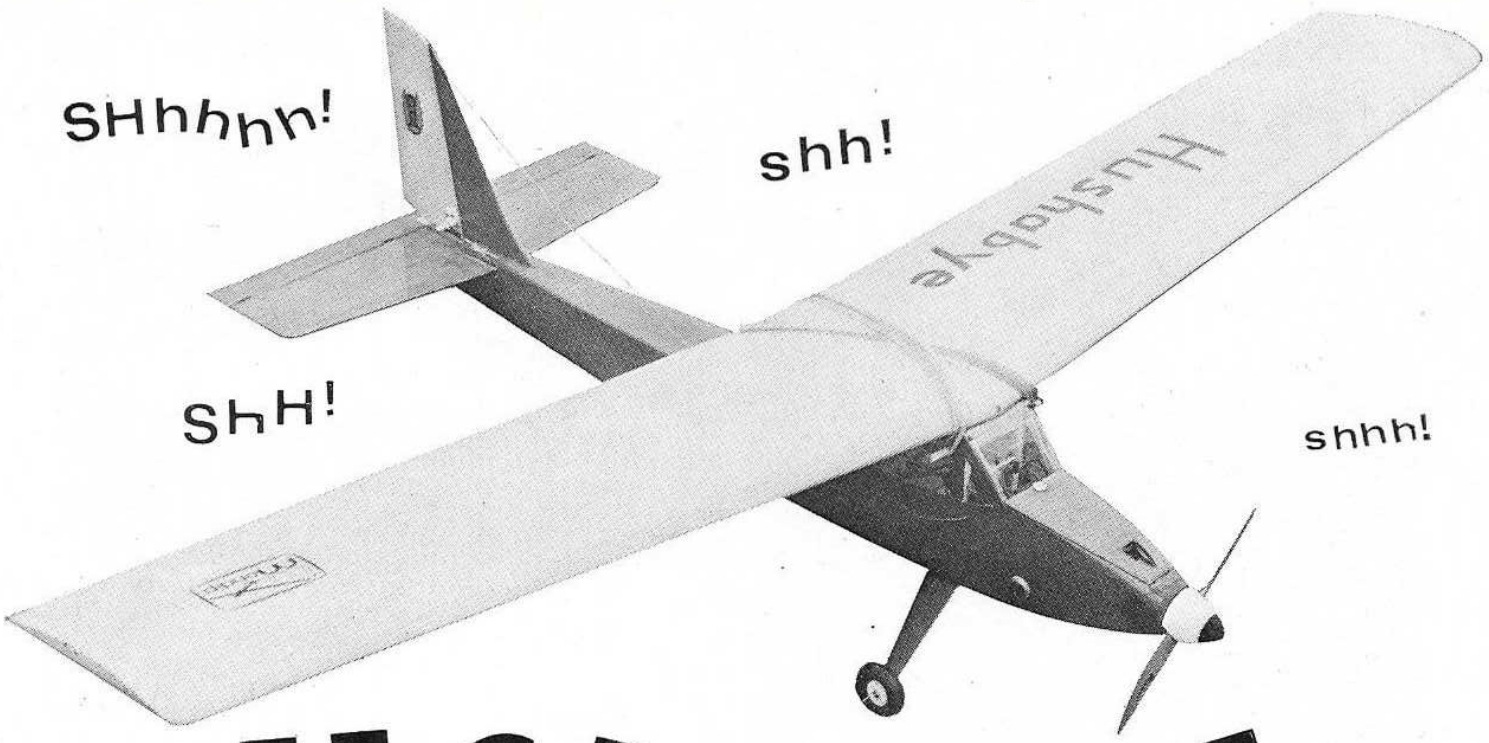



# HUSHABYE

***Everybody's talking about trying ELECTRIC POWER to solve the noise problem—JOHN FLETCHER gives you this neat sport design —51" span, for Cyclone-15 motor and 3-function radio . . .***

THE seemingly inevitable noise, mess and running expenses that accompany the average power model have had a considerable influence on my modelling career, and have resulted in my becoming a confirmed glider man. Therefore, when a model emerged from my workshop with a propeller on the front, my family regarded it with horror, and as yet another sign of my rapidly advancing senility! After they had experienced for themselves, however, the pleasures of electric power, the new model rapidly became accepted and, after the choosing of a suitable name (does anyone with a family ever get away without naming a model, by the way?), it has become just another of "Daddy's models".

