

Among pilots' favorite light planes is this old reliable, newly improved and slicked up for 1936, and offered in a clever convertible flying and scale-model version.

THREE years of development have advanced the Fairchild 24 to a position as one of America's foremost light planes. The 1936 model has a pleasing new symmetry and many improvements, such as the smooth N.

A. C. A. cowling that fairs over the Warner engine, cleaner landing gear with more oleo travel, and generally greater strength. The cantilever stabilizer omits tail wires, which goes to make a better scale and flying model. Improved aileron and flap design, along with the new trim tabs, make the Fairchild even more maneuverable than last year's model.

Versatility has been carried out in the design of our model to the extent that it may be used as a flying model or, in three operations, changed to a scale model to place on display. Note while studying the drawings that the landing gear struts can be adjusted to scale or lengthened to flying model proportions, that the tail surfaces for scale are removable to make way for larger flying surfaces, and finally that the scale prop is just as easily replaced with a fine flying prop.

FUSELAGE

Place waxed paper over the drawing. Build two sides of the fuselage by cutting pieces to fit the ones on the side view of the model. Use plenty of pins to hold the parts, but do not push pins through the material. Note that the $\frac{1}{16}$ " special ribs are part of the fuselage frame. Use only model airplane cement to assemble with, unless you wish to get into difficulties.

To assemble the two sides, cement the tail posts together and hold with a paper clip while the succeeding formers to the front are cemented in place as per drawings. Scraps of balsa with notches cut to the former widths will help to hold the sides against the formers and keep the cross section squared up. When the front is reached, note that former 2t is slanted to the windshield angle and that $\frac{1}{16}$ " square spacers are used at

Time-Tested

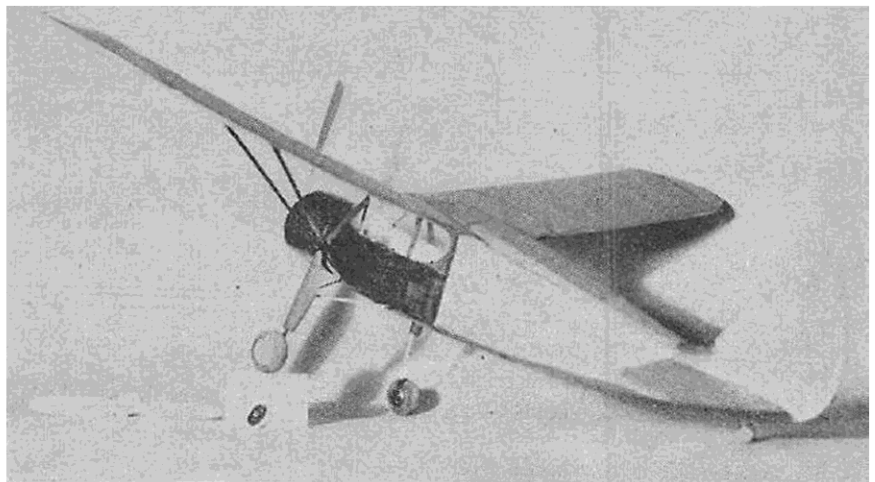
by Alan D. Booton

FAIRCHILD 24

the very front, instead of formers. It was necessary to do this so the round bulkhead could be attached more accurately after the formers have dried. Cover the sides of the fuselage with $\frac{1}{32}$ " sheet balsa back to #3 upright and on the bottom to #2b former. Leave a surplus of the $\frac{1}{32}$ " sheet on the space under the windshield, in order that the accurate outline be cut according to the top view. After cutting the outline, cement the four bamboo supports in and apply cement fanwise to form small fillets.

Select evenly cut $\frac{1}{32}$ " square bamboo fairing strips and cement them to the fuselage as indicated on the drawing. Fit and cement the windshield and cabin windows. Use model celloloid, not cellophane.

The cowl is carved out of a soft block $2 \times 2 \times 1\frac{9}{16}$ ". Hollow it to $\frac{1}{4}$ " wall thickness. A plain $\frac{1}{4}$ " soft sheet retainer disc may be used, but if the seven base-relief cylinders are carved, the appearance of the nose will be improved. Cut a $\frac{5}{16}$ " hole in the retaining disc and carve a nose plug to fit it. Sand and dope the cowl, nose plug and the sheet balsa on the fuselage to a smooth finish and cement the cowl to the bulkhead. Insert prop shaft through nose plug, several washers, and the shaft hole in the prop, and bend the end over in the usual



A pose showing the strut that slides from flying to scale position.

manner and cement thoroughly. A free-wheeling device may be attached at this stage, if preferred. Bend a $\frac{1}{8}$ " wide piece of aluminum sheet in a loop and cement it to the bottom of the cowl for the dummy exhaust stack.

WING FRAMES

To get a left wing panel drawing, place a sheet of white paper under the right-wing drawing and a sheet of carbon paper, carbon face up, under the white sheet and trace over the lines of the right-panel drawing. An accurate left-panel drawing will result. No instruction is needed on the wing structure, except that the bamboo tips should be cemented on while the frames are still fastened to the drawings. When the wing frames are dry, cement them to the fuselage ribs that have been provided just for this step, then block the tips up to $1\frac{1}{2}$ " dihedral to dry.

