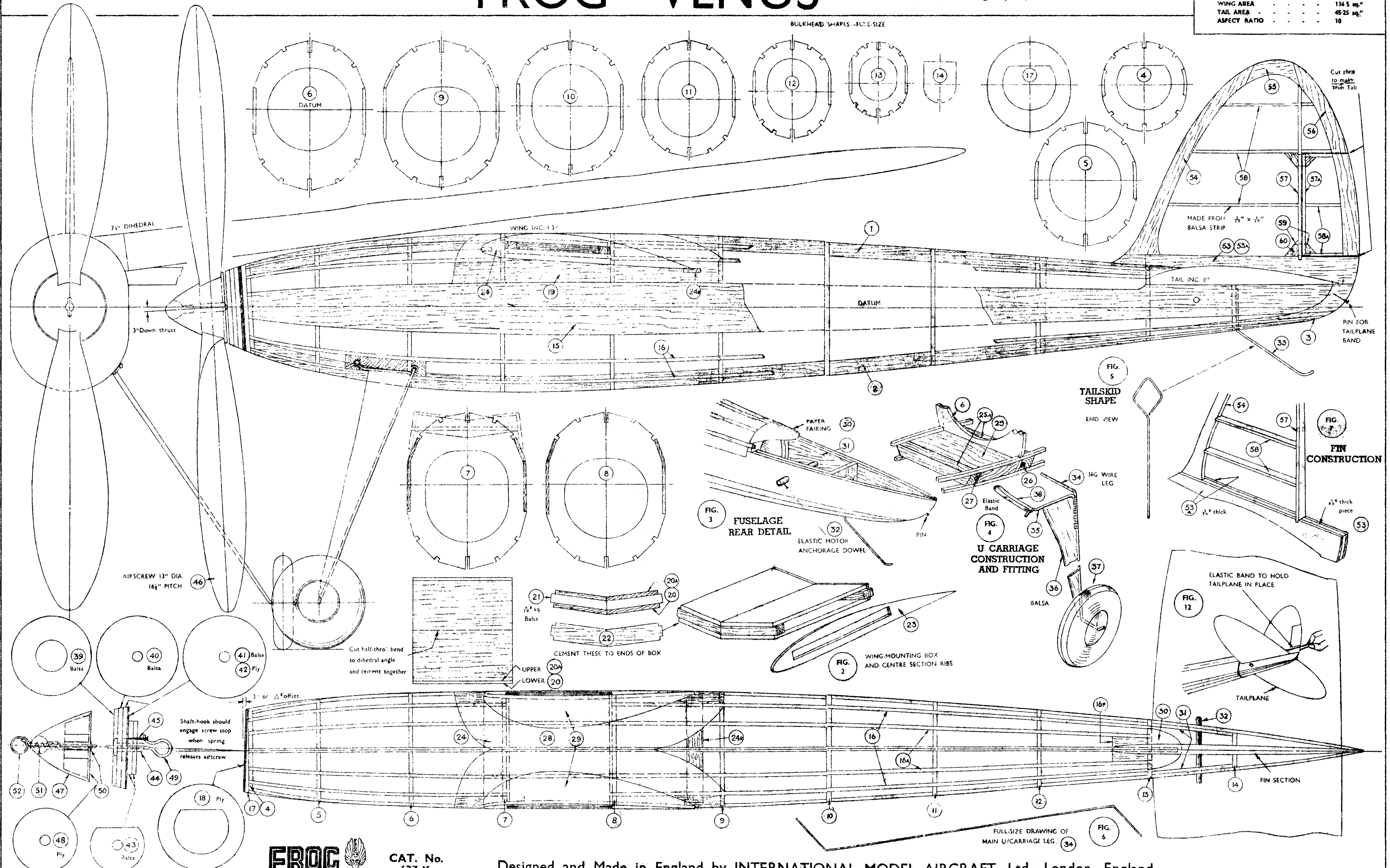


FROG "VENUS"

38in. Wing Span High-performance Contest Model.

