

THE REVOLUTION series of combat wings was initially conceived in 1976 and progressively developed to give a rugged and very manoeuvrable model. The continual refinements have resulted in a model which is very competitive and well up to the standard required today.

5th Revolution has been built by pilots of all abilities and, with nylon covering and a forward centre of gravity, can be used as a control line trainer. However, with a light model and a rearward centre of gravity the design will compete with any other at least on equal terms — only pilot ability is the limiting factor.

Commence building by cutting out the trailing edge from $\frac{1}{8}$ in. sheet balsa and gluing a $\frac{1}{8}$ in. sq. strip of spruce to the front (straight) edge. Unless stated otherwise, the glue used throughout construction is PVA (white) woodglue.

The centre rib sides are cut from $\frac{1}{8}$ in. sheet balsa and the core from $\frac{1}{8}$ in. plywood. Glue the assembly together as a sandwich, weight down and leave to dry.

I taper the leading edge after building the wing; if you taper it before assembly, then you will need a $\frac{1}{8}$ in. packer under each tip when you pin it down.

While the wing is drying, cut out and assemble the engine pod using epoxy resin.

When the wing is dry remove from the plan and sand and shape all over.

Next cut out and fit the bellcrank mount using epoxy resin.

The plan shows two different bellcrank systems. The inverted bellcrank and the conventional method. The inverted bellcrank is claimed to improve the line tension in tight manoeuvres.

Advocates of the conventional bellcrank system claim it is slightly easier to install and has a straighter push rod which is less likely to bend in flight causing widening of manoeuvres.

All I can recommend is to try them and to see if you can tell the difference. If in doubt though, go for a conventional system.

PVA the tip gussets in position and drill the tips for the brass lead out tubes, when

5TH REVOLUTION

Control Line Combat Design
for 3.5cc diesel or
glow motors

FULL SIZE PLAN FEATURE

by
NEIL GILL

Next cut out the $\frac{1}{8}$ in. ply leading edge reinforcement and glue it to the rear of the leading edge as indicated on the plan.

The ribs are made from $\frac{1}{8}$ in. and $\frac{3}{16}$ in. sheet balsa, six from the $\frac{1}{8}$ in. thick and two from the $\frac{3}{16}$ in. thick. You will also have to cut the tips and the trailing edge extension from $\frac{3}{16}$ in. sheet.

It is a good idea to write 'Top' on the trailing edge. The inboard wing is longer than the outboard and building the model upside down, i.e. longer outboard wing, will result in serious line tension problems!

Assembly

The model is built flat on a board (preferably one into which you can stick pins). Cover the plan with thin polythene, to prevent glue sticking to it and pin the leading edge down. Glue the centre rib to the trailing edge and add the trailing edge extension pieces. Now stick the centre rib to the leading edge and pin down the trailing edge onto some $\frac{1}{8}$ in. thick packers. These packers may be laminated from scrap sheet balsa and ensure that the trailing edge is on the centre line of the leading edge.

Add the ribs and tips and leave to dry. A tapered leading edge is shown on the plan, however, a parallel fin. commercial pre-shaped item can be substituted. The tapered leading edge gives a model which is faster on the level. However, using the commercial leading edge does not affect the model's turning ability.

this is done epoxy the tubes in position. Fit the bellcrank and bicycle spoke pushrod (remembering to solder the post bolt retaining nut).

Fit, bind and solder the seven strand Laystrate leadouts and make up and fit the mustard tin tank as shown on the plan. The leadout wires are threaded through holes drilled in the ribs from the bellcrank to the leadout tubes. Cut and fit the $\frac{1}{8}$ in. ply pushrod outlet to the centre rib, and assembly is complete.

The model can be covered in *Solarfilm* or nylon, or one of the new heat shrink fabrics like *Solartex*. The last two being preferred for beginners, because of the added crash resistance. However, in all cases great care should be taken to prevent warping of the model during covering.

It is most important that the covering is removed from the centre rib where the pod fits so that a good glue joint is made. Sand the pod to shape and then epoxy in position.

Cut out, cover and fit the elevator either by using tape hinges or sewing, but make sure

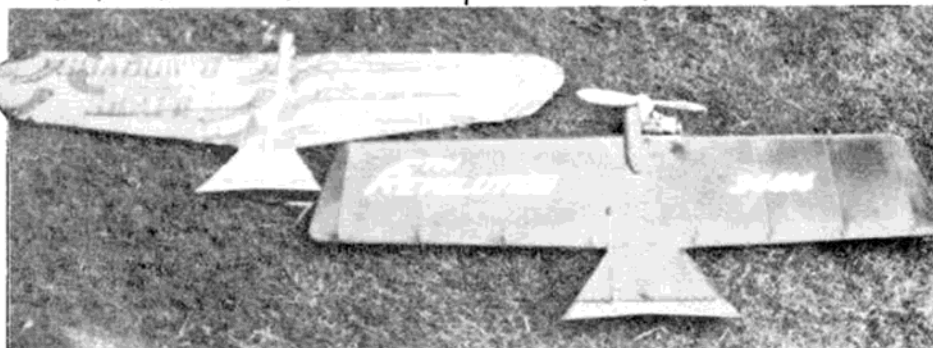
that there is no slop in the joint.

Fit the elevator horn and set up for about 40° up and down movement (i.e. 80° in total). Fit a pushrod keeper to the end of the pushrod to prevent it falling out of the horn. I use a cut down electrical terminal as a pushrod keeper.

Temporarily fix the motor (complete with propeller) to the pod with a rubber band and adjust its position until the model balances level when suspended from the point shown on the plan. Now drill the four motor mounting holes.

The model can now be fuel-proofed. If it is covered with *Solarfilm* you will only need to fuel-proof the pod and outboard wing seams; but on a nylon model the whole thing will need coping and fuel-proofing to prevent fuel soaking into the covering. When absolutely dry fit the motor using 6BA bolts.

Final adjustment of the centre of gravity position and the elevator movement should be carried out to suit the personal preferences of the pilot for stability and manoeuvrability.



Top right: designer Neil Gill with one of many 5th Revolution combatic models, this one *Solarfilm* covered. Right: another 5th Revolution, this one by Brian Waterland, seen with Shadow 8, $\frac{1}{8}$ A Combat model.