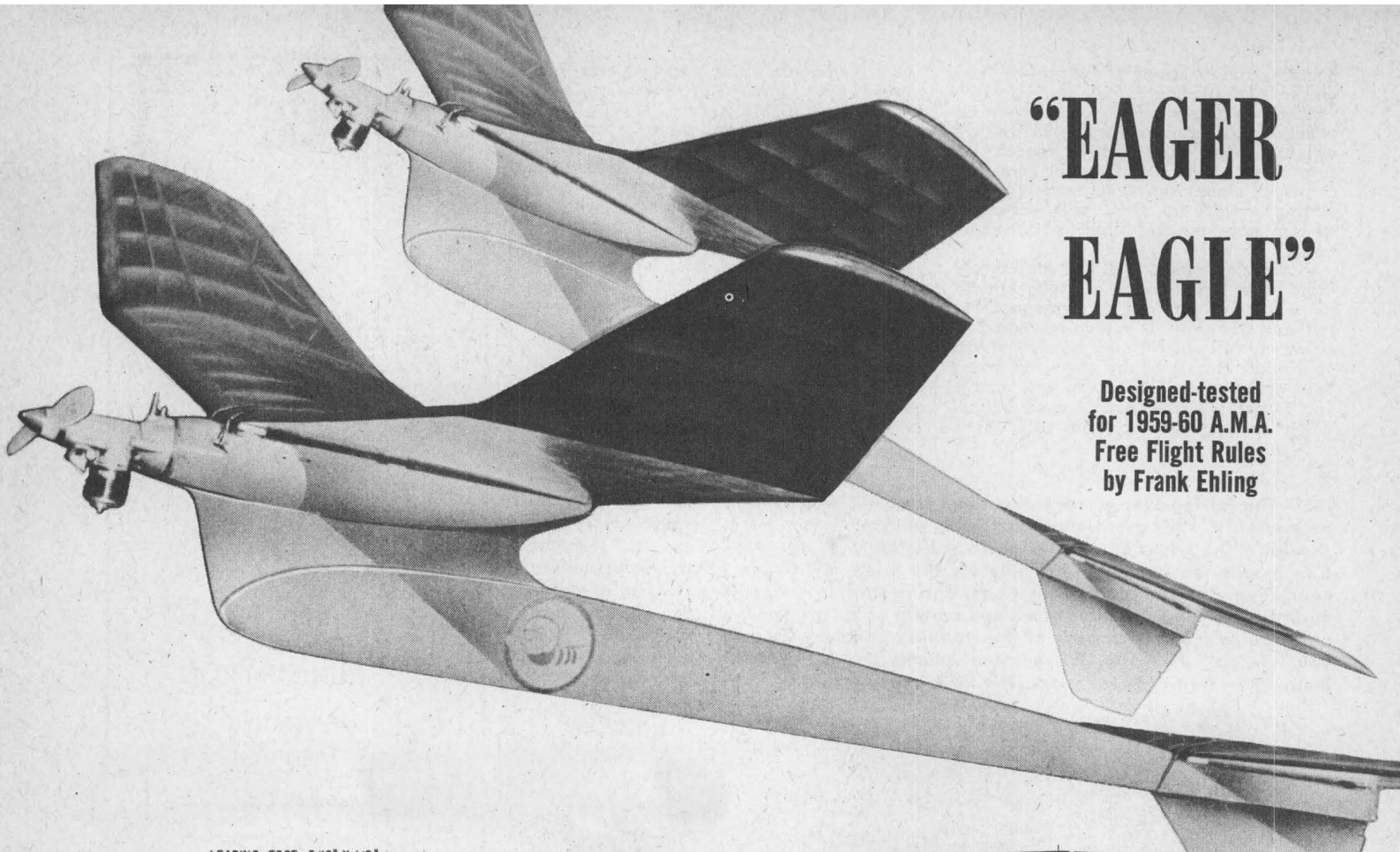
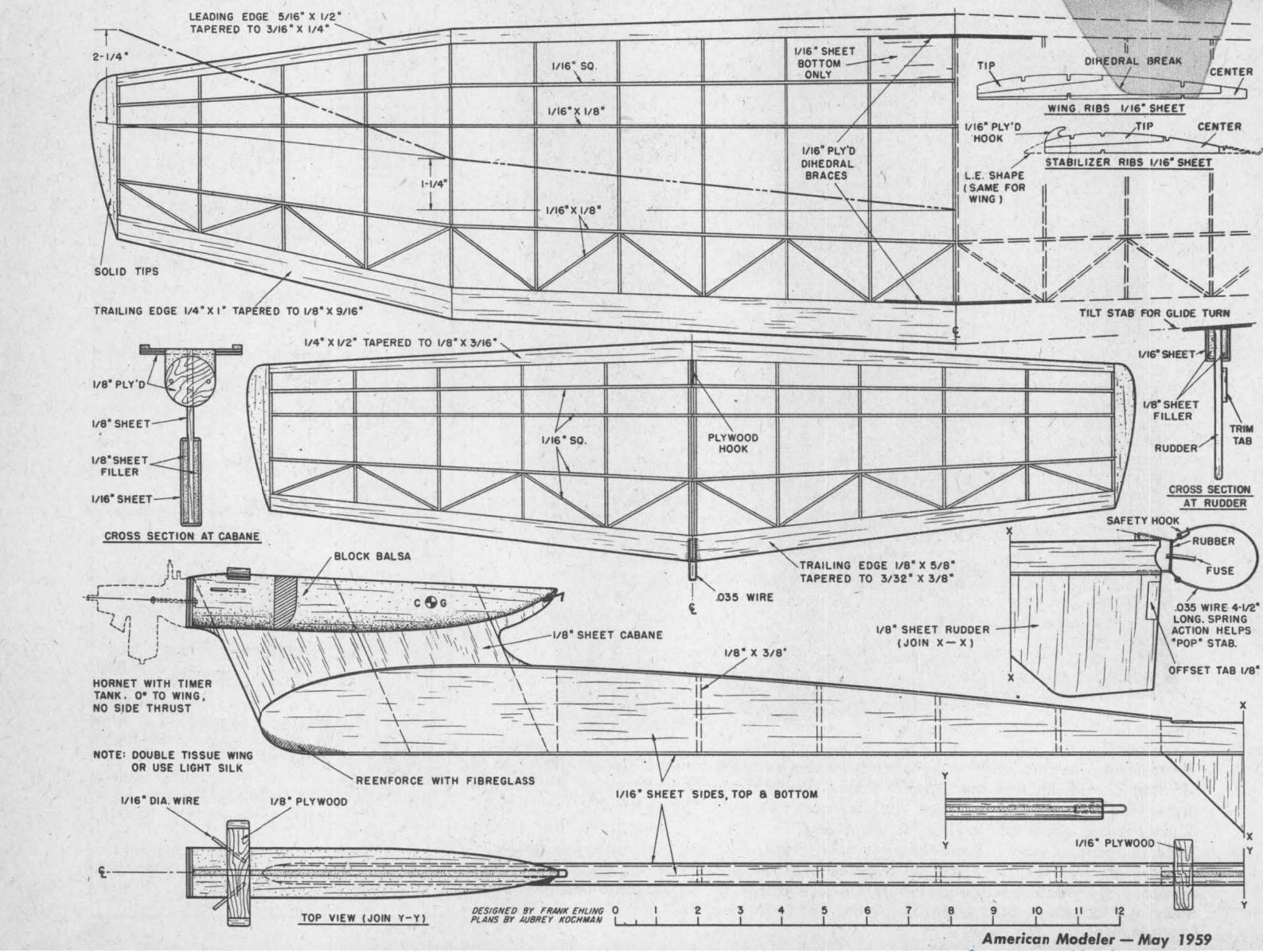
"EAGER EAGLE"

