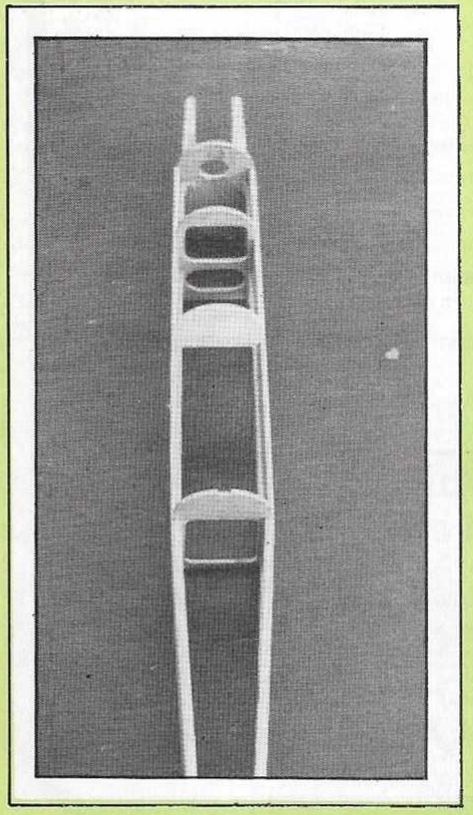
Bant

A 49 inch span sports/aileron trainer for four function radio and .40 four-strokes, Bantam was designed for small, noise-conscious fields by PHIL KENT.

Bantam was designed and built due to a decision by our club (West Yorks MFC) to restrict flying on one of our sites to four-strokes only. The field was in a noise sensitive area and as our flying times had been increased it was felt that we would be tempting providence if we continued to use two strokes. The field was a school playing field quite good in summer but a bit rough in winter when the rugger boys had made their marks. The model had to be capable of flying from this field and had to be fun to fly. I made the prototype with rubber banded on wings but have shown bolt and peg fixing on the drawing.

Fuselage construction is based upon balsa side panels with balsa and ply formers, a basic structure streamlined with a rolled ply top deck.



To me one of the most off putting points when building from a plan is a tip and root rib, if the model has a tapered wing, with instructions to make the ribs using the sandwich method. I think that it is much easier if there is a drawing of each rib, it is much more economical on balsa too. I also like models to use standard size sheets of balsa. Bantam uses 1/8 x 3 x 36in. pieces for the fuselage sides and four sheets of 1/16 x 4 x 36in. over the wings. The tailplane comes out of one 3/8 x 3 x 36in. sheet.

Construction

Wings — It should be possible to see the drawing of the wing from the reverse side of the plan (wipe the plan with a paraffin-moistened rag) but if this is not so, tape the plan onto a window and draw out the required details. By using these methods you know that each wing panel will be identical. Trace or photocopy the root rib from the drawing. I trace the rib and then pin prick through onto the balsa. Cut out the rib, check the shape and then cut out two more. Take the original rib template and sand it down to the shape of rib 2, then cut two ribs. Repeat this operation until a full set of ribs is obtained. Cut out the recesses for the spars and the holes for the push rods.

The full depth mainspar is from hard 1/8in. sheet and notches are cut to accept the ribs. The 1/16in. ply dihedral braces are fitted each side of the mainspar before assembling the wing. The main spar and rear lower spar should be pinned down over the plan (use Solartex backing or other polythene sheet over the plan) along with the 1/4in. square trailing edge. The ribs should be fitted and glued in place before the leading edge. After the rear top spar and leading edge are fitted the front and rear sheeting can be cut. By cutting the 4in. wide sheet diagonally it is possible to get a leading and trailing piece of sheet plus the centre section sheeting from each 36in. length.

