



The author's Airacobra has put in many one-minute-plus flights. The long nose moment simplifies proper balancing, and the trike gear makes takeoffs pure pleasure.

## BELL P-39 AIRACOBRA By CLARENCE MATHER

● The sleek lines and graceful proportions of the P-39 made it a beautiful aircraft! Designer Lawrence Bell showed refreshing originality in locating the engine over the wing and driving the propeller by an extension shaft. That location permitted a number of features; the pilot was well forward for visibility, the big 37mm cannon could fire through the propeller shaft, thus not requiring synchronization, and the nose could be thin and streamlined yet house tricycle gear for rough field operation.

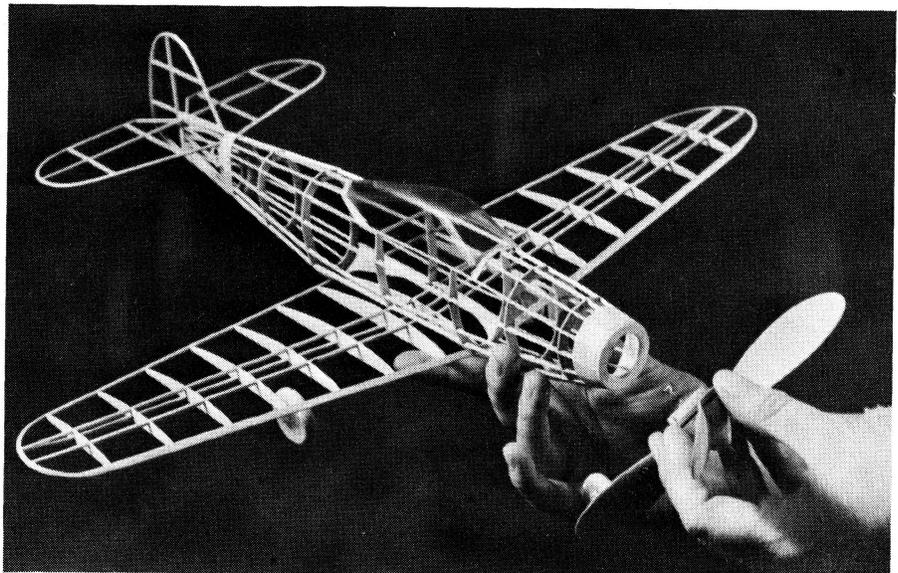
The P-39 first flew early in 1938 and had excellent performance, with the design weight of 6200 pounds and a supercharged engine. However the combat versions did not have the supercharger and weighed a ton more! Performance suffered so much that pilots, used to the nimble Spitfire, called the P-39 the "Iron Dog!" But the plane was tough, could carry a 500 pound bomb, and was well liked for attack missions. Several thousand were sent to Russia where it did good service in ground strafing.

The model is very realistic and flies well. It is built close to scale, with modest increases in stabilizer area, dihedral, and propeller size. Being a low winger with a short tail moment and smallish tail areas, it does not have

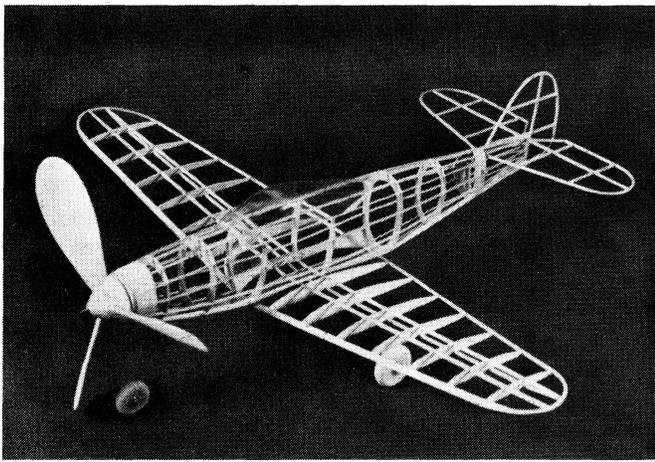
much excess stability. Notice that the balance point is well forward. This increases the effectiveness of the tail and requires the negative aileron shown in the stabilizer. The original model was kept light by using medium grade balsa, built up wheels, 1/32 x 1/16 stringers, and a light coat of dope. It weighs three quarters of an ounce empty, and flies

for about a minute . . . R.O.G.

When cutting the ribs and formers, do not notch them for the spars and stringers. Cut the notches after the parts are in position on the wing and the fuselage. Small errors in the notch positions cause an unsightly snakiness in the long strips. This can be avoided by sighting along the ribs and formers and mak-



Extremely light structure results in a light model, and that, coupled with a long-running rubber motor and large propeller, means maximum endurance as a flying scale model.



Bulkhead material has been kept to a minimum for lightness, and tail surface outlines are laminated.



Greatly enlarged photo of Airacobra as it passes overhead at considerable altitude.

ing required adjustments in notch locations. As drawn, the formers are slightly oversize, to allow for tracing and cutting errors.

Note that the stringers are pre-bent before being glued in place so they

won't pull the body out of shape. The top and bottom stringers can be continuous during body assembly. Later, when the rest of the fuselage is complete, sections under the canopy and over the wing can be cut out.

