

BM 1/2

NO MATTER HOW SOPHISTICATED AEROMODELLING GETS, THERE'LL ALWAYS BE A PLACE FOR TISSUE AND DOPE AS GEOFF NORTHMORE PROVES WITH HIS CLASSIC VINTAGE CRUISER



The wonderfully classic lines of the B.M.1 are faithfully reproduced in Geoff's scaled down version.

The subject of this feature is a half sized radio controlled version of the B.M.1. The designer is unknown to me but as far as I can make out, it is a 1941 (Italian?) design. The drawing I worked from appeared in the May 1992 'Sam Speaks' magazine and was useful in as much as it gave outlines, rib positions, the general construction as well as wingspan, length and dihedral angle. I had to invent a rib section as nothing usable was shown, otherwise the model is as close to the original as hand enlarging permits. In the power department I used a Russian BigMIG .049 R/C engine which I've found is just about perfect.

Radio is a Fleet Micro Rx, 3 Hitec micro servo's with closed loop on rudder, pushrod for elevator and a wire pushrod for the throttle. Initially I used 130 mA batteries but have now changed to 200 mA as these install slightly more confidence, especially towards the end of a flying session. The .049 and the 35 mm film canister tank, featured on page 61 in issue 11, is a satisfactory combination giving a staggering 23 minutes endurance with



normal usage, so I'm more than happy in that department.

Hitec servos are fine with Fleet radio providing you change the red and black leads over at the servo plug - just lift the plastic tags with a pin and withdraw the wires - swap over - click tags back and Bob's your uncle! Just make sure you plug into the receiver the correct way i.e. red lead upper most. I put red paint on plug and Rx to avoid mistakes. For your interest, the new 'Super Naro' micro servos from J. Perkins need the same treatment if

they are to be used with Fleet gear, the choice is yours - why, you could even use the Fleet servos if you fancy, I'm sure they wouldn't mind!

TOTALLY TRADITIONAL

This is a fairly simple model to build but like all aircraft, careful and accurate construction will pay dividends with looks and performance. The following notes may assist those with only one or two conventional construction models under their belt.

FUSELAGE

Cut out all ply formers and while the fret saw is in use, hell, you may as well

cut the rib template and dihedral braces. Bend up the main undercarriage leg from good quality piano wire, stitch it to its former but don't epoxy yet. Leave the forward undercarriage leg until later. Using hard balsa for longerons, pin down over the protected plan and build the first side, noting the grain direction of the balsa sheeting and leaving gaps for ply formers along the way. I use scrap ply as spacers. When dry, cover the frame with cling film and build the second side over the first.



When all is set, separate the two sides and carefully sand. Join the fuselage side frames together with the ply formers between and when cured, dry join at the rear end and fit the fuselage cross pieces, formers and upper and lower longerons. Take your time over this, we don't want a banana shape!

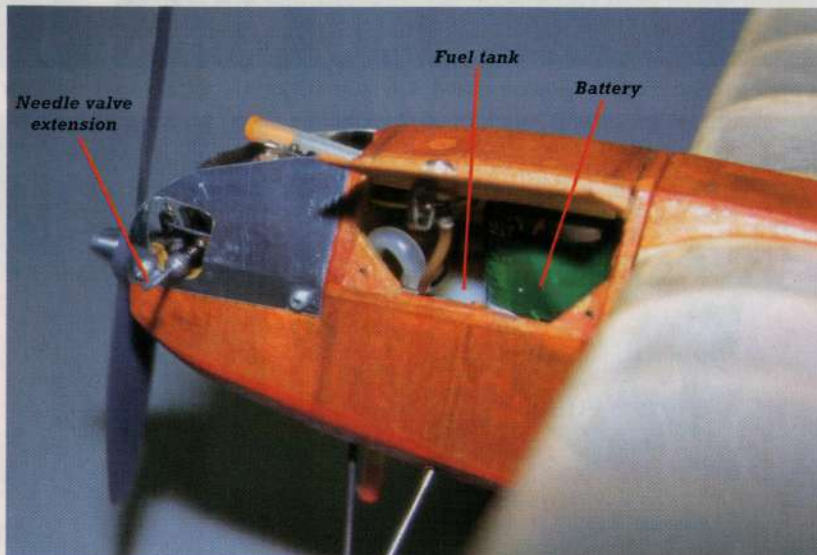
Next, complete the nose apart from the lower cowl block and the bottom sheet. Bend up a dummy front undercarriage leg from soft wire (coat hanger is fine) and take great care to get the angles and lengths correct. Having done this, use it as a template for the real thing. Stitch to its ply former, bind the legs together with thin wire, solder and finish with epoxy glue over your needlework.

