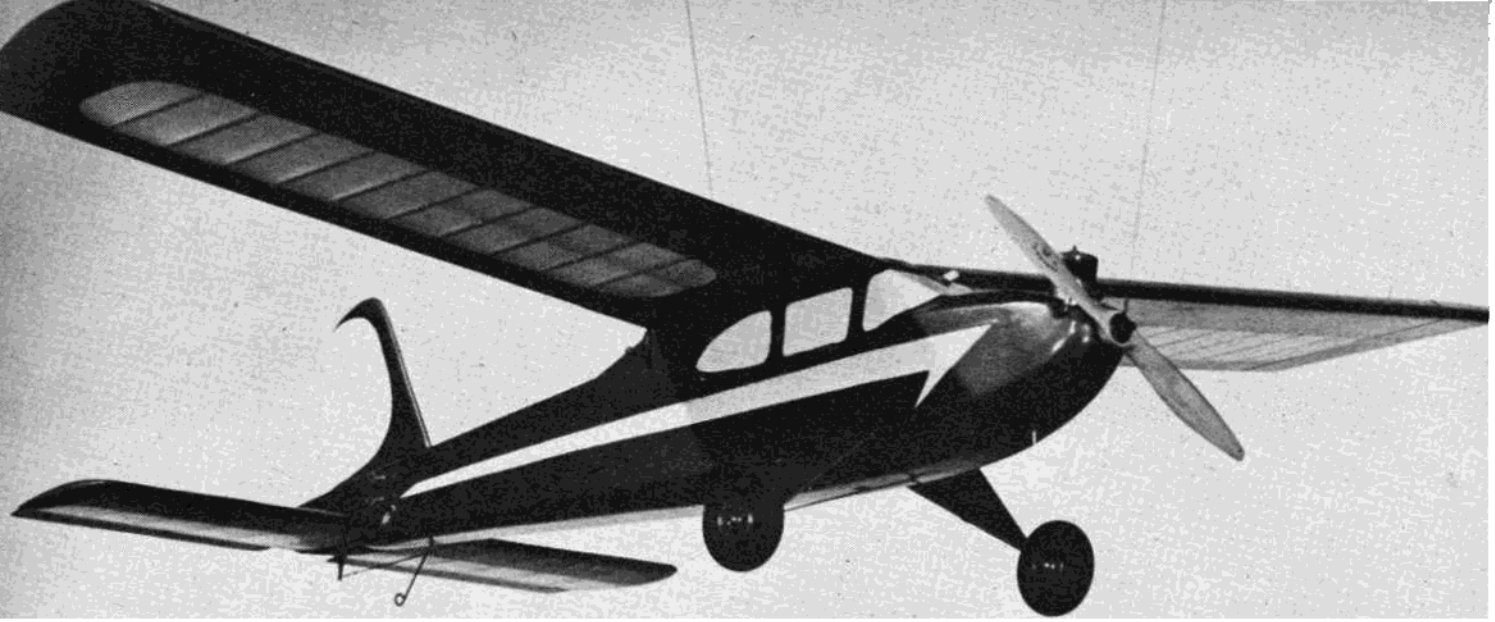
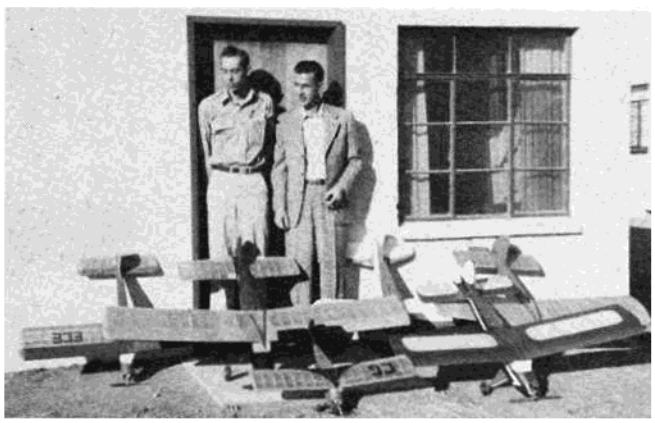
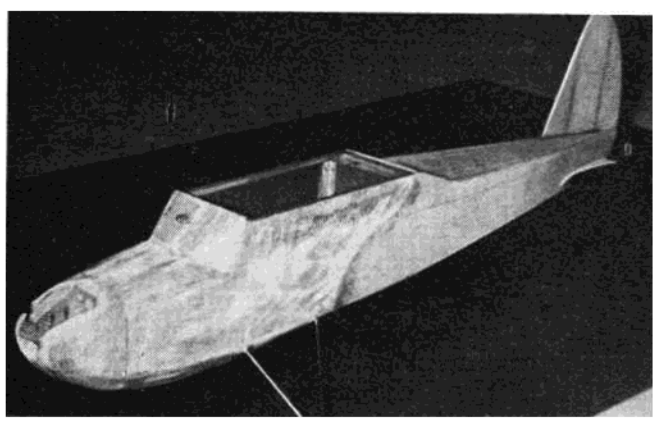