The half wing can now be removed from the plan. Turn the plan over and repeat the sequence for the other wing. The sheeting and cap strips can now be added to the undersurface of the wing. Use soft 1in. block for the tips, carve and sand to shape. Using a plane, carve the leading edge to shape and sand to blend with the sheeting. The centre section trailing edge is fitted next and finally the 1/16in. ply doubler underneath. 1/16in. ply supports for the bellcranks complete the woodworking part of the con-

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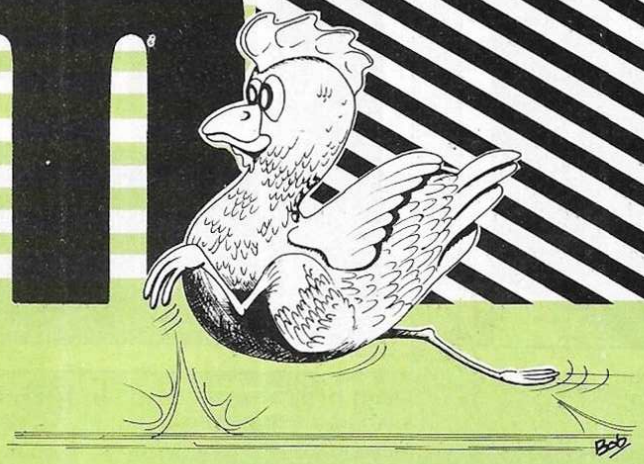
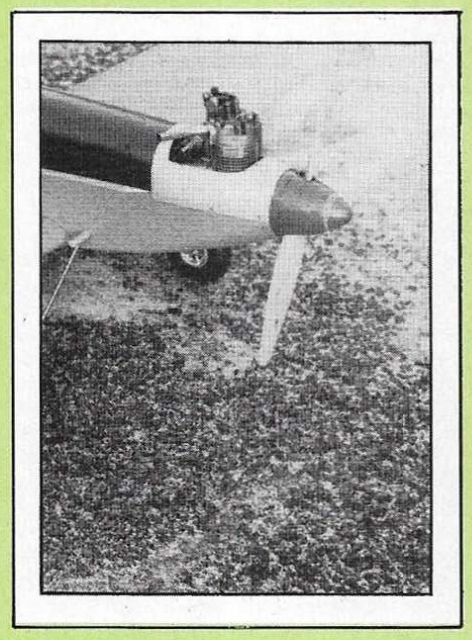
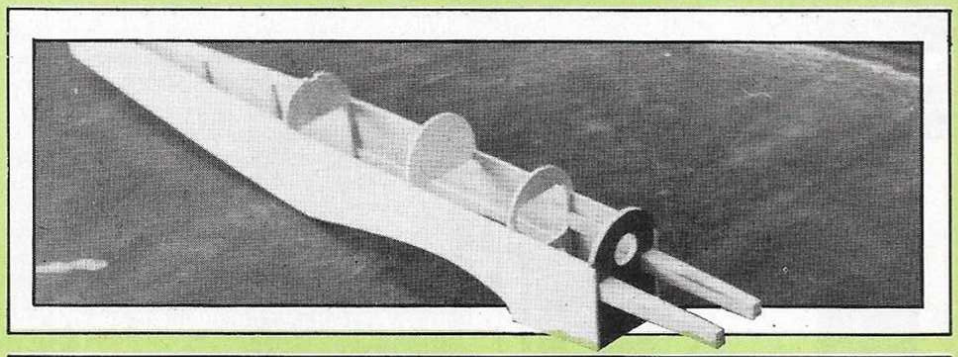
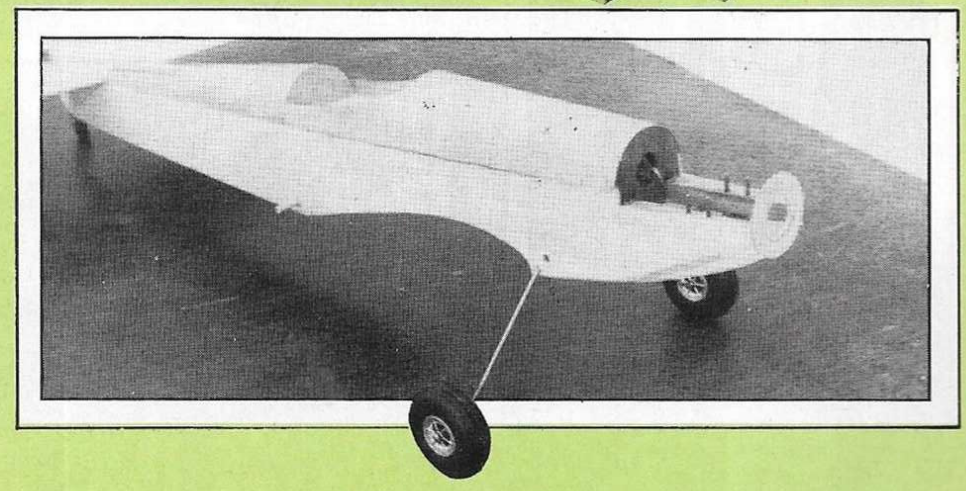




