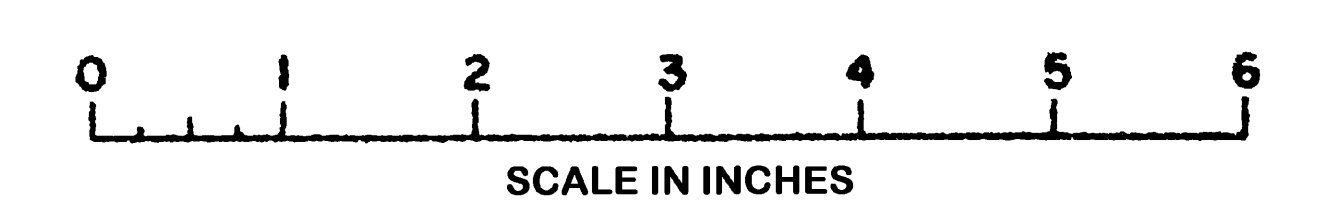


DESIGNED AND DRAWN BY TOM HENEERY



SWAYBACK

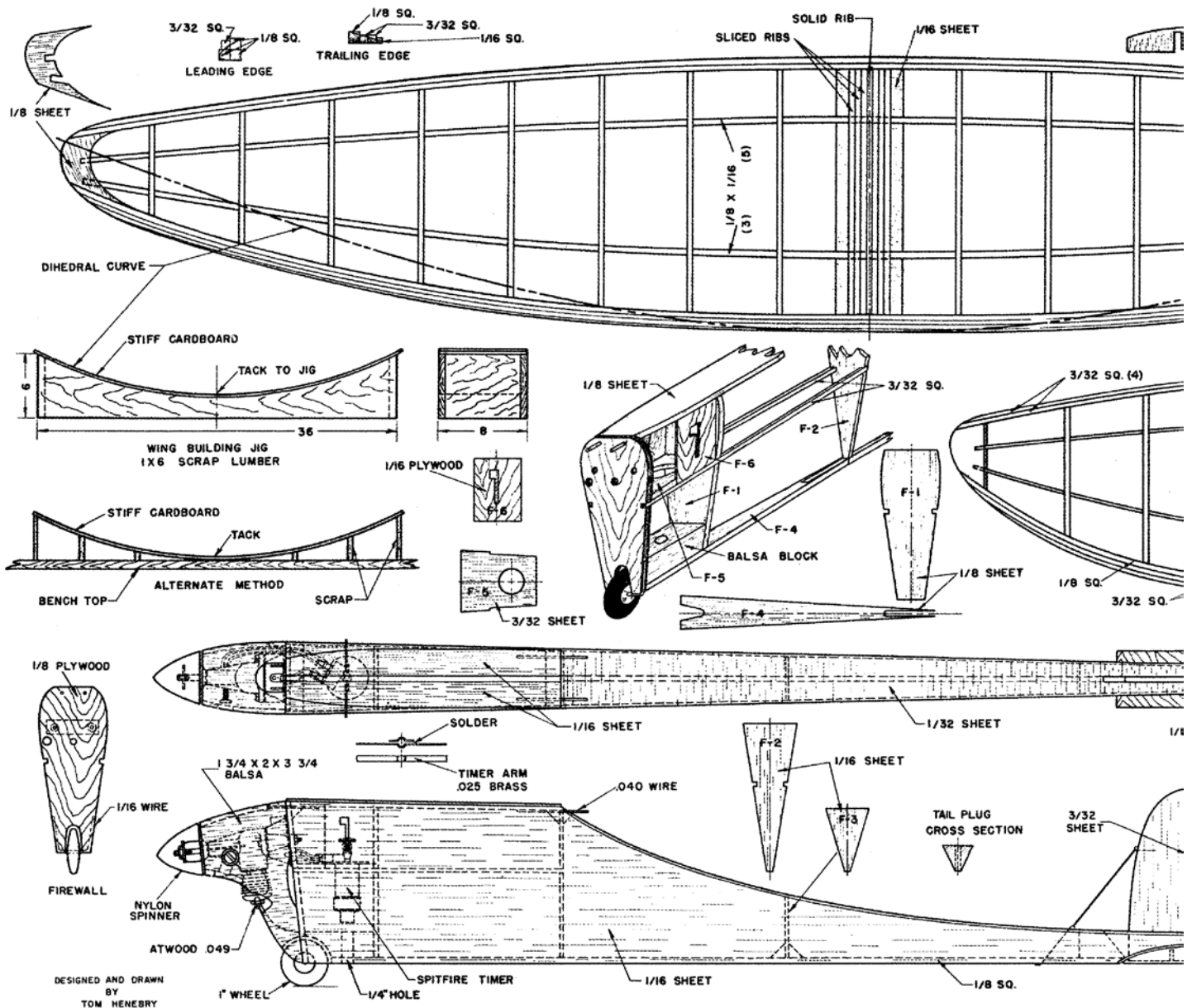
Swayback



The Chief from Chula Vista (Calif., that is) presents his latest Half-A free flight model with efficient elliptical dihedral

