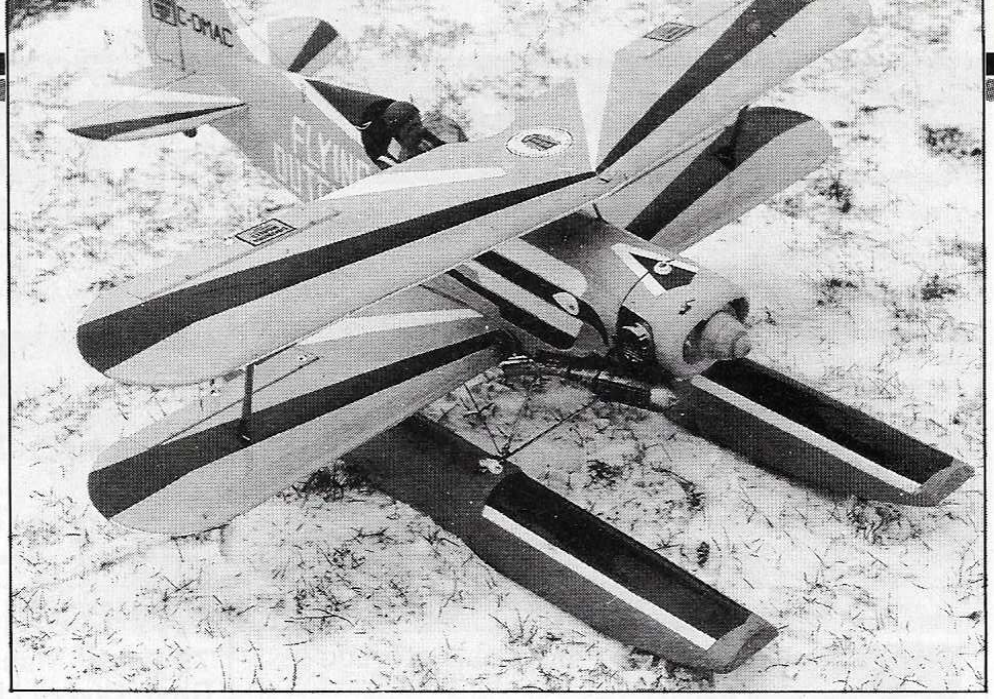


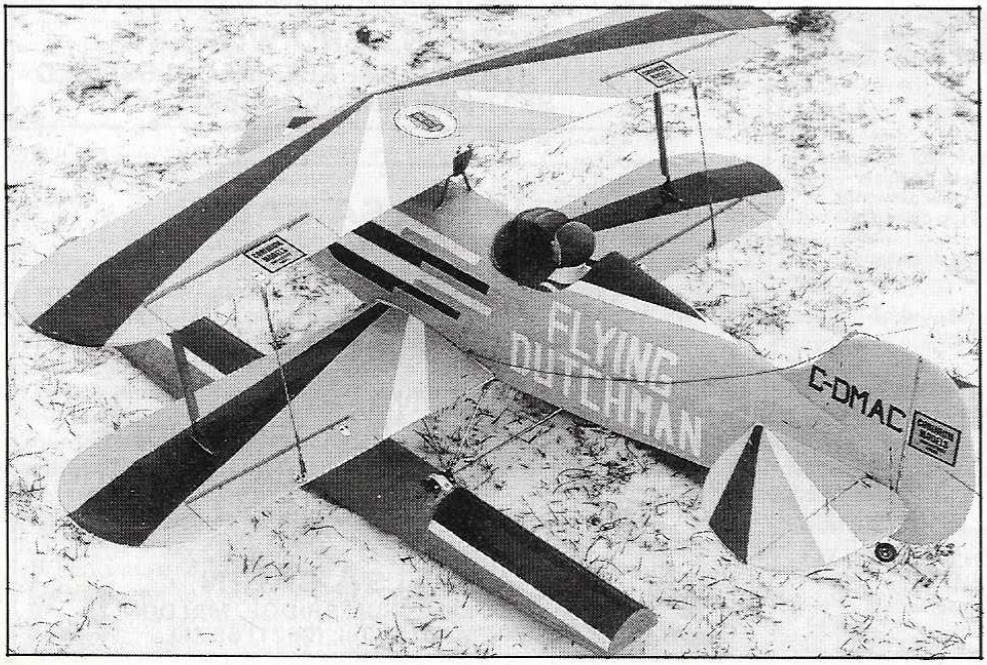
DOUBLE DUTCH

Compact airframe (43.1/2 in. span), bags of power! That's Steve Holland's formula for stunning aerobatic performance

The basic ideas behind the 'Double Dutch' design are: (1) The model would have to fly slowly so as to enable hand launching from and landings into rough pasture. (2) Because of the above, the model would need to have a very gentle low speed stall. (3) The plane would have to be small for transport by motor-cycle. (It sits on the topbox fully rigged and causes a few funny looks as cars are overtaken by a plane). (4) The model had to be capable of aerobatics. (5) I also wanted the finished result to look like a full-size aerobatic plane i.e. bright colours and sponsors' adverts, etc., to help get away from the toy-like look.

The above facts all pointed to a vintage model's flying habits but most vintage subjects are large and not especially aerobatic. The only way to get a largish area into a small span was to make the model a biplane. This also helps with the slow flight requirement as the slot effect of the two wings helps to keep things controllable at slow speeds. The original model was very aerobatic and would fly quite slowly but it was very heavy and would flick roll if it was hauled off the ground too quickly. A second model was made with a lighter wing loading and a slight change to the tip section and mild washout added. This has led to an aeroplane which, in fresh winds, can be landed with no ground speed at all, and in really windy weather the landing roll is backwards!

