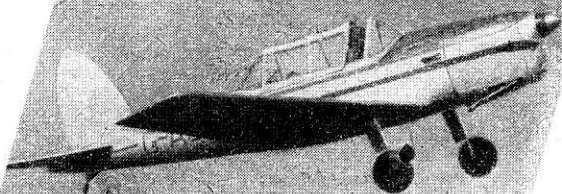


A 1/8TH SCALE DE HAVILLAND

Chipmunk

BY J. M. GREENLAND

THE idea of building this flying scale Chipmunk was suggested to me in 1947 by Mr. Pat Fillingham who kindly provided the drawings and data, etc. Having toyed with the idea for nearly a year I finally decided to build it to 1½ in. to 1 ft. scale and fit a diesel engine. The factors governing the choice of engine were that it should start easily, since it is totally enclosed, should drive a 9-10 in. propeller and that it should not be too powerful, since the Chipmunk is in the light trainer class. For a model of 4 ft. 3 in. span the 1.3 c.c. Mills diesel fulfilled all these requirements admirably, but any other engine of approximately the same capacity should fly it equally as well.

Fuselage. The fuselage is built up in the monocoque fashion of balsa planking. Commence by cutting out the keel from 1/16 in. sheet, pin it to the plan and add the half formers and ½ in. × 1/16 in. balsa planking. When dry turn over and add the other halves of the formers and the rest of the planking. Sand smooth and cut out the cockpit recesses. Next build the tailplane (its construction is clear on the plan) and carve the tail unit fairing blocks to shape, cut a slot in these blocks to take the tailplane mainspars. Glue the block on and fit the tailplane into place, lining it up at 0° incidence with the datum and thrust lines of the fuselage. Sheet cover the tailplane where shown and fair it into the fuselage with 1/32 in. sheet, plastic wood, etc.

Fin and Rudder. The fin is fixed to the fuselage and faired into it with balsa blocks, the rudder is movable being hinged on pins. To make the rudder hinge properly the hinge-pins should be at the centre formed by the semi-circular recesses in the back of the fin ribs and in the same vertical plane as the rear edges of the fin's sheet covering. The leading-edge of

the rudder is made semi-circular in section so that it fits snugly into the fin. The actual construction of these two units needs no explanation.

Wings. The wings are built in three sections, centre section and two outer panels. The centre section is fixed to the fuselage at 2° incidence and contains the undercarriage and its stress member and springing.

Construction. The undercarriage stress member is first cut out and the slots, holes, etc., drilled, the position of the undercarriage legs must then be accurately marked on. Next build up the centre section including the undercarriage stress member. Cut slots in the fuselage to take the spars and then glue firmly into place at the correct angle of incidence. N.B. that the trailing edge is $\frac{1}{8}$ " below the bottom of the fuselage. Connect the trailing edges to the fuselage by $\frac{1}{8}$ in. $\times$ $\frac{3}{8}$ in. balsa cut and bent to the shape of the fairing. The fuselage is faired into the wings with $1/32$ in. sheet top and bottom carefully steamed to shape.

The outer panels are simple to construct and are plugged into the centre section so that they can knock out in a crash.

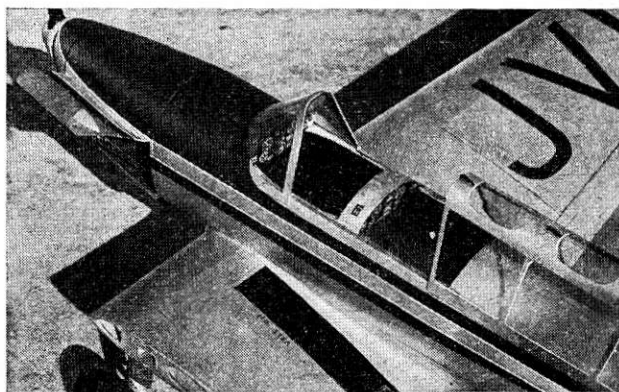
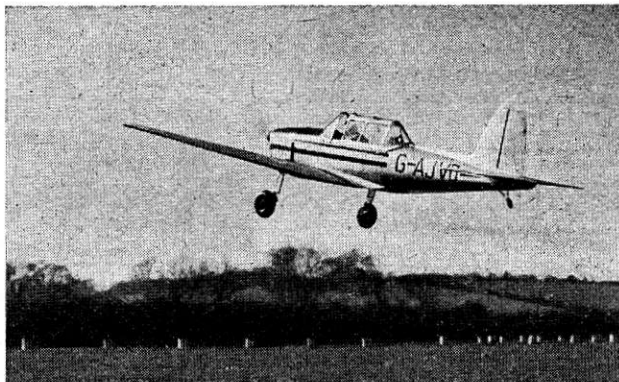
Undercarriage. The undercarriage legs are made of 16 s.w.g. steel wire faired with balsa and paper. They are sprung to the spars with elastic bands so that they can travel backwards, being pivoted in brass tubes which are bolted to the stress member (shown clearly on the plan). "M.S." airwheels are fitted to the model because with a little modification to their hubs they exactly resemble the real thing.

Cockpit Cover. The cockpit cover on the original model is moulded in three pieces from $3/32$ in. sheet perspex but it could alternatively be built up with ply and block balsa with celluloid windows. I made the original canopy to slide because the throttle controls were to have been situated in the rear cockpit, but on my Mills the throttle control does not have to be touched so this obviates the necessity. The frames were cut from notepaper and seccotined on to the perspex, afterwards being painted silver. The sliding rails are built of "L" section $1/32$ in. sheet balsa with a bamboo runner fixed to the canopy. When moulding the canopy make it a little too narrow so that it has to be slightly sprung into position.

Engine Mounting and Cowling. The original cowling was to have been of beaten aluminium, but since it was not finished in time for publication, a wooden one was built instead with a door on one side. Admittedly the engine is somewhat inaccessible, but if your engine is reliable there is no need to be able to get at anything more than the throttle, tank and compression head. The engine mounting bulkhead is cemented to the front fuselage former so that in the event of a bad "prang" the whole "power egg" will knock off.

Flying. My usual practice when testing prototypes as mentioned in my Bleriot article (Christmas, 1947), is to make sure of the centre of gravity position, check the rigging angles and then give short powered hops with the model under-elevated, gradually increase the elevation until the model just rises off. In this way, little harm can come to the model should it be badly out of trim. The nearer it is to the ground the less hard it can hit it!!

Full-size plans of the model are available, price 5/- post free, from the Aeromodeller Plans Service (see $\frac{1}{4}$ scale reproduction overleaf).



All the photographs on this page are of the model and not the full-size machine as one might imagine. Readers will be interested to know that its young designer is only 16 and there is no doubt that the model is a tribute to his ingenuity and enterprise.

Aeromodeller Photos.