• If you want a Half-A free flight job that is out of the pylon rut, different from other high-thrust jobs—keep reading—you'll find that *Swayback* draws plenty of favorable comment from expert or beginner, the elliptical dihedral wing, vertically mounted engine timer and unusual dethermalizer setup getting the nod of approval from most. They will all approve the fast, straightaway, almost vertical climb and the flat floating glide. Besides the maximum flights and contest wins, you'll have the personal satisfaction of building and flying a sleeker looking airplane than the average bare-minimum, squared-off contest type.

By CPO TOM HENEBRY, USN



The first step in construction is the wing building jig. Look over the two shown in the drawing and decide which type you prefer. If you have access to a band or jigsaw, I suggest the solid type. The alternate type will do the job but requires more care in aligning. In either case, you will need to trace the wing dihedral curve, full size, on a piece of cardboard, carefully marking the centerline of the wing on the cardboard.

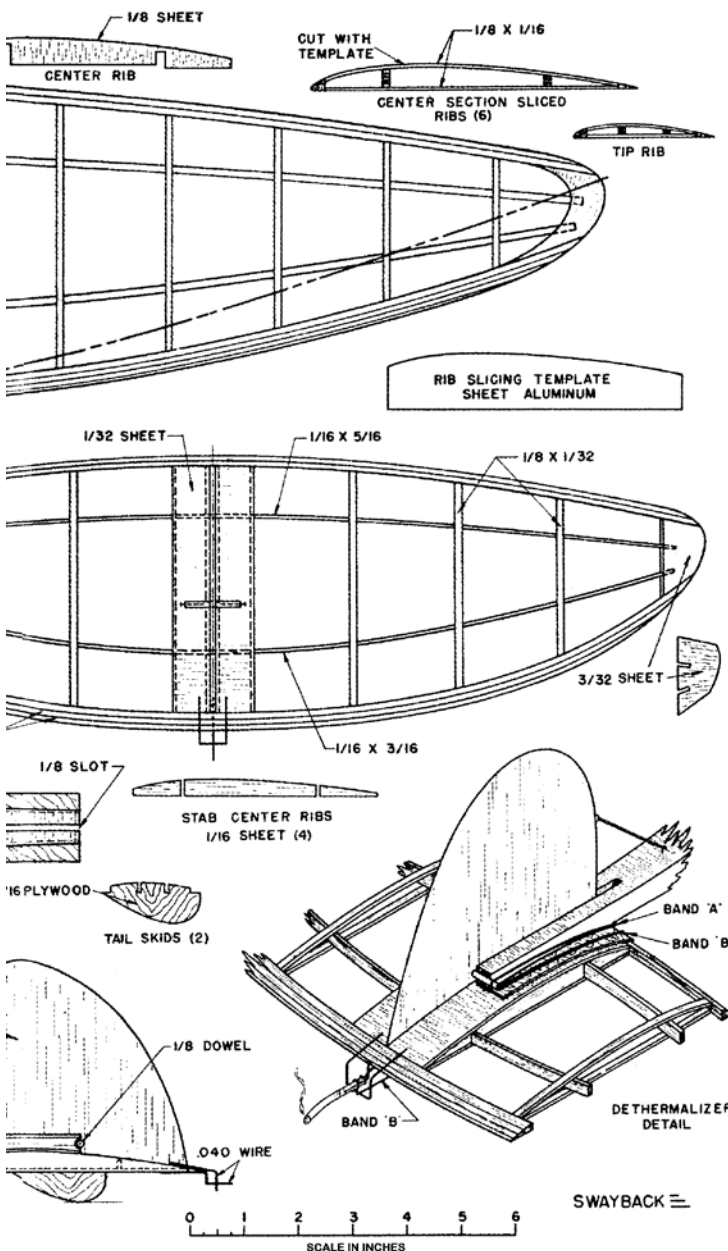
Cut along the curved line as accurately as possible with a razor blade; retain the male or convex half of the cardboard template. For the solid type jig, nail two 36" lengths of 1"x6" lumber together lightly, mark a centerline across the face of the top board. Line up the centerline on the template with the one on the board and trace out the curve with a sharp pencil. Saw along this line, both pieces at the same time, smooth curve with a file and separate the two pieces with a 6-1/2" length of 1"x6" at each end. Nail together and check by setting the wooden form on a smooth straight surface; make sure all corners contact the surface or you will be building in a warp.