WINGSPAN	38"
LENGTH	251"
WEIGHT	4½ ozs.
WING AREA	134.5 sq."
TAIL AREA	45.25 sq."
ASPECT RATIO	10

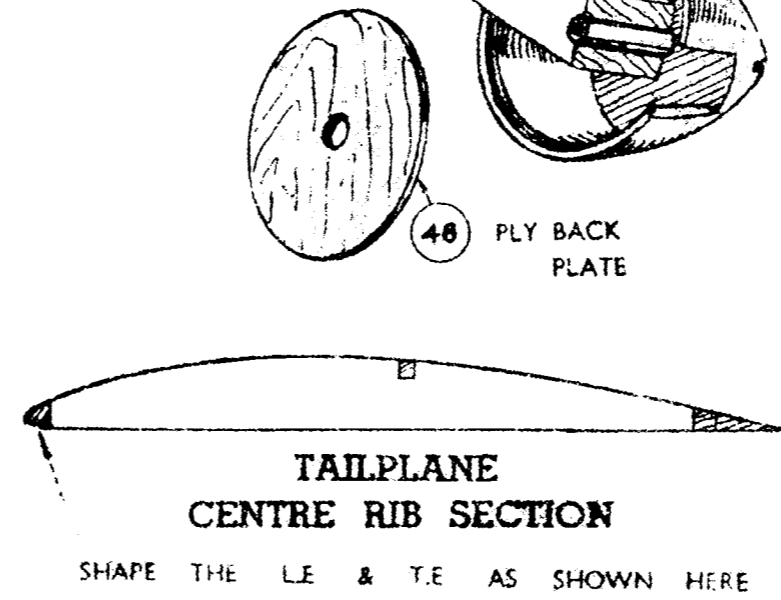