Designed-tested for 1959-60 A.M.A. Free Flight Rules by Frank Ehling

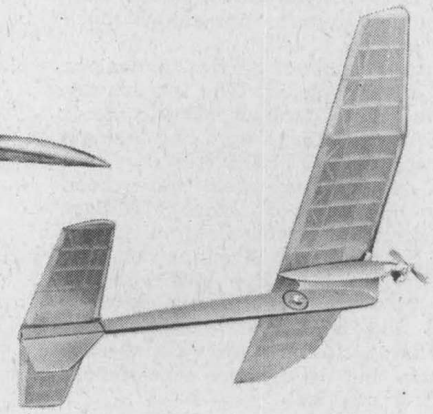




■ This year the "free-fright" competitions should prove keener than ever. The increase in weight under the new rules encourages new construction techniques and more rugged models better able to withstand the rigors of contest flying. The added "lumber" used in bringing these up to the required weight will cost a pretty penny—if the trend toward large models were to continue.

But do we really need a big model to win contests? Time after time we all have seen smaller models turn in "maximums" and many a small job has walked off with the hardware in free-for-all, combined classes events. "Eager Eagle" has demonstrated that it can compete on a par with the largest. It also offers the lazy lad an opportunity to compete in two events, A/2 and A, with the same model. This by merely changing engines. No readjustment is necessary.

We realize some argue against such a feature; we readily agree that for competition purposes it is far wiser to have two identical models on hand in case a replacement part becomes necessary. But



this has been quite expensive and time-consuming where the big jobs are concerned. Building two smaller models such as "Eager Eagle" will actually take less time and money than one large model. Then, too, it is easier to adjust.

