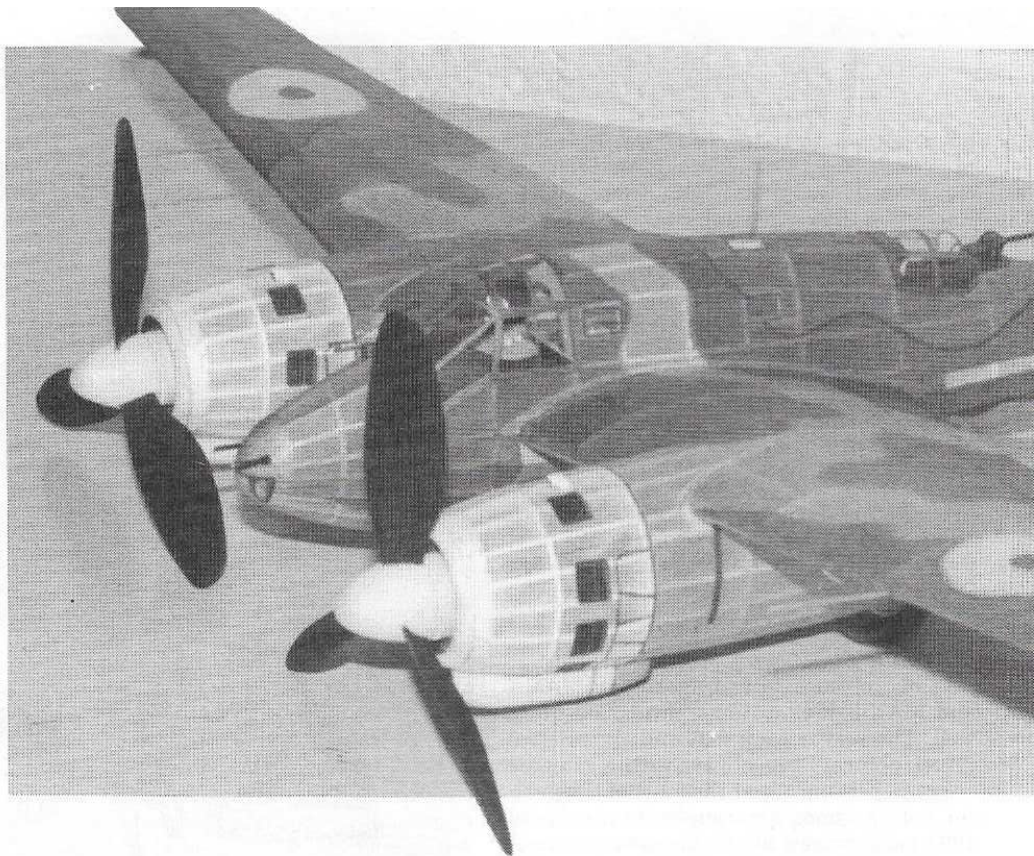


**T**his little gem from France was conceived as a three-seat fighter similar to the famed British *Mosquito*, but ended up as a low altitude ground attack bomber before the Germans took the design over and pressed it into Vichy French service during World War II. I selected it for its large radial engines, its minimal construction aft of the C.G., and its good proportions for rubber band power.

Construction is very similar to the Martin B-26 *Marauder* I built years before this one. (see the November 1984 issue of *FLYING MODELS*, Plan CF-680). Like the B-26, the Breguet has a top and a bottom keel construction with a full-length waterline keel on each fuselage side. That makes it easy to set up each with the fuselage bulkheads in place. Then you can join the two sides using "eyeball" alignment. The rest of the stringers are laid in, left and right simultaneously, to ensure symmetry.

One important note: leave the top of the fuselage open between F4 and F7. The entire wing and engine assembly is added later, then completed with the fuselage stringers and bulkhead tops. The last to be tissue covered is this section.

