

# Whirlwind P.S.S



Hold on to your hats!

Here's Neil McHardy's

Power Scale Soaring

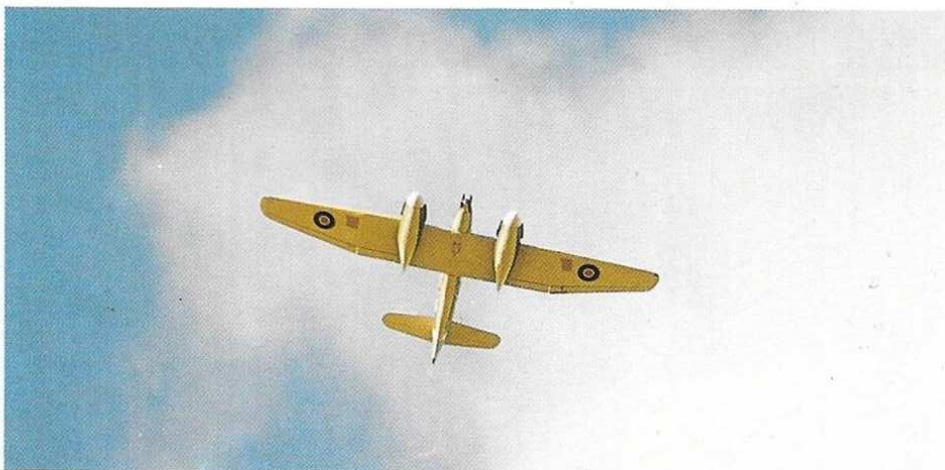
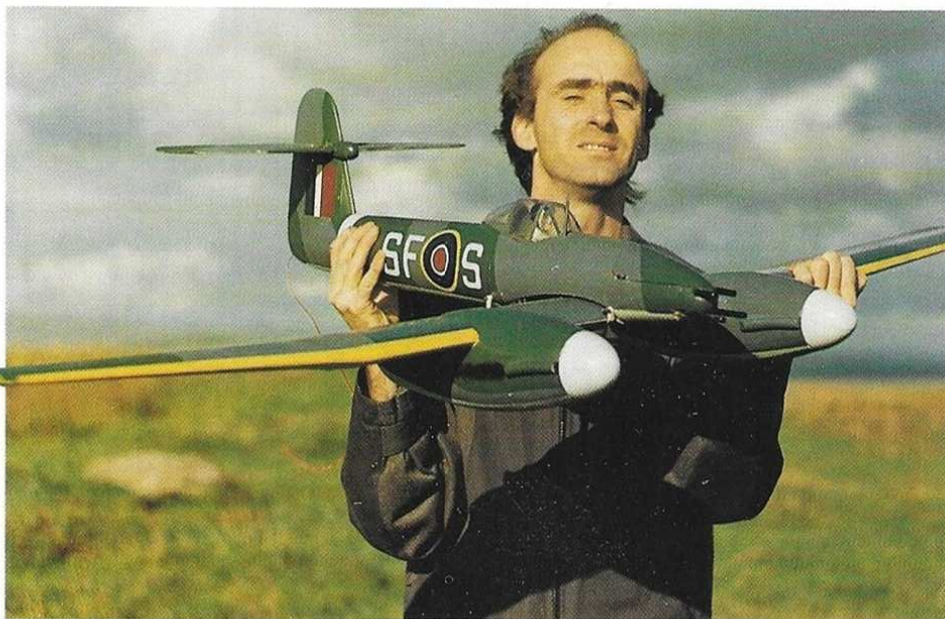
fighting twin



**T**he Westland Whirlwind was first conceived in 1938 under an RAF directive for a long range fighter with heavy armament. The four

20mm Hispano cannons gave the aircraft tremendous firepower and was a quantum leap over rifle calibre guns of the day. Unfortunately the aeroplane was designed around very indifferent power units, namely the Rolls Royce Peregrine which had very limited potential for development and was a low altitude engine which would cause concern later for the Whirlwind's altitude limitations. That said, the aeroplane had virtually no peers at low altitudes, its initial climb rate and turning and manoeuvring abilities were better than even the famous Spitfire or Hurricane.

