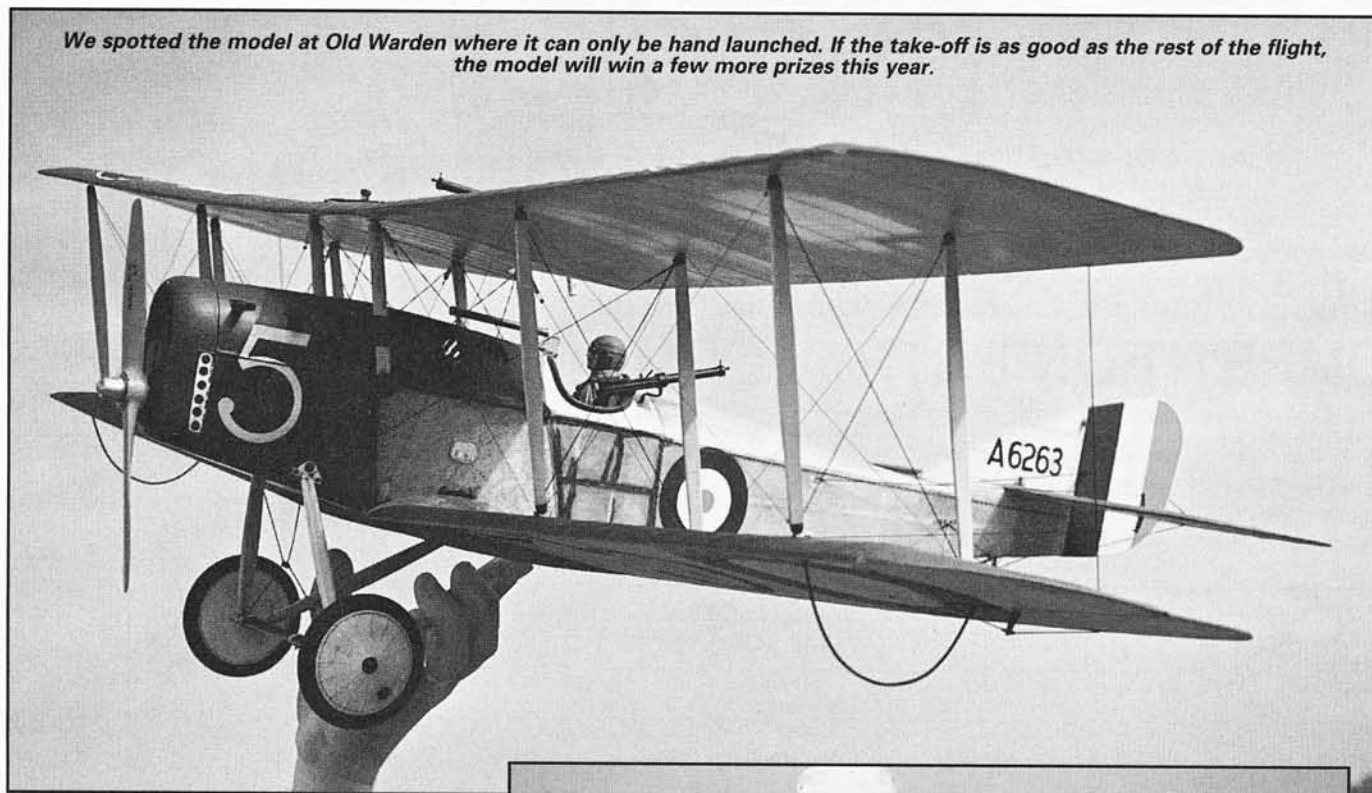


We spotted the model at Old Warden where it can only be hand launched. If the take-off is as good as the rest of the flight, the model will win a few more prizes this year.



Mike Smith has designed this super scale model for free flight and uses a Mills 1.3 with some history

Right : After a rather mysterious crash during initial trimming, Mike Smith's Elephant has proved to be a consistent and stable flier.