The wing and engine nacelles are built as



a freeflight scale delight:

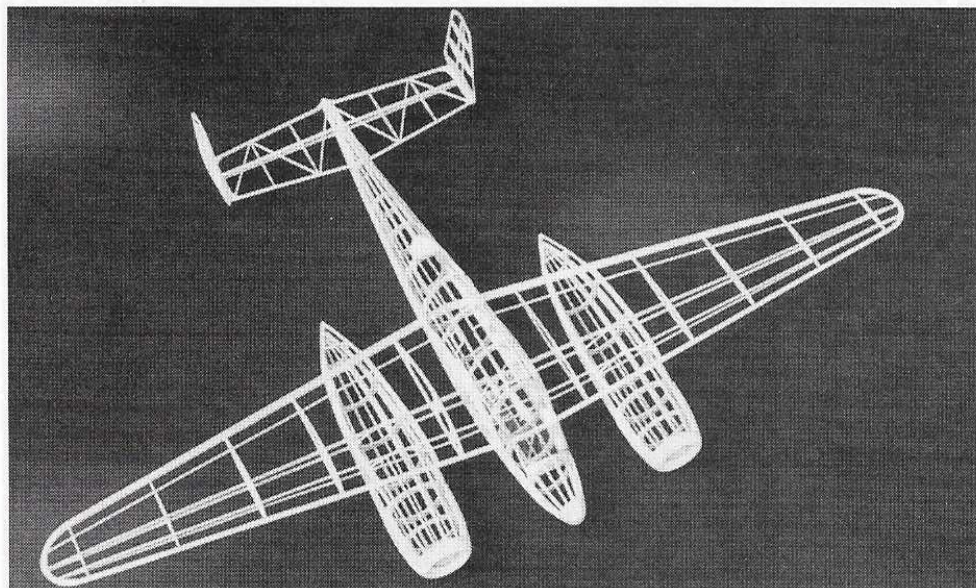
# Breguet 693

By Pres Brunning

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With some ingenious construction techniques, a complex design like this French twin can be relatively simple to build.

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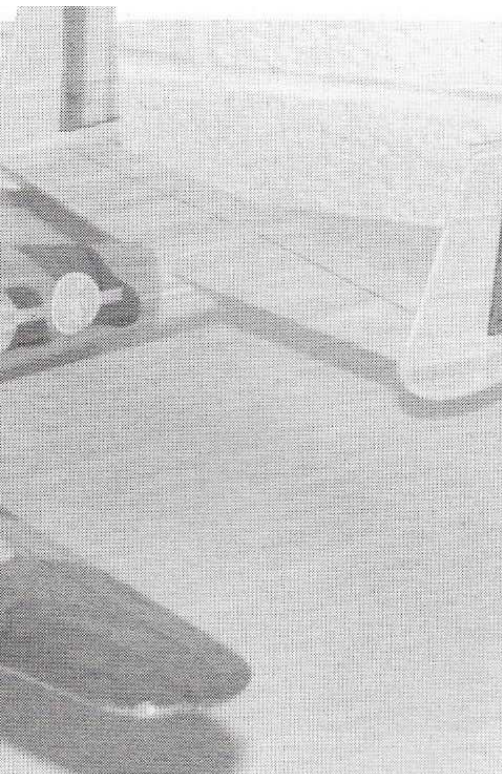


Good, light contest grade balsa goes into the framework of the Breguet. The only hard balsa is that of the wing's leading edge. The keel construction of the model helps alignment and strength.

one integral unit, the dihedral added later. This is the first time I tried a layered tissue technique to yield the three-colored camouflage scheme. I lay the base color, light green, down first and then overlapped the other two colors, the dark green and the brown over that.

Carefully cut out the patterns you want, making sure they overlap. Then carefully brush a light film of thinned-out (50/50) Elmers glue and stick them together. Now cover the wing, top and bottom, and nacelles separately. Be careful to align the color patterns. Water shrinking is done after sealing the joints with 50/50 thinned-out clear nitrate dope. Pin the wings in a jig if you are worried about warps. Give the engine nacelles two coats.

