

The Helio Courier

by J. Fergusson



A one inch to the foot scale model of an unusual prototype built for the U.S. Army

THE Helio *Courier* represents the third stage of an interesting development attempting to produce a light aircraft that combines—among other features—quick take-off and climb, fully controllable flight at low speeds, freedom from stall and spin, high cruising speed, and low landing speed.

A two-seat prototype was built, followed by a four-seat version known as the Helio-Four. It was this latter aircraft that provided the basis for the *Courier*, of which one example was delivered to the U.S. Army for evaluation tests. This machine is designated YL-24 and has the serial number 22540 on the fin and rudder.

The model is to 1 in. = 1 ft. scale and has lived up to the stable reputation of the full scale job in all of its 200 flights to date. The only damage so far has been tissue tears on corn stubble, and a broken prop or two. At the P.A.A. Scottish Rally held at Heathfield, it gained an equal 2nd

in the scale event with only two flights.

Fuselage

Construction, although it looks complicated at first glance, is in fact very simple. A basic structure of $\frac{1}{8}$ in. sq. longerons and $\frac{1}{8}$ in. \times $\frac{1}{16}$ in. struts with $\frac{1}{16}$ in. sheet stringers is overlaid to the rear of the cabin with 1.32 in. sheet: 1.32 in. \times $\frac{1}{4}$ in. flanges to the longerons give a reserve of strength at the vulnerable rear end of the fuselage. There are only two real formers in the fuselage, a $\frac{1}{16}$ in. sheet dashboard and a $\frac{3}{16}$ in. ply firewall.

The only other shaped part in the fuselage to cause the least thought is the nose block, and this is shown on the plan. It is, however, necessary to carve or build up a mould for the lower cowl, as this is made of papier mâché (a couple of pages of newspaper applied wet in layers with plenty of photo paste,

then removed and doped when dry). The top cowl is detachable, being made of thin aluminium from a biscuit tin and polished with metal polish.

It is fixed by short straight pins into the $\frac{3}{16}$ in. ply engine mount sides. The undercarriage is of 14 gauge wire bound and cemented to the firewall and finished with shim brass fairings soldered on. The cabin sides and belly former pieces are of $\frac{1}{16}$ in. \times $\frac{3}{8}$ in. strip glued on and then shaped to suit the contours of the fuselage.

The Wing

This is a simple, single spar structure with no sheet work at all but incorporating an anti-warp web structure. This definitely makes the wing and tail absolutely warp free, and greatly adds to the ability of the model to withstand hard knocks. The tail and rudder are simple enough not to cause any headaches.

Flying

The engine is an Allbon Merlin or similar motor, mounted 2 deg. right and 1 deg. down, swinging an 8 in. \times 4 in. prop, the blade pattern of which is the same as the aerofoil used on the wing panels—N.A.C.A. 6412.

The flight pattern is left turn on power and right on glide. The climb is very steady in approx. 60-80 ft. circles and is, in fact, scale-like. The glide? Well that really is something, so be sure to fit a timer.

