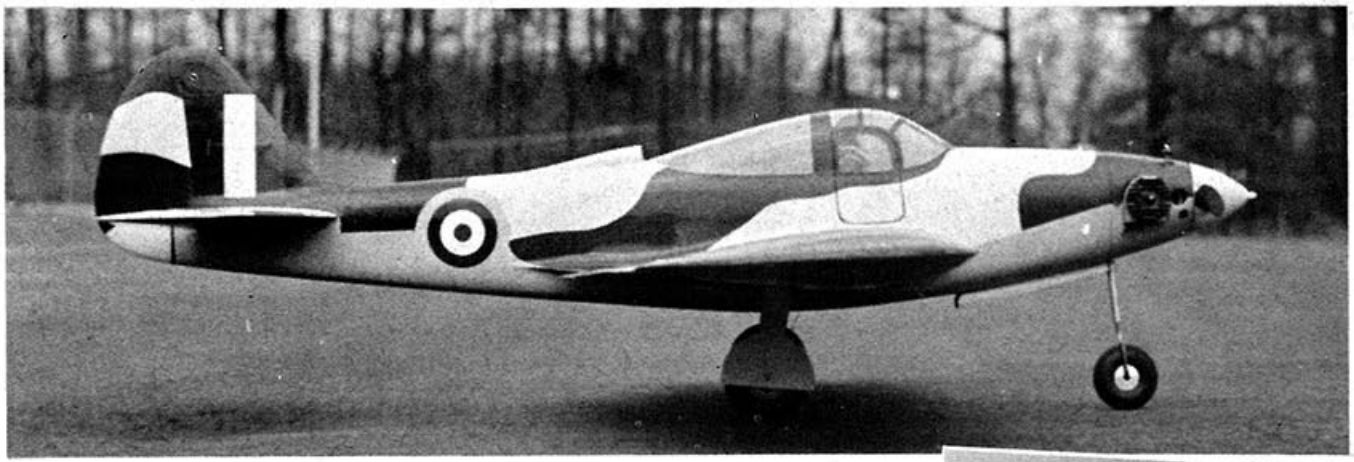

Acrobatic Airacobra

Designed, Drawn, Described by Walt Pyron

■ During the past few years changes in the A.M.A. stunt pattern have made an exceptionally good flying airplane an absolute "must." Although this Airacobra model possesses an amazing resemblance to its real counterpart, it was actually designed with good flying characteristics in mind. The general configuration of the real Bell P-39 offers many *very* desirable features for a high performance stunt model.

The tricycle landing gears make take-offs and landings practically fool proof. By side-mounting the motor, semi-cowled fashion, a cool steady engine run was assured, plus easy accessibility. (Needless to say, a fully cowled engine can bring about a serious over-heating problem on those hot summer days.) I chose the British version of the Airacobra because of its beautiful multi-colored paint scheme.

As for flying, the Airacobra will fly as well as any stunt model out today. It is smooth and stable, and will turn on a dime.

Now let's get down to the construction details. Start by cutting out the ⅛" sheet balsa fuselage sides and doublers; cut *both* sides *full* length. Cut out the fuselage formers and secure the ⅛" steel landing gear wire to F-1 with "J" bolts. After the doublers have been glued to the sides and they have thoroughly dried, glue the rear of the sides together with ⅛" x ¼" "spacer" between them. Glue the formers in place, working from the back of the fuselage to the front.

Set this aside to dry, and begin wing construction by sandwiching ten 1/16" sheet rib "blanks" between the W-1 and W-10 aluminum (or plywood) rib patterns with 4-40 size mounting bolts; carve and sand the ribs to shape. After two sets have been made, use the 1/16" sheet balsa W-1 and W-3 ribs as patterns and make from ⅛" sheet balsa and ⅛" plywood respectfully. (Be sure to substitute these materials *after* the first set of ribs have been made as the taper of the wing will be non-uniform if this procedure is not followed.)

