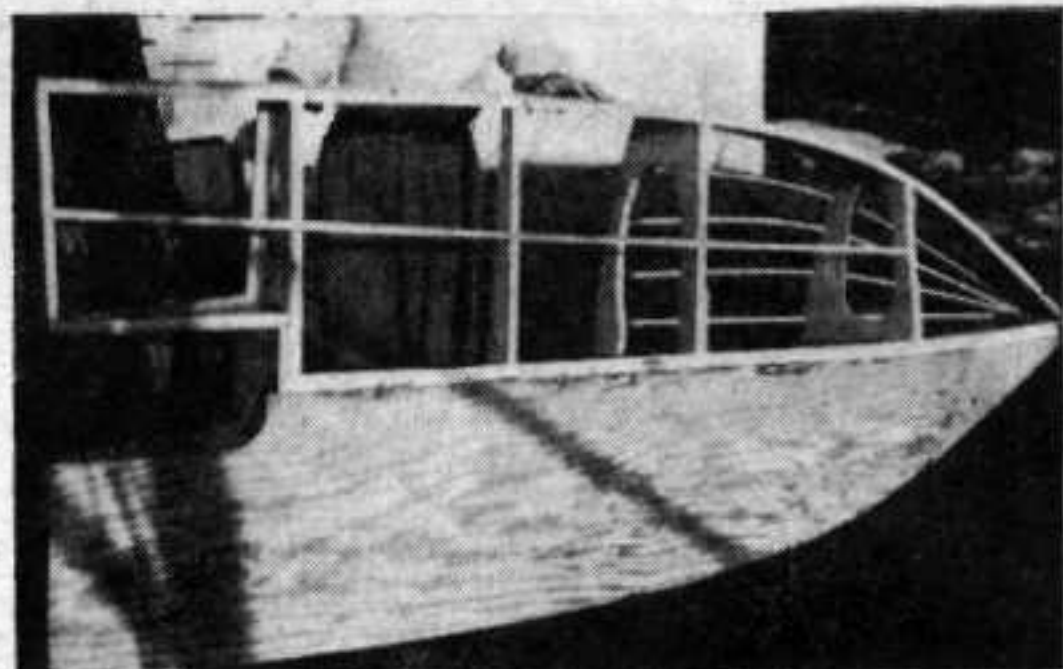
free ends aft of frame No. 3 extend exactly 20". Bring free ends together, being sure this does not cause misalignment of the bottom lines, and secure free ends with a $\frac{3}{4}$ " thick knee, cut to fit and fastened to both chine and clamp with $1\frac{3}{4}$ " No. 8 f.h. screws.

Between chine-clamp juncture and extreme end of tail well board a $\frac{3}{4}$ " x $2\frac{1}{2}$ " tail end piece is attached with $1\frac{3}{4}$ " No. 8 f.h. screws.

