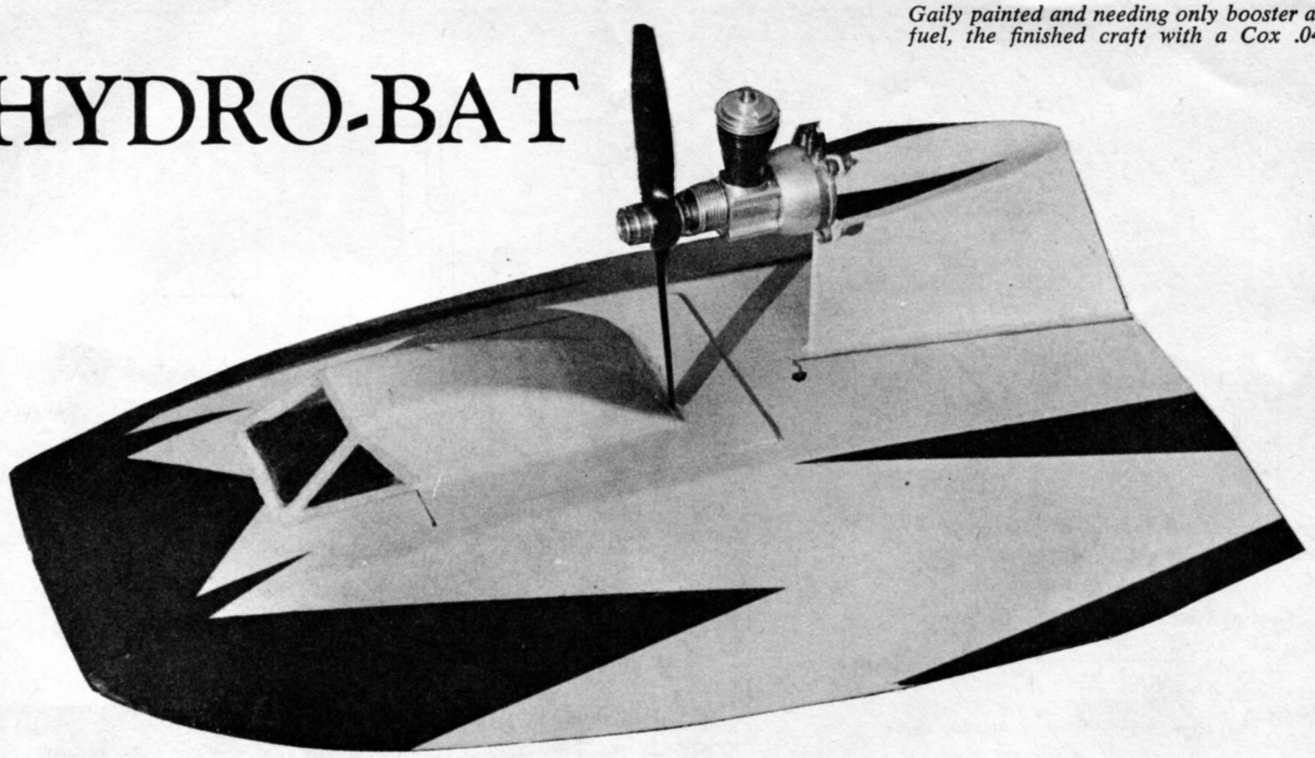
HYDRO-BAT



Gaily painted and needing only booster and fuel, the finished craft with a Cox .049.

The air boat undoubtedly is the simplest of all RC exciting action projects. This one needs no flywheel, prop shaft, water cooling. You do have to start an engine!

By VIC SMEED

► There is no doubt that the simplest form of boat is the airscrew-driven hydroplane—no prop shaft, flywheel, water-cooling, or other complications of that nature, and a performance that can be quite sparkling. Tethered hydros, built for speed only, reach speeds of 80 mph. without too much difficulty, but for radio running something stable in itself and not quite so fast must be used. Even 10 mph. is a high enough speed for a small model of this type under radio control. The design presented here will comfortably achieve this speed, and in action looks as though it is doing a great deal more.

Motors of .049-.09 capacity are suitable, and we have shown the Babe Bee as being one of the popular motors which is easiest to mount. Modification to beam mounting is quite straightforward, either by using a metal bracket conversion or cementing beams to the pylon, with suitable packing pieces. Alternatively, the motor may be mounted sidewinder fashion in a cut-out in the ply pylon. For different motors, keep the prop in the same position as on the drawing, and adjust the mounting appropriately.

The one drawback of air prop boats is the unprotected airscrew, in the sense that a bystander being helpful and catching the model can damage his fingers. Shrouds or ducts, etc. have proved impractical, apart from the loss of simplicity which is one of the attractions of this type of model, so that operators must use common sense in their choice of water.

Construction: The hull is built egg-box fashion using three bulkheads and two fore-and-aft members, all cut from ⅛-in. medium balsa. Cut and cement these pieces together, ensuring that the assembly is square and true. Cut the pylon from ⅛-in. ply and cement into the hull between B2 and B3; cement scraps of ⅛-in. sheet along each side, between and level with the tops of the two bulkheads. The motor mount plate (firewall) or other form of mounting may be added at this time, or left until later if preferred.