THE MARTINSYDE G102 ELEPHANT

The Elephant first appeared in 1915 as the G100 and was powered by a Beardmore 120hp engine. In this configuration the Elephant was found to be lacking and rather large for a single seater. In 1916 Elephants were fitted with a 160hp Beardmore engine and, with much improved performance, became much more useful as an all-round fighter/bomber/reconnaissance aeroplane. Elephants were mainly allocated to No.27 squadron in France. They also appeared in the Middle East. The origin of the name Elephant is unclear but the badge of the Elephant is still carried on 27 squadron Tornados to-day.

This rarely modelled aeroplane has all the right sizes and angles to make it a very stable free-flight and is further helped with excellent engine cooling, there is no radiator up front. The model is very accurate in all respects and has excellent competition potential. It was built

during 1992-3 and very nearly didn't make it past the first trimming session. On its fourth sustained power flight it turned right for some unknown reason and literally dropped out of the sky from 20ft. It broke a wing spar and snapped all the cabane bracing wires. With extensive repairs to the structure and covering it was painted in the colours and markings of 27 squadron R Flight.

The model won the first contest in which it was entered, the E.J.Riding Trophy, 1994. It weighs in at 40oz, which sounds and feels quite heavy but it flies very well. Keep the back end light to avoid a national lead shortage. The Elephant is powered by a Mills 1.3cc which used to belong to Eric Coates and was fitted to his legendary D.H.9a, (plan no. 1243). Any front induction engine of the appropriate size can be used because the engine has to be choked through the open front cowling.

Construction

The model is built using the tried and trusted Eric Coates type of design with several modifications which I will detail. Some experience of this type of model would be useful. The construction is fairly conventional and I would recommend reading Eric Coates Flying Scale Model series in Aeromodeller March 1971 - March 1972.

Fuselage

This is a basic box fuselage with formers and stringers. Make up two basic sides using 2.5mm square spruce longerons and uprights. Build up the box with formers. Add the engine bearers with particular attention to their angle. Add the rear decking formers



This close-up shows some of the details and that elephant marking. We see the trusty Mills 1.3, which used to belong to Eric Coates, is on a 9X4 Graupner.

and stringers. To stiffen the rear fuselage button thread is passed diagonally across each fuselage bay in a criss-cross fashion on all sides. This simulates the wire bracing on the real thing. Tack in place with PVA. At this point I would recommend that the engine bearers and F1 be adjusted to suit your engine and cowling while you can still get at them easily. Now add the tubes for the cabane struts, lower wing dowels and undercarriage. Ensure that the rear U/C anchorage is well braced to take the landing shocks. Cover the fuselage between the cabane struts with 0.5mm ply.

1mm Balsa capping strips are placed over the longerons. The fuselage side and bottom stringers are added and faired in to keep the covering off the uprights. The cowling components, except the front one are made of litho plate over balsa. Two laminations of 0.8mm are held in place by bands or tape

until set. On this model I made the front cowlings from 40thou polystyrene sheet moulded in a vacuum moulding machine. This was strengthened by generous fillets of epoxy resin once in place. If you don't have a moulding machine, make the cowling out of fibre glass or go the whole hog and bash one out of 22swg aluminium. A balsa one could be made but it would be vulnerable. Do not forget to allow for the thickness of the material when making the solid mould/former.

The U/C is conventional in construction. The axle is loose and held in place by elastic bands with the movement restricted by two loops of Laystrate soldered in a ring. The wheels are sandwich ply/balsa. The effect of spokes is made by wrapping button thread round the wheel holding it in place with thinned PVA and then covered with doped on nylon.

The cabane wires must be carefully bent to shape. Plug into the tubes and put a very small drop of cyano on the wires where they enter the tubes to hold them temporarily in the correct position. Using a card template tack the wing centre section to the cabane wires at the correct angle of incidence using clothes pegs to hold the tubes to the spars. Secure the tubes to the spars by binding with 1/2" nylon tape and epoxy. The permanent fixing of the cabane should be done as late as possible as it is easier to fit the cockpit and rear cowling decking etc. When fitting cabane bracing use double strands of laystrate wire soldered to the cabane wires in two continuous lengths, tacking them with solder to the cabane wire corners. 20swg piano wire can be used if preferred but I find it stretches on heavy landings.