The horizontal and the twin vertical stabilizers are built conventionally. Construct the outlines first and then elevate them so you can slip in the symmetrical  $\frac{1}{32}$ -inch thick ribs in their proper places indicated on the plan. Check alignment from tip to tip, and use a sanding block if necessary. At this point you will have to sand in the  $\frac{1}{32}$ -inch



PHOTOGRAPHY: PRES BRUNING

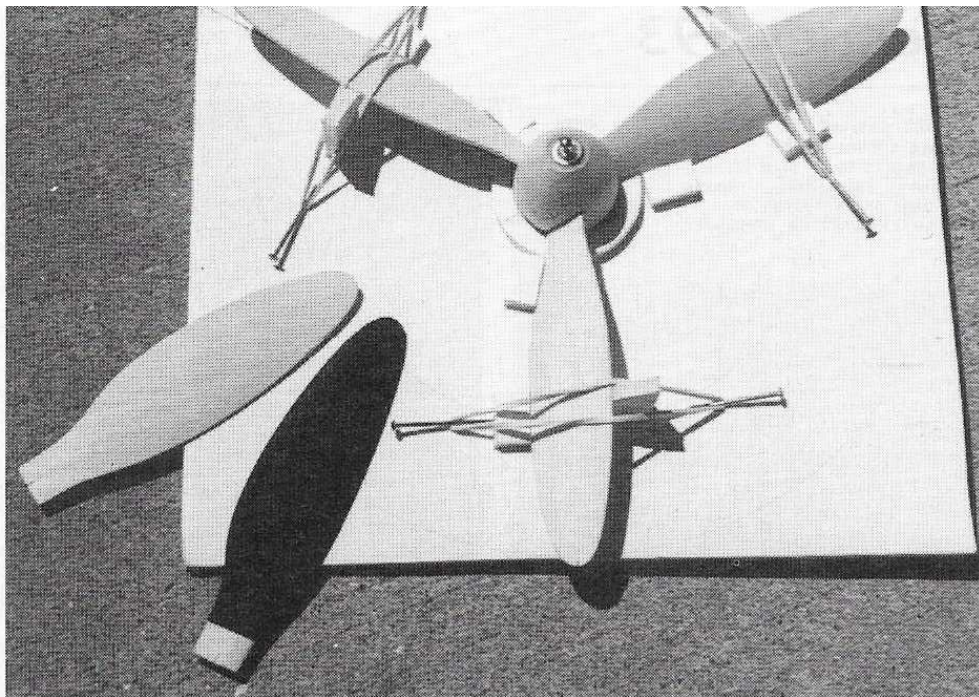
wide grooves top and bottom and side to side of each vertical and horizontal stab to accept the  $\frac{1}{32}$ -inch thick flat spars. A symmetrical stab guards against warpage.

Covering the tails was done with alternate yellow and orange red Vichy stripes (overlapped like the wing covering), and in the case of the vertical stabs, the rudder markings of red, white, and blue were also overlapped. Clear dope these parts with one coat of thinned 50/50. Then glue together and assemble to the top rear of the fuselage as shown on the plan. Check alignment with wings in front view and in plan view as well.

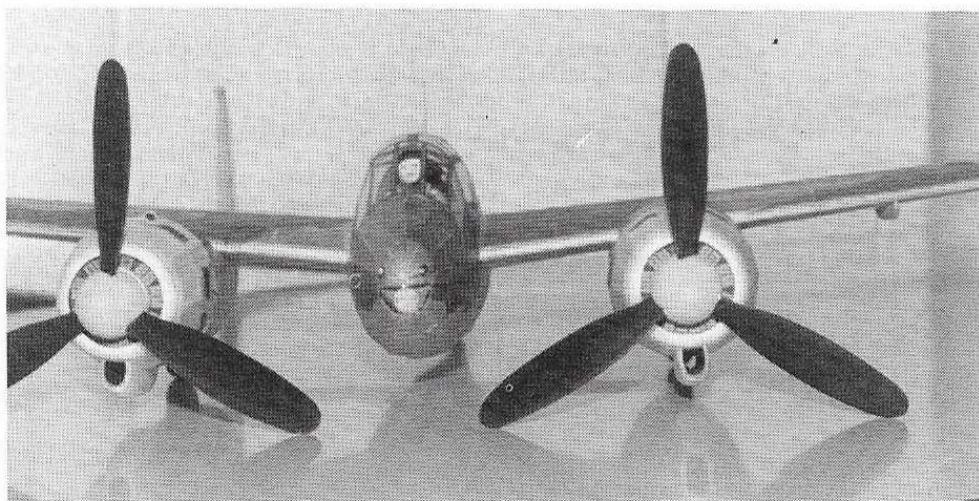
All the canopy parts were vacuformed over carved balsa molds sealed with Hobbypoxy "Stuff" which was then sanded with fine sandpaper. All the cockpit framing was done while the canopies were on the molds. I applied a length of Scotch 3-M Brand rubber cement transfer tape to the dull back side of the black tissue after which I cut the individual frame strips with a sharp X-Acto knife using a metal straight edge.