Add the 1/4" ply engine mount, nose block and sheeting. Glue the 1/8" ply in position for the metal cowl retaining screws and drill holes for fuel and throttle access. If using a BigMIG motor, rotate the throttle arm through 180 degrees to clear the balsa sheeting around the nose. Finally, fit the tail skid, make up any hatches, insert an aerial tube and leave the fuselage aside. I used Solartex to hinge the hatches with small screws to secure.

BAND OR BOLT

The wings are totally straightforward apart from the laminated tips. Do have a go at these as it makes the model look so much better. If you do, remember to leave the leading edge, main spar and trailing edge overlong, super impose the laminated tip and trim the spars to size - it's much easier this way. Alternatively, you can make up a sheet tip outline.

The wing can also be held on by elastic bands as opposed to the nylon bolt shown. If you go this route you will need to place a couple of dowels in the fuselage to take the bands and while you're at it, it might be advisable to increase the span width of the centre section wing sheeting. If you decide on the bolt, glue a balsa pack between the rib underside and 'fuselage longeron level'. With 1/8th ply 'nut retainer' glued in position in its slots across the fuselage, the wing can be offered up and a hole drilled to take the bolt. I recessed my bolt head into the fairing as it looks better - the choice is yours. I sheeted the top and front of the wing fairing, the sides I covered with Solartex - easy!



(ABOVE LEFT) Shot of the nose showing the compact and business-like motor installation. Don't you just love those alloy side cheeks?

(LEFT) The battery and tank compartment housing the infamous 'film canister fuel tank' giving 23 minutes duration. Note the needle valve extension which proved necessary in order to accept the BigMIG .049.

END BITS

The tailplane is easy to build and as with the wings, laminate if you can. Join the elevator halves using an 18 swg joiner with a silver soldered central horn. Note that the horn is raked forward slightly and above the tailplane. An all moving tail is an option, however, if you use my design you will need to cover and complete the tailplane and elevators and make up your pushrod prior to positioning in the fuselage. The best way I found, was to cut through the joint at the rear of the fuselage, trim the central longeron, then open up the joint slightly and feed the pushrod attached to the tailplane until in its correct position. Once satisfied, glue and add the remaining balsa sheet.

The fin is simply an 1/8" balsa outline with 1/32nd sheet over each side (the original plan indicates that it was solid). The rudder is a piece of 1/16" sheet glued to a 3/16 sq. leading edge with ribs added for shape. My rudder horn is made from thin Formica and is held in position with 1/16" balsa either side. All hinges were cut from Mylar. Once again, cover the fin before gluing to the fuselage.

OUT WITH THE OLD SHOEHORN

You may have noticed by now that space is at a bit of a premium. With this in mind I mounted my throttle and elevator servos across the fuselage on simple 'U' mounts made of 1/8" ply.



A piano wire undercarriage makes life easy during construction and has so far coped extremely well with the ruff and tumble of every day flying.

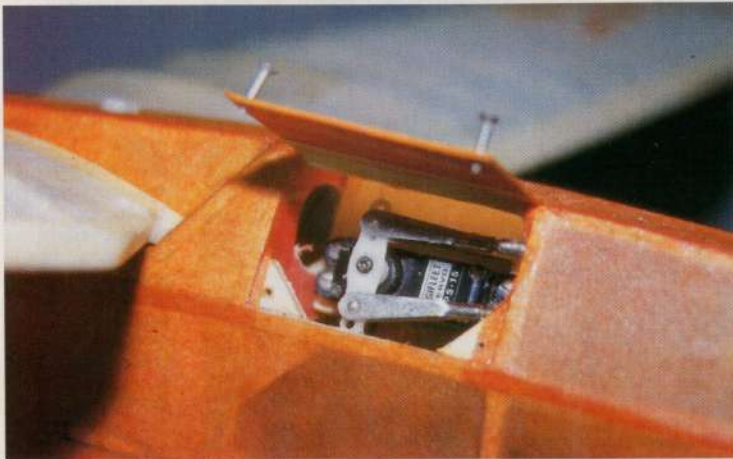
Cut slots in the fuselage sides to take the bearers which you can slide fore and aft for balance. The rudder Servo is angled more or less in line with the rudder horn. Use small bits of snake for exiting guides. My receiver is held to the fuselage side with Velcro and the switch harness has a wire operated external remote. The battery sits above the fuel tank so do make sure you have no leaks.