It was very fast in a dive and also very



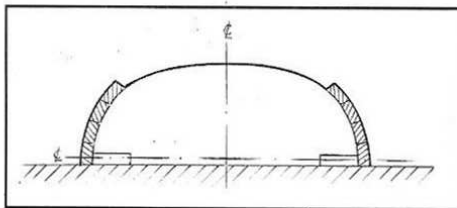
stable at tree-top height due to its excellent aerodynamics, being almost unaffected by ground effects. One test machine was nicknamed 'Crikey' by the local residents of its home airfield, due no doubt to the alarming effects of the aeroplane appearing over the roof tops travelling at maximum speed!

From all the pilots who flew the aeroplane there was hardly a bad word for it; being a twin it gave all pilots confidence in getting home safely. That, coupled with excellent visibility and massive firepower, made the Whirlwind a very nice aeroplane indeed. Sadly the airforce chiefs did not echo the pilots' sentiments for reasons unknown, and pressure by Hawker & Supermarine for more Merlin engines from Rolls Royce caused the termination of the Peregrine programme. The Whirlwind squadrons were relegated to 'Rhubarb' missions at which it must be said they excelled, harassing trains and shipping in the channel and across the low countries.

The Whirlwind was not without problems but most came from the almost total lack of any serious development work by the manufacturer and the failure by the Airforce Chiefs to recognise them and the aeroplane's potential plus their lack of any commitment to the project. All together, these factors plus the demise of the Peregrine engine brought about the end of one of the most aesthetically pleasing aeroplanes of the war years.

### Construction

The first and most important thing to say is *wood selection*. Mine was built using *very soft* or light 3/32in sheet for most of the fuselage. This does pay dividends in the end as lightness and ease of construction are the order of the day. Cut out all fuselage formers and mark on vertical and horizontal centre lines. Pin down top and bottom crutches to the plan using 1/8 or 3/32. Cut the formers down the middle along their centre lines and glue to the crutches using cyano as per sketch. Commence planking up

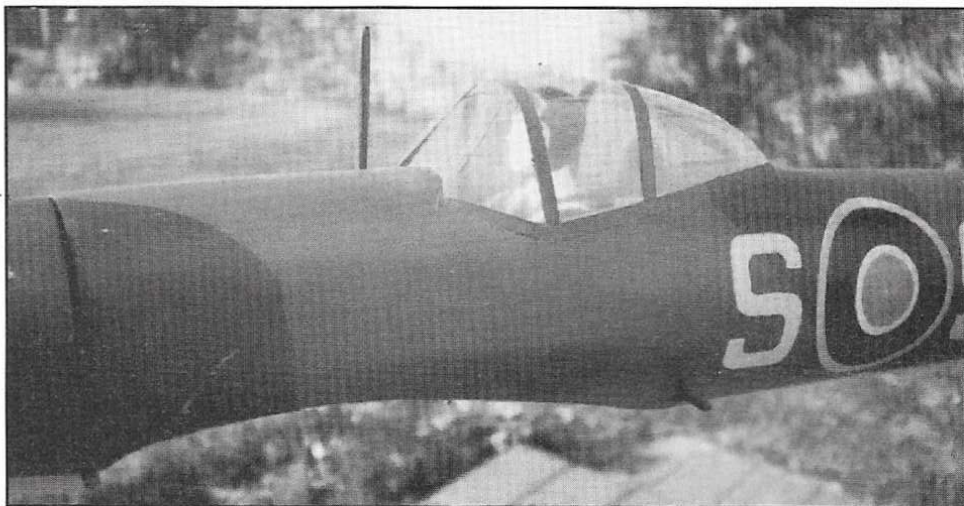


*Whirlwind PSS is by no means a beginners' project from the building point of view but finished model is predictable in the air being stable and very forgiving. What's more, it's capable of basic aerobatics if you make sure to keep the speed up. All that apart, it makes for an unusual shape in the sky and quite a conversation piece on any slope. So go ahead and try one; plan is available from Radio Modeller Plans Service in the usual way and carries scale camouflage and marking details as well as construction gen.*