Mark rib positions on the two 3/16" square trailing edge spars, after they have been spliced as shown. First, glue the ribs to the center spars after which the leading and trailing edge spars cement in place. After the wing gears have been secured to W-3 and the ⅛" plywood braces with "J" bolts, glue on the 1/16" sheet leading and trailing edge coverings. When these have dried, the ⅛" plywood bellcrank floor may be glued in (use plenty of glue here) and the bellcrank bolted in place with leadout guides attached. Plank the center section, add the cap strips, and build up the tips. Don't forget that outboard wing weight!

Carve the flaps from hard (brittle) ¼" balsa. After these have been sanded smooth, make "cut-outs" and glue the 1/16" sheet ribs in place. Make the openings in the center section for the push rod and bellcrank, attach the push rod to the bellcrank and flaphorn, and hinge the flaps with nylon fabric.

Now the wing can be glued to the bottom of the fuselage, and the bottom of the fuselage planked. Set this aside to dry and carve the tail section to shape.

The elevators and stabilizers are made from ½" medium grade sheet balsa; taper these to ⅜" sheet balsa. (Note the Lifting Airfoil section.) After "cut-outs" have been made and the 1/16" sheet ribs attached, install the elevator horn in the elevators and hinge them to the stabilizer with nylon fabric. Connect the rest of the control system with the second push rod, and glue the stabilizer to the fuselage, making sure the flaps and elevators are in neutral position at the same time. After this has dried, the 3/16" top spar is added and the top planked. Add the scrap block over the stabilizer, and glue the rudder in place.

Form the fuel tank from tin can stock to the specifications shown, or use a similar commercial tank. After the tank has been constructed, glue the bottom hardwood motor mount in position, set the tank in place, and slide the top mount into position. Center the tank with pieces of scrap balsa and glue the tank and mounts, using several coats of glue on the mounts. After the mounts have thoroughly dried, the ⅛" plywood nose brace and fuselage sides may be cut away from the section where the engine cowling goes.

Temporarily install the motor with "blind" mounting bolts; glue the scrap block between the mounts and inboard fuselage side (shown on planes). Cement the top and bottom cowl block in place.

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Walt's P-39 gets off smartly, right; the designer holds his plane (above). Full size plans for this control line stunt plane are on Group #759 from Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y. (60c).

Airacobra

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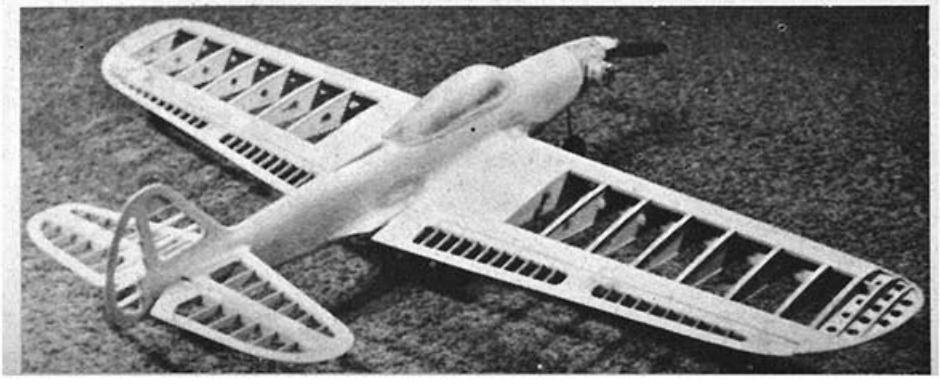
After these have dried, the nose section is carved and sanded to shape and the engine cowling made from a scrap block. With this done, the scrap air scoop and wing fillets may be carved and glued in place. Use "Plastic Balsa" for any additional fillets.

The canopy is made from 1/16" acetate which may be purchased from any commercial plastic dealer (or a similar commercial hobby shop canopy may be substituted). If you choose to make your canopy, carve a "male" block to the shape of the outside of the canopy; for the "female" mold, cut a hole the shape of the base of the block in the middle of a piece of ¼" x 13" x 6" plywood and nail some 4" legs around the edge. Tack the acetate material around the outside edge of the female mold and heat in an oven to 200° F. From here on, slowly increase the temperature of the oven, and check the acetate for softness every few seconds by mashing the material with the male mold. When it becomes pliable enough, push the male mold into the acetate until it is flush with the female mold. Now turn off the oven and remove the molds, holding them firmly in place. After the aceate has hardened, trim the canopy to fit the plane. If any "blushes" appear, they may easily be rubbed out with any abrasive auto polish such as "Car-Skin."

