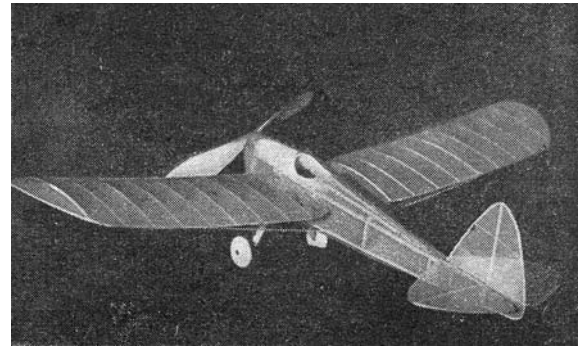
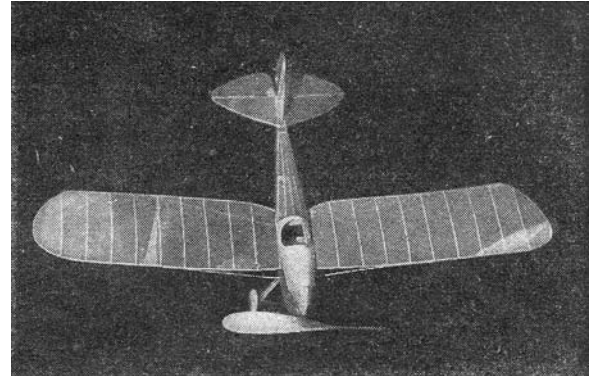
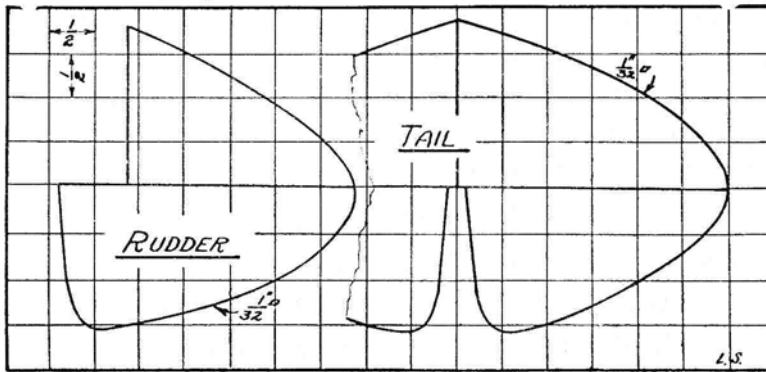


Heath Midwing



Much pleasure can be derived from an indoor flying scale model. The Heath Midwing proved itself an excellent flier, stable and reliable. The two characteristic poses-right-show the pertinent assembly details and the opaqueness of the microfilm-covered wing and tail. Fuselage is covered with superfine. This ship is capable of nearly four minutes' duration.

A novel construction feature in the form of an indoor flying scale model.

by

LAWRENCE SMITHLINE

REAL indoor flying scale models are rare birds. The scale model usually palmed off as an indoor model is heavy enough to fly outdoors in a stiff gale.

The Heath Midwing makes a particularly good indoor scale model as it is very simple in design and construction. It has no fancy doodads, such as a more intricate airplane would have, and which, when left off, would make it look incomplete. Yet, when built, it looks very much like a real airplane.

Our model has a tissue-covered fuselage and microfilm-covered surfaces. The film, however, is not the ordinary kind, but is of a solid color. How to make it will be described later.

FUSELAGE

Make a full-size drawing of the fuselage sides and build them up of 1/16" square balsa and cement

the bulkheads in place. After the cement has dried, cut away enough of bulkheads 1, 2, and 3, and the cross braces, so that the rubber can get freely from the propeller to the rear hook.

Carve the nose block out of very light balsa, leaving a thin shell approximately 1/6" all around. The plug, which is an aid to winding and changing the rubber, should be cut out next. After the nose block is finished, cement it to the fuselage framework and then cement the three upper and two lower 1/20" square stringers in place. Draw the cockpit section full size, make one out of heavy white paper, and cement it in place. Make the rear hook as shown in the drawing, and cement it also in place. Now cover the fuselage with superfine tissue by coating the longerons and cross braces with banana oil or microfilm solution, and laying the tissue over the wet surface. Make sure that

there are no wrinkles in the tissue, and then trim the excess off. Spray the tissue with water to tighten it.