Two or three coats of balsa filler, followed by three coats of clear dope and two of colored, are just right for the silk covering on Blitzen.

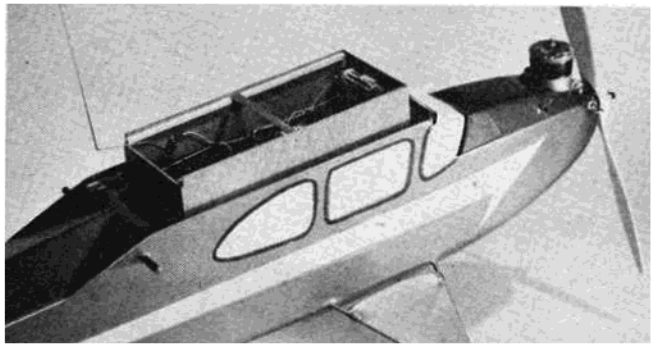


With the CG test fleet of airplanes is Don Yearout, left, and CG's general manager, Frank Hoover. Blitzen in the front row, extreme right.



If you want to use Fibreglas for added strength, as shown on treated area in this picture, the fuselage front end will be indestructible.

Removable receiver box is optional. Box does make easy troubleshooting and interchange equipment from plane to plane. That's a help.



Blitzen . . .

By DON YEAROUT

Is it realism and good looks you want in a cabin RC? Then, brother, look no farther.

► Blitzen was originally designed as a flying test jig primarily for new radio control equipment for my employer, the CG Electronics Corp. of Albuquerque, N.M. I was given the job of designing and building an all-purpose test plane—so, out came the drawing board and here's the result.

Blitzen has many desirable characteristics, some of which are strong, light and fairly simple construction, ability to carry a great variety of loads without noticeably disturbing the flight characteristics, and excellent wind penetration which, although increasing the speed of the plane somewhat, permits flying in breezes which would ground many models.

When Fibreglas covers the nose section, the crash-resistance of Blitzen must be seen to be appreciated. Powerplant size is not very important, with .15 to .19 displacement engines serving most purposes, although one early model was pulled around by a Torp .35, meriting the name Lightning.

Let's start construction with the wing. First, the main (front) spar is made of ¼ x 1 in. hard balsa and notched every 2 in. along the total length ½ in. down from the top and 3/32 in. wide. Cut out all 30 ribs, noting that the rear spar hole is omitted from 14 of them. Begin construction of the wing by pinning down the 1/16 x 3 in. leading edge bottom sheeting directly over the wing plan. The 1/16 x 1 in. lower TE, 1/16 x ¼ in. bottom cap strips and bottom tip sheeting are pinned down and cemented together. The main spar is then cemented in place with the notches toward the top. The wing ribs are installed next, followed by LE and rear spar. Both wing halves are finished to this point and then joined with the plywood gussets and plenty of cement. When thoroughly dry, the wing is ready for the top LE and TE sheeting, top cap strips, tip and center sheeting. Add the wing tip

blocks, TE reinforcing wire, trim any rough edges, sandpaper completely and cover. Silk or nylon covering is recommended but Silkspan may be used, if desired.

The stabilizer can be built quickly. Cut out all ribs, noting that the three center ribs are a different size. Pin lower spar down on the plan and cement the ribs to it in the appropriate positions. Install the upper spar, LE and TE, tip blocks and center sheeting. Elevators may be added, if desired; 20 sq. in. of movable surface has proved to be about the right amount.

