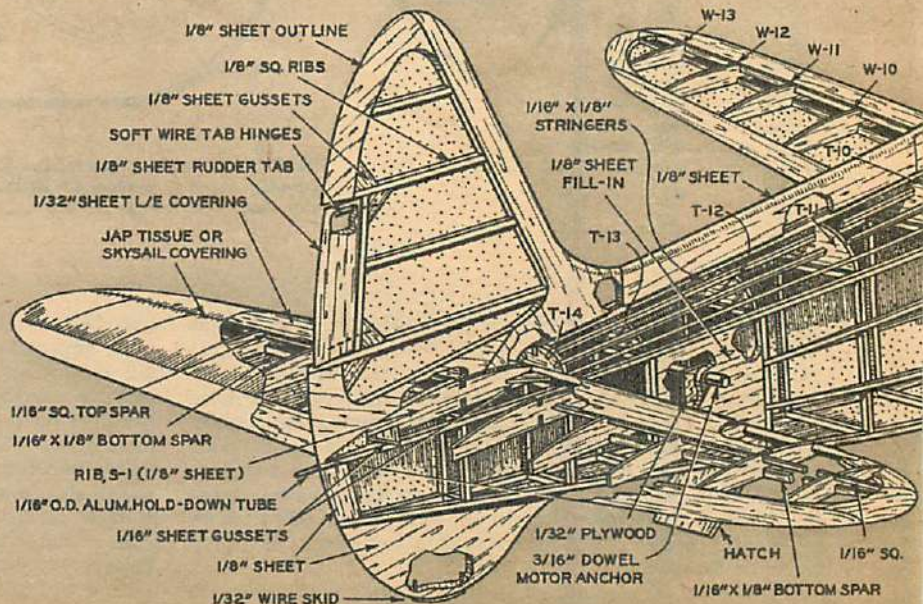
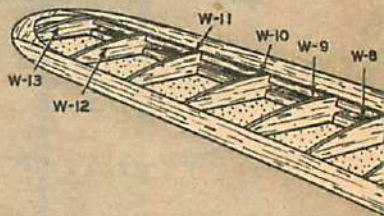




By CHARLES R. "CHUCK" WOOD



Looks a little like the 1939 Arado cantilever biplane, no? Model first appeared as "skeleton" photo in Air Trails. Interest on part of rubber model fans brings it to the Annual as the most gorgeous rubber-powered job of the year. Model is all yellow with black details, full cockpit details, windshield, headrest, cockpit coaming and a "pilot" who flies for exhibition purposes. "Chuck" Wood is flying partner of Ted Enticknap and noted for F/F designs.