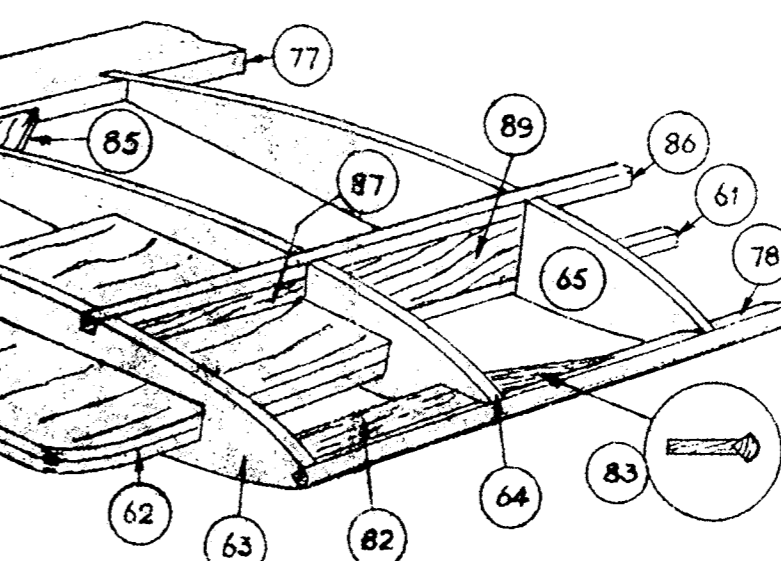
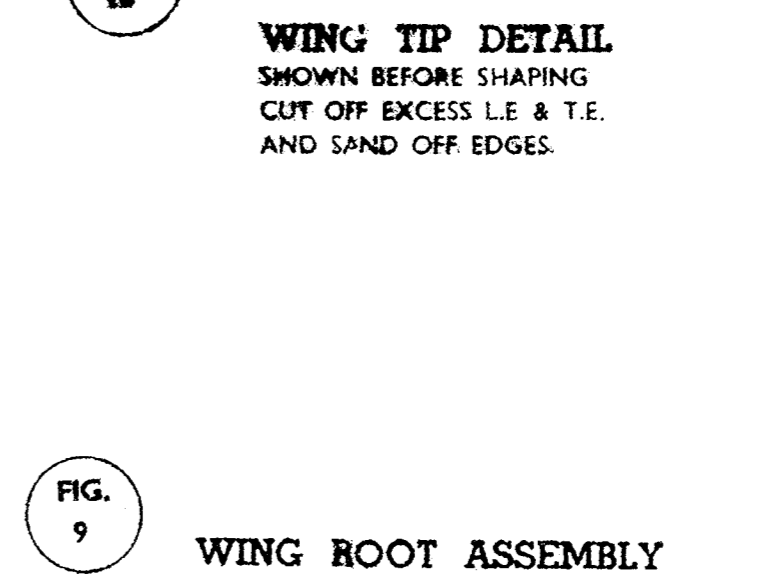
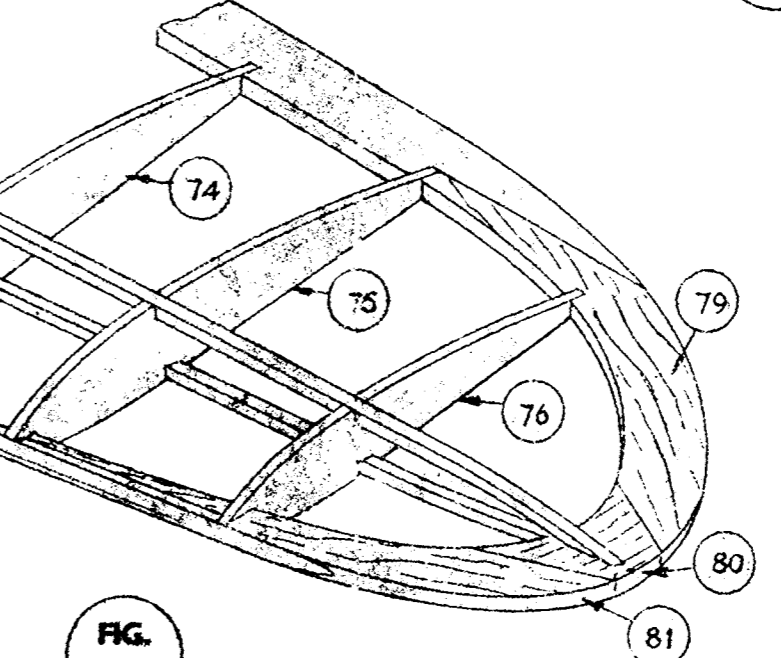
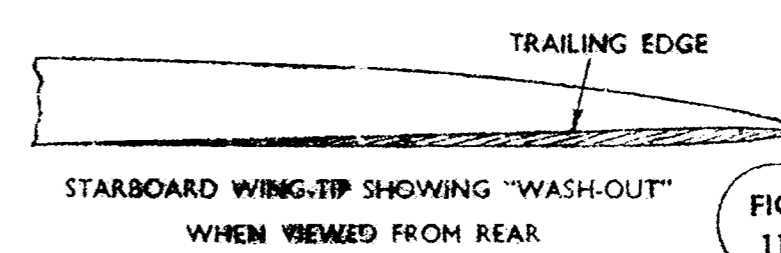
