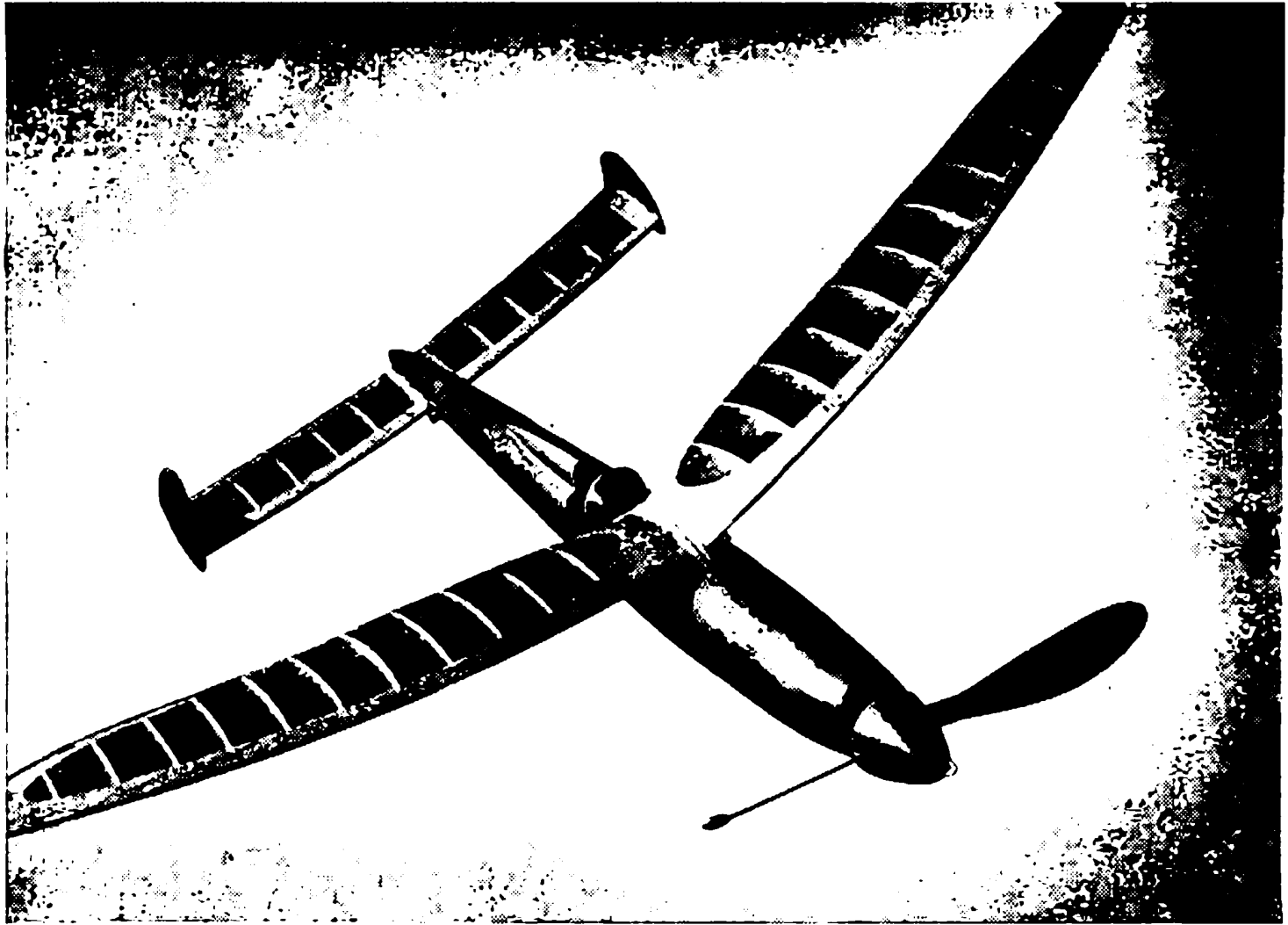


**HALF WING**

**BALSA PROPELLER BLANK**



Here's a rubber-powered model that will reach out not only for altitude, but for real distance as well.

