Curtiss XPW-8

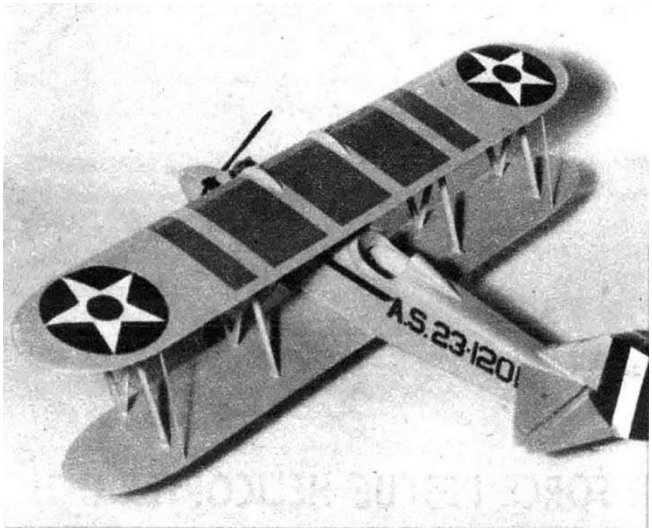
Lt. Russell L. Maughan spanned the continent in this fleet forerunner of the famous Hawks series by Warner Frake.

Uring the years immediately following the end of World War I, the military services of the United States encouraged the development of racing planes and the Pulitzer Trophy Race resulted in some keen competition between the Army and Navy.

Considerable design experience was gained from the Navy Curtiss R2C and R3C racers while the Army learned much from its Curtiss R-6 and R-8 racers. The results of this experience were incorporated in a newer Army model in 1923. This plane was the Curtiss XPW-8 and was powered with a Curtiss D-12 “V” type liquid-cooled engine of 440 hp. Althbugh only three planes of this type were built, the U. S. Army ordered twenty-five slightly modified designs which had the cooling radiators under the nose instead of being built into the top wing. These aircraft were designated PW-8 and became the standard Army pursuit plane until the Curtiss Hawks were evolved.

Lt. Russell L. Maughan (the Pulitzer Trophy Race winner in 1922 at Detroit) flew 2,670 miles from Mitchel Field, Long Island, to Crissy Field, San Francisco in his XPW-8. This flight took 21 hrs., 48 mins., 30 sec. and attracted world wide attention because he had spanned the American continent from dawn to dusk, on June 24, 1924, thus setting a transcontinental record. As a matter of fact, Lt. Maughan is known as the “dawn to dusk flyer” because of this flight.

Armament of the XPW-8 consisted of one .50 caliber machine gun and one .30 caliber machine gun both



Construction is a cinch: sheet slab sides, wings have no dihedral or sweepbaclt. Goes low V slow on a .19 hot as blazes with a .49.

firing through the propeller arc. The maximum speed of this design was 168 mph.

With 285 square inches of wing area, our XPW-8 model performed stunts beautifully, and a sport airfoil has been included on the plan for those modelers who do not wish to stunt. We used a K & B Glo Torp .29 engine. However, any engine from .19 to .49 can be used although the .49 installation is recommended for the experienced builder only.

Begin construction by cutting the fuselage sides from 3/16" medium balsa sheet. Make certain you cut out for the lower wing and stabilizer. Join the rear of the fuselage sides and cement the 3/16" cross braces in place at station E. Add the remaining cross braces and plywood bulkhead B. While this is drying, the wire landing gear can be bent to shape and joined together. This assembly is then wrapped to the plywood platform with crinoline and cemented well. The plywood platform can now be securely cemented to the fuselage sides.

Cut the tail surfaces from 1/4” sheet balsa and sand to a streamline cross section. Attach the control horn in place and hinge the elevator to the stabilizer. Cement the stabilizer to the fuselage. Mount the dural bell crank to the 3/8" x 1/2” pine block and attach the .025" music wire lead-out lines. Glue the bell crank assembly to the fuselage and install the control rod.

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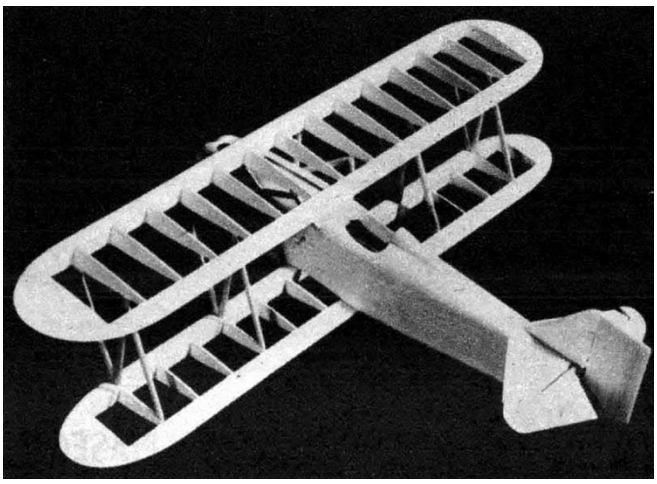
The engine is now bolted to the plywood bulkhead. Although we used a radial mounting, a beam mount can be installed as the' plans show. On the radial mount , we suggest soldering the nuts to a sheet of tin or brass and bolting it to the rear of the bulkhead in order to prevent the nuts from dropping off inside the fuselage where they are not accessible.