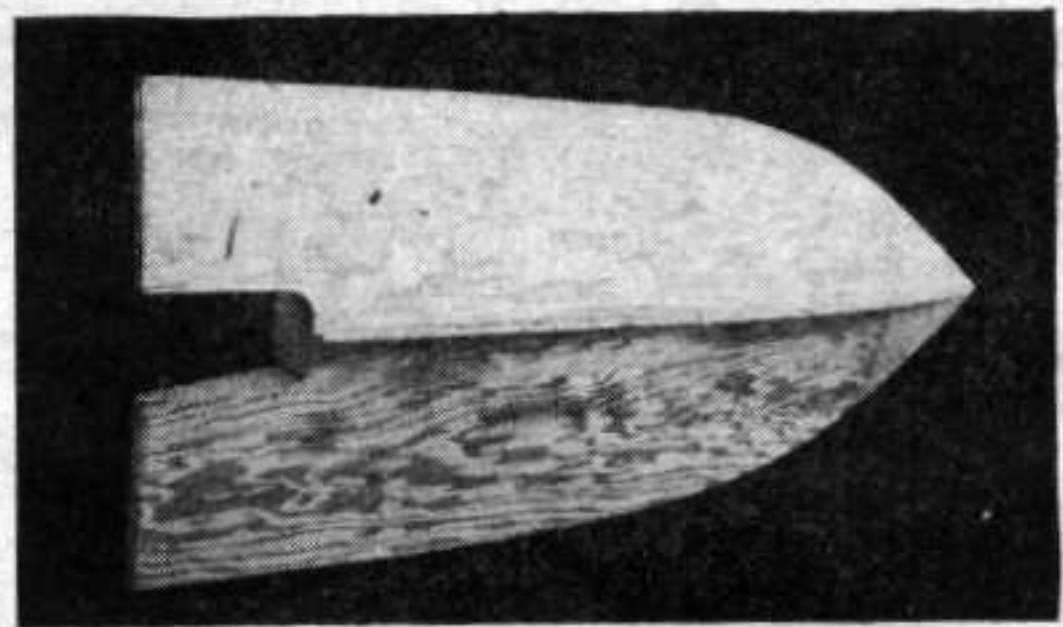
The intermediate bottom rib is attached at a point midway between No. 2 and No. 3 mould frames and is attached to chines and keel with $1\frac{3}{4}$ " No. 8 f.h. screws, one screw to each joint. This rib serves to maintain shape and rigidity, and also provides a means of supporting floor. It is not notched into chines or keel but merely rests atop these parts.

The framework is completed by gluing and screw fastening a $\frac{3}{4}$ " square frame around tail pieces so as to afford a foundation for the plywood covering. The entire framework is now trimmed and faired so the plywood to be applied will lie evenly at all points.

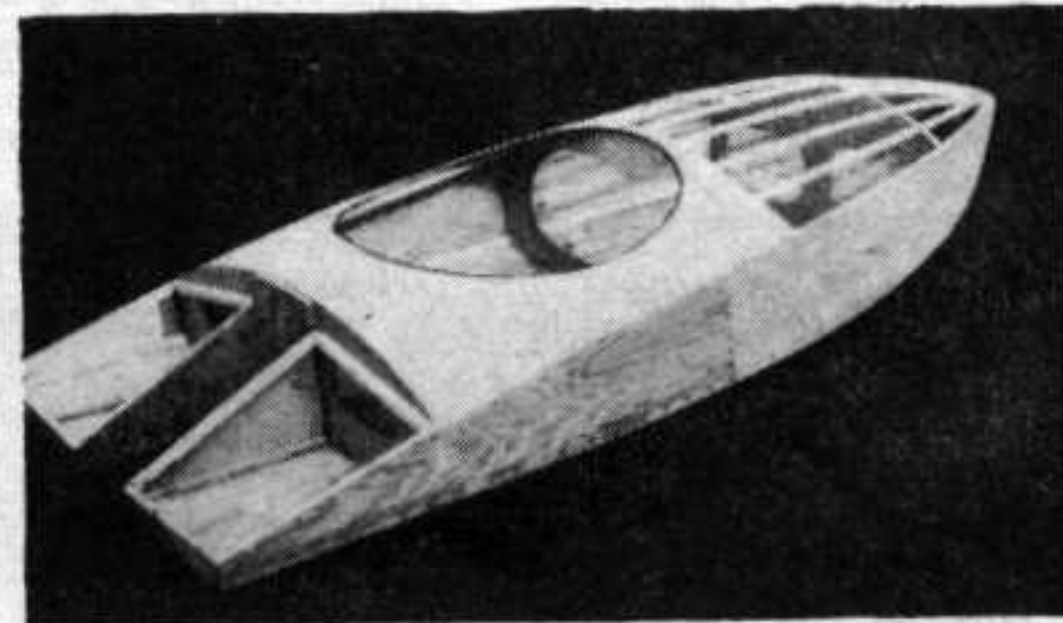
Clamp a plywood sheet to the side, mark and saw to shape, using a shaped piece as a pattern for the opposite side. Coat all adjoining surfaces with marine glue, clamp plank in position and fasten with 1" No. 8 f.h. screws spaced about two inches apart. If full-length sheets of plywood are not available, simply provide butt joints, with a $\frac{1}{4}$ " x 6" plywood block backing the edges of



The bottom is planked with two pieces of marine plywood carefully sawed to shape.



