



From nose to tail, the "Atavist" is simplicity in itself. It might not be as pretty as some other free flight ships, but it's a winner.



Popped-up tail is common sight on this model. Hand "coming up out of the washing machine" has a real good grip!

• The Atavist is aptly named (A person or thing characterized by reversion to an earlier type; a throw-back). After designing, building and flying streamlined, complex gas models such as the "Shrike" (MB, June 1975), I came to the gradual conclusion that esthetically pleasing ships are not necessarily vital to success on the contest circuit.

Several changing conditions led to that judgement. First, reduced engine runs in the AMA gas events (9 to 12 seconds) put more emphasis on the climb, and in particular, a consistent, stable power pattern. Second, a sharp reduction in my desire to build, and time available for that purpose, put a premium on simple, straightforward construction. Finally, the occasional loss of a model through wear and tear, accident, crash, OOS, or sundry other causes, fostered the need for a simpler replacement design.

As a result of these influences, the Atavist was conceived. It was designed to be smaller (252 sq. in. wing) than my previous 1/2A-A models, in order to increase altitude achieved during the power run. A flat-bottom, 8% wing and stab airfoil was selected to facilitate construction and minimize drag during the climb. Diagonal ribs in the wing and stab were included to enhance torsional rigidity in those surfaces. The fuselage was designed as a straightforward box, with no compound curves other than the simple fairing of the nose into the firewall and engine mount.

To date, the Atavist has performed up to all my expectations. The model has a consistent, grooved power pattern which seems relatively impervious to normal wind or gusts. Altitude gained during the climb appears higher than my larger, more streamlined models. While the Atavist has a glide somewhat inferior to its larger predecessors (as expected), it thermals easily and tenaciously. Since most contests are flown dur-

# THE "ATAVIST"

By BILL LANGENBERG . . . Quick to build and highly competitive, the "Atavist" is one of the new, smaller-than-usual 1/2A models.

ing the presence of thermals, I frankly believe the Atavist can compete equally with the more streamlined, complex models under typical contest conditions.

But that is enough of a prelude. If the design appeals to your tastes, and you seek a consistent, durable 1/2A or A model which will permit you to compete rather than build, the Atavist may be for you.

## STABILIZER

Begin construction with the stabilizer so that it can be covered, doped, and cured before any test flights are attempted. To withstand the rigors of D-T landings and enhance durability, spruce spars, as shown on the plan, are utilized. Balsa can be substituted if weight is the ultimate criterion to the builder, although this is not recommended.

The stabilizer should be covered with tissue and given at least three coats of thinned dope. I normally prefer nitrate to butyrate dope, because it appears less susceptible to moisture changes in the air. If nitrate dope is used, a coat of fuel proofer must be applied as the final step. The stabilizer should be absolutely free of warps.

## WING

The wing is straightforward and should present few building problems. Here again, balsa can be substituted for the spruce spars shown on the plans, although I do not recommend it.

Select the wood for the wing tips with care, as they should be kept as

light as possible. For the two inboard wing panels, ribs should be cut from medium 1/16 quarter-grain stock. The trailing edges are carved from similar 1/8 sheet balsa. The diagonal ribs are inserted last, after the spars have been glued in place.

Assemble the wing panels to the polyhedral dimensions indicated, using liberal amounts of glue on all joints. Install the plywood gusset and triangular reinforcements as shown. Sand the entire completed structure carefully to ensure an attractive covering job.

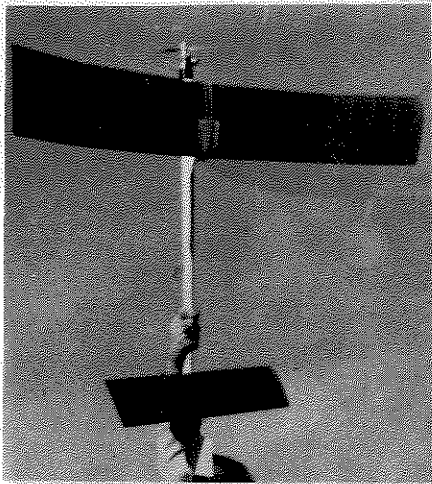
I recommend covering the inboard wing panels with GM silkspan, to enhance torsional rigidity and facilitate field repairs and patches. If tissue is used, cross-grained double covering of the inboard panels is desirable. As on the stabilizer, apply at least 3 coats of nitrate dope, plus fuel proofer on the inboard panels. Set the wing aside and allow it to cure thoroughly. The right inboard wing panel should have 1/8 inch of wash-in.

## FIN

The fin is cut from medium 1/16 sheet, to the outline shown on the plan. To preclude warps and enhance durability, 1/16 x 1/8 spruce strips should be glued to all the edges, as shown on the plan.

## FUSELAGE

Select two 1/8 x 3/8 straight-grained balsa strips for the long-erons. Cut the two fuselage sides from 3/32 medium-quarter-grained sheet balsa. Cut the 1/8 x 3/8 diagonal and vertical members to length.



Clean, simple lines of the model are evident in this photo.