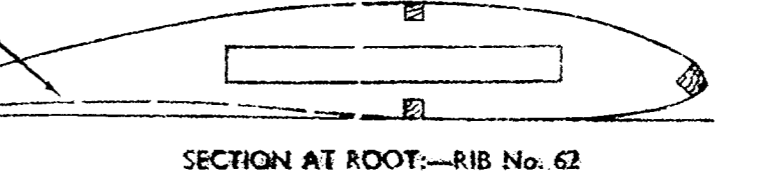
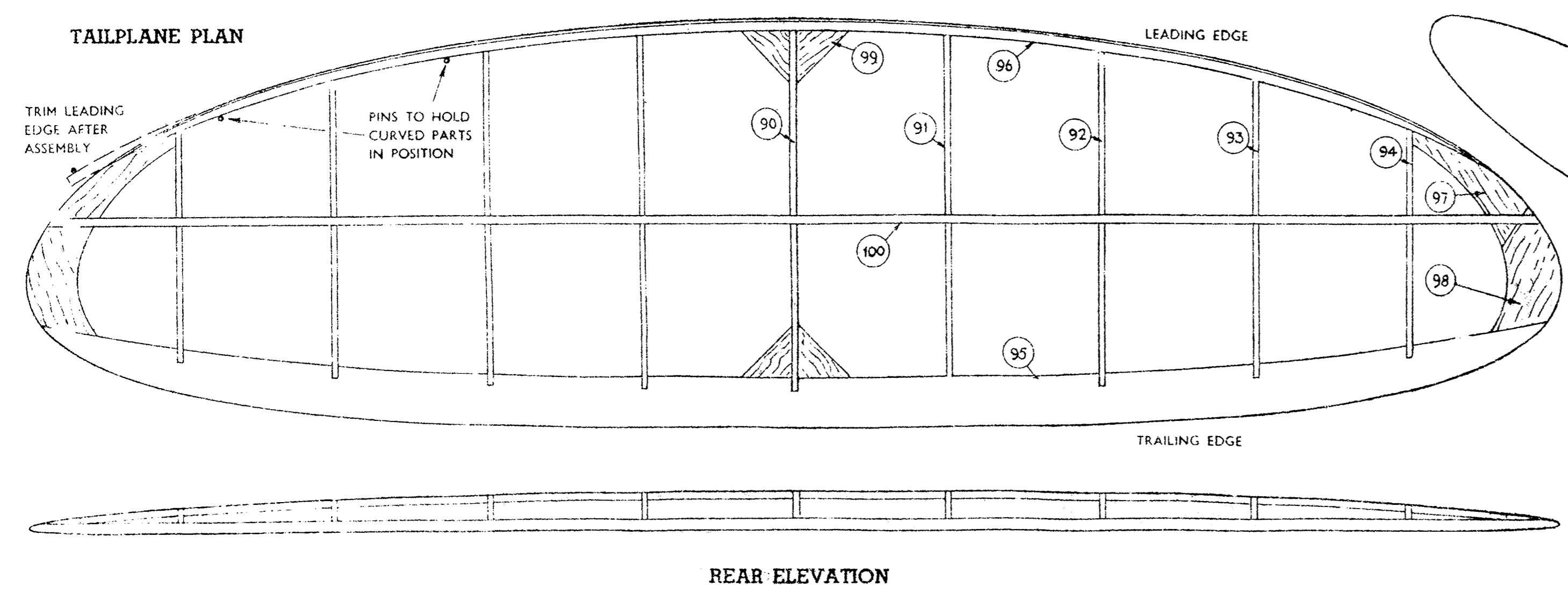
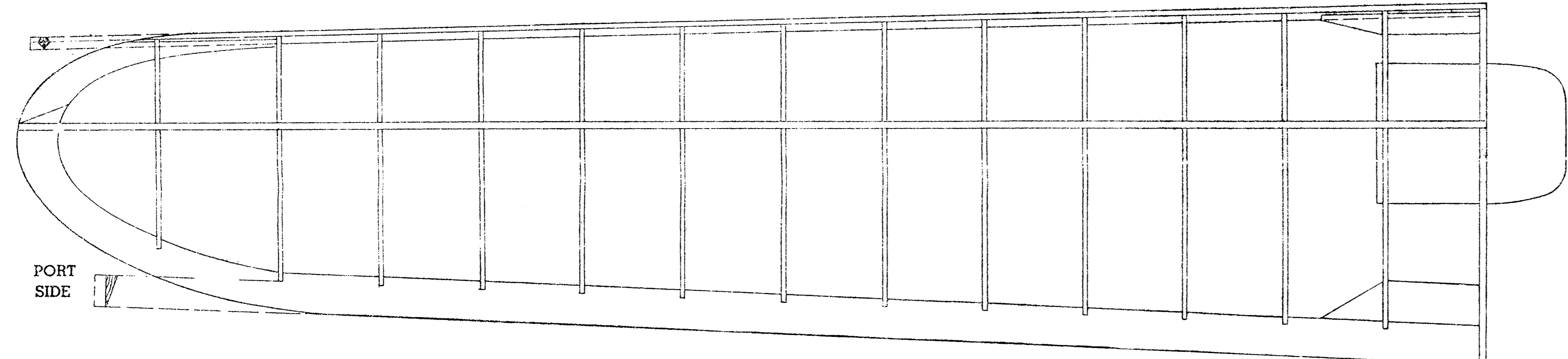
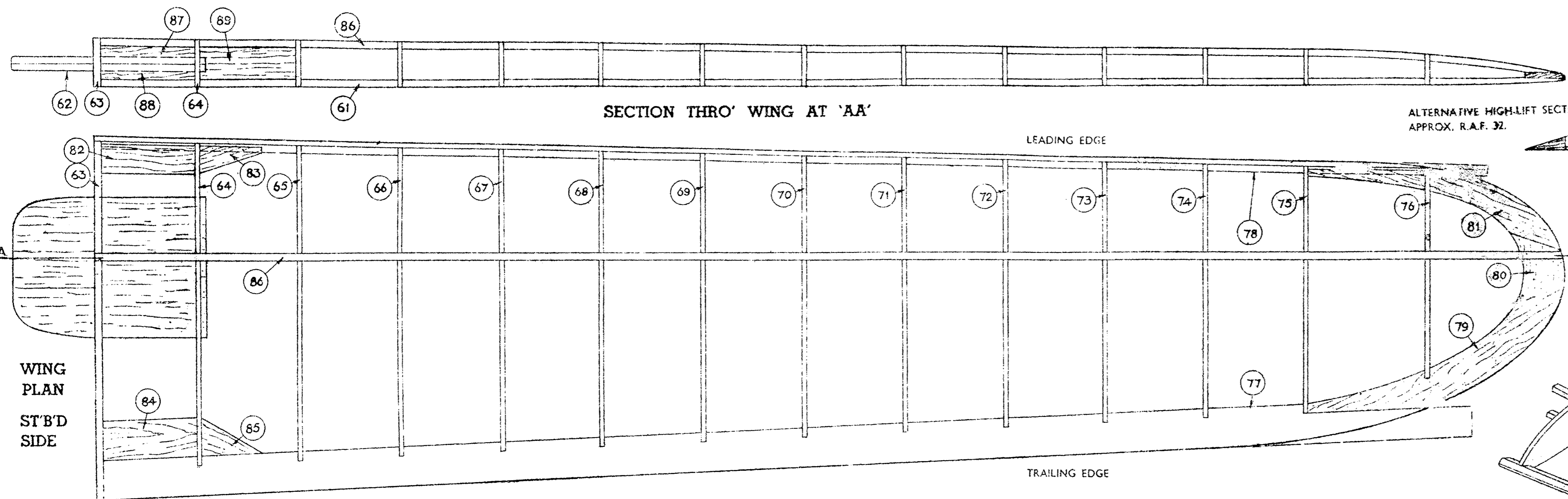


