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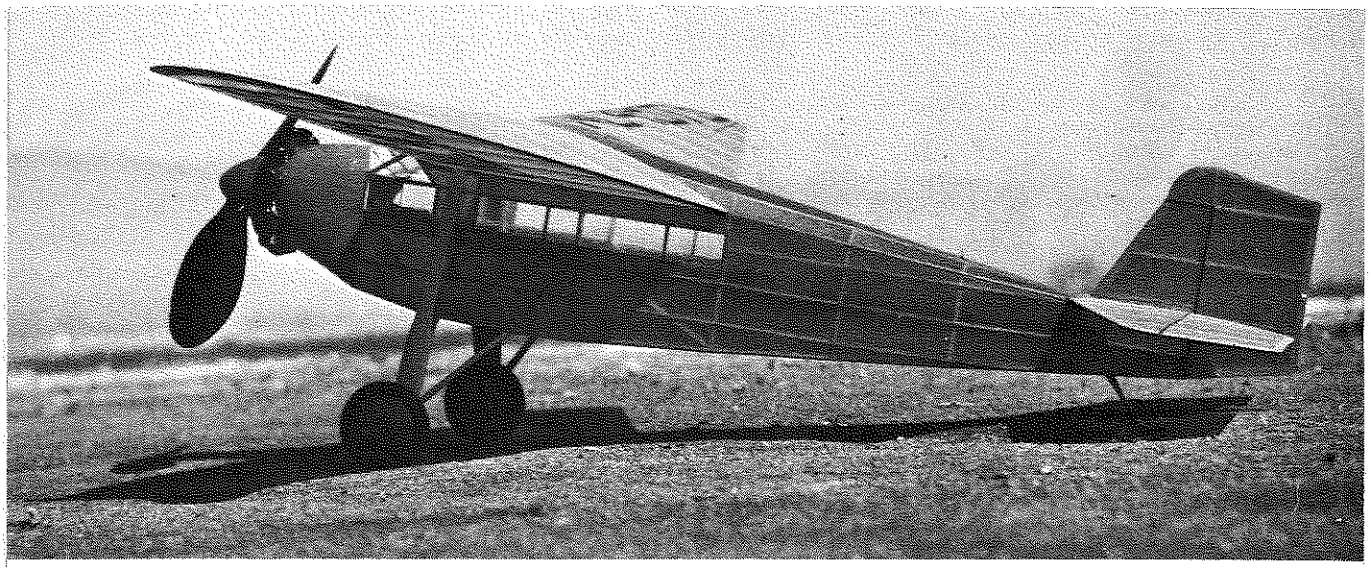

the LONE EAGLE

By BOB OSLAN

● The Lone Eagle was designed and built in 1927 by the Ryan Mechanics Monoplane Company of San Bernardino, California. The Company expanded in 1928 and incorporated into the Federal Aircraft Corporation; the Lone Eagle then became the CM-1 "Lone Eagle." I have no idea what CM-1 stood for, but the "Lone Eagle" was in honor of Charles Lindbergh. The three principals of the company had worked on the Spirit of St. Louis and possibly hoped to capitalize on the Ryan name and fame, hence the name Ryan Mechanics. Their success can be measured by the fact that the Lone Eagle did not become one of the classics of the period despite creditable performance.

It was powered by a 230hp Wright Whirlwind J B-4 and had a maximum speed of 125 mph with a 105 mph cruise. It carried a pilot and four passengers for 700 miles at cruising speed and landed at 40 mph. The wing span was 37'-6" and the overall length was 29'-3". An article in the March 1928 issue of Aero Digest describes the interior as follows: "The chairs are of reed and fibre construction and the backs are padded and finished with tapestry to harmonize with the upholstering. Each chair is provided with a separate cushion built up of 36 separate coil springs and covered with tapestry." The interior of the cabin is finished with heavy red Fabrikoid and the floor is covered with carpet." Pretty classy . . . those were the days.

The Lone Eagle is well suited to model work, with its reasonably long nose and tail moments. The tail surfaces were enlarged for stability and the landing gear was lengthened slightly to allow for a large enough prop to insure good performance. These are customary scale compromises and do not detract from the model's appearance.

Construction is conventional throughout and building goes surprisingly fast.

FUSELAGE

The basic framework is made of hard 3/32 sq. longerons with medium uprights and crossmembers. Note that all the uprights are one piece and the horizontal sticks that form the cabin windows fit between the uprights. This is important, because the strength of the fuselage depends to a great extent on one piece uprights. Stringers, or fairing strips, are 1/16 sq. medium hard unless otherwise noted. The noseblock and spinner should be made from the heaviest stock that you can cut with reasonable ease, as weight in the nose is needed and it may as well give you some structural advantage. Dummy engine cylinders should be made from heavy stock and they should be countersunk into the noseblock to eliminate the annoyance of being knocked off from handling on the flying field. The amount of detail put into the engine is up to the individual. The original model had almost as many hours put into the engine as did the entire airframe and frankly, you wouldn't know to look at it. So . . . suit yourself.