# Beautiful Bess

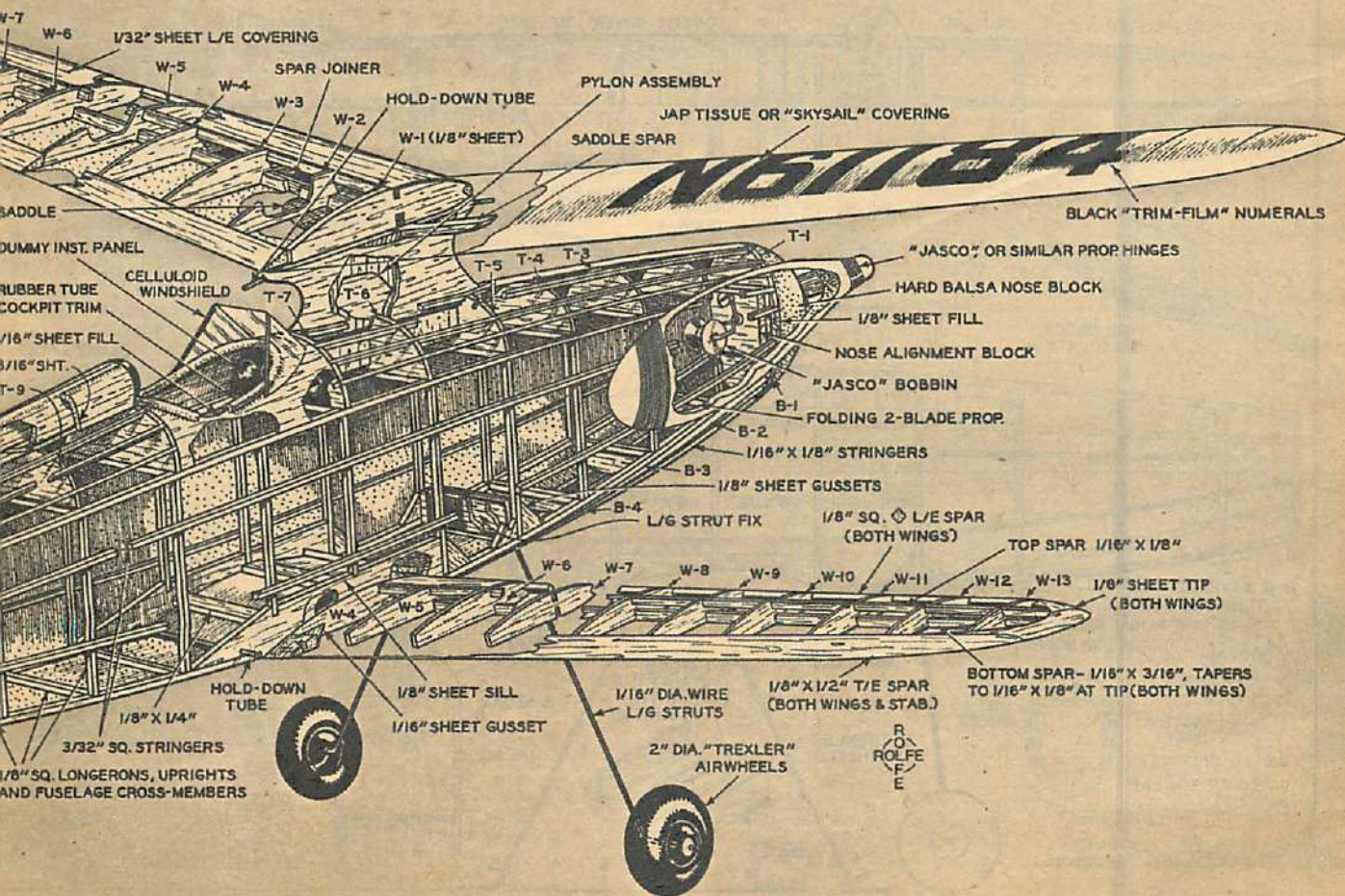
Sweet, high-flyin' gal who can vie in any beauty contest; full-size plans available

■ *Beautiful Bess* is a compromise between a scale model in appearance and a contest model in performance. The result is a snappy and rugged biplane that will attract attention wherever it is flown. The model is nearly two years old, and although it has logged over two hundred flights it has yet to suffer major damage.

The biplane is not intended as a contest ship, but under full power it will thermal easily. The best feature is its consistent flying characteristics and ability to hold adjustments flight after flight.

Much of the credit for success of the model is due to C. H. Grant's excellent notes on biplanes. The force arrangements and proportions are those recommended by C. H. G. With minor adjustments, *Bess* "flew off the board."

The fuselage main structure is built of  $\frac{1}{8}$ " sq. balsa—hard for longerons and medium for uprights and crossbraces. Much of the beauty



# BEAUTIFUL BESS

of the fuselage lies in correctly aligned stringers. Use hard  $\frac{1}{8}$ " x  $\frac{1}{16}$ " strips for the top and bottom stringers and hard  $\frac{3}{32}$ " sq. for the side stringers. Cut out all formers and glue them in their proper positions. All formers except T-1, B-1, T-5, 6, 7, 8, and 14 are made so that stringers lie on top of the formers, which eliminates scalloping effect between stringers. In this way covering will lie smooth, and stringers are easier to align.

