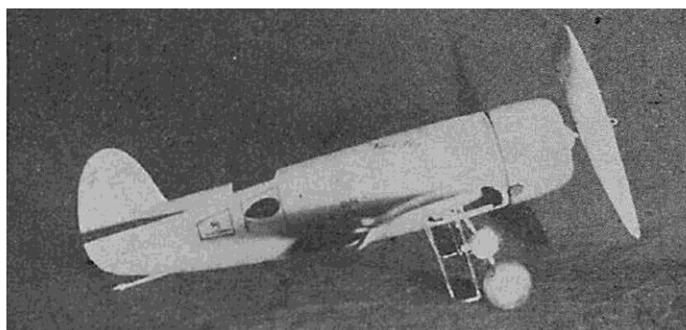




REMEMBER the Travelair "Mystery S" Capt. Hawks flew on so many record-breaking trips several years ago? Now he's testing a silver-and-blue ship similar in appearance to the "Mystery S" and promises to set as many new records with it as he did with the old red-and-silver speedster.

The model of *Time Flies* is faithfully reproduced in miniature to conform with the outward appearance of the big ship. It even boasts of a landing gear that lets down at the end of flight, an anti-torque aileron, and flaps that also let down. With all these features the model, ready to fly in any speed-model race, weighs only 2 ounces. With the aid of the anti-torque aileron, maximum thrills with a minimum of crack-ups can be obtained.

The first step in building this type of model is to make plywood sheets for the formers and wing-cover panels. The four wing panels can be cut from two 7x8" sheets of two-ply $\frac{1}{16}$ " balsa, cemented together cross-grained. The formers are cut from a 4x6" sheet of two-ply $\frac{1}{16}$ " balsa. Carve the nose block, wheels, propeller, and cut out the ribs while these are drying.

FUSELAGE

Now cut out the formers; that is, two each of the halves. The formers may be cemented together and the fuselage frame assembled on the two side $\frac{1}{16}$ " square longerons, or, the right half of the fuselage may be built up on the top and bottom longerons, working directly on the drawing, and then the other half built to the already assembled half. The latter way is more accurate.

WINGS

The fuselage frame is set aside until the wing panels are made. Only a tracing of the full-size wing patterns is needed, but the rib and spar positions will help. Cut the four patterns and make certain there are two top patterns and two bottom patterns, and that the exposed

Time Flies

HAWKS HM-1

grain will run from the center to the tips. The ribs and spars interlock and make assembly easy. Cement the ribs and spars to the lower panels. If the leading and trailing edges of the panels are blocked up with tapered

stock, and the ribs and spars held down with plenty of pins, all parts will fit snugly.

No left aileron is needed, but may be workable manually, if desired. Cut through the bottom panels between the spars in several places, so the exact cutting location of the flaps and aileron can be found after covering the top. To prevent the top cement from sticking to the flap ribs and spars, insert small pieces of waxed paper and fold them over. Notch out for the #12 wire aileron control, lay it in and cement the top patterns on. Use the trailing edges as guides and let the front edges remain uncemented to the leading strips until the panels are removed, then use pins and clamps to pull the edges together. Attach the wings to the fuselage with the stub spars with $\frac{1}{4}$ " dihedral.

Before going farther with the other parts of the model, install the operating mechanism in the fuselage.

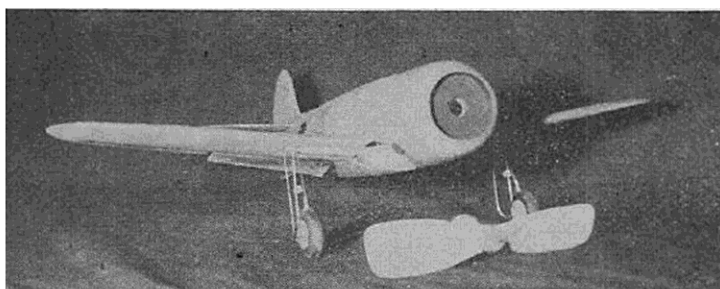
THE MECHANISM

The rubber motor tension is what really operates the parts. The principle is the same as that used in the Folkerts Special model last month. A little study will make it clear.

The tension of the motor being wound overcomes the tension of the spring B and the rear hook arm on A is drawn up in a horizontal position after the motor is about half wound; the crank on A is therefore drawn back, which pulls the control bar back about $\frac{1}{4}$ ". In this $\frac{1}{4}$ " movement the flap connecting wire D is caught by the reverse bend on the control bar, while the flaps are held up, and the control bar being directly connected to the aileron control G raises the aileron to its highest angle and holds the right wing down against the pull of the propeller torque, and lowers it as (Turn to page 94)

Performance, like size, is scaled down in this flying model, but it's all there.

by Alan D. Booton



TIME FLIES

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the torque diminishes, making an ideal anti-torque control. Then, at the front end of the control bar is an elongated loop that engages the releasing latch E for the landing gear. The loop permits the engagement of the landing gear and yet the rear end of the loop forces the latch open when the power runs out. A small #4 wire spring is attached to the latch to hold it in locked position at all times, except when the control bar overcomes it to release the landing gear.