Lay a piece of stiff cardboard in the concave form and tack

the wood, starting at the center and working out toward the tips. Tack only as necessary to make the cardboard follow the contour, then trim the excess cardboard off with a razor blade. Mark the centerline across the cardboard with a square; this should be a continuation of the centerline on the board face of the jig. Scale up the wing plan or use the full-size plan, cut it out and paste it to the cardboard, carefully line up the wing centerline with the one drawn on the cardboard, smooth out the plan and cover with waxed paper—and you are ready to start construction.

If you choose the alternate type jig, start by cutting a piece of stiff cardboard 38"x8". Draw a centerline across the cardboard, being sure it is at right angles to the long side. Paste the wing plan to the cardboard, again aligning the centerlines. Tack the assembly to the surface of your work bench or to a straight warp-free board, tack securely and only along the centerline. Holding the wing curve template over the wing plan, centerlines together, with the centerline on the template at right angles to the surface of the bench, shim up the cardboard where necessary to make it follow the curve of the template. Shim equally on both sides of the centerline and be sure the shims reach from one side of the cardboard to the other. Check both the leading and trailing edges with the template; if all is in contact, glue or nail the shims in place, cover the face of the plan with waxed paper and you are ready to start.

The 1/8" solid center rib is added after the wing is removed



from the jig, so pin a short piece of 1/8"x1/8" scrap inside the leading and trailing edges exactly on the centerline to act as a spacer. Lay a piece of 1/16" sheet; 11/16" wide on each side of the spacer, cement the inner 1/8" sq. leading and trailing edge strips to these. Using weights (pliers, dope bottles, small tools, etc.) to hold the strips down in the concave jig, outline the strips with pins to make them stay directly over their proper places on the plan.

Cut and cement the 1/16"x1/8" rib bottoms in position. Cut two pairs of wing tips as shown on the drawing. One pair, with the grain running span-wise, are slotted to receive the spars; the other pair have the grain running chord-wise, are added later. Cement the slotted tips in place, laminate the leading and trailing edges with the size balsa strips indicated in the detail drawing. Cement carefully and continuously along their entire length. Slow drying cement is ideal for this part of the construction. Cement 1/16"x1/8" spars in position on every rib and at the tips, build up the spars to their proper thickness by laminating. Be sure to keep sufficient weight on the laminated parts to hold the proper dihedral curve. Taper the spars from their thickness at the edge of the sheet center section to 1/8" thick at the tips.

Cut rib slicing template shown from thin scrap aluminum and slice the ribs from 1/8" sheet, keeping as close to a uniform 1/16" thickness as you can. If you have tapered the spars properly, each rib will contact both spars and the airfoil will be smoothly tapered. After installing all ribs except the solid center rib, cement the un-slotted wing tips you cut previously, on top of the slotted pair. After all cemented joints are dry, remove the wing from (Continued on page 74)

Sway-back

(Continued from page 37)

the jig and add the solid center rib. You will note it protrudes below the lower surface of the wing; this acts as a key to secure the wing in its proper position on the fuselage. With a sanding block, shape the leading and trailing edges, smooth the rib tops, shape the tips and it's ready to cover.

The stab is made in much the same manner as the wing, except it is built on the conventional flat board, the only difference being the spars are not laminated and may be tapered before installing. Where you left a 1/8" slot in the center of the stab, a 3/32" space is left between the two center ribs for inserting the rudder. The same rib template is used for the stab rib tops, except the ribs are cut a little less than 1/16" thick, and sanded to 1/32" after assembly. The .040 piano wire dethermalizer parts are cemented in place and covered with small strips of crinoline (this may be obtained from the adhesive backing of a Band-Aid) and cemented again. Cut and install the 1/16" plywood tail skids. After the cement dries, sand tops of skids to match airfoil shape of the balsa tips.

Complete building details are available on the full-size plans.