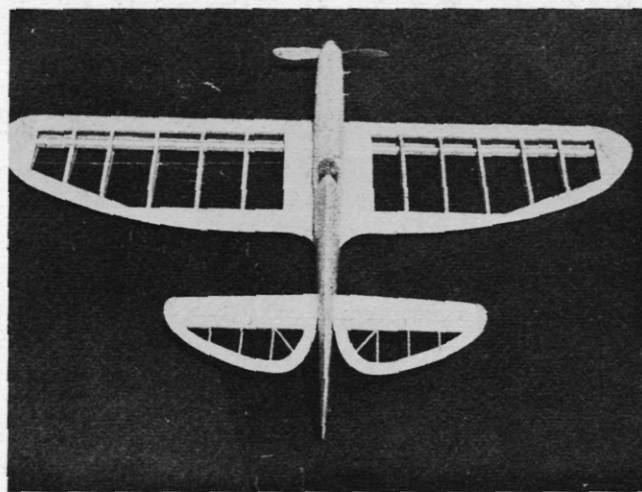


Built during the author's stay at Bartow Air Base, Fla., design an immediate success. Weighed 30 ounces, flew 80 mph, on 65 feet.



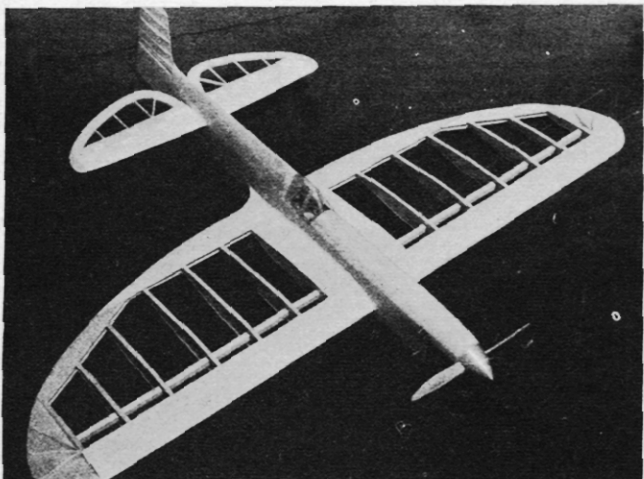
Tapering fuselage, graceful planform outlines add something extra to appearance. Aircraft glides well, and makes excellent landings.



Profile distinctive for a stunt design. Long fuselage, inverted engine, cause the ship to sit almost horizontal to ground. Helps take-offs.

# The LIEUTENANT

by LEROY F. DUCHARME



Main spar, D-section leading edge, give great strength. Ribs are cap-stripped. Seven coats clear, black fuse, red silk wing. A looker!

**Top praise of .35-engined stunter has come from the competitors who flew against it. It's no run-of-the-mill design.**

► The Lieutenant is a contest stunt model designed to achieve peak performance and yet be a distinctive looking airplane. The long tail, semi-balanced elevator, inverted engine and tapered elliptical wing were all designed for specific purposes.

It all started with a very official letter stating that my career as an Air Force officer was to start in one month; at that time I was working in the experimental department of Bendix Aviation. We had just finished a project for the Hustler (B-58) and, therefore, I had some spare time. By the time the week ended, almost every engineer in the department had made comments and helped on the design!

The construction of the Lieutenant began at Bartow Air Base, Fla., after I soloed the T-28 and finally found some spare time. Rapid progress was not made until we learned that a contest was to be held in Tampa, Fla. The airplane was finished on Friday, tested on Saturday, and took first place in open stunt on Sunday!

The finished model weighed 30 ounces and was anything but slow: it was clocked at 80 miles per hour. Besides being a fast stunt model, the design produced a very good glide and excellent landing characteristics: the long fuselage and inverted engine installation enable the model to rest almost in a horizontal position—this also produces a beautiful take-off.

Flying the real thing proved that ample rudder area was necessary for smooth flight in wind; therefore, the model has the rudder blended with the fuselage producing the needed area and an extra clean design. The rudder had to be made extra light because of its location: this was accomplished by using a 1/16" sheet outline with ribs cemented to produce the desired airfoil section and then silk covered.

The entire structure is built in a conventional manner, but here are a few helpful hints. Build the entire wing first, starting by joining the main spar and leaving the inside panel 1 1/2" longer. Insert the controls, but do not cover until the entire model is finished. The wing is very easy to build despite its elliptical shape and tapered airfoil section (this makes covering the wing extremely easy by eliminating wing-tip *(Continued on page 40)*

## The Lieutenant

(Continued from page 18)

difficulties). Next, cement the motor mounts on the fuselage sides and slip the sides on the wing adding the formers. Finish the horizontal stabilizer and hinge after inserting the Veco control horn; place the stabilizer on the fuselage, connect the pushrod and cement the section. Check controls for free operation as this is very important (30 degrees up and down maximum).

Insert the tank in position, cement the rudder on, and then plank the top of the fuselage. Add the plywood base for the landing gear, tailwheel, and then place the bottom planking between the fuselage sides. Do not eliminate making a generous fillet where the wing and the stabilizer join the fuselage. Make the wheel-pants, finish the canopy and you are almost in business.

The original Lieutenant was covered with silk and given seven coats of Aero Gloss clear dope. The color scheme was a black fuselage, red wings and a silver pin stripe separating the two colors. The airplane should balance at the front lead-out wire (note that the wires are slanted to keep the lines taut). No wing-tip weight or off-set rudder was used, but the engine has three degrees of right thrust. A 2" Froom spinner was used, as I do not recommend the use of a plastic spinner.

The model was designed for a Fox 35 and flown on 65-foot lines; if a different engine is used, check the nose section for the increased shaft length. If you think flaps are necessary for a model of this size, try it and see if any model you have flown will pull a better triangle!

The only thing I had to sweat out on  
(Continued on page 42)

this model was the fact that after I made the first flight, my room mates threatened to dunk me in the water barrel (an Air Force custom: you get dunked after you solo). Since you do not have to worry about this, you should have no trouble with this design.

### *Bill of Materials*

(Balsa unless otherwise stated)

8-1/16" x 2" x 36"—wing leading and trailing edge and planking; 2 3/8" x 1/2" x 36"—main wing spar; 3-1/16" x 3" x 36"—wing ribs, wing tips and rudder; 2 1/4" x 1/4" x 36"—leading edge; 4-3/16" x 3/16" x 36"—wing stringers; 2 3/8" x 3" x 36"—fuselage sides and formers; 6-1/16" x 1/4" x 36"—wing cap strips; 4-3/32" x 1" x 36"—fuselage planking; 1 3/8" x 1/2" x 12"—(hardwood) control and engine mounts; 2-3/32" x 3" x 36"—bottom fuselage planking and formers; 1 3/8" x 1/4" x 36"—fuselage strip; 1 1/4" x 3" x 36"—stabilizer and elevator; 1 1/2" x 2" x 12"—wheel pants.

1/16" steel wire; 3/32" steel wire; .064" aluminum; 1/16", 1/8" plywood; 3" bell-crank; Veco control horn; plastic for canopy; 2" Froom spinner; 3 1/2 oz. Froom gas tank; 2" diameter wheels; 3/8" diameter wheel; silk; Fox .35, or similar engine; dopes and silk.

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