# The Chieftain Hits the Ceiling

**By Paul Mueller**

**T**HIS rakish plane, the Chieftain, is a flying model designed for clean appearance and good flying qualities. Construction is much less complicated than it may seem. The retractable landing gear and folding propeller lessen drag when in the air. A color shot of the plane as it might look in flight is shown on page 128.

Glue up two 1" by 2½" by 21" blocks of soft balsa with paper between them, and then carve the outer shape of the fuselage, turning the piece in the hands often to aid in obtaining concentricity. Then split the two halves apart and hollow out the inside with a gouge to 3/32" thickness except at the nose. This is the hardest part of the job.

Attach the landing gear inside the right half of the fuselage with a small hinge cemented in place. Up in the lower part of the nose, cement a bent pin far enough away to keep the retracting rubber band taut when the landing gear has been drawn up. To reinforce the balsa where the ¼" dowel motor anchor runs through, cement inside the hull two plates cut from tin-can stock and notched around the dowel.

When these parts have dried, glue the fuselage halves together. Add the headrest, wing mount, and 1/16" plywood nose facing. Let these dry, and then finish with fine sandpaper and wood filler.

The propeller is carved from a blank to a thin airfoil shape with ⅛" undercamber. A metal plate is then cemented to the front of the propeller hub, and the spinner is carved to take the hub assembly. Give the propeller and spinner several coats of clear dope, and when the parts are dry cut the propeller blade cleanly from the hub.

Bind the wire hinge on with thread at an angle that will allow the blade to fold back against the flattened side of the fuselage, which fairs into the curve about 1" behind the nose. Press the counterbalance wire through a drilled hole in the hub, clinch it at the hinge, and balance with the propeller



After completion of the fuselage, the wing mount, windshield, and headrest are cemented to the top.



The single propeller blade is hinged to fold back on the fuselage and lessen drag during the glide.



Rubber strands powering the model are anchored in the tail on a dowel. Note the stabilizer camber.

by removing lead from an oversize piece soldered at the outboard end.

Then put a  $1/16''$  wire shaft through the spinner, the hub, and the nose plug. This plug is glued up from three pieces of  $1/8''$  sheet balsa, a faceplate of  $1/16''$  plywood, and a metal bushing. Separate the spinner and nose plug with a washer and spring. A wire stop is inserted in the plug to halt the propeller at the position where it will fold back automatically on the flat. The spring pulls the rubber hook against the stop while a turn or two remains, so the twist of the motor keeps the blade on the flat.

Cut both wings as a single piece from butt-glued  $1/8''$  sheet balsa, and notch to receive the ribs. Dab cement on the underside at the ends and center to produce camber as the cement dries and draws the wood.

The ribs are marked on a single balsa sheet  $1/16''$  thick and  $3\frac{3}{4}''$  wide by moving a cardboard or tin template down  $1/8''$  for each succeeding rib. Rule an alignment line  $1/8''$  from one edge to show on each rib. Align these marks with a similar alignment line on the wings, cutting individual ribs to required length as they are glued in. The same template, shortened to  $1\frac{15}{16}''$ , is used for the stabilizer ribs. Since the stabilizer sides are square, no line is needed.

Cut the wings apart at the center, bevel the cut edges for  $2''$  dihedral under each tip, and glue back together. Cover the bottom when dry and then the top, making sure the tissue touches every part of the rib edges. Doping provides the elliptical dihedral. Except for cutting through at the center, the stabilizer is made the same way. It is also  $1/8''$  sheet balsa.

The rudders are cut and sanded to shape from  $1/16''$  balsa, and one is slit to make the plane turn in flight. Apply a few coats of clear dope, cement rudders to the stabilizer, and then cement the stabilizer to the fuselage, giving it a slight negative incidence. Fit the wings to the wing mount, and hold them with rubber bands.

To fly the model, use about 12 strands of  $1/8''$  flat rubber with  $4''$  of slack. Lubricate the rubber before mounting it in the fuselage. Try the plane first for a slow, flat glide. If all works well, give the propeller a few turns, watch for any bad characteristics, and adjust as necessary. Continue increasing the turns until you reach the maximum, and then go into your powered flights and long chases.

END