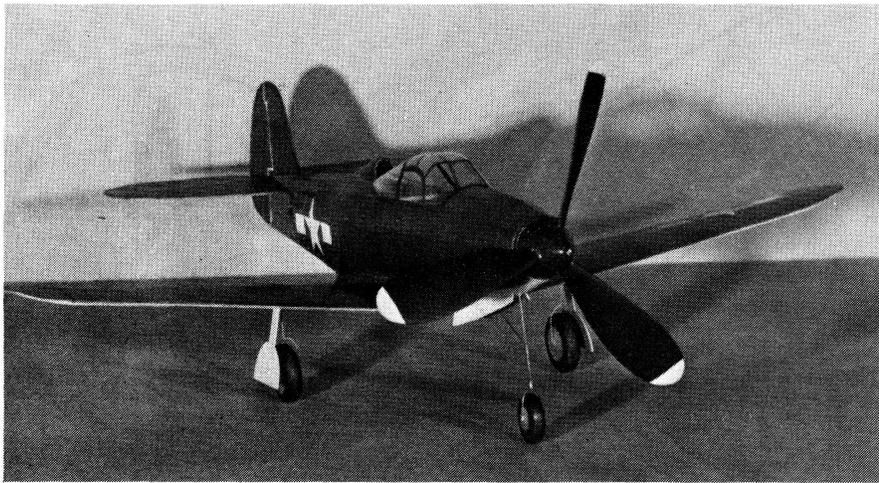
The canopy was molded over a form carved from spruce. It was a lot of work, but the results made it worthwhile. Heat-softening plastic sheet can be purchased from plastic supply firms. The fillets are also a lot of work to fit to the complex fuselage curves, but certainly add to the appearance. Use 1/32 sheet to fill in part of the nose area, the rear peg area, and under the edges of the canopy.

Tail surfaces built of 1/16 square balsa may give warp problems if the tissue is shrunk and doped. It would be well to use 1/16 x 3/32 strips, with the deep side up, for extra strength. Such strips can be cut from sheet with a metal straight edge guide. Leave the area above the stabilizer uncovered until after flight tests so that the stabilizer angle can be changed if needed.

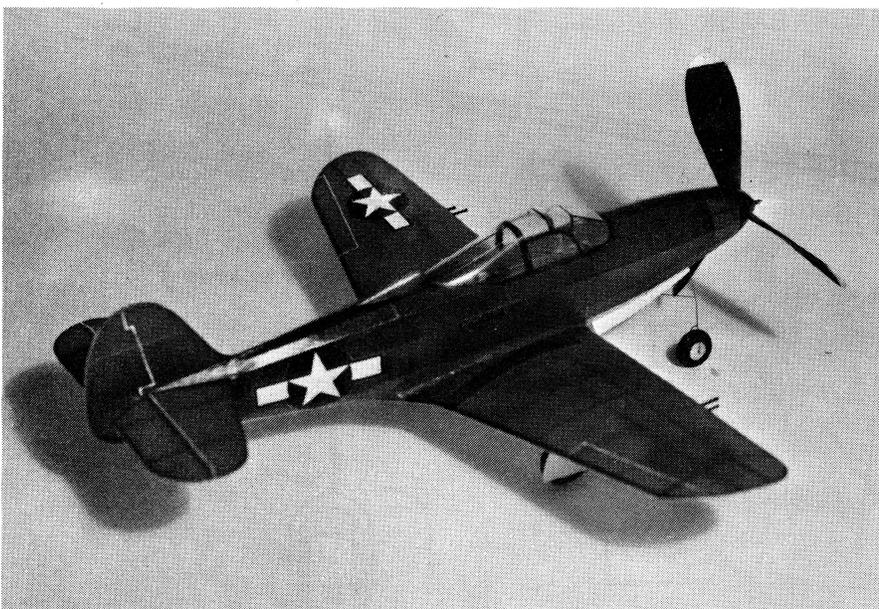
If the model is to be doped, use thin, well plasticized dope, and spray lightly. Use at least two parts thinner to one part dope and add ten drops of castor oil per ounce of dope. Castor oil works fine with nitrate dopes of lacquer. Use tricresyl phosphate (TCP) with butyrates.

Before test flying, make certain that the balance point, the incidence angles, the wash-in, and the fin and prop offsets are as suggested. Use a shim of at least 1/16 thick balsa for down thrust between the top of the fuselage and the nose piece. Start with a loop of 5/32 Pirelli about ten inches long. Wind perhaps 100 times and launch slightly nose-down over tall grass, if possible. The model should be slightly nose heavy with the short motor. As longer motors are used for longer flights, they will bring the tail down.

The drawings are enlargements from an old plan that we had cut out. It was used because it agreed best with photographs of the aircraft. Profile Publications is a good source of drawings and colorations. In the U.S.A., they are sold by: J.W.C. Aeronautica, 7506 Clybourn Ave., Sun Valley, Calif. 91352. ●



Hand carved three-bladed balsa prop was found to be more efficient than the popular plastic ready-made two-bladers.



Only slight changes from scale dihedral, stabilizer area, and prop size were required to make the 'Cobra a good, realistic flier.