The U/C legs and cabane wires are faired with lime which is easier to work than spruce and is very flexible. The top cowling is held in place with press studs. Solder these to small tin plates then stick the tin plates in the correct position. If you don't the press studs will pull off. The top wing rigging wire anchorages are soldered to the cabane struts and the lower ones to the wing dowel tubes before being faired by spruce.

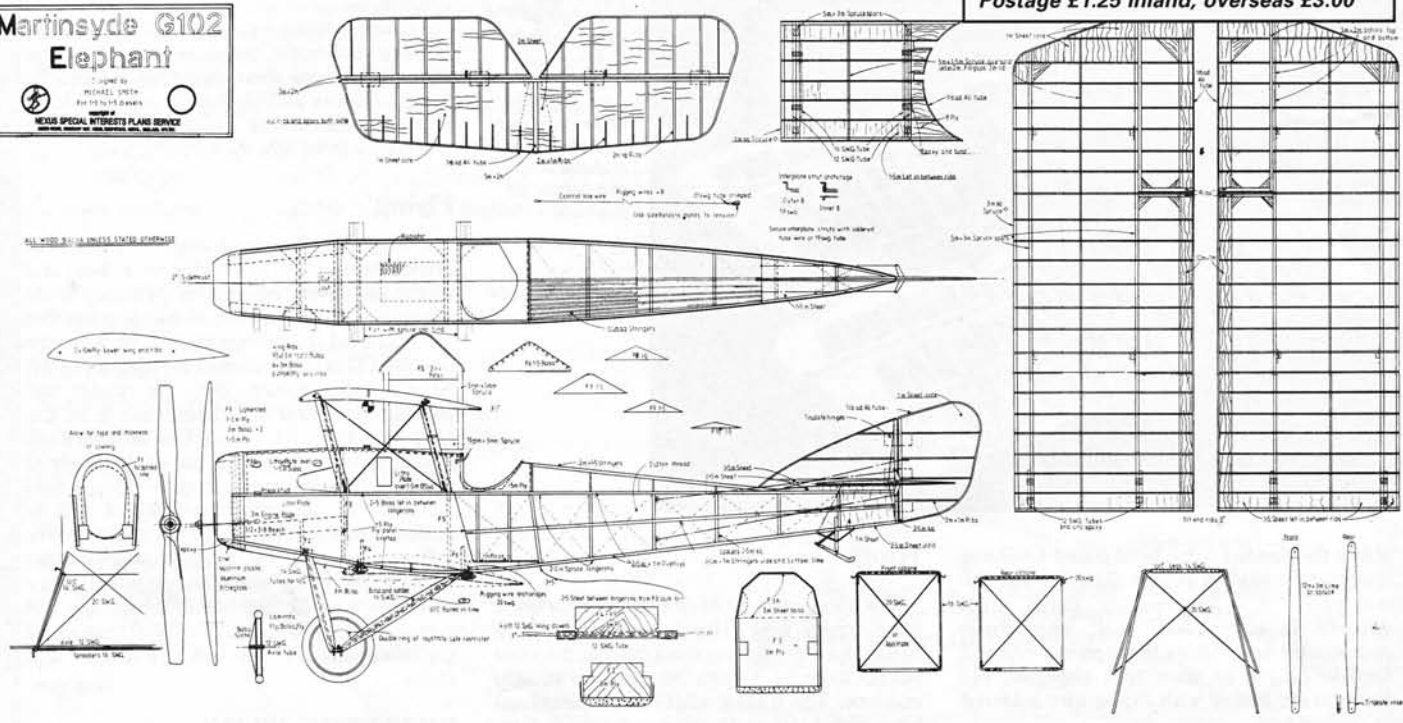
The position of the radiator is a case for debate. As far as I can tell from photographs it is on the underside of the fuselage between F4 and F5. Let in 2.5mm sheet between the longerons with the radiator let into that. The radiator core is simulated by wrapping cotton round 1.5mm balsa to simulate the vanes. secure with thinned PVA and paint black.

