



Talking to a 'modeller' at one of the Trade shows last year he expressed the view that he had 'now been in R/C model aeroplanes for four years and had done it all'. He intended moving on to another hobby! Having been involved myself some ten times longer in the hobby, my worry is that - even given another period of forty years - I shall never be able to build and fly all the models that interest me!

When I started to draw-up the 'Bi-Mini' for this issue there was a very strong urge to build another example of this cute little biplane that had given such enjoyment when first built. Only lack of spare time and other pressing projects prevented my cutting out the parts there and then. The prototype was built in a period when my Christmas present to my brother, Charles, always took the form of an R/C model; a somewhat 'dual purpose' gift as I also got a lot of pleasure from flying the model! Powered by a D.C. Dart and directed by the press-button, rudder only, radio control that was *de rigueur* for the period, the 'Bi-Mini' was a stable and predictable flyer.

Modern radio control equipment allows you to fit more control functions without unduly increasing the wing loading of the biplane; with sub-miniature servos it would be possible to fit rudder, elevator and throttle control and, say, a PAW 80 diesel up front. Alternatively, if you want more challenge to your flying skills you can stay with the original rudder only control...

Strength and lightness

It may surprise some of the modern generation of modellers, weaned on a diet of GRP and veneered foam, that open structures can produce models that are capable of taking knocks and crashes better than their more 'solid' counterparts. The reasons for this apparent anomaly are two-fold. Open structures result in a lighter airframe so

BI-MINI

**David Boddington's
charming biplane takes
.75-1.0cc engines**



The ubiquitous Super Sixty has been the subject of many a mod. and redesign over the years. None so pretty as this cheeky two-winger from the drawing board of RCM&E magazine editor David Boddo. Build it and enjoy!



that the model requires less power (lighter engine) and flies slower (hits the ground with less force). A built-up airframe also retains a degree of flexibility and, when a knock does occur, the shock waves will cause the airframe to distort but not break. So, put your blocks of foam away, lock up the glass cloth and resin and start whittling away

at the balsawood!

Decide, before you start building, what type of radio you are fitting and where it is to be installed. Don't use a larger nicad than a 225mAh pack - a 150 mAh should be more than adequate for two function radio. Check the engine bearer spacing for the engine to be fitted, you can dispense with the bearers if a radial mounted engine is used, but retain the downthrust and side-thrust.

Fuselage side panels are built one above the other to ensure accuracy. Cyano adhesives can be used, although I prefer PVA white glues as this retains a certain flexibility when dry and helps to prevent joint separation in stress conditions. Join the fuselage sides with the front, full width, formers in position, slide the pre-drilled engine bearers in position and check the engine mounting. Make sure that the fuselage remains true and square when the rear ends are brought together and the crosspieces added.

What type of fuel tank is fitted will depend on the engine used. As the 'Bi-Mini' is not intended for advanced aerobatics, a free flight type tank will suffice; if you can't find one at your model shop, try your soldering skills and make one from tinplate. The nose of the model is built up from 1/8in. sides with 3/16in. doublers and block and sheet on top. Round-off the nose area and top in typical 'Super-Sixty' fashion. You will note that the wings and undercarriage are retained by rubber bands - another crash-resistant device.

If the model is to be rudder only control the tailplane can be similarly secured.

Six appeal

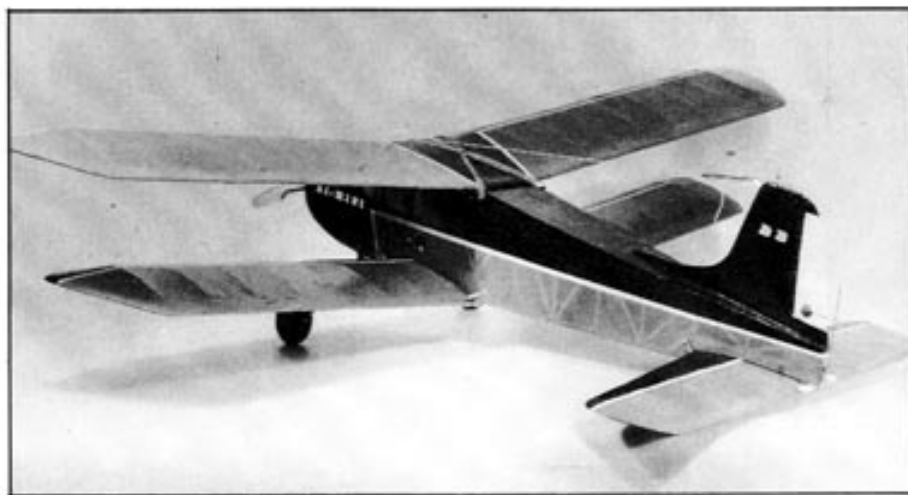
Each wing consists of three panels, centre and outers, and as there are two wings you will need to build six panels in total. If you think that this is a lot of work don't worry, they go together very quickly. Cut out the ribs by the sandwich method and pre-cut the spars, leading and trailing edges to length. Note that the lower spars extend out to the wing tip and the outer panel top spars extend to the middle of the centre section panel (this gives better structural continuity). Angle the root ribs of the outer panels to the dihedral template. 1/32in. sheeting is used only on the top leading edge, the top of the centre section and for the vertical webbing. Join the wing panels, propping up to the correct dihedral, and then cut the slots for the dihedral braces.

Tailsurfaces are built up from strip and sheet parts, the elevators have 3/32 x 1/8in. strip added top and bottom, plus 3/32in. centre sheet, to give an aerofoil section. When elevators are not fitted, the trailing edge can be formed from 1/8 x 3/8in. balsa.

Turn to the centre of the magazine for your full-size **Bi-Mini** plans.

Strength in covering

One area where a little extra weight will bring dividends is in the covering material used. There is no reason why you shouldn't use film or fabric iron-on materials, but if you want maximum strength and durability, then doped nylon is the answer. Use self-coloured nylon - it is not difficult to dye to the colour of your choice - and limit the paint trim. If you do use a heat shrink fabric, watch out for induced warps.



Before readers start to write in asking what the total weight of the 'Bi-Mini' should be, let me explain I am *not* quoting any figures. Much will depend on the R/C equipment used and one thing is certain - when built, you cannot do anything about it! Build as light as possible, but do ensure the balance point is correct - a tail heavy model spells disaster.

Biplane flying

Why go to the bother of building an extra wing when the monoplane, particularly the 'Super Sixty', is a proven good flyer? Probably the simplest answer is that, to most modellers' eyes, biplanes have more character. However, there is a little more to it than that; in general, the extra wing area gives a lighter wing loading and the additional drag produces a slower-flying model. These assets are very useful for small field flying and to give a model of small overall dimensions which will maintain good flying characteristics.

Should you wish to build the 'Bi-Mini' as a high wing monoplane the lower wing could be omitted - it would still fly well. Alternatively, if you fancy an even smaller version of the ubiquitous 'Super-Sixty', *Radio Control Models & Electronics* included full-size drawings of the 'Micro-Mini' (26in. span for .020-.030 cu.ins. engines) in the April 1987 issue. Back issues are available.

How do you fly the 'Bi-Mini'? Check the balance point, airframe for warps, radio and engine; launch into wind and enjoy yourself! Seriously it is an easy model to fly - just make sure you don't over control during the initial stages. 