LANDING GEAR

Note that the L. G. struts can be moved up and down in the fairing. This movement permits the use of the same L. G. for scale or flying. Each fairing is made of two $\frac{1}{8}$ " sheet patterns and each half is grooved to retain the sheet aluminum guide. The guide is made by folding a predetermined .010 sheet aluminum pattern over the $\frac{1}{16} \times \frac{3}{32}$ " bamboo strut so the ends overlap. The resulting guide is then cemented between the halves of the strut fairing. Make two sets of struts and fairings. The aluminum guides stand more shock than the bare balsa grooves and provide a firm fit on the bamboo struts, so they will stay in the position placed, whether for scale or flying.

Make the wheels as shown on the drawing. Pains have been taken to include them in detail. Carefully streamline all struts (except the ones that fit in the guides) and cement the landing gear and wing struts in place while the dihedral of the wing frames is $1\frac{1}{2}$ ". Attach tail wheel to the tail post with #6 wire.

TAIL SURFACES

There are two sets of tail surfaces to be made, one for flying and one for scale. The scale surfaces are made of $\frac{1}{16}$ " sheet balsa to the outlines provided on the drawing. The flying surfaces are built up, and they are larger.

Carve the tail block from soft balsa, dope and sand it. Cement the tail surface parts together "in the square," or in other words, cut the rib lengths out of $\frac{1}{32} \times \frac{3}{32}$ " strips and do not shape them as ribs until the assemblies are taken off the board, then sand them carefully to shape.

Cement the rear hook and the bamboo pegs to the tail block, and then the rudder. When dry, punch holes, one in the tail post and two in former 6t to receive the three pegs tightly fitted.

PROPELLERS

The flying propeller is larger than usual for this size and type of model. You may use an 8" prop design of your own or the one shown in the drawing. The one provided has a slight design toward scale, but is efficient for consistent flights over a minute.

A scale propeller design is provided in the drawing.

COVERING AND DOPING

Select the tissue for your favorite color scheme.

Cover one section between formers, on top and bottom, at a time. It is impossible to get a good covering job by trying to cover the full length all at once. The sides, however, can be covered with one piece each. The sections of the wing panels between the first two ribs should be covered with individual pieces. On the under surfaces of the wings, cover from the second ribs to the ribs where struts join, then to the last ribs and finally to the tips. On the top surfaces, cover from the second ribs to the last ribs, and then to the tips.

Cover the rudder and the two stabilizer halves on both sides, and then cement the stabilizer halves to the tail block. Be sure they line up perfectly and are set at zero incidence while the tail block is resting on the fuselage. Spray all the tissue surfaces lightly with water and they will tighten up when dry. If preferred, a light coat of glossy dope can be applied to the tissue.

The wooden surfaces should be doped with glossy colored dope to correspond with the tissue selected. The cylinders, wheels, and struts are black. The big ship is striped as indicated by the color lines on the drawing, and probably should be yellow or cream. Use colored beads for the lights and fair them with cement. Rule the flap and aileron outlines on with black ink.

FLYING

Remove the tail assembly and hook on the end of a 72" motor of six strands and lubricate it. Wipe off excess lubricant to prevent splattering the tissue, then pull the other end through the fuselage and attach the flying prop.

Glide the model to determine the adjustments needed, if any, and then gradually increase rubber winds between powered flights for the final check-up.

LIST OF MATERIALS

Balsa

- 1 2x2x2" for tail blocks, etc.
- 1 2x2x1 $\frac{9}{10}$ " nose block
- 1 $\frac{5}{8} \times 1 \times 8$ " prop block
- 1 $\frac{1}{4} \times 1\frac{1}{2} \times 5$ " prop block
- 1 $1\frac{1}{16} \times 1\frac{1}{16} \times 1$ " wheels block
- 1 $\frac{1}{4}$ " sheet, $1\frac{3}{8}$ " sq., retaining disc
- 12 $\frac{1}{16}$ sq. x 18" hard balsa strips
- 3 $\frac{3}{32}$ sq. x 18" balsa
- 3 $\frac{1}{32} \times 2 \times 18$ " balsa
- 2 $\frac{1}{10} \times 2 \times 18$ " balsa
- 1 $\frac{1}{8} \times 2 \times 6$ " balsa
- 14 $\frac{1}{32}$ sq. x 12" bamboo
- 2 $\frac{1}{32} \times 1\frac{1}{8} \times 12$ " bamboo
- 1 x 2 $\frac{1}{16}$ " pc. .010 sheet alum.
- 3 $\frac{1}{2} \times 4$ " sheet celluloid
- 12" #4 music wire
- 4" #8 music wire
- 4" #6 music wire
- 2" $\frac{1}{16}$ alum. tube
- 2 $\frac{1}{4}$ " washers
- 2 $\frac{1}{8}$ " washers
- 2 sheets col. tis.
- 1 oz. cement
- $\frac{1}{2}$ oz. clear dope
- Black and choice of colored dopes
- 72" $\frac{1}{8}$ " flat rubber