Build the fuselage sides one atop the other to assure identical size and shape. When completely dry, join the sides together, being careful to keep the framework cross section square and the curves symmetrical. Attach the formers and stringers to the top of the fuselage, noting the stringer sizes on the plan . . . this minimizes the chances of stringer sag after covering. Attach Formers 1t, 2, 1b, and 2b. Plank the top formers with 3/16 sheet as shown on the plan. Note that the finished shape changes from angular at Former 2 to circular at Former 1t. Plank the sides of the nose with 1/4 sheet and cover the bottom of the nose between 1b and 2b (rear) with 1/16 sheet or planking, which ever is easiest for you. Add the side fairing strips and cabin molding strips . . . see cabin detail on plan.

Bend the landing gear, using the front and side views for your guide. Secure the two wire cross members to the bottom fuselage cross members with thread. Then bind the lower parts of the gear with copper wire and solder. Now apply two or three coats of glue to the thread holding the gear to the fuselage. Add the bottom fairing strips. You can now install the windshield framework of 1/16 x 1/8. The curved top cabin strips are added after the wing is attached to the fuselage.

The front view shows a wire (straight pin) going from the axle area up to the "shock absorber" strut. This pin goes through and is glued to the landing gear struts (1/16 x 1/8) and extends up and into a piece of aluminum tubing that is imbedded in the "shock absorber" strut. This makes for a nicely simulated and fully shock absorbing landing gear. The shock absorber strut is added after final assembly and doping. Wheels are built up from medium balsa, unless you are lucky enough to have ready made wheels on hand that are light and the correct size.

WINGS

The wing is made from light stock and is surprisingly rugged. This is due to multi-spars and severe thickness taper. If my experience is any indication, wing warps will have to be intentional, and even then it won't be easy, The real aircraft had a flat upper wing surface and the small amount of dihedral in the model does very little, if anything, to detract from the effect.

When building, pin the trailing edge and bottom spars flat on the board. Do

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not stick pins through the spars. Block up the leading edge 1/16 above the board. Glue on the ribs, being sure to tilt the root ribs so that they will be vertical when the wing halves are joined at the prescribed dihedral angle (check wing front view for details). Glue in top spars before removing the wing from the board.

Build in the dihedral right on the plan to assure correct alignment. Pin the center section trailing edge on the board and block up the center section leading edge 1/16 above the board. With the leading and trailing edges cut to the correct length and pinned in place, glue each wing half to them and block up the tips to proper height. Pin the halves to the board at their roots and add the top center section spars. When dry, remove from the board and add the bottom center section spars. You now have a wing, that when covered, is the P-47 of the stick-and-tissue crowd.

EMPENNAGE

The vertical and horizontal stabilizers are perfectly straightforward. In each case, block the leading edge, trailing edge, and tips 1/16 off the board. They are constructed entirely of 1/16 x 3/16 medium balsa except for the stab spar, which is medium hard.

COVERING

Cover with Japanese tissue . . . do not water shrink the tissue until all parts are assembled. When the covering is tight . . . no wrinkles . . . apply three coats of thinned dope (60/40) with plasticizer added. Control outlines and license numbers are cut from black tissue. *(See Fernando's column, "F/F Scale," for more detail on covering with tissue. wcn)*

PROP

The prop is carved from medium hard balsa and is covered with Japanese tissue for added toughness and as an aid to a good finish. Utilize a free wheeling device of your choice. Although the winding eye is more practical if located outside of the spinner, it really makes a neat job if the spinner can be kept clean. This necessitates winding the rubber motor directly or with an "S" hook instead of through the prop shaft, but a clean spinner sure looks nifty.

TRIMMING AND FLYING

The original model required 1/4 downthrust and a touch of left thrust, which was inserted before each flight so that the plane wouldn't look like a 1927 SST droop-snoot when not flying. It climbs left, glides right and is competitive for most flying scale contests. Do your initial testing over tall grass, if any is available, as the best of them take a few bonks until fully trimmed. The ship should balance about 40 percent back from the leading edge and some nose weight may be required. A hand glide with the nose pointed down slightly should produce a smooth straight glide and gentle landing before trying a powered flight. Start powered flights with 100 turns in the motor and work your way up, paying careful attention to flight characteristics. Power stalls should be corrected with down thrust and stalls in the glide should be corrected with nose weight. Try to avoid warps, as they can change from one flying session to another and make each session a new series of test flights.

A well trimmed Lone Eagle, fully wound, should produce flights in excess of a minute with no difficulty. The original thermaled so well that it went 20 min O.O.S. — sob! Good luck with yours.