Tail surfaces

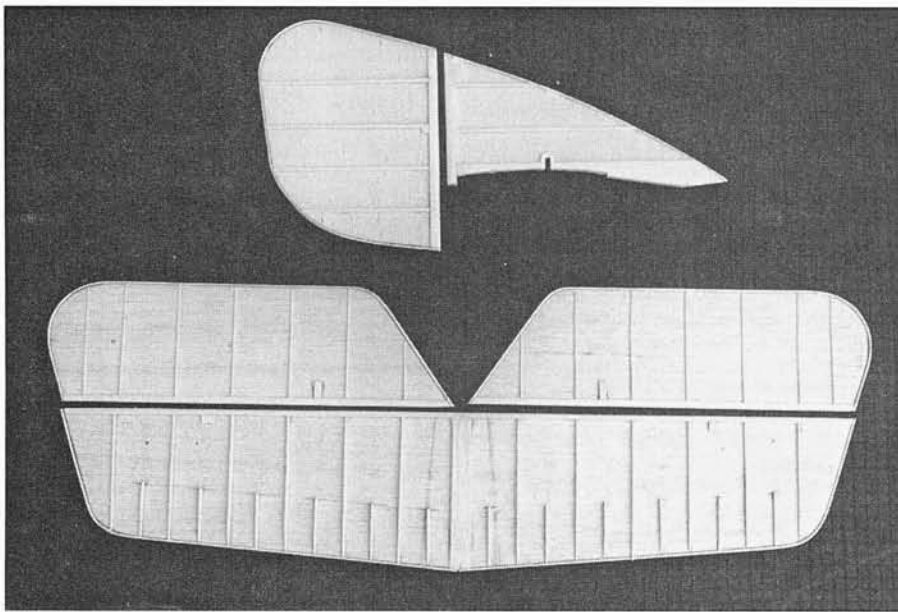
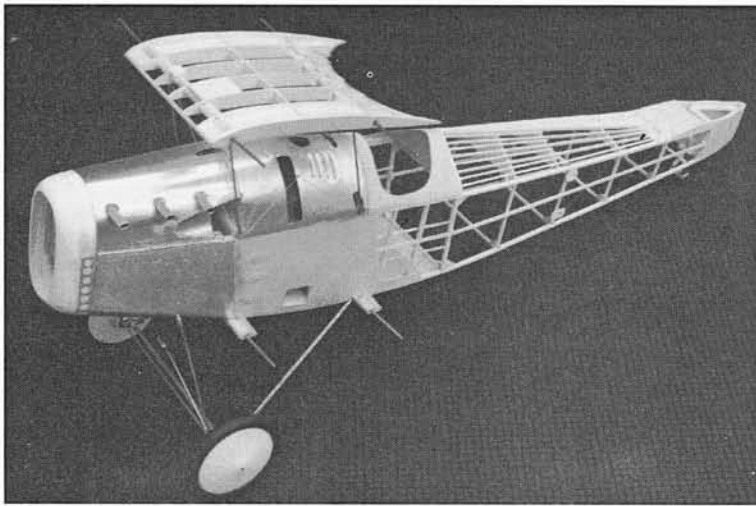
These are made using the traditional sandwich method with a 1mm core but with one big difference. The outline is made from 1/16" outside diameter aluminium tubing. To

A superb model of little known WW1 Bi-plane. Wing span 46". Suitable for 1.3-1.5 diesel engines. Plan Ref. AM1795. Price £5.25 (10% off plan price for MPA members) Postage £1.25 inland, overseas £3.00

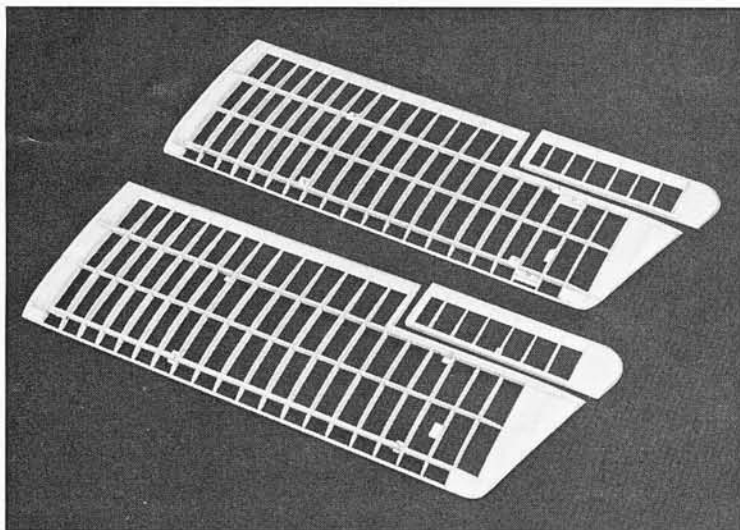
Martinsyde G102 Elephant
 1/2 Scale
 1917-18
 For 1.3 to 1.5 Diesel Engines
 MPA SPECIAL INTERESTS PLANS SERVICE