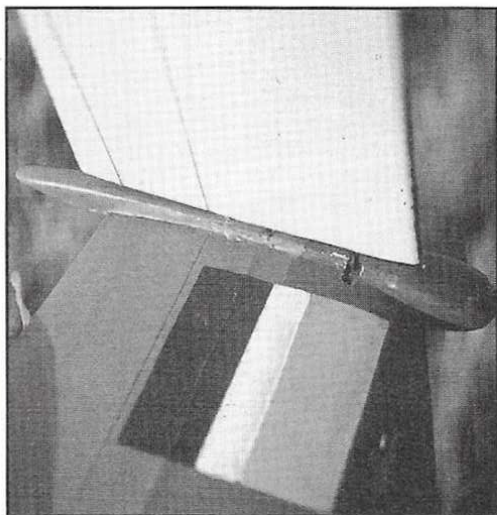
from the edges for about 1in either side using one of the soft PVAs like aliphatic resin or Loctite Wood Bond Rapid. Don't be shy with pins.

When dry, remove from the board and glue the other half of the formers to their mates. At this point all snakes and aerial leads should be fitted but leave elevator snake outer overlength. Now plank up the fuselage completely. When dry trim off the ends and give the whole fuselage a rough sanding. Glue on the nose block and carve and sand to shape. Now sand the nose to profile and give the fuselage a thorough sanding. It should be now almost complete, requiring just a finish rub down to smooth things out.

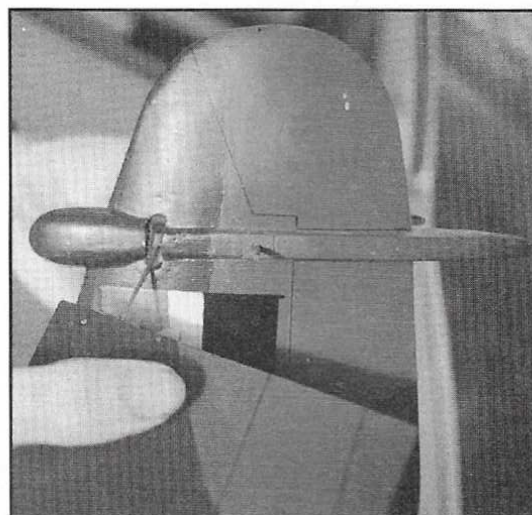
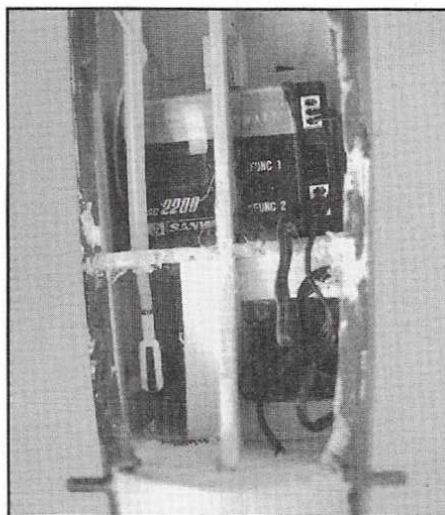
Using a fine tooth coping saw, cut out the wing seat following the line of the crutch carefully. When you've reached this point glue on soft balsa scraps to the wing seat, on



