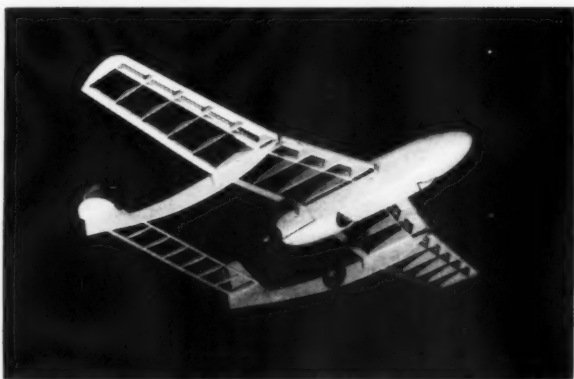




Graceful as a bird, on the ground or in the air, the Boomer flies beautifully on the Cox (revs both directions) or the clockwise Holland Wasp.



Light, careful construction is important on pusher because of the rearward location of the engine. Nose is ballasted—but follow directions.

► Pusher models are one of the most neglected types, yet few builders realize just how much fun has been missed if they fail to give them a try. Our first series began with the excellent Arden motors on ignition and these models turned in hours of pleasant, trouble-free flying. Incidentally, one of them is in good flying condition after five years and still has its original prop. This last item is one of the great virtues of the pusher, as one rarely breaks a prop.

In the past I have noted one particular disadvantage of the pusher as viewed by most builders, the lack of pusher or so called "left hand" props. It was with this thought in mind that the Thermal-Hopper was chosen as the powerplant, because of its reed intake valve which will allow right or left hand rotation. This motor, when used in pusher application, is run in the clockwise direction with a standard right hand prop. Another Half-A motor, which can be used after it has been converted to clockwise rotation, is in the Holland Wasp. A clockwise ported crank shaft is available and, once installed, the Wasp can be

# BOOMER

*Gem of a free flight has everything: modern design, good looks, sound construction, real flying ability. It's a crowd stopper, believe us, for we've seen it perk. Ever see Half-A as nice as this one?*



By **BOB MILLER**

run clockwise with standard props. The builder having neither of these two engines should not hesitate to carve his own left handed prop.

Let me make this point before interest is lost. I for one will buy the good props available today in preference to carving my own but, if necessary, I will carve a special one. As stated before, pushers rarely break props and the prospect of having to carve only one should not be too frightening. It isn't too difficult: merely take a standard prop, such as a Tornado 6-3, trace its blade shape and check its thickness from hub to tip and cut your own blank. Just remember to carve it with the pitch opposite to the standard one.

Since this is not a step-by-step construction article, only the important points will be discussed. Since the motor is placed behind the CG, care must be taken during construction to keep the tail structure as light as possible. Final balance of the model is achieved by adding lead to the nose. Regular fuel tanks do not function too well when used in pushers because the pick-up

pipe is situated for tractor installation. The coil of plastic fuel line as shown on the plan is wound around a solid balsa core and is held in place by thread and cement. An external tank supplies the fuel for starting and is detached prior to launching. About 12 in. of line will run the motor 30 to 45 seconds and, with the slow climb obtained with a prop on backwards, realistic sport flights can be made.

Choice of wood is very important in the well balanced model. Slant it for the job to be done. All spars, leading and trailing edge stock should be hard. Blocks can be soft, while rib and sheet sides are medium weight. For the booms, select medium weight wood with a definite grain for maximum strength. Do not be tempted to use soft grainless wood for this application because, upon forward impact, weak booms are likely to snap.

Trexler balloon wheels were used on the rear because of their extreme lightness, whereas a fairly heavy aluminum hub-sponge wheel helped add weight to the front where needed. The front strut should be  $3/32$  in. dia. wire because of the landing load imposed by the model's weight.

Construction of the wing, fuselage pod and elevator is standard. Note the double elevator ribs as the rudder position both top and bottom. The spacing is  $1/8$  in. to allow the booms to slip off and on while the top side accepts the rudders which are cemented in place after the elevator has been covered.

If the booms stump you, here is the answer. They start as a point, progress to a triangular cross-section and gradually diminish to a flat section at the rear. If possible, cut four boom sides simultaneously. A jig saw is useful. Then cut them individually, being careful to make them accurately. Follow this assembly procedure: apply cement to the edges of B-1 and pin boom sides, one on each side till they come to the front point. Cement B-2 in place under B-1. Quickly run a seam of cement along the bottom inside edges and up the back. Join the two boom sides at the rear and proceed to close up the bottom seam by using pieces of Scotch tape or pins. Avoid introducing a bow into the boom as straightness is important to proper trim of the finished model.