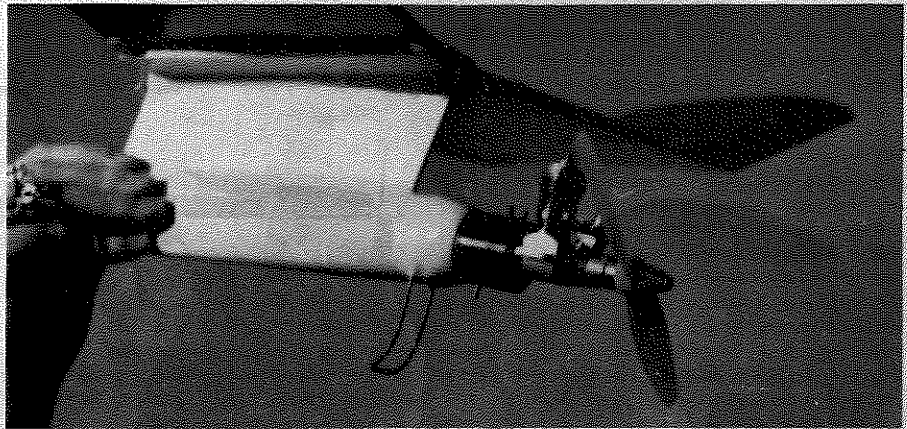
Do the same for the 1/8 sq. members in the pylon area.

Now pin one fuselage side to the plan and glue the 1/8 x 3/8 longerons to it. The top longerons must be cut to 1/8 sq. from the rear of the pylon forward. Glue the 1/8 x 3/8 diagonal and vertical members in place. Then glue the 1/8 sq. verticals in position forward and aft of the engine and D-T timers.

Cut out the pylon, very accurately, from hard 1/8 quarter-grained sheet balsa. Glue it firmly in place, ensuring that it is perfectly vertical. Then add the 1/8 sq. vertical members and top longerons section along the pylon. Sand the entire assembly smooth and glue the second fuselage side in place. Prepare the wing and stab platforms as shown on the plan.

After the fuselage assembly has dried, remove it from the plan. Cut and drill the 1/8 plywood firewall to fit a Competition Models CM-1 tank mount. Install blind mounting nuts, then glue the firewall to six cross-grained sheets of 1/8 bass wood, and cement this assembly to the fuselage forward bulkhead, as shown on the plan. Epoxy is recommended for this step. Add the soft 3/8 sheet balsa cheeks. Now file, carve, and sand the forward fuselage into a smooth, round shape to ensure a clean junction with the tank mount. Use fiberglass and epoxy resin over this entire region.

Sand the balance of the fuselage smooth, then add the wing and stabilizer platforms. Glue the fin in place, ensuring that it is properly aligned. Add the 1/16 spruce dowel for the D-T bands, then the tubing for the external D-T string. Bend the wing hooks from 1/16 music wire and epoxy them firmly in place. Drill two 3/32 holes in the bottom of the nose and epoxy short lengths of 1/16 I.D. tubing in place to hold the landing skid, which is formed from



The Cox Tee Dee .049 is mounted on a Competition Models tank mount. Thin airfoils and small overall size make for a skyrocket climb.

1/16 music wire. Sand the entire fuselage smooth and apply two coats of clear dope. Install the engine and D-T timers. I normally apply two coats of epoxy paint as a fuselage finish, primarily because it is durable and absolutely fuel proof. If desired, however, the fuselage can be tissue covered and doped. Ensure that adequate fuel proofing is applied if the latter procedure is used.

#### FLIGHT TESTING

The "moment of truth" of a hot 1/2A or A model usually occurs during initial testing. Normally, the first few flights are the most critical. Once these have been completed (hopefully without mishap), the rest becomes easier. The Atavist is no exception to these statements. Before attempting the first test flight, assemble the model and check it carefully for proper alignment, CG location, and absence of warps. Test glide it and adjust as necessary by using small increments of packing under the leading or trailing edge of the stabilizer. Hand glides should reveal a slight right turn. This should be generated by stab tilt.

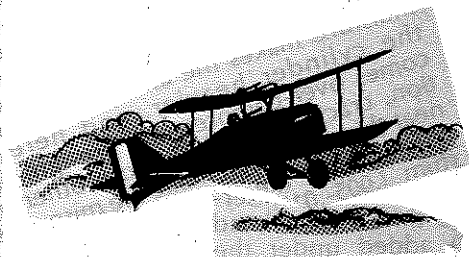
After the glide is satisfactory, the ship is ready for its first power flight. Set the engine timer for not more than a three-second run, start the motor, and hand launch the model gently into the wind at about a 45 degree angle. The climb should be straight out at the angle of launch, into a slight right spiral. Any tendency to go left in the climb should be corrected immediately, as this is normally fatal. On subsequent test flights, increase length of motor run as flight pattern, safety, and intestinal fortitude permit. All of my models of this general design have required about 1/16 inch left rudder tab to keep the tail down during climb. The 1/8-inch wash-in in the right inboard wing panel helps keep the right wing up during ascent.

One word of caution on this

subject seems appropriate. If this model is to be used interchangeably in classes 1/2A and A, this test procedure should be repeated upon switching engines. Nothing affects the Atavist's climb pattern more drastically than major changes in power, hence speed. So, unless you are absolutely certain your 1/2A and A engines are equal in power output, a few short test flights upon engine changes are normally prudent.

With a full hand-launched 12-second engine run, this model should make about 2 full turns to the right during climb, and enter its glide pattern with no stall or loss in altitude. Flight patterns should be right-right, and this will automatically result if the model is built according to plan.

The model should weigh about 7 to 8 ounces ready to fly, if built as shown. In my opinion, this extra weight will not noticeably reduce performance, presuming a hot engine is used. The rugged construction which creates this weight, however, will allow this ship to compete actively for several contest seasons. For those modelers with limited building time, or with a preference for competing, rather than building, this can be a great advantage.



**MODEL  
BUILDER**

#10783