The main landing-gear struts are made by streamlining 1/16" balsa sheet, 3/16" wide and 1-7/8" long. The auxiliary struts are 1/32" square strips of bamboo. Cement the wire axles in place, slip the streamlined wheels made of sheet balsa 1/4" thick and 1-1/8" in diameter, on them, and put a dot of cement on the ends of the axles to prevent the wheels from coming off. The fuselage is finished by cementing the bamboo tail skid in place.

WING

The wing is single surfaced and of light construction. On the real plane it is braced with "N" struts, but on the original model only two struts were used. The wing, as mentioned above, is covered with a semi-opaque-colored microfilm.

In constructing this model it is first necessary to make a template of the ribs from stiff cardboard. Cut out the twenty ribs by the usual procedure from 1/32" sheet balsa by slicing along the edge of the template, and then sliding the template down 1/32", but parallel to the first cut, and slicing again. The spars are 1/20" square and are pinned to the full-size drawing of the wing. The tips are made by bending 1/32" square strips of soft balsa around the cardboard template, and should be cemented to the spars. Insert and cement the ribs, making sure to cut a third of any excess length from the front and two thirds from the rear. The microfilm is made by mixing well a half ounce of good colored dope and a half ounce of microfilm solution and pouring it on the water in the usual manner. Cover the two halves of the wing and cement them to the fuselage in the proper place as shown on drawing. Make struts of 1/20" square balsa and cement them in the places indicated on the drawing so that there is 1-1/2" dihedral in the wing under each tip. This finishes the wing.

RUDDER AND TAIL

Make a full-size drawing of the tail and rudder, and make templates of them from stiff cardboard. Bend strips of 1/32" square balsa around the templates and then pin the outlines to the full-size drawing.

Insert the auxiliary spars, cover them with microfilm, and cement first the tail and then the rudder in place on the fuselage.

PROPELLER

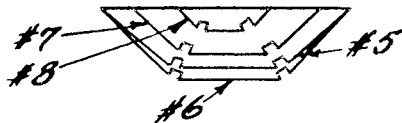
The propeller is carved from a very light block 3/4 x 1 x 7" in the usual manner. That is, first draw the diagonals on the broad faces and remove the wood to them (allowing for a hub) with a sharp knife. Smooth the edges and then fashion the concave sides of the blades, using a knife at first. Progress to a razor blade and then through the various degrees of sandpaper until the concave sides are completely finished. The convex side should be carved with the razor till the blades are 1/16" thick at the tip and 3/32" thick at the hub. Then use varying degrees of sandpaper till the hub is 1/16" thick and the tips 1/32" thick. Make a template of the blade shape of paper and cut the blades to fit. Trim and smooth the edges and insert the shaft, first through the nose plug (and after slipping three washers on the shaft), then through the propeller and cement it in place. Cement one of the washers to the nose plug and one to the propeller, making sure that no cement gets on the surfaces exposed to the rubbing.

FLYING AND ADJUSTING

Cut out the rear section of tissue from one of the sides of the fuselage and force a loop of 1/8" flat brown rubber through the fuselage. Connect it to the propeller shaft and put the nose plug back in position. Glide the model. It should glide well if you have the nose block of the proper thickness and the wing and tail set correctly. Any necessary adjustments can be made by moving the elevators. If the model stalls or dives badly you will have to weight the nose or tail accordingly. After a good glide is obtained, wind the model a few turns and launch it. It should fly in approximately forty-foot-diameter circles. If it does not, bend the rudder. The original model, which weighed two ounces, turned in several flights of over two and a half minutes and appeared to be overpowered. With 7/64" rubber the model would have probably flown nearly four minutes, but an unfortunate argument with a large glider (in which the glider won) ended its career.



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ALL BULKHEADS $\frac{1}{32}$ SHEET.



WING SECTION

FULL SIZE

PROPELLER TEMPLATE
Block $\frac{3}{4}$ " x $\frac{1}{2}$ " x 7"