Apply them to the canopy like you would strips of tape. The completed canopy is now attached to the plane. Be sure to include a carved pilot and an instrument panel. It looks more authentic in the air. I use blue foam for this and other details like guns, etc. since it is easy to sand and paints well with latex or acrylic model paints. I built my model with the gear retracted for hand-launched events. You may want to have plug-ins for take off, etc. — your choice.

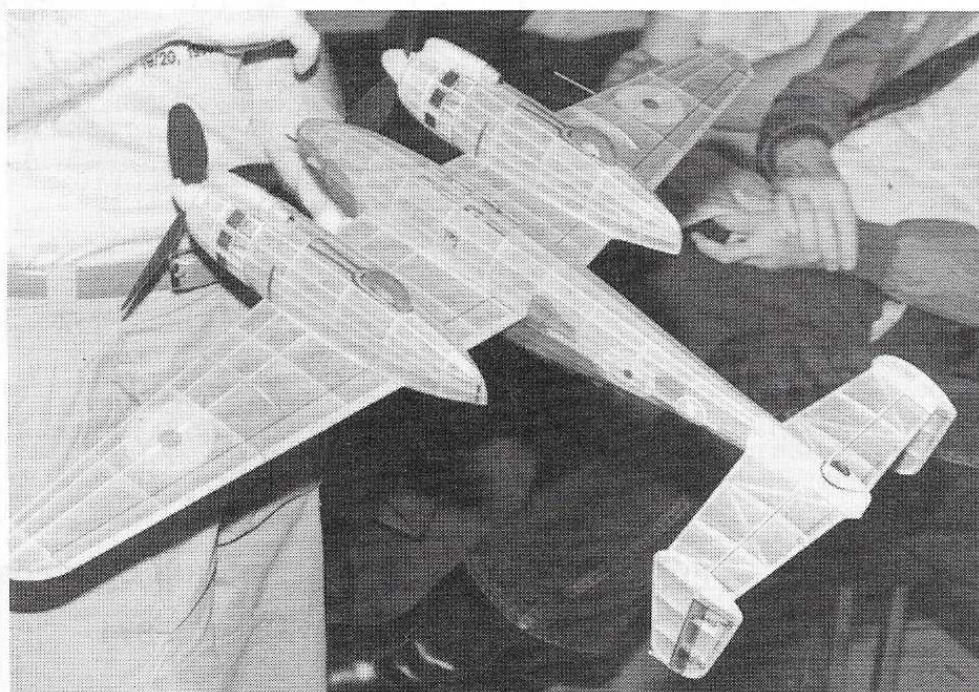
This time I wet-formed bass wood prop blades for a counter rotating propeller system over a wax paper-covered mailing tube. The spinners were formed from balsa chucked in an electric drill, clamped in a vice using a wood screw to center the balsa. A file and sandpaper were used to shape them, checking with templates. I had to build a jig to locate and glue the blades at the proper pitch and location in the spinner slots. I preferred this method to eliminate torque, which was a nuisance in the B-26 props where both turned the same way. It did cause me some problems with the *Marauder*. The blades on the 693 turn outward at the