Pylon is mounted in the slots on T-5, 6 and 7. Note that the center top stringer butts against front edge of pylon. Two  $\frac{1}{8}$ " x  $\frac{1}{16}$ " stringers run along the core of pylon, under the  $\frac{1}{16}$ " sheet side pieces. These stringers are blended into center stringer. Next add the  $\frac{1}{16}$ " sq. stringers (tissue supports) in proper notches and blend these also into center stringer. Now add rest of the stringers between T-1 and T-7. Stringers from T-8 to T-14 run in straight lines. After these are in, glue the headrest in position. Glue in landing gear before adding bottom stringers.

The cockpit is made of  $\frac{1}{16}$ " soft sheet balsa warped and butted against T-7 and T-8. An instrument board in cockpit, a headrest pad, and a cockpit coaming of split  $\frac{1}{8}$ " rubber tubing add much realism to model. Windshield is made of stiff celluloid in three pieces and outlined with  $\frac{1}{32}$ " strips of black Trim-Film or dope.

Wings are standard in construction and should

cause no difficulty. Put a seam of glue along each rib where the  $\frac{1}{32}$ " sheet planking touches them. Wing and stabilizer tips are all of the same outline. Notch front piece of all tips so that they fit leading edge smoothly.

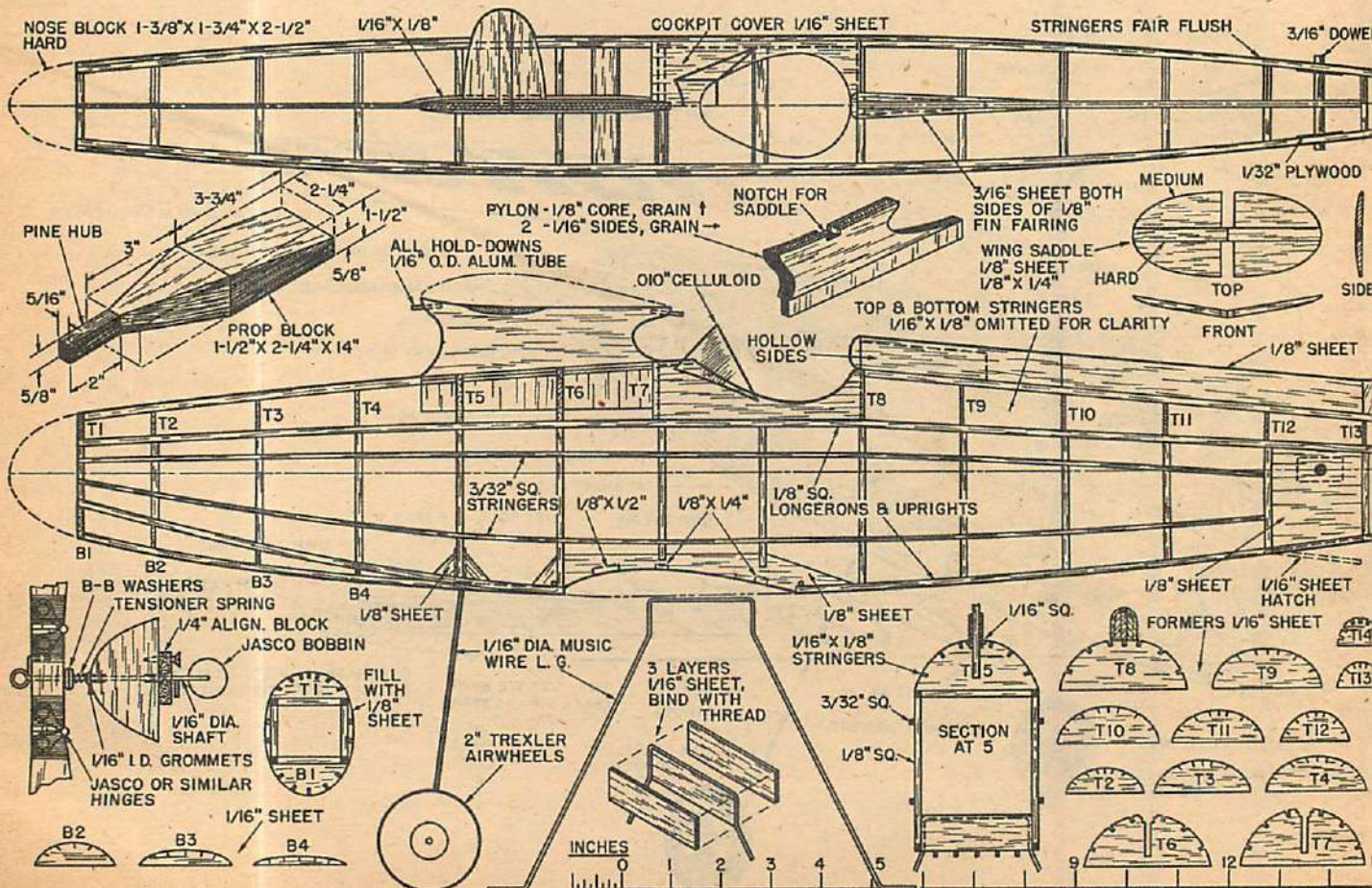
Stabilizer is same construction as wing. Fit ribs carefully. Add spars and then plank with  $\frac{1}{32}$ " sheet balsa.