CAT. No. 637 K.

Designed and Made in England by INTERNATIONAL MODEL AIRCRAFT, Ltd., London, England.

Full-size Drawing of the FROG "VENUS" Wing & Tailplane Group.

FROG "VENUS" BUILDING INSTRUCTIONS.



In common with all other "Frog" products, this model has been designed to give the most efficient performance in its class, and the constructional methods are fully worked out to enable even the beginner to make a satisfactory job.

A feature of the "Frog" kit is the full-scale working drawings, comprehensive number of and detailed for easy reference with the instructions, so that you can place the drawing on a soft wood board or old table, and build the various parts of the model on the drawing by pinning the parts to it, carefully cementing as joint, and leaving for about 30 minutes to set before removing. Small pins may be used to hold the parts in position as shown on drawing.

Bearing these points in mind, and referring to the sub-assemblies, it is necessary for us to give a recommended sequence of assembly instructions with special reference only to unusual points.

FUSELAGE: This may be built either in two halves as shown in Fig. 1, or assembled one unit.

The first method entails cutting the bulkheads 4-13 into two, and cementing one half of each to the keel strips 1-4 and 3, together with the side panel 15, a stringer 16 to form a half-shell. When the cement has set, remove it from the board and add the other halves of bulkheads, side panel and stringers.

Using the second method, assemble the complete bulkheads to the keel strip first, locating them by the slots, and checking against the drawing to get them in line. Then damp the outside of the panels 15 to bend them easily and cement them into place on the bulkheads, followed by the stringers 16. Next cement rear bulkhead 14, fillets 15 against 13, balsa front bulkhead 17, ply ring 18 and wing supports 19. Cut away two of the stringers between bulkheads 7 and 8 to fit No. 19.

Make wing-box from parts 20, 20A, 21, 22 as shown in Fig. 2. Cover with tissue, doped on, before assembling to fuselage. It should rest on the supports 1 to obtain the correct angle of incidence, and cemented to these and bulkheads 8 and 9. Cut away the top stringer 16A between these bulkheads to fit it. Assemble parts 22 and 24B into place, and cement to 28 and to ribs 23, using plenty of cement. Then fit blocks 25A into place, together with brass tube 26 and paper tube 27, and cut the ends to fit the fuselage; see Fig. 4.

Cut out the paper fairings 28, 29, 30 from the sheet supplied, and cement into place first. Then parts 29 which are cemented to 28 and to ribs 23, using plenty of cement. Rear fairing 30 is cemented to bulkhead 13 and to keel strip.

Cement 31 to the insides of the panels 15 to form extra supports for the motor pin 32; see Fig. 3. Bend the tailkite to shape from the piece of 22 g. wire and cement to bulkhead 14, and through a hole made in the keel.

Sandpaper the whole fuselage structure, round off the sides and stringers, to obtain a smooth finish before covering.

UNDERCARRIAGE: Bend the main legs 34 to shape given in Fig. 