The exact dimensions for all the various wire parts are not given, because any deviation in your model would make them useless. The best plan is to fit your model with the parts so that they will work unerringly before covering the fuselage. All of the main parts are #12 music wire. The rear spring B is ten turns of #10 wire, on a $\frac{1}{8}$ " drill shank.

The scale landing gear is provided for those who would rather make a scale model. The wire landing gear for the flying model should be closely followed. Unhappily, several soldered joints have to be made. Cut out the spaces shown in the wing bottoms for the landing gear and force a 2" length of #12 wire through the blocks and landing gear axis, in one wing and then the other. Cement the guides to former 4 as shown on the guide detail and attach the brace wires, so they stop the landing gear in the right position. After testing the movement, remove the axis pins, add the tension springs that force the landing gear down, and replace the pins.

Cut the aileron free and cement a tissue hinge on. Cut the flaps loose from the bottom and cement tissue hinges to them. The aileron hinge goes on top and the flap hinges go on the bottom. After all of the wire parts are fitted to the model, test them all before covering. *Make sure of them.*

COVERING FUSELAGE

Cover the fuselage with $\frac{1}{64}$ " sheet. Do this carefully and see that all seams are flush and well butted. Do not get blobs of cement on the panels between the formers. The fillets are $\frac{1}{64}$ " strips $\frac{1}{4}$ " wide and work very well. Cement the rudder ribs to the post, and frame for the trim tab. Trace the rudder outline on two $\frac{1}{64}$ " pieces and cut out, the grain running vertically. Cement these to the ribs and to the edges of each other.

HORIZONTAL TAIL

Cut four of the half patterns from $\frac{1}{64}$ " sheet and cement them together around the edges, with $\frac{1}{8}$ " streamlined ribs between, to make the two halves. Provision has been made on the draw-

ing to have interchangeable scale and flying surfaces, by showing wire dowel rods and aluminum tubing sleeves.

PROPELLERS

A three-bladed propeller is shown for scale models. The propeller for the flying model is a two-bladed high-speed type designed especially for this model. It is carved from a $\frac{3}{4} \times 1\frac{1}{8} \times 6$ " medium balsa block and is left fairly thick at the boss. Sand and balance and dope several times.

COWL AND NOSE

The cowl block is carved from medium balsa and left fairly thick in order to balance the model. The hollowed cowl is fitted with a $\frac{1}{8}$ " sheet disk and a conventional removable nose plug. Base-relief cylinders and additional detail can be added to the motor disk if desired. When installing the prop shaft, a loop for stretching and winding the motor will provide for longer flights.

FINISHING

Cement the tail skid on. It can be fashioned out of hard balsa. Cement the cowl on, and when set, sand the whole model with fine sandpaper and give it a coat of thinned clear lacquer. The use of dopes on all-balsa models is very discouraging, because it sags the sheet balsa between the formers and ribs. Mix aluminum powder with some thinned clear lacquer and coat the whole model. The lettering is "bold" blue. The background of the coat-of-arms is gold. Outline the door, radio compartment, and glass panels with a ruling pen and black ink. It is suggested that the glass panels be painted black instead of cutting them out. The tires, motor, and exhaust stack are also black.

Cut a $\frac{3}{4}$ " door where the rear hook is. Power the model with 8 or 10 strands of $\frac{1}{8}$ " lubricated rubber and lightly cement the "door" back in place. Cut the wheel wells in the fuselage barely large enough for the wheels to clear.

FLYING

Do not glide the model, unless it can be done in tall grass. The gliding speed is about 15 m.p.h. and one must become accustomed to launching models with that speed. Pin the flaps up and be sure the aileron is down in neutral position before gliding. Adjust the glide with the trim tabs after the model will balance at the center of the tips.

If tall grass is not available, pin the flaps up and let the model take off with the wheels down, using only enough turns on the motor for the model to clear the ground. After the adjustments are perfected, cement the tabs.

- 1 $1\frac{3}{4} \times 2\frac{1}{2} \times 2\frac{1}{2}$ " nose block
- 1 $\frac{3}{4} \times 1\frac{1}{8} \times 6$ " prop block
- 1 $1\frac{1}{4} \times 1\frac{1}{4} \times 1$ " wheels block
- 2 $\frac{1}{16} \times \frac{1}{8} \times 12$ " leading edges
- 4 $\frac{1}{16} \times 1\frac{1}{16} \times 12$ " longerons
- 1 $\frac{1}{8} \times 2 \times 8$ " sheet 3 $\frac{1}{32} \times 2 \times 18$ " sheet
- 1 $\frac{1}{16} \times 2 \times 18$ " " 12 $\frac{1}{64} \times 2 \times 18$ " "
- 3 #12 music wire x 24"
- 1 #10 " " x 12"
- 1 #14 " " x 12"
- 1 #4 " " x 6"
- 1 oz. tube cement
- 1 oz. clear lacquer 1 oz. thinner
- 1 dram fine aluminum powder
- 1 dram blue lacquer pack of pins