With the fuselage comes the fun. The fuselage is constructed mainly of ⅛ in. sheet balsa with silk or nylon covering for extra strength. Begin by tracing the side pattern outline (indicated by the heavy line in the side view) on a sheet of ⅛ x 4 in. balsa. Notice the splice line near the top. Cut out two of the sides, using two pieces of sheet balsa that are medium hard and free of warps. Next, indicate on the cut-out sides the positions of the 3/16 x ⅜, ⅜ x ⅜ and ⅛ x ⅜ in. uprights by tracing or punching a pin through the plan in appropriate places. Now cement the uprights to the side pieces, being sure you make both a right and a left side. Now, cut six 3/16 x ⅜ in. pieces, 3⅜ in. long, and fasten the two side pieces together with them at stations B2, B3 and B4 on the fuselage side view. Be sure everything is square and cement well.

After drying, pull the tail end together and cement with a piece of ⅜ in. square between the sides beveled to fit flush. Now add the rest of the fuselage cross-pieces. Trace the fuselage formers onto ⅛ in. sheet balsa and ¼ in. plywood and cut out. Build the engine mount onto the firewall before installing the firewall into the fuselage. Similarly, the landing gear is mounted on BF2 and BF3 before they are installed into the fuselage. Then cement in the rest of the formers and stabilizer platform. B1C and both B2L pieces are put on next, in that order. Notice that the edges are beveled before attaching the B2L pieces. Install the fuel tank of your choice in the correct position and test for leaks. T1C goes on next, followed by both T1L pieces. Then the windshield or T2C and T2L pieces are added. TF3 may also be installed now but T3 sections should be left off until control torque rods or actuators have been installed.

At this time, you must decide whether you will mount the receiver equipment directly in the plane or in a removable box. Although the box adds a little weight to the plane, it gives the receiver a great deal of crash protection and also makes it handy for changing receivers and wiring. If the box is used, it should be made to fit tightly into the fuselage to avoid damage from engine vibration. Since wiring differs with each type of radio installed, no realistic general diagram can be prepared.

After torque rods or their equivalent have been installed, strongly cement in both T3L pieces and rudder. Next, cement the scrap balsa tail fairing and block balsa around nose. Carve off all excess balsa and sand thoroughly. If the fuselage is covered with silk or Silkspan after a few coats of clear dope, its strength will be greatly increased. If Fiberglas covering extends back to the wing TE, the model will be practically indestructible. The enhanced strength amply compensates for the slight additional weight. Of course, you may "dress up" the model by painting in windows in white and by covering with silk or 1/16 in. plywood the area between the front and rear landing gear struts.

Before you begin to fly your new model, first check carefully for warps. If the plane does not balance at the position indicated, add weight to nose or tail until it does. Check incidence by placing the assembled model on a flat surface and block up under the tail skid until the stabilizer is level. Check by measuring with a ruler from LE and TE down to the base surface. Then check the wing incidence by the same method. The leading edge should exceed the trailing edge by ⅛ to 3/16 in. Continue necessary adjustments until it does that.

The original Blitzen was covered with silk over its entire surface, including the fuselage after the Fibreglass had been applied and sanded smooth. The silk covering over the sheet balsa on the fuselage and rudder add considerable strength and is highly recommended. The model was then finished in Aero Gloss. Give the entire model two or three coats of balsa filler coat before applying the covering. Use plenty of sandpaper for a good finish. Three coats of clear and two of colored were used to complete the job. For an extra-smooth finish, use 320 or 400 Wet-ordry sandpaper before color-doping.

Subsequent models of Blitzen were covered with nylon for greater durability. However, nylon requires many more coats of dope to fill the grain and obtain a first class finish. A little talcum powder added to clear dope, or the use of ready-made filler, speeds up the operation. Paper covering, like heavy grade Silkspan, may be used, but at the sacrifice of some strength.

Flying should prove no problem if the balance and incidence are correct. However, it is best to fly Blitzen at first with a small amount of rudder movement. If you equip your model with a throttle control, improper adjustment on the first few flights might kill the engine. Since the plane is fairly fast, an energetic hand-launch is recommended at first. And remember that Blitzen will be just as dependable as your radio equipment.

END

From Model Airplane News Feb. 1956