Sheet the hull bottom with medium ⅛ in. in short pieces, grain across, lodging the edges of the sheet on the fore-and-aft members only half-way, i.e. 1/16 in. The remaining 1/16 in. provides a seat for the outer panels of the underside, which are cut to the outline shown, grain lengthways. Cement these to the straight part of the hull, and when dry bend the forward ends to fit, cementing and pinning as you go. It will be necessary to cut a chamfer on the inside edges as work proceeds, to ensure a snug fit. If the sheet is reluctant to bend easily at the bow, score and crack the underside, filling the cracks with cement and sanding to a smooth curve later. Sand the edges.

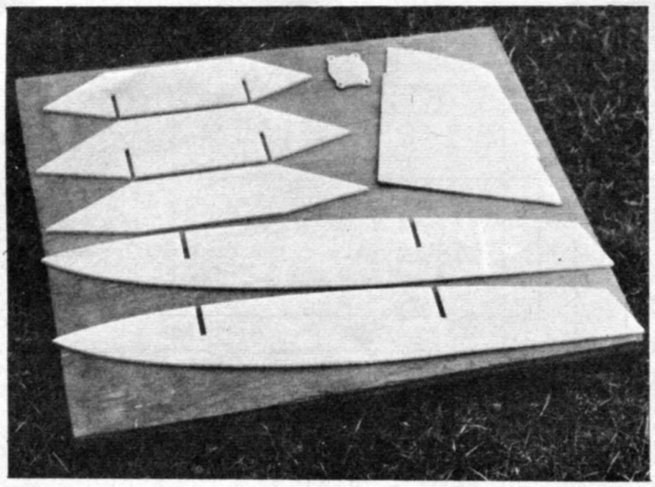
Sheet the center top in the same way as the bottom, leaving a 1/16 inch step for the side sheeting as before. The sides are, however, planked in short pieces, grain across. This combination of grain directions gives a very rigid and tough but light structure.

Sand the hull, then mark and cut the hatch. Cement strips under the edges of the hatch opening, then replace the hatch and build on the cabin. You may prefer to use a bubble canopy, but in any event the front overhang must be sealed with a piece of sheet underneath. The cabin keeps the hatch in shape, so no other structure is needed, especially as the hatch is sealed in place with surgical adhesive tape.

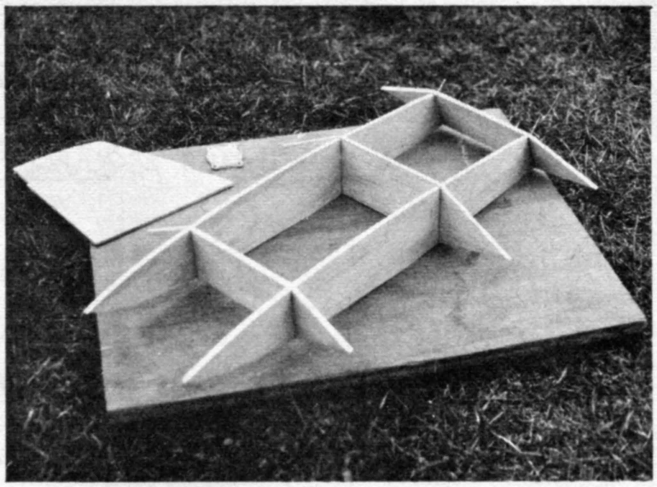
A fuel tank may be mounted on one side of the pylon and the other streamlined in with soft block. Fit the rudder tube, which is simply cemented on the back with a piece of silk or gauze bandage, also the lower fin, then give everything a final sanding and dope on tissue over all woodwork. Finish and dope or paint in the usual way.

Any small single-channel R/C equipment using an electric or clockwork actuator can be fitted, the actuator needing connection only to a crank passing through a rubber grommet trimmed and glued where shown. A pushrod connects this crank to the rudder horn. Only a small amount of rudder movement is necessary, but the degree will depend on the speed of the model. For an .049 engine 25 degrees each way is about maximum. Control is best when optional rudder can be selected without going through a sequence, and the lightest way of doing this is usually pulse control, using a Bellamatic or similar servo. Radio and battery weight should be as small as possible—with a maximum of, say, 8 or 9 ounces.

Trimming for maximum performance may entail moving the batteries forward or backward, but it is not too critical, and the boat is divided into nine separate compartments, giving a very high safety margin in the event of a mishap. To keep it all watertight, tape the hatch as mentioned and bring out two wires through the deck (cement around them) to a switch mounted on the pylon. Then, even if the model flips, only the motor and switch will need drying out. ●