Rudder is built flat of  $\frac{1}{8}$ " medium balsa stock. Note that its lower edge glues to stabilizer only. Fit rudder carefully so that it blends with rear edge of headrest. The rudder and stabilizer unit is held onto fuselage with rubber bands around the  $\frac{1}{16}$ " aluminum dowels. This unit should not be glued to fuselage.

Wing mount is now glued to the pylon. The center brace is made of  $\frac{1}{4}$ " rock-hard sheet balsa and the "ears" of  $\frac{1}{8}$ " sheet balsa. Glue solidly to center brace and pylon sides. Cover top of the wing mount with a piece of silk or nylon for added strength.

Propeller is carved from a  $14"$  x  $2\frac{1}{4}"$  x  $1\frac{1}{2}"$  block. After prop is carved, cut out the short balsa hub and replace it with a hardwood hub (see plans). Any type hinges may be used, but be sure that they work easily with no tendency to bind. Cover prop with white Skysail paper and apply six coats of clear dope, sanding until it is glassy smooth.

Bess is covered with yellow Jap tissue or Skysail. Six coats of thin clear dope will give a beautiful



finish. Plasticize the last coat with Jasco glider polish or a few drops of castor oil. Front section of the fuselage, windshield outline and headrest pad are trimmed with black dope. The license numbers are cut from black Trim-Film.

The rubber motor is made up of 18 strands of 1/4" flat T-56. Use two inches slack unbraided. The spring tensioner will handle the slack.

Model should balance at 50 to 60% of the upper wing chord with rubber motor installed. Add clay to inside of nose at B-1 to achieve this balance. Check wings and stabilizer for any warps.

Model should glide in wide right circles. Use rudder tab to get this turn. Glide should be flat with no trace of a stall or sag. When the glide is correct model will land on the wheels with tail high. Biplanes, because of their relatively small wingspans, will spiral more easily than monoplanes of the same wing area. Before making the first power flight add about 1/16" down-thrust. If model shows a tendency to spiral to right under power add about 1/32" left thrust. *Bess* uses both down and left thrust for trim. If any trace of a stall appears under power use more downthrust, but do not tighten the glide turn unless the glide is nearly straight. The glide can be tightened into small right circles by a combination of right rudder and more left thrust.

The rubber motor when lubricated and broken in



This beauty is powered by 18 strands of 1/4-inch flat T-56 rubber; to make building easy, full-size plans are available from Air Trails.

will handle about 600 turns. Under this power *Beautiful Bess* will average around a minute and a half in the air. The take-offs under high power are impressive. *Bess* will roll for a few feet before the wheels clear the ground. Then it will gain speed and pull up into a steep climb, gradually leveling off as the power is expended. The landings too are realistic.

If you want realism and performance, why not try this model? The full-size plans available from Air Trails make it simple.