*Don't forget the pilot – even semi-scale subjects demand one!*

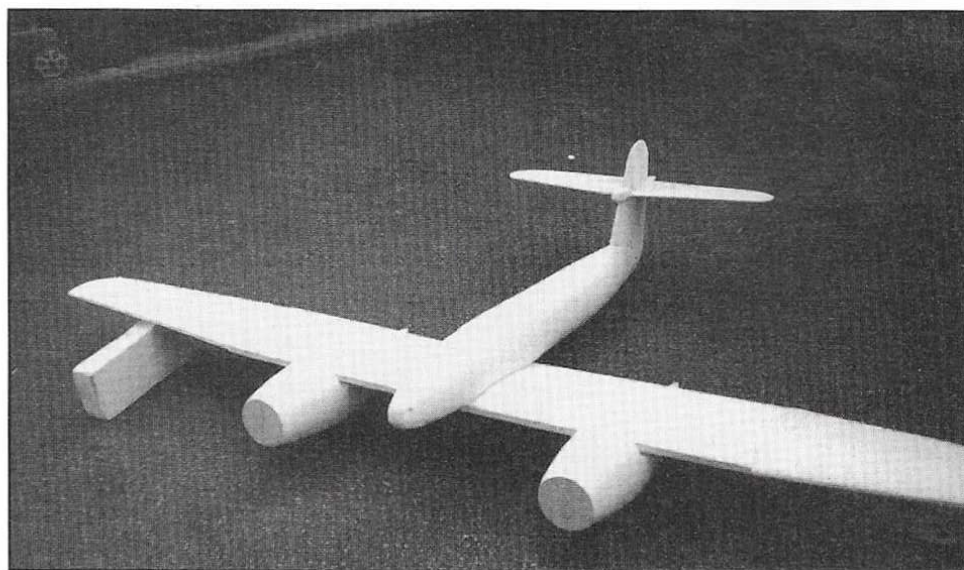


*Close-up of the detachable all-moving tailplane (above left and right) and the R/C installation (centre). In hindsight, designer reckons he would use two aileron servos, one in each engine nacelle, as wing installation proved awkward.*



the inside, and then sand smooth; this is simply to reinforce the edges. Cut out the canopy area and sheet the opening with medium 3/32in. Sand the edges to profile. Build up the fins using either your own method or mine which is to cut a foam core and veneer it. Cut a trough for the snake before sheeting. Cut off the nose of the fin and thread it onto the snake. Trim the fuselage ends to allow the fin to blend in, a nice curved line should develop round the profile. Sit the wing mounting on a piece of timber and epoxy the fin in place checking for squareness with a wood-working square off the board.

When dry, sand the fuselage fin transition to a feather edge. Fit a hollowed block underneath and sand to finished profile, and that's almost it. The tailplane fillet and bullet fairing is made from a piece of 1/2in sheet which has a profiled hole to mate to the fin at the required place. The front has a piece of scrap glued on top and bottom and sanded to shape. Now slide the whole assembly over the fin and epoxy in situ. Any holes, etc., are taken care of with a dab of Polyfilla. Cut a slot for the driving rod and



*Uncovered prototype reveals all-sheet finish; wings and fin are veneered, fus. is 3/32 balsa.*

drill a hole for the pivot tube. Reinforce the area with a few scraps of glass cloth and glue in a piece of alloy tube.

## Wings

The wings are best built in your favourite manner – mine is to use home-made veneered foam panels. The centre section is parallel. I would recommend the fitting of a

plywood spar as my wings broke in the middle during a firm arrival! The washout on the outer panels makes the aeroplane very stable; it *will* tip stall but recovery is almost instantaneous. Alternatively, the tip section could be made symmetrical which has a similar effect.

Join the panels with glass cloth or nylon. I cut the ailerons on the prototype from the

fully veneered panels. The nacelles are built in the same manner as the fuselage, but again very soft balsa is essential as the curves are very tight. Present the nacelles to the wing and mark their positions and tape them in place. Cut a piece of very soft block to the wing profile and fit to the nacelle with a couple of tacks of cyano. Slide the whole thing off the wing and sand to shape, then break off the block. Glue the nacelle back on to its marks and glue the top in place and lightly sand the transition point.

