



THE HOBO

Quick to Build, Easy to Fly. . . . A Sunday Flier's Biplane for Six Channels or Proportional . . .

BY DR. D. J. GERNER



HOW many times have you wandered down a model flight line and turned back in the middle of it out of sheer boredom because all you saw were the same old "low-wingers," "mid-wingers" or cabin jobs? Oh sure, they had exotic paint jobs and all kinds of gimmicks and all kinds of names, but most of them were crosses between some kind of well-known model airplane or other. If you wandered down that flight line a little further you may have seen a group congregated around a particular airplane, and if you looked a little closer you may have found it was a "double winger." Comments ranging from "That's pretty nice" to "Gee, I gotta see that crate fly," were heard from the onlookers. The author may be a prejudiced biplane fan but he finds it difficult not to feel a particular type of thrill every time he sees a

biplane in flight.

The idea of a six channel biplane came to mind while flying a Cal Smith "Wonder Wings" and noting its responsiveness on rudder-only control. The years went by with many airplanes coming and going (mostly going), but the thought of finding a true fun-type of biplane kept coming back to haunt this model builder. With the advent of the RCM design contest it was felt that an opportunity had presented itself to see if that dream biplane could be designed, built, and flown. After gathering together all the notes that had been stored for just such an occasion, and finally sitting down and getting busy, one fine Sunday morning the Hobo lifted into the skies and a dream had been realized.

This plane is called 'Hobo,' for it looks like one around all the sophisti-

cated multi ships with their chrome spinners, varigated paint jobs, adjustable flaps and retractable gear. It has only simple functional lines with no more frills and gadgets than those necessary to promote an enjoyable Sunday afternoon's flying. This plane is not wild and flies at almost scale-like speeds. It is quite responsive and is a sight for sore eyes after seeing so many of the hot rod types.

Now that you are convinced that a biplane can be fun you may think that darn bird cage and extra wing aren't worth all the effort. Well, the bird cage is taken care of nicely by being built out of plywood, and if you can't saw out one of these contraptions, take up bird watching as a hobby! The extra wing may take a little extra time but not much, as there is no covering to mess with, just sheeting of the wing and finishing.

FUSELAGE: Cut out the fuselage sides from $\frac{3}{32}$ " sheet and cement the $\frac{1}{2}$ " plywood doublers in place with contact cement. Cement the $\frac{1}{2}$ " sq. spruce into place along with the cabane struts, which may be cut from $\frac{3}{16}$ " or $\frac{1}{4}$ " plywood if you are squeamish. Cement the $\frac{3}{16}$ " sq. balsa in the aft portion of the fuselage sides. Next cut out and cement into place fuselage formers numbers 1, 2 and 4. After this has dried, using a **taut string** to determine the center line of the fuselage, cement in the tail post block; followed with the remaining fuselage formers. Omit the cabane cross

braces ($\frac{1}{8}$ " ply) until the last step as they might interfere with the sheeting of the fuselage top and bottom which is undertaken **after** provisions are made for mounting the self-locking nuts for the radial mount and an 8 oz. fuel tank. Place a plywood wafer between the radial mount and the firewall to ensure **at least** 2° right and 3° down thrust. The nose blocks and the battery compartment blocks are now cemented into place. If you feel that the built-up landing gear is too much trouble, use an aluminum one, but don't forget to put in an extra dowel to facilitate its attachment to the fuselage.

TAIL SURFACES: While you are waiting for some of the fuselage parts to dry, the elevator and the rudder assemblies can be built and made ready for attachment to the fuselage. Begin by gluing together the framework of the rudder and elevator. While this is drying, cut out the elevator and rudder flippers, sand to shape, and glue $\frac{1}{16}$ " ply reinforcements where the control horns will be attached. Assemble the elevator flipper assembly as indicated (ala DeBolt) and you will have a true and strong flipper assembly that will not spring under load. After the framework assembly has dried get out the contact cement and attach the sheeting (ala Cunningham) for the **quickest and truest** tail surfaces ever. Rudder fins built this way have **never** warped, which is not true of the $\frac{1}{4}$ " balsa sheet rudder fins even though the dope is

plasticized with castor oil. The surfaces may be attached with nylon hinges, or may be sewn. The fairing blocks are now cemented to the rudder and elevator as are the lower wing cradle rests ($\frac{1}{2}$ " medium hard sheet).