Install the fuel tank, either stunt or sport. Cement the nose former A in place. Apply the 3/16" sheet bottom covering as well as the turtledeck and nose blocks. Select soft balsa blocks and use very little cement on them, because they must be removed later. Carve the blocks to shape when the cement has dried and sand smooth. Do not neglect to cut away for the engine cylinder and exhaust. Carefully cut off the blocks and hollow as shown. Remove the engine and cement the blocks securely back on the fuselage. Bend the tail skid and cement to the fuselage bottom. Add the headrest and fin. Sand the fuselage and clear dope twice, sand again lightly.

The wings are the picture of simplicity, no taper, dihedral or sweepback. Both are made in one panel from tip to tip. We suggest notching the leading and trailing edge for greater strength. First cut the ribs to shape and sand smooth, then notch the leading and trailing edges. Make these notches about 3/32" wide so the Vs" ribs fit snugly. Insert the ribs into these notches and apply plenty of cement. Cement the soft 'balsa tips in place. When the structure is thoroughly dry, using a sharp knife or razor blade, cut the leading and trailing edge and wingtip to shape. Sand well. Both wings can be covered with either heavy Silk-span or 1/32" sheet balsa. In view of the fact that the full-scale plane had plywood-covered wings, the sheet balsa provides an exact scale appearance. We used heavy Silkspan on the prototype model with good results. Dope the Silkspan or Sky Sail with three coats of clear. Cement the lower wing to the fuselage.

Cut the pine struts to shape and sand smooth. Four sets of inter plane struts are required (these are all the same length) and two sets of cabane struts must also be made. Clear dope, sandpaper and apply wood filler to the struts. Sand again.



Choice of airfoils is offered stunt fans should use the symmetrical section: Sunday flyers will probably stick to the sport section.

Wood filler the fuselage and empennage twice with intermittent sandings. Paint the entire plane before final assembly. The color should be aluminum throughout. Several coats of thin dope bring better results than a few thick coats. Sanding lightly between coats with finishing paper, we applied eight coats of aluminum dope. Rub down with rubbing compound.

Cement the struts to the lower wing and fuselage and be sure they are pushed into the balsa about 3/16" for added strength. The soft balsa radiator expansion tanks and filling caps are now painted and cemented to the top of the upper wing. The flush brass radiators on both sides of the top wing can be painted in place or, as we did, use sheets of gold Trim-Film. The upper wing can now be cemented in place. Add the celluloid windshield and black colored exhaust stack of dowel. The rudder stripes, star insigne and all lettering are made from Trim Film. Add the stabilizer struts and 1/16" dowel aileron pushrod. All rigging is made from heavy grey carpet or button thread. A “Froom” aluminum spinner fits the model perfectly, but a balsa or plastic spinner of the correct shape will do. Slide the wheels on their axles and solder a washer to the axle to hold the wheels in place. Bend the control line guide from .032" music wire and attach securely to the inter plane struts close to the wingtip.

A thin coat of transparent fuel proofer should be brushed on the entire model, including the cowl interior, to protect the finish from any “hot” fuels you

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may use. We found Comet Hot Fuel Proofer covers the model with a transparent, durable coating. A removable hatch should be cut in order to obtain access to the engine.

The model XPW-8 should balance at the point indicated on the plans. Strips of solder or lead shot can be firmly attached to the nose or tail to remedy any nose or tail heavy condition that may develop. Flight lines should be at least .012" thick and can vary from 35 to 60 feet. Long lines are suggested for performing stunts. Although it is not an absolute necessity, we do all our flying with a Jim Walker “U Reely” control handle reel combination. With this device the flight lines can be varied in length even while the model is flying. Fly from smooth surfaces like wood or concrete, however, in view of the comparatively large unobstructed wheels, close cut grass should not hinder landings and take-offs.

Bill of Materials

Fuselage. 2 pcs 3/16" x 3" x 24" medium balsa, fuselage sides and bottom. 1 pc ¾" x 3" x 24" soft balsa, fuselage top and nose blocks. 1 pc 3/32" music wire, 20" long, landing gear. 1 pc 1/16" music wire, 24" long, control rod & landing gear & tail wheel strut. 1 pc ⅛" plywood, 2" x 3" bulkhead. 1 pc ⅜" dowel, 28" long, exhaust stack. 1 pc 3/16" x 3/16" x 10" medium balsa, cross braces. 1 pc 2½" x 1/16" x 1" dural, bell crank. 1 pc ⅜" x ½" x 2¼" hardwood, bellcrank mount.

Wings. 1 pc ¾" x ½" x 31" medium balsa, lower wing leading edge. 1 pc 1" x ⅞" x 31" medium balsa, upper wing edge. 1 pc ¾" x ¼" x 31" medium balsa, lower wing trailing edge. 1 pc 1" x 5/16" x 31" medium balsa, upper wing trailing edge. 1 pc ⅛" x 2" x 24" hard balsa, ribs. 1 pc ¾" x 12" x 2" soft balsa, wing tips. 1 pc 24" x 36" sheet of gas model Silkspan, wing covering. 2 pcs ⅜" x ⅛" x 30" pine or spruce, interplane struts. 1 pc 5/16" x ⅛" x 14" pine or spruce, cabane struts. 1 pc 2" x 3/16" x 12" medium balsa, compression ribs.

Empennage. 1 pc ¼" x 2" x 28" soft balsa, tail surfaces. 6 pcs ½" x 1" crinoline, hinges. 1 pc ¼" x ¼" x 10" pine or spruce elevator spar.

Miscellaneous. "Froom" spinner, 2⅜" wheels, washers, nuts and bolts, cement, clear dope, thinner, aluminum dope, hot fuel proofer (transparent), "Trim-Film," heavy thread, celluloid.