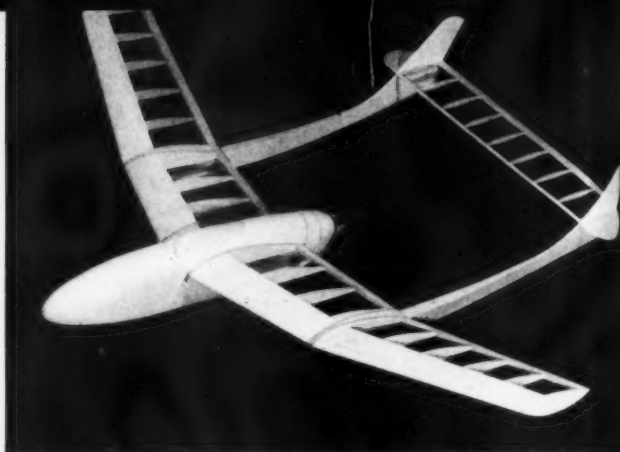
Insert B-3, B-4 and B-5. Then cap the top of the boom with  $1/16$  in. sheet. The front end of the cap should match the angle of sweep back of the trailing edge of the wing. This last step can best be performed while the boom is temporarily attached to the wing.

Since the model features rugged construction, a suitably strong covering job is in order. The original model was covered with Berkeley SGM Silkspan, which isn't exactly light. Lightweight silk can also be used, as the weight will be less than that of the SGM. The wood surfaces, including the booms, should be covered too, as this will greatly increase their strength.

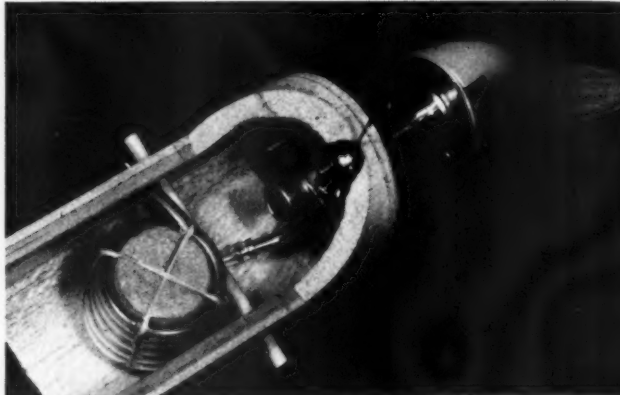
Give the model three coats of clear fuelproof dope followed with two coats of color and then the final trim. A pair of reference lines drawn in ink on the bottom of the wing center section will aid in lining up the wing to the fuselage pod for consistent assembly. The original model required 2 oz. of lead in its nose to balance and the final weight was 14 oz. Check the model for warps and proceed to test glide it. The best balance for proper trim is between ribs 7 and 8 at the leading edge. Check the angular difference between wing and elevator and, if model appears to stall, reduce the negative angle of the elevator slightly or add a bit more weight to the nose.

It has been observed that these pushers are not particularly affected by torque and we allow them to fly in the circle they create. In the past we have experienced right power and glide circles in one job, yet another flew best in the opposite circle. For power testing, the prop should be put on backward to reduce thrust. After adjustments have been made, it can be turned around for maximum thrust. Under high power it may be necessary to introduce a slight amount of side thrust to eliminate any stall which might occur. Once properly adjusted, the builder will have a model which is a pleasure to fly and the lack of broken props will be a new and pleasant experience.

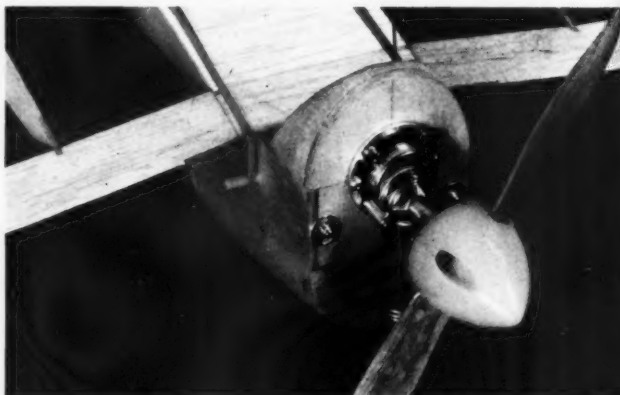
END



Wing held on with rubber for knock-off, also booms to wing. With anti-clockwise engines, trace outline of correct size prop, carve opposite.



Coiled neoprene tubing makes good timer tank suitable for pusher operation. Ordinary tanks, having pick-up tube wrong end, are not suitable.



Inverted Cox; note air tunnel for cooling, front end of which shows in picture on page 9. Two dress snaps make cowl removal lead pipe cinch.

If this view of Boomer looks familiar, it probably is because you've sketched dream ships like it so many times. Turn that dream into reality!