**Background**

When I decided to try my hand at electric powered flight, there were two early decisions to be made.

1. *What approach to take?* A powered glider with a geared-down motor, a la *Mosquito*, or a direct drive motor in a normal "power plane" layout.

2. *Which power unit to use?* The recent introduction of a range of power units onto the market gives a fairly wide choice and I decided to use one of the Ripmax 'Cyclone-15' outfits. Any electric motor of approximately the same size (35mm dia.) could be used, however, and the battery compartment will take either a 600mA or 1200mA power packs.

With a total power unit weight of 21oz. and a typical radio installation, using 3 servos and 225 nicad, weighing about 9oz., it rapidly became obvious that, if I didn't want to end up with an excessively high wing loading, the airframe weight should not exceed about 1lb. and, with this firmly in my mind, *Hushabye* took shape.

A couple of ounces *could* be saved on the radio installation by dispensing with the motor on/off control but, in view of the damage which can be caused to the battery cells by over-discharging, I would recommend that the third servo *is* used. It also makes landing much easier!

With a wing area of 2.7sq.ft., the design wing loading was 16 to 17oz./sq.ft. and this, with the flat-bottom wing section used, has proved quite acceptable. The structure, whilst being as light as possible, is quite strong enough and will stand the occasional bump on landing—and you must admit that it does look prettier than some other electric-powered models you may have seen!

**CONSTRUCTION**

This is conventional, but keep an eye on wood weight to ensure reasonable performance.

**Wings**

Start by making the ribs by the sandwich method, using the root and tip sections shown, then build up the spars, ribs, leading edge and trailing edge flat on the plan. Fit the spar webs from W2 outwards and, when dry, remove from the board and shape the leading edge ready to receive the sheeting. Pin the structure back onto the board and fit the sheeting to the leading edge and wing root. Leave it on the board for a good 12 hours before removing, to fit and shape the wingtip blocks and undersurface sheeting. A light sanding should then complete the wing panels, which are then joined, using


With no dip after hand launch, *Hushabye* climbs slowly but steadily away, while RM's Peter Holland times the motor run. *Below:* this is what we *call* an installation shot. John's really neat job is worth showing well blown-up, as an example to all!

the dihedral braces shown. A narrow strip of bandage or glass cloth epoxied over the join makes for a stronger wing joint.

*Note: veneered foam wings can be supplied for this model by the designer —see Classified Ads.*