There's plenty of building in this model for the scale enthusiast to relish. It is particularly useful that the radiator was not in front of the engine.



An unusual feature of the tail surfaces is that they are outlined with 1/16" dia aluminum tubing.



The scale number of ribs makes it strong but you could add another spar on the top to reduce any tendency to curl up.

obtain the desired curve bend round a suitable template of a slightly smaller diameter than the one required. The resulting finish when covered is very good. N.B. keep these components light. Hinge these panels with stiff finplate hinges to allow trim changes. Tail surfaces are braced with 24swg wire soldered to finplate tags.

Wings

Yes, there are a lot of ribs but they do make for a strong wing. Use 1mm medium hard balsa. The holes for the spars must be accurate but not too tight. Ensure the spars are straight and true. The trailing edges are 12mmx1mm balsa with 1/16" O/D aluminium tube to form

the edges. The wing tips are made in the same manner as the tail surfaces. The wing dowel tubes are held in place with clothes pegs and the wings are fitted to the fuselage. When the wings are at the correct angle of incidence and dihedral, tack in place with cyano. Remove the wings and pegs. Bind with 1/2" nylon tape and epoxy. Don't forget to fit the 1.5mm ply wing end ribs or the wing will break in a prang (like mine did!). An auxiliary spruce spar 5mmx1m can be let into the top of the ribs and recessed by 2mm. The holes left are filled with scrap balsa. This is to help prevent curling of the wings.

The interplane wing struts are a novel but simple idea and allow the working rigging wires to be removed completely. These are epoxied and taped to the spar. The rigging wire can be hooked over its interplane clip after the elastic band has been attached to the anchorage point. Easy, no more struggling, and it is in a scale position.

Covering and finishing

The covering is silk over tissue. The whole model was sanded, given two coats of 50/50 dope thinners and sanded again. Then I covered the model with antique coloured Jap tissue. Two coats of 50/50 thinned dope were then applied. The Japanese silk is carefully rinsed in luke warm water, squeezed out and very carefully ironed dry. The adhesive is wallpaper paste mixed to the standard consistency. Place the silk over the tissue, ensuring the weave is square and straight. Brush the paste through the silk from the centre of the panel and work outwards. Allow to dry. A hair dried will do this very quickly. Trim off the edges, wet with paste and smooth down. The one big advantage of using this method is if you make a mistake you simply, but carefully, peel it off and start again. Stick the rib tapes on with thinned PVA or dope. Give two coats of 50/50 dope with one more coat on the natural underside. I would recommend that the wings are pinned down between coats. I try to leave the wings pinned down for as long as possible. A couple of days minimum when finished. Varnish the ply panels and fuelproof the engine bay and cowling.

Choose your subject and finish the painting and scale detail, don't forget your pilot. References for this aeroplane can be found in Cross and Cockade vol.4 no.4 1973, Profile publications no.200 and W.W.1 Warplanes form Albatross Productions.

Flying

I tested the Elephant unpainted and this proved fortunate. The repairs were done and all the joints were covered by painting. Some schools of thought frown on this practice but I'm glad I did it on this occasion. First ensure that the CG is in the correct position, even if it takes a lot of ballast. With the rudder and elevator at neutral it is time to pump up the adrenalin. Test glides should be flat with a fair rate of sink. Power flights are made slowly at first with a reversed prop. With gradual increases of power between flights aim to achieve large left hand circuits under power followed by wide right hand circles in the glide. If the plane stalls under power more downthrust is needed. Only adjust the tail surfaces by 1mm steps. The performance of my Elephant has proved consistent and stable.

PACHYDERMS DO FLY