WINGS: We may now start building the wings, which really is not a bad job if you have a wing board. If you are not interested in **true** wings forget the wing board and have fun guessing just when the next snap roll is coming! If you are lazy, stack up the $\frac{3}{32}$ " sheet blanks, trace the rib outline on top of the stack and use a band saw to cut them out. If you can't get to a band saw, use a Dremel bench saw making certain that the blade is 90° to the holding table. Notch out the ribs for the spars and cut out the dihedral braces from $\frac{1}{16}$ " sheet plywood. The next step is to set up the correct dihedral value on the building board which can be checked with the main spar dihedral brace. The bottom main spar is pinned to the working surface and a $\frac{1}{4}$ " sq. balsa strip is positioned so all ribs are true in all positions. This position usually falls between the rear spar and the trailing edge. After the ribs are positioned, the dihedral braces are cemented in place followed by the trailing edge, top rear spar, top main spar and the leading edge. If you desire outboard N struts, $\frac{1}{4}$ " bass strut inserts are ce-



THE HOBO

mented into place at this time. The top of the wing is sheeted with $\frac{1}{16}$ x 4 x 36 with contact cement on the wing board to prevent any warpage. The wing is turned over and sheeted on the bottom on the wing board in the same manner as the top. The tip blocks are roughed out and attached to the wing with contact cement and finished down. The center section of both wings, top and bottom, are fiberglassed, and you'll be amazed at the light strong wings you have constructed even with this fiberglass protection. THE LOWER WING IS CONSTRUCTED THE SAME WAY EXCEPT IT IS SHORTENED BY ONE RIB STATION MEASURED FROM THE OUTSIDE TIP. Be sure

power and seemed adequate at this altitude. The Orbit relayless and Bonner Transmites functioned flawlessly on the reed version.

FLYING: Words can't describe the flying characteristics of the Hobo, for you will feel a thrill that you haven't experienced for a long time. If watching your "double winger" climb into the blue doesn't stir your soul, feel your pulse and see if you are still alive! To ensure best flying characteristics the Hobo should balance at the forward extreme of the CG limit. Make sure all surfaces are neutral except the top wing ($1^{\circ}+$). Open the throttle, make any take off corrections that are necessary, then let the Hobo take off when ready and a prettier take off you will never see. The author has yet to apply corrective rudder on the take off run even with the aluminium gear in place. The plane may have a slight left turn which

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and pick out **light** balsa sheeting for the wings.

Finishing of the airplane was a hurry-up job. The entire framework was sanded and three coats of clear dope applied with a light sanding between coats. Sig filler coat was applied twice and thoroughly sanded followed by two more coats of clear dope with an equally thorough sanding application. Sig blue was brushed on the fuselage twice followed by a light spray coat. The wings were given three coats of Sig yellow followed by a light spray coat. The entire airplane was sprayed with one coat of clear dope. The entire framework may have been covered with silkspan, or some covering material, but this was a simple approach and it has proven more than rugged. Attach the windshield and install your favorite gear. Originally flown on reeds, the Hobo is now flying with an Orbit proportional. A K & B .45 was used for

may be offset with thrust corrections and making certain that the wings balance beforehand. Explore the sky at your leisure with a stable and easy-to-fly biplane and when you get tired of chasing the wind and playing tag with the birds, throttle back and come in for an effortless landing that will make the "hot shots" envious. Taxi up to the ready line and cut the engine; then proceed with the unbuttoning of some of your shirt buttons because you are going to pop them if you don't! Good luck with your Hobo and drop me a card letting me know what you think of this little "double winger."

FINIS

ADDENDUM: "N" struts may be fashioned from $\frac{1}{16}$ " ply cut into $\frac{1}{2}$ " strips using $\frac{1}{16}$ " piano wire wrapped with thread at the tips for strength and ease of insertion. The mid-portion of the strut is attached with glue and wrapped with thread for rigidity.