Two photos right show how the fuselage progresses from its skinny beginnings to a plumper form.





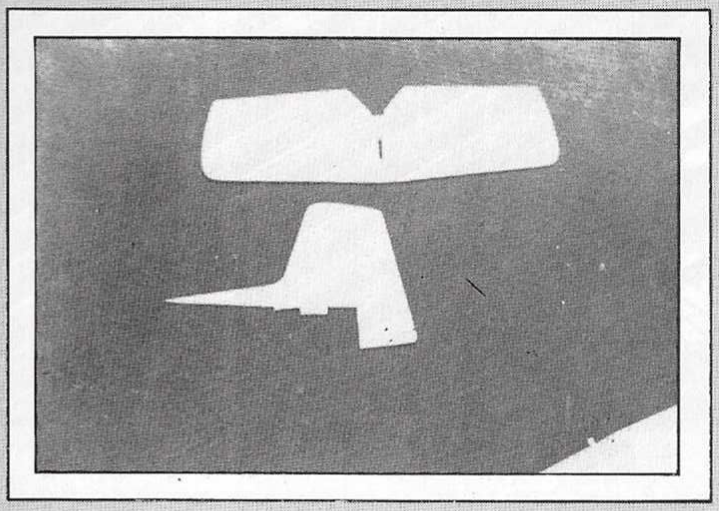
struction. 16swg push rods were used on the original with standard metal snap links and rods from the bellcranks to the horns. The ailerons were made from 1 x 3/8in. trailing edge stock. The taper was cut using a straight edge, the undersurface being cut away to give the correct section and progressive washout towards the tip.

Tailplane, fin and rudder

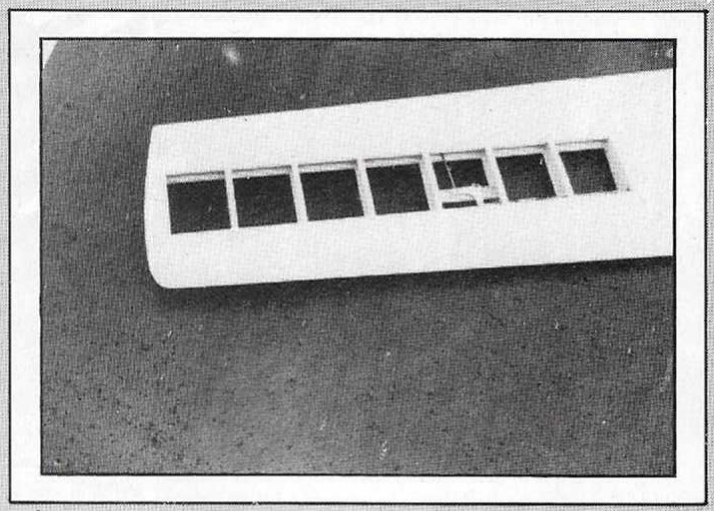
The tailplane is from med. soft 3/8in. sheet, note the end pieces which give added rigidity and enable the use of only one sheet of balsa. Shape to the sections shown. The elevators are joined by wire epoxied in place. The fin and rudder are from 1/4in. sheet (no problems here).

Fuselage

The fuselage comes out of 1/8 x 3 x 36in. medium balsa, make sure that the tailplane mount is at the right angle.



Balsa sheet forms the tail feathers.