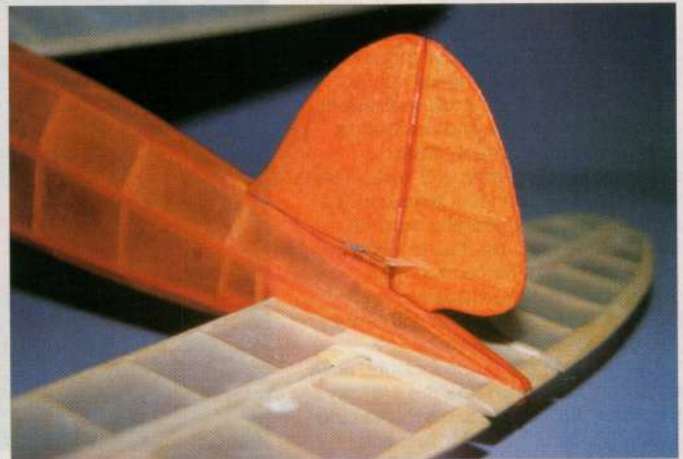
In, with room to spare! Given a bit of thought the radio installation isn't as daunting as it might at first appear.



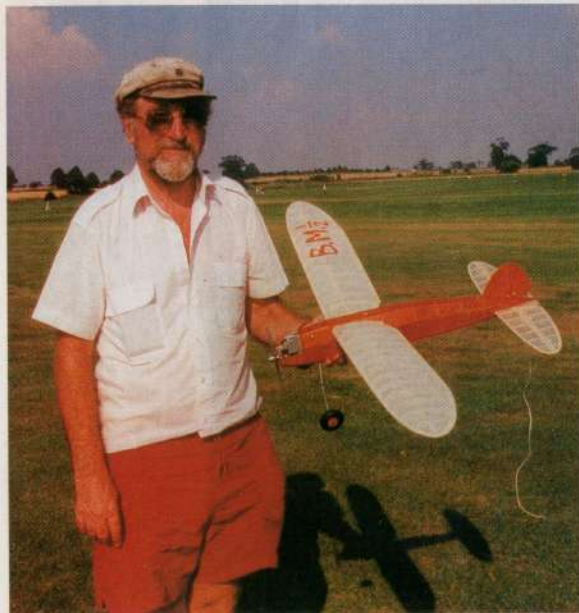
B.M.1/2 is a docile, steady flier - a real dream.



A second hatch behind the wing gives easy access to the rudder servo.



The tailplane is built-up with a central elevator control horn housed in the fuselage.



Geoff is well pleased with both the model and the motor - a super combination.

TISSUE OR FILM?

Medium weight tissue and dope was used on mine but there's no reason why you shouldn't use one of the proprietary films if you so wish. I only fuel proofed the engine bay. The engine cowl side cheeks were made from thin 'metal alloy' sheet with holes drilled and filed to size. Whilst you're about it, fit a remote glo too - it's so easy and so much safer.

FLYING

Frankly, the model flies like a dream - I didn't even have to adjust the trims! It was a surprise to me but the rudder is not at all twitchy, neither is the elevator but I would suggest low rates initially. The model loops, rolls, stall turns and has a very fast spin if a small amount of power is left on. I haven't been able to try a take-off as the grass at my strip is a bit long for the power available, however, the model has been flown by many club members and all had favourable comments to pass on.

Even on my B.M.1/2 the glide is very good so the original B.M.I must

have had a sparkling performance. This really is a most enjoyable model to fly, which for me, has been the icing on the cake of a truly successful project.

AND FINALLY...

The BigMIG motor shown in the photos has an exhaust which clouts the firewall. To overcome this, I just drilled and filed a hole to accommodate it then let a piece of alloy tube into the fuselage side at a slight angle. The end of the exhaust just sits inside this tube and seems to work very well indeed. ●

DATAFILE

Name:	B.M.1/2
Aircraft type:	Vintage
Designed By:	Geoff Northmore
Span:	41.1/2"
Chord:	5.1/8"
All-up weight:	1 lb 12 oz
C of G:	1.6/8" back from leading edge
Fuselage length:	22.6/8" (less engine)
Req. No. Channels:	3
Control functions:	Rudder, elevator, throttle
Control movements:	Elevator 1/2" each way Rudder 7/8" each way
Engine range:	.049 - .061 cu. in.

BUILD MATERIALS

Fuselage:	Balsa & ply
Wings:	Balsa
Tail:	Balsa
Covering:	Doped tissue