If you watch full-size aircraft of this type fly you'll notice that they fly on about 1/3rd throttle and only open up to full throttle at the start of vertical manoeuvres, then shut off at the top of loops, etc., so there is not need to tear around the sky all the time flat out. The engines used so far have been an old HP61 and Super Tigre's wonderful Como 51 with a 10 x 6 or 11 x 5 prop.



Flying notes

Aerobatics tried so far are stall turns, tail slides, slow rolls, figure eights, knife edge, loops, inverted, four and eight point rolls, spins upright and inverted, avalanches and clover leafs. Landings with a biplane can be bouncy affairs if you don't get them quite right. The best approach is using elevator to control speed and flair out with the throttle. Landings are very easy in small fields as the high drag enables steep, slow approaches – quite different to the 40-powered kippers.

On the subject of aerobatics, when trimming the model out if you find that, in a vertical climb it drifts left (or right) simply add side-thrust in the appropriate direction 1/2° at a time – the same also applies to the model drifting off up or down in a vertical climb as the speed drops off; mine needed about 3/4° of upthrust compared to the datum line.

Construction notes

The model is very conventional to build with the fuselage being basically 1/4in. balsa frames with 1/16in. balsa top decking. The wings are basic 'D' box type with a sheet trailing edge. Start by making the two fuselage sides and sticking to the ply doublers. Next, cut out the formers while the above is drying. Bind and epoxy the wire wing mounts to F2 and F2A, then jig the sides square and glue F2, F2A, F3, F6, UC1 and UC2 in place and leave to dry. Glue F1 in place and pull the fuselage sides into the bottom of F1; I used five-minute epoxy. Next, pull the tail end together and glue. The stern post and

tail wheel bracket can now be fitted. Now fit F4 and F6 and cockpit floor from 1/16 sheet. Next come F7 and the 1/4 fuselage joiners to the bottom of the rear fuselage. The tailplane is cut from 1/4 in balsa.

Fit the 1/8 ply servo plate and wing plates and glue on the tailplane and the fin between F5 and stern post, making sure all is square. Finally, cut two fuselage deckings out of 1/16 balsa roughly to size, dampen outside to curve, then glue and cut to fit. Hold them in place with masking tape while the adhesive dries.

Wings

Start by pinning down the top spar over the plan. Next, pin down rear spar spacing it 1/4 in off plan. Cut rib templates from 1/16 ply and make ribs by the sandwich method. Build lower wing first by glueing ribs to spars and, when dry, glue in the bottom spar and sheet the leading and trailing edges. Now add the dihedral brace and centre section sheeting, finishing off with capping strips to ribs and aileron cut outs.

Turn the wing over and pack the main lower spar with 1/16, 1/8 and 1/4 in pieces as you near the tips. Now pack the trailing edge up 1/4 in and sheet the leading and trailing edges. Fit the ply plates to ribs F5 - these are to bolt wing strut plates to. At this point you can add the bellcrank plates and bellcranks and build the servo box. Next, instal the pushrods to the bellcrank from servo and add centre sheeting and top capping strips. Make tips from two 1/8 balsa outlines and glue with grain 45° to each other. Cut the ailerons from the wing; you'll need to cut 1/4in. from the front of each aileron and 3/16in. from each side, then glue the 1/4in. leading edge to the wing before you forget it!

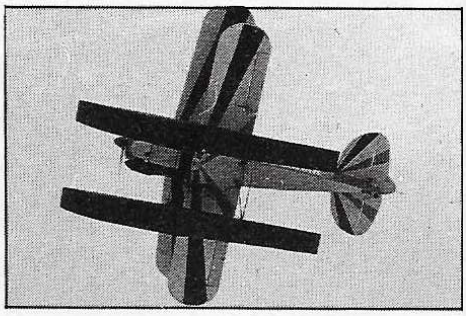
Build the top wing just the same, omitting the servo box and bellcrank assemblies. Using the rib template and another made to match it, glue to R1 and glue the wing bolt plates to them. You'll find that the 1/16 ply braces will bend to fit the sweep of the spars; fit two to the top wing for safety.

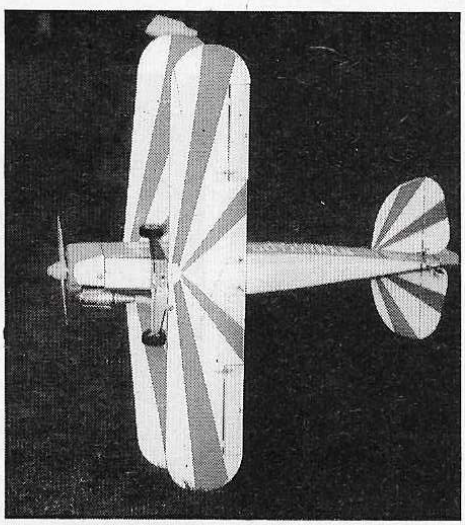
Now sand the whole thing down, fit radio and linkages, make the tank hatch and cowl, cover and fuel proof. The prototypes were covered in film but the choice is yours.

Control throws should be approximately:

Rudder	Maximum possible,
elevator	18mm up and down,
ailerons	25mm up, 20mm down.

The wing struts are standard S.L.E.C. items and your finished masterpiece should weigh between 5 and 5.1/2 lbs.





And she flies well with floats, too! Steve uses RM Trainer floats for operation in the snow. Full-size copies of the plan (RM 331) are available from RM Plans Service, 9 Hall Road, Maylands Wood Estate, Hemel Hempstead, Herts HP2 7BH, price £4.55 including postage.