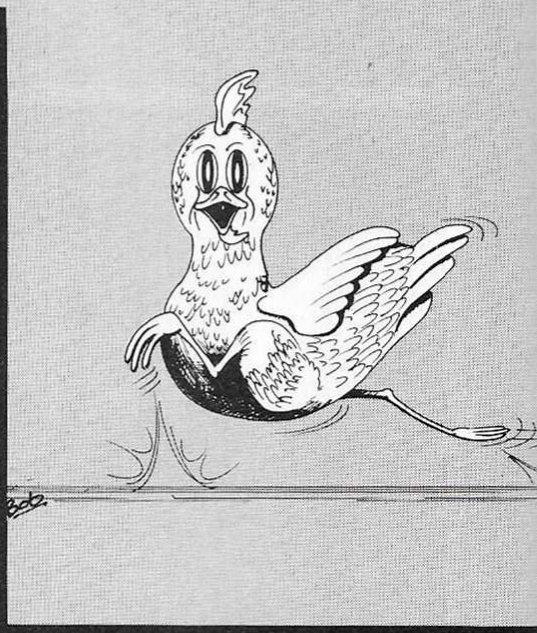


Plenty of meat on the wings, which feature sheeting over the leading and trailing edges.

Due to the top decks being of rolled ply and balsa I decided that conical sections would make things much easier. The tapers on the front and rear portions of the fuselage are therefore straight. A good anchorage is required when using this technique so 3/32 x 1/8in. strips were glued in place on the forward portion and 1/16 x 1/8in. strips on the rear. The ply doublers were then cut out and fixed in place with Evo-stik.

The remaining 1/8in. strip and sheet pieces can now be added. I partially cut through the sides at F5 to obtain the correct plan shape before fitting the formers. A commercial engine mount could be used but I used bearers for convenience. Note that the bearers are cut away to accommodate the tank. The bearers should be epoxied to the sides before fitting any formers. Formers F2 to F5 were epoxied in place and the stern post making sure that the fuselage was true. F6 to F10 were then fitted along with the cross pieces. The undercarriage is a simple torsion bar unit. The 1/8in. ply plate is fitted first followed by the u/c legs and a ply packing piece. The two slotted side pieces should be epoxied in place to hold the vertical parts of the legs. An 1/8in. ply bottom completes the unit. 1/4in. balsa sheet fills in the front underside of the fuselage and 3/32in. sheet balsa with the grain crossways the rear. The rolled 1/32in ply top decking can now be fitted. Cut a template from stiff paper first. I use masking tape to hold the ply in place whilst getting a good fit and again when fastening the ply in place. The rear decking from 1/16in. sheet balsa is quite straightforward after this.

Cut out for the cockpit (the cover is added after painting) and complete the bottom part of the cowl from scrap balsa block. The top part of the cowl was made from litho plate fixed by screws into the engine bearers.



Finishing and flying

I covered the fuselage, tailplane and fin in lightweight tissue and the wings in nylon. The structure is suitable for any of the popular coverings such as Solarfilm and Solartex. After filling and sealing car cellulose was used, black for the top decking and fin, orange for lower fuselage, wings and tail. The SMAE number was cut from Con-tact sheet. The whole model was fuelproofed with eggshell polyurethene varnish. I painted the tailplane and fin before fitting and used nylon hinges on all moving surfaces. There is plenty of room for the radio gear, move it about for correct balance. The original model is nose heavy!

The first flying test was on the school playing field. The Enya 35-4C started up first flick and away Bantam went. A long straight run, then up and away. Slight up trim was required but otherwise everything was fine. The four-stroke up front makes you feel that something is missing but you soon get used to the lack of two-stroke engine noise. The model was put through its paces and came through very well. I had difficulty getting the model to spin (must move the CG) but other manoeuvres such as rolls, loops, inverted flight, etc. were all accomplished with ease. The slow flying characteristics are excellent and landings a delight, three pointers being the order of the day.

If you want a model which is easy to build, easy to fly and easy on the ear put your 40 four-stroke in a Bantam and have fun.

Plenty of room for the radio to be stuffed in.