Outer keel is securely positioned and aids stability and safety at high speeds.



Here's how the "Dragonfly" shapes up, when framework and planking are completed, cockpit covering and deck beams are in place, and it's all ready for the finishing details.

the joint. The joint is secured to block with $\frac{3}{4}$ " clout nails clinched.

With both sides planked, the hull is removed from the form and turned bottom side up, while the $\frac{1}{2}$ " x $\frac{3}{4}$ " outer keel strip is fastened to center of keel with 1" No. 8 f.h. screws spaced six inches apart. Trim all joints and surfaces evenly on bottom to insure uniform planking surfaces and proceed to notch a $\frac{3}{4}$ " x 1" bilge batten into mould frames each side of keel (as shown) fastening with $1\frac{3}{4}$ " No. 8 f.h. screws.

The bottom planking is fitted, marked, and sawed to shape. Before fastening the plywood in place, coat chines, keel, and tail surfaces with marine glue. Lay cloth strips upon coated surface; recoat with glue; clamp plywood in place; and fasten along keel with $\frac{3}{4}$ " No. 8 f.h. screws and to frames and chines with 1" No. 8 f.h.

All done and ready to
take to the water.



screws spaced about two inches apart.

Turn hull right side up and install deck battens at points indicated, notching battens half way into No. 1 mould frame beam and flush into No. 2 frame beam, while battens at stem are beveled and ends secured to stem with 1" No. 8 f.h. screws.

The cockpit covering is merely a $\frac{1}{4}$ " sheet of plywood applied in two pieces, with a joint in the center. The cockpit opening is then cut to shape. The edge of the cockpit is reinforced by installing a $\frac{3}{4}$ " x $1\frac{1}{2}$ " cockpit railing, fastening to No. 2 and No. 3 beams with $1\frac{3}{4}$ " No. 8 f.h. screws. Fasten the cockpit covering in place with 1" No. 8 f.h. screws spaced four inches apart.

Cover the tail surfaces with $\frac{1}{4}$ " plywood, coating all adjoining surfaces with marine glue and cloth and fastening with 1" No. 8 f.h. screws. A final fairing of the tail ends is accomplished by covering exposed ends of tails with another $\frac{3}{4}$ " x $2\frac{1}{2}$ " piece, screw-fastened in place and planed round and fair, smoothing with sandpaper.

The battened deck is covered with closely woven muslin, tacked along edges at sheer and No. 2 deck beam. Coat surface of muslin deck with three coats of airplane wing dope, finishing by painting or lacquering any desired color. Finish the deck by attaching the $\frac{1}{2}$ " x $\frac{3}{4}$ " half round moulding to sheer edges with 1" No. 8 f.h. screws spaced about eight inches apart. The motor board is made as shown and is bolted in place with four $\frac{5}{16}$ " carriage bolts, varying this board's height to suit any motor used.

Apply one coat of equal parts linseed oil and turpentine to the inside and outside of planked surfaces and finish with three coats of paint or varnish.

Stabilizers are constructed of $\frac{1}{4}$ " plywood and secured to side of hull with small angles. These stabilizers are necessary only with higher-powered outboard motors and are well worth the effort to install them.

● Craft Print No. 100 in enlarged size for building the "Dragonfly" is available at 25¢ each. Address Craft Print Dept. B-48, SCIENCE AND MECHANICS, 49 East Superior St., Chicago 11, Ill.

