FROG "STARDUST"

37in. Span Medium Weight Contest Duration Model

TOTAL WEIGHT - 6 ozs.
WING AREA - 175 square inches.

Nose Assembly

The nose block is made up from 3 laminated balsa discs with a rear disc of 1 mm. plywood. (Fig. 7.) The rear rotating spiggot is of two layers of balsa. Cement all these together with the plastic nose bush through the centre. Airscrew assembly is also shown in Fig. 7—the plywood backplate being added after the joints between blades and spinner have set. During blade assembly rotate the airscrew on the shaft to check that the blades are rotating truly. Sand off the blades to aerofoil section and balance the airscrew.

The order of assembly of nose block and airscrew is indicated in Fig. 7. The length of the rear screw for the rubber tensioner must be adjusted so that enough turns are retained to keep the motor reasonably taut between front hook and rear peg during the glide. An 18 s.w.g. wire ring may be soldered and bound to the bent front end of the shaft to enable a winder to be used.

Fuselage

Build the two fuselage sides, one above the other, from strips of 3/32in. x 3/32in. obechi. Insert front reinforcing pieces (F1-F2-F3-F4-F5), rear motor attachment strips (F8). Allow to dry. Cement bulkheads 'A' and 'B' in position (Fig. 1). Pull in rear ends of sides and cement together. Cut two of each horizontal spacer and cement in place. Bend wing supports (F13-F14) from 16 s.w.g. piano wire supplied—these parts are most important and must be exactly as shown on drawings. Carefully cement them on to the rear faces of the bulkheads 'A' and 'B' so that the vertical distance between the top of the longerons and the top of the wire mount is precisely as indicated on the plan. Refer to Fig. 3 and add the reinforcing pieces (F6-F7) after grooving them to fit the wire. Add 1/8in. balsa corner fillets (General view in Fig. 2). Securely bind the obechi wing mounts to the struts as shown (F15).

Cement plywood nose former (F9) in place. Fit nose top and side stringers (F10-11-12). These parts are supplied slightly oversize and must be sanded to shape after assembly.

Undercarriage fixings. The front fixing consists of a paper tube cemented in place after a hole has been made in the reinforcing pieces and bottom stringer. Drill the holes for the rear brass tube as indicated. Cement in position, cut off a strip of 3/32in. x 3/32in. obechi and cement it in place immediately below the tube. Bind the tube to both bottom spacers with cotton.

A de-thermaliser box (constructed from 1/32in. sheet balsa with a ... in. trapdoor may now be added if required. For general flying this is not necessary but for contest work a de-thermaliser is nowadays considered essential. General arrangement of a standard type parachute unit is shown on the plan and in Fig. 4.

Undercarriage

Refer to Fig. 6. Bind with fuse wire and solder the two top wire parts together to form the fuselage attachments. Bind and cement this unit to the top of the wooden undercarriage leg—AFTER this has been shaped with sandpaper to a streamline section as shown in the sketch. Bind axle to the bottom of the leg, fit landing wheel and bend axle at right angles to retain wheel.

Mounting. The projecting rear wire fits into the brass fuselage tube, so that the bent end of the other wire is opposite the paper tube. A rubber band stretched through the paper tube and looped over the ends of the wire will provide the necessary springing.

Fin

Cement the parts R1-R2-R3-R4-R5-R7 in place on the plan. Add the 3 ribs (R11) which are of ... in. x ... in. strip balsa cut from scrap material. Make cuts in the front edge of trim tab (R6) and insert hinge strips of aluminium as shown in Fig. 5, then fix tab in place. Cement fin in position on fuselage—it is vital that it lies exactly on the centre line of the fuselage. Add parts R8-R9 and spacer of 1/8in. x 1/8in. balsa. Sand leading edge and tips to rounded section and taper off trailing edge.

Tailplane

Construction is straightforward. Lay the leading and trailing edges on the plan and add shaped tip pieces and ribs (T1-T2-T3-T4-T5-T6).

When dry, cut into leading and trailing edges where shown, bend in the dihedral angle and place blocks under the tips to hold the correct height (1in. under each tip). Cement spar (T7) in place—in two pieces meeting at the centre rib. Slightly deepen the slot in the centre rib to allow for the spar ends projecting downwards. Double coat all centre section joints. When dry, remove from plan and sand leading edge and tips to rounded section and to fair in with the trailing edge.

Covering and Finishing

Fuselage, wings, tailplane and fin are covered with tissue in the normal manner. Use white photographic or office paste as an adhesive. The front of the fuselage and wing centre section may be double covered for additional strength. The wings must be covered on the underside first, and in four parts—port and starboard inner and outer sections. Paste must be applied to each rib so that it follows the undercamber of the section. Cover the top surface in a like manner—except that the ribs must not be coated with paste—apart from the root and end ribs of the inner section. Fin and tailplane are covered in the usual way.

All the tissue covering must be lightly coated with water—preferably applied with a fine spray—to shrink it. During the shrinking process the wings and tailplane must be held down in such a way as to prevent warping. The two centre panels of the wing must be exactly straight and the outer panels straight or with a 'wash-out' of up to 2 degrees at the tips.

All tissue surfaces should be given two coats of clear cellulose lacquer.

Undercarriage, airscrew and nose block need three thin coats of lacquer or coloured dope, rubbed down with sandpaper in between coats.

Wings.

Each half is constructed on the plan—pay no attention to the polyhedral angle during building the basic structure. This is made up of the leading and trailing edges, ribs and tips. (W1-W2-W3-W4-W5-W6). When dry, partly cut through the leading and trailing edges, so that the outer sections may be bent up as indicated on the drawing. Carefully apply the increased dihedral and place blocks to hold tips at 2 3/16in. from the board. (See Fig. 10). Assemble main spars on plan as shown. When dry, cement spar halves in place in ribs. Add joint brace (W11), and tip braces (W14). Add corner fillets.

Assembly of two halves. (Refer to Fig. 8). Cement two halves together, with blocks under each to raise centre section dihedral to 1in. on each side. (Fig. 10). Make slot in the centre section ribs larger, so that spar brace may be inserted against the front face of the spar. Cut away rear ends of these ribs and insert the trailing edge brace—which is of 3/16in. x 3/16in. balsa and shaped after assembly. After centre section joints have been double coated with cement and set, remove wings from the board, add underside balsa panels. (W13).

Sand leading edge and tips to rounded section, smooth off whole surface before covering. Finally, sand the wing with fine paper to ...

DESIGNED AND PRODUCED IN ENGLAND
BY
INTERNATIONAL MODEL AIRCRAFT
LIMITED
MORDEN ROAD, MERTON, LONDON, S.W.19.