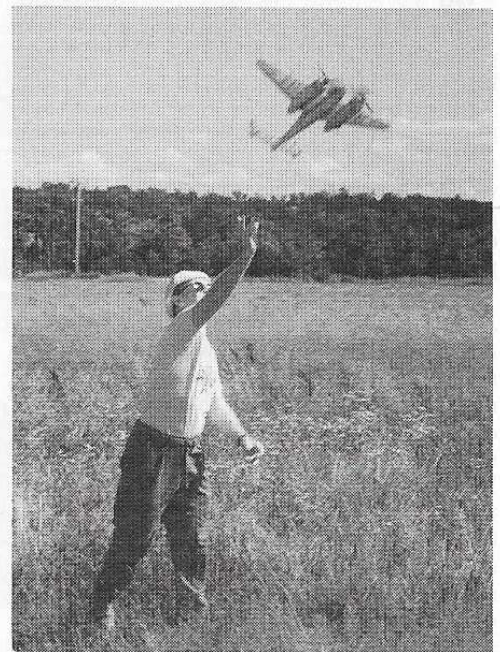
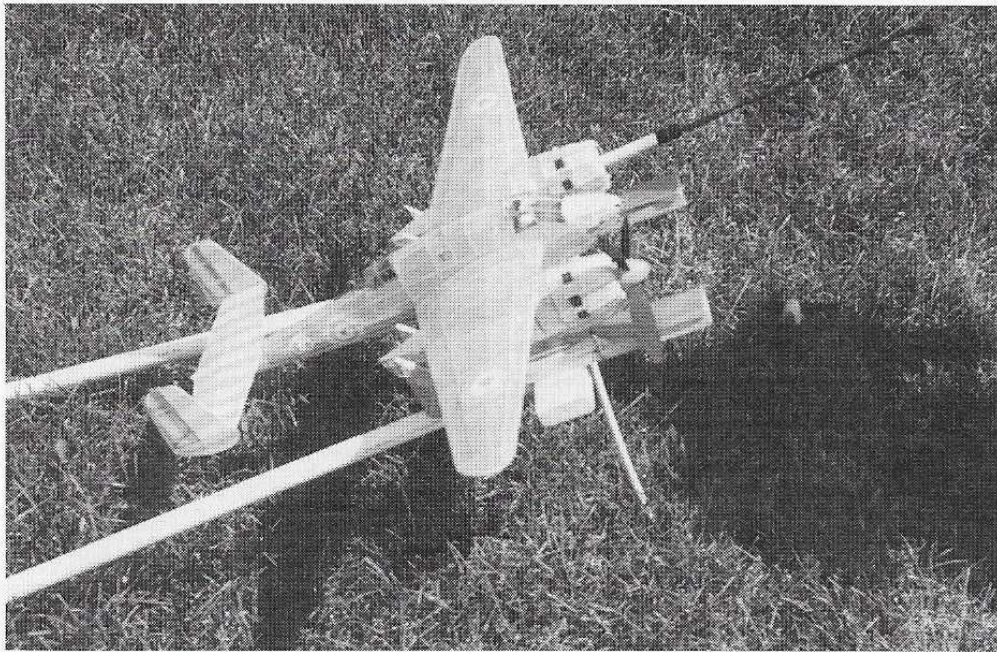


This simple but ingenious jig helps align and set the pitch on the 3-blade props. The jig itself is nothing more than foam core material. The pitch angle for the blade blocks is shown on the plans.



That very lightweight foam core pilot really adds the breath of realism to the model (above). The canopy framing is tissue applied with a novel technique described in the text. The landing gear adds a nice touch (below) but keep it light. Use aluminum tubing for the struts and the softest balsa for the wheels.





This stooge may be makeshift (plastic pipe and wood left). After winding, the props are hooked to the motors (the stooge stops the

blades). Pull the pins at the rear of the nacelles, hold the model by the nose (your hand stops the blades) and launch (above right).

top giving me lift at the tail causing a straight out flight from hand launch. That's a much more stable situation.

I've been very fortunate with this model, which requires very little trim due to the lightweight structure aft of the C.G. You could say it flew right off the drawing board.

Power in each nacelle is one loop of 1/4-inch

Pirelli, 30 inches long, each wound 105 turns with a 10:1 gear winder ratio. Best time is over two minutes, enough to win the mass launch multi-engine event at FAC in Gene-seo, NY this year.

I hope you have as much fun with your Breguet as I've had with mine to date. It sure looks pretty up there in the blue.

### References

*Warplanes of the Second World War*, William Green, Vol. VIII, p. 132-144.

*Flying Colors*, William Green and Gordon Swanborough, published 1981 Squadron/Signal Publications, Inc. p. 123, #4, 4a, 4b.

*RAF Flying Review*, Vol. XVIII, No. 8, p. 33-34.

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