**Fuselage and tail**

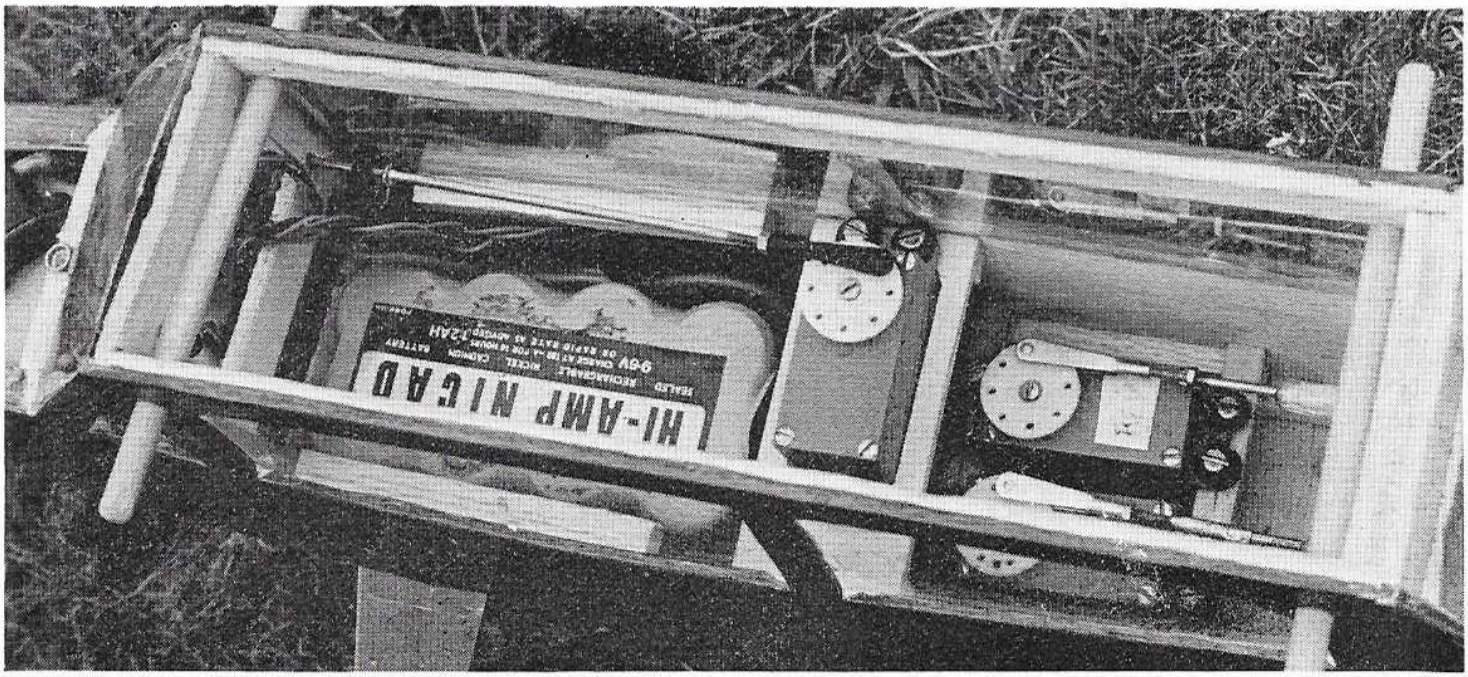
The fuselage, again, is quite conventional. Start by cutting two identical fuselage sides (they just fit on a 3in. wide sheet) and glue the longerons in place. Laminate the formers as shown on the plan, and start assembly by joining F4 and F5 to the fuselage sides, ensuring that everything is square. Next fit formers F1, F2, F3 and F6—which should give you an opening at the rear of the fuselage roughly $\frac{3}{8}$in. wide. Note that the nose pulls in fairly sharply onto former F1, so take it gently, steaming the wood if necessary, and bind the front with draughting tape or similar while it is all drying.

Fit the strip joining the tops of F4 and F5 and then the rest of the cabin structure, except the two triangular pieces at the rear, which are fitted after the top sheet is fixed. The motor tube may now be made and fitted; it is formed by rolling a piece of damp 1/32in. ply round the motor (first sealing any holes with Sellotape) and then gluing, and binding until dry. Cut the necessary slots for brush cooling, and then glue the tube in position in the nose, building around with scrap balsa as necessary, to give downthrust as shown.

Note that I have chosen to mount the motor from the back of the tube as the thought of just pushing it in from the front worried me somewhat (guess whose motor would go free-flight, then!). This means that the length of the tube is fairly critical, so watch this, and trim it if necessary. (The size shown on the plan suits the Cyclone-15).

Now fit the bottom sheeting, followed by the u/c mounting plate and the battery compartment floor and rear support; then the servo mounts may be installed. Now cut the tailplane/elevator and fin/rudder from medium grade $\frac{1}{8}$in. sheet and sand them to the section shown. Fit the hinges and control horns, and then securely glue the tailplane to the fuselage, and the fin to the tailplane.

All that remains now is to make and install the pushrods, fit the rear



top decking, skid and rear cabin structure, and make and fit the hatch as shown on the plan.

Screw on the undercarriage, using self-tapping screws, and make cooling holes in the bottom of the battery compartment, and finally complete the construction by fixing the acetate sheet to the "window" areas of the cabin. (Note that the front piece of this must be made removable in order to be able to install your reciever. The original is held in place with two pins).