Glue the canopy on and build a fillet up around it with Plastic Balsa. This may be strengthened by mixing Aero-Gloss glue with the Plastic Balsa.

For covering, I double-cover the entire plane with Silkspan. This adds very little extra weight and increases strength tremendously, plus improving the finish. Before covering, the entire plane is sanded smooth and given 2 thin coats of clear Aero Gloss; sand between each coat with No. 320 wet-or-dry sandpaper. Now cover the wings with medium grade Silkspan. The rest of the plane (flaps, etc.) is covered with light grade. Apply two coats of clear Aero Gloss, sanding after each coat has dried, with 320 wet-or-dry, and cover the entire plane with light grade Silkspan, wings included.



With this done, apply 3 coats of clear Aero Gloss, again sanding between each coat. For filler, I use a 50-50 mixture of clear Aero Gloss and talcum powder. Apply 3 or 4 coats of this mixture to the entire plane. Each coat should be sanded thoroughly with 320 wet-or-dry after it has been allowed to dry. After all the filler coats have been applied, seal them with 4 thin coats of clear Aero Gloss.

Spray or brush the final colored finish. If you spray, use a 50-50 mixture of base paint and thinner. If you brush, use a thicker mixture. The top of the plane is "sand and spinach" color scheme. I use Stinson Green for the spinach and 3 parts white mixed with 1 part Taylorcraft Cream for the sand. The bottom is Cessna Blue. Paint the bottom first, then mask off the color separation between top and bottom and paint the sand part of the top, overlapping to allow for masking. Allow the sand to dry for about two days before masking for the spinach. After the plane has been completely painted, a "mirror" finish can be obtained by rubbing the plane with Martin-Senour rubbing compound. Make the insignia from Trim-Film type material. After all the other details have been added, the entire plane should be waxed with any good automobile paste wax.

Before flying, check for warps, and make sure the nose wheel is tracking straight ahead or slightly *in*. (If the nose gear is tracking out, friction will pull it off the hub.) I used a 10-5 size prop and

65-foot lines on the original. Try to pick a calm day for the test hop, and make sure your engine is running smoothly.

AIRACOBRA BILL OF MATERIALS

Balsa: Four pieces 1/8 x 3 x 36" for fuselage, wing tips, planking, and formers; One 3/16 x 4 x 36" for fuselage sides and doublers; Ten 3/16 x 3 x 36" for ribs, wing and fuselage planking; Five 1/16 x 1/4 x 36" for cap strips; One 3/8 x 4 x 36" for rudder; One 1/2 x 4 x 36" for stabilizer and elevators; One 1/4 x 4 x 36" for flaps; One 1/4 x 3 x 36" for fuselage bottom; Two 1/4 x 1/4 x 36" T.E. Spar; Five 3/16 x 3/16 x 36" L.E. and wing spars; One 1 x 3 x 36" for front blocks and sown; Scrap blocks as required.

One piece 1/8" plywood for F-2, W-3, wing gear and nose brace, and bell crank mount. One piece 3/16" plywood for nose gear mount (F-1). One piece 3/8 x 1/2 x 24" motor mount material.

3/32" piano wire for push rods. 1/8" piano wire for landing gear. "J" bolts for landing gear attachments. One large Veco bell crank. One set of Pylon B-C leadout cables. Two large Veco elevator horns. One 2" spinner. One pair 2-1/2" Veco wheels. One 2" Perfect wheel. One piece 3/32" brass tubing for leadout guide. Nylon cloth for hinges.

One box Mennen talcum powder, for sanding sealer. 1/16" Acetate for canopy. Aero Gloss as needed: Stinson green, Cessna grey, Swift white, Taylorcraft cream, clear. Trim-Film as needed: red, white, blue, and yellow. One sheet heavy Silkspan. Six sheets light Silkspan. Glue as needed.