Actually this craft was built and thoroughly test flown last fall, even though we felt that its all-up weight of 8 oz. might be too much of a handicap in competition with the lighter 5 oz. jobs with the same wing area. However, during these flights, the extra weight went unnoticed by everyone who watched its almost straight-up, really moving climb. This year it was only necessary to add an additional half ounce weight. But thanks to Bob Holland's Hornet and its timer tank which streamlines in neatly, the climb continues just as "hot".

The wing and stabilizer are multi-spar with husky leading and trailing edges to take the brunt of rough landings. The fuselage is sheet, with the cabane pylon running down to the bottom and reenforced with sheets of ⅛" making the nose section solid. The rudder is reenforced in a similar manner. While our original craft was tissue covered, we recommend light silk or double-tissue covering on the wing. This will make an even more durable model and should bring the model up to "new rule" weight.

Construction begins with the fuselage. Cut out all required parts. Cement filler sheets to cabane and rudder. Lay one fuselage side on a flat surface and cement cabane and rudder assemblies to this. Add formers and other side. Cap top and bottom making sure all seams are well cemented. Loose seams on a fuselage as thin as this will allow it to twist under power and thus make adjusting quite difficult.

Nacelle sides are carved from solid balsa blocks. If the blocks are first lightly cemented to a "filler" sheet the same thickness as the cabane they more easily can be carved and sanded to a uniform shape. After sanding split them apart and cement them to the cabane. Push the wing tie-down wires in place on the nacelle-wing mount and cement well. Cut out plywood firewall, secure Hornet retaining plate to it. (An alternate method is to solder the nuts to a piece of tin or brass and cement this to the rear of the firewall.) It will be necessary to hollow nacelle face so firewall fits flush. Check to see that nuts do not offset engine in any way. Engine mounts with no side or down thrust.

Add plywood wing-stabilizer platforms. Note stabilizer platform is tilted . . . this should be done at this time. Tilting the stab by inserting shims under one side can be done, but should a shim fall out during flight, the entire flight pattern will be alerted.

The dethermalizer wire set-up shown has proven very efficient; it acts as a spring to help "pop" and limits the dethermalizing angle.

Sand rudder to streamlined shape. Go over entire fuselage with fine sandpaper. In doping your model start right off with

Eagle

a good grade of fuel-proof dope—this is the best way to obtain a really fuel-proof model.

Start wing construction by preparing leading and trailing edges. Taper these to match the plan view and the ribs by cutting away back of leading edges and front of trailing edges. Bevel ends to secure proper dihedral angle. Pin down leading and trailing edges of both center sections, cement ribs in place. Raise tips to dihedral angle, add plywood braces and top spars. When completely dry, lay one section down and add tip section. Add other tip section in same manner. Turn wing over, add bottom spars. This do very carefully to insure against a twisted structure. Cement all joints well as no gussets are used at the tip breaks. Shape tips from medium grade balsa, cement in place.

Make stabilizer in similar manner using lighter grade balsa. Sand wing and stab to remove any irregularities—recement any joints that may have been weakened during the sanding.

If light grade silk is used to cover the wing apply it in two pieces: one for the top, one for the bottom. To cover top in one piece, start at tip and work toward dihedral break. The silk should be wet, the dope brushed through to adhere it to outline only. Work out wrinkles as you go along, then dope it to the rib at the dihedral break. When first panel is completed proceed to next. Do not trim edges until all panels are covered. Wrinkles can be removed by re-doping the appropriate edge, stretching the silk and holding it until the dope dries. Cover bottom in similar manner.

Doping the silk takes a little time if a first rate job. Thin dope 50% and apply very sparingly for the first few coats. In this way the pores of the silk partially fill to prevent full-strength coats from dripping through. If you dope wing bottom first and some dope should drip through the top, it will not be too noticeable when top is finally doped. However, if the bottom is doped last and some drips through to the top it will show.

The stabilizer, tissue covered to save weight, should be doped about half as much as the wing.

Assemble the model as it will be flown to check required weight and C.G. location. If the model is under weight and the C.G. is right, add necessary weight at the C.G. point. If the model is tail heavy add the weight to the nose. This weight may be in the form of a lead washer placed behind the engine—hammered flat until it is the diameter of the tank so as not to affect the engine thrust line.

We like to test fly our models with wide open engine runs of 4 to 5 seconds duration with the nose pointed up about 60 degrees. This way you can let the model pull itself out of your hand. "Eager Eagle" should climb to the left; as the engine cuts it should slide into a left-hand glide without any loss in altitude.

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