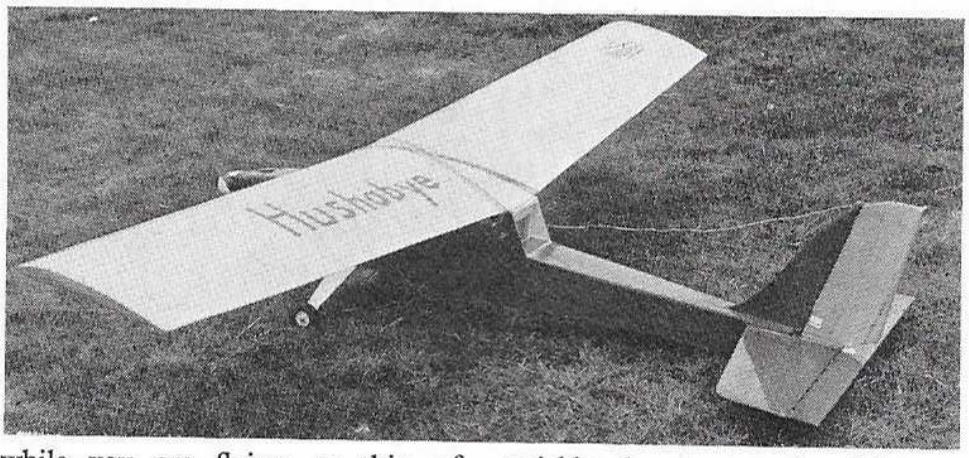
### Finishing

This is always a matter of personal taste, but, whatever you decide to do —*keep it light*.

### Motor installation

The installation of the motor is shown on the plan, and should present no problems, but the following points should be noted. After a little use, the motor may tend to rotate in the tube during flight, thus cutting off cooling air to the brushes. This can be prevented by placing a *very small* drop of epoxy adhesive on the motor casing—or, preferably, by means of a small wedge. The battery compartment is designed to be a tight fit around the battery, so as to prevent any of that $MV^2$ from shifting in flight! My original uses a removeable ply plate, mounted across the fuselage, to hold the battery down firmly.

The connectors supplied with the Ripmax 'Cyclone-15' are undoubtedly effective, but also very large and stiff. I replaced mine with car type spade connectors, which are much smaller and easier to use—particularly if you use alternative power packs, and have one battery charging




while you are flying, as this, of course, means a lot of un-plugging and plugging of batteries.

### Flying—in silence . . .

The c.g. should be where it is indicated on the plan, and all flying-surfaces should be warp-free and secure. Check the control movements—they should be approximately as on the plan, and this will give precise and powerful rudder, and gentle elevator response. The all-up flying weight of my prototype was 46oz. and I used a 7 × 4 wood propeller for most of the flying. In windier conditions a 6 × 5 gives good results.

Unlike the run-of-the-mill power plane, power available here is strictly limited, and *Hushabye* has to be *flown*—no just pointing the nose up and watching it disappear! Hand launching is the order of the day and, with the controls at neutral, a flat left-hand turn may be expected. To gain height, use a *small* amount of up elevator and let the wings do the work. Height is gained surprisingly quickly, however, and mild aerobatics are then possible.

With the elevator movement shown, the stall is non-existent, and *Hushabye* just sinks slowly down in a nose-up attitude. This makes for really beautiful landings, and one can slowly ease the stick right back when the model is a few feet off the ground, and it will settle slowly and gently into a perfect three-pointer!

If you fly off anything other than very short grass, or a runway, then it is advisable to dispense with the undercarriage—and substitute a plastic prop—for obvious reasons.

Well, that's *Hushabye*! I have found this to be altogether a most enjoyable form of model flying, and and which I think is bound to catch on in a big way, because of the increasing noise-awareness of the general populace. Get in on the ground floor, then, and start off with this proved design. If you're sharp about it, you might even get one built in time to participate in the RM/St. Albans All-Electric Fly-in on October 3rd. Send wifey out for that postal order, while you clear the workbench . . .

Layout at a glance—this snap takes in the arrangement of motor, switch, receiver, power pack and servos, for correct balance.