I would recommend the fitting of a servo in each nacelle, as far forward as possible as the central servo set up I had was troublesome, plus the forward weight will help. Make up the spinners using firm blocks glued to hardwood dowels and spun in a drill using a sanding block and a card template to produce the shapes required. The radio compartment in the fuselage is very tight so a little care will be needed. The tailplane is soft 3/16 with alloy tubes of 16-14 gauge glued in and reinforced with nylon. Cover the entire model with lightweight tissue and 50/50 dope and thinners, applying three or four coats to seal the tissue completely. Finish off with a couple of coats of sanding sealer rubbed down after each one to leave a smooth uniform finish. Pull a canopy over a plug and fix to the fuselage after painting the cockpit area and fitting the little pilot – after all, someone has to fly the thing! The edges of the canopy are best stuck down, I find, with strips of double-sided tape and then blended in with notepaper fillets which are painted with sanding sealer – the fillets are also stuck on with the old double-sided. I'm beginning to sound like Blue Peter!

The exhaust stacks are carved from balsa

and cyanoed on then sanding sealed. I find it easier to fit any detailed bits and pieces after the airframe has been covered and rubbed down as it makes the actual covering easier, ie. no lumps and bumps to get round. The aerial is a piece of bamboo glued into the fuselage side just in front of the canopy with a scrap block inside to secure it. The cannons on mine were simply bits of dowel glued in, the holes for them cut with a piece of brass tube. I would recommend using something other than dowel, maybe plastic tube, as they have tended to snag on grass clumps and pull lumps of nose block out when landing on our sort of hill top. Perhaps you have a golf course on top of yours?

### Finishing

I prefer this method of finishing: Paint the whole model in Humbrol matt camouflage colours, duck egg blue, grey and green. Also using matt colours, paint the roundels, fin flash, the fuselage band, spinners and all letters and, don't forget the yellow leading edges. You can have a ball with this part of the job! Draw on a few panel lines (I use a 'Pilot Fineliner' pen) but don't overdo it as it tends to look a bit over-decorated if you try to put every single line on it. Remember it's only semi-scale and absolute accuracy is not important.

Now carefully spray the entire airframe with a single coat of thinned matt polyurethane varnish – just enough to seal the paint – and that, as they say, is it! Balance the model at about 25-28% mean chord. I used alloy wheel balance weights tucked as far forward as possible in the bottom of the nacelles. Remember what I said about building the fuselage light? It has virtually no nose moment so a bit of weight

will be needed. Mine turned out at 36ozs all up weight, which gives you about 14-15ozs per square foot.

You will need only about 1/2in up and down at the tailplane trailing edge. I always like the ailerons to have as much moment as can be sensibly put into them with a bit of differential. Having virtually 45° up and down is not unusual for me. My attitude is that you don't have to use it all, but if it's there you might be glad of it sometime...

### Flying

Get someone to launch it for you and sort out the trims right away. Gain some height and get the feel of the aeroplane. It turns very tight if you want it to or with just an initial touch of aileron will gently arc round looking very stately. Remember this is no 'Phase 6', it is quite draggy for a glider so its flying speed may seem slow by comparison. That said, it will loop and roll and generally bash about. Aileron response is strong at first but tends to become a bit sluggish as it rolls inverted which could be due to the high aspect ratio and the stabilising effect of the washout. So keep the speed up on entry to a roll and let it go round in its own time. Bring it roaring in low and fast across the front of the slope and shout "daga-daga-daga" as it goes past but be careful on the next run as they will be waiting for you with bags or flak!

I hope you choose to build a Whirlwind; it's a lovely little aeroplane to look at both on the ground and in the air. I wouldn't recommend it as a beginners' project as far as building goes but it flies like a trainer and is very stable and forgiving. Have fun!