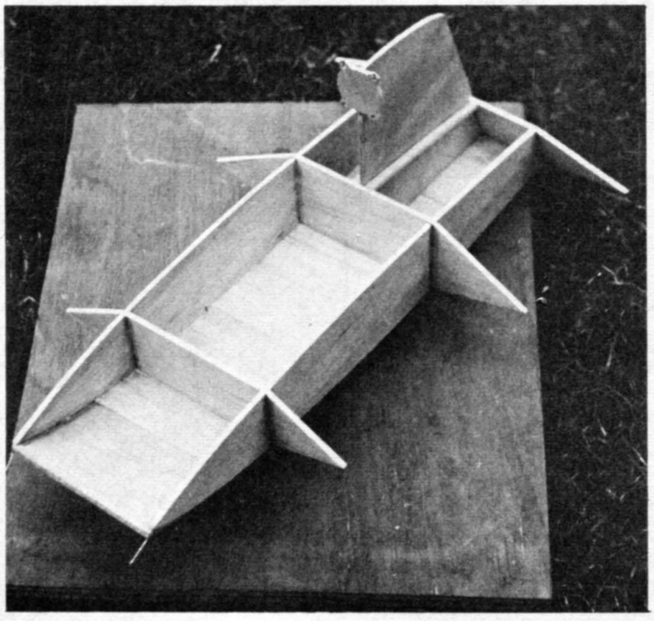


Basic structure consists of just these seven parts. The pylon and "firewall" are made from plywood; the others are sheet balsa.

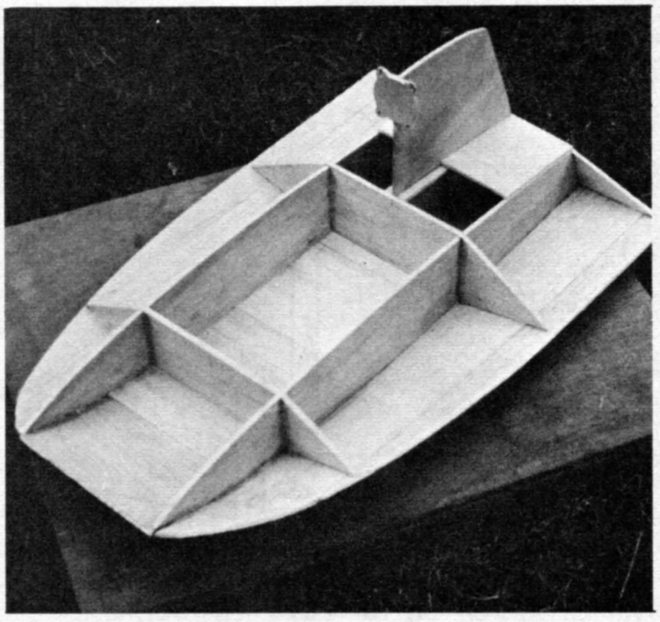


The basic "egg-box" is assembled in rapid-fire order and the transom B-3 is pinned in position until the cement is dried.

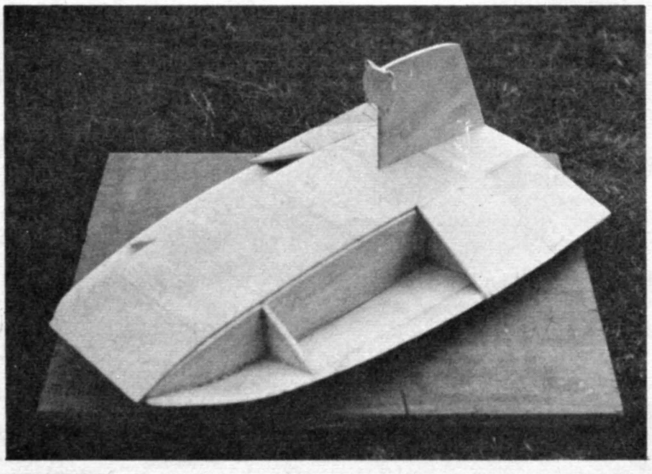
THE FULL-SIZE PLANS OF THE HYDRO-BAT ON THE FOLLOWING TWO PAGES.



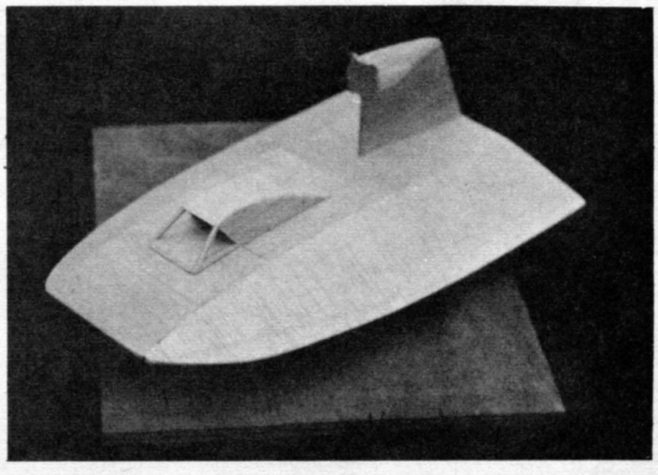
Bottom then is sheeted; pylon, motor-mounting plate fitted. Note scrap balsa parts alongside the pylon at the deck level.



Bottom outside panels attached—the top sheeting started. Side-mounted engine permissable by making modification to mount.



The top center sheeting is completed and the sides begun. Note step along edge of center sheet takes side pieces for gluing.



Completed "in the white." Hatch is cut out and the cabin is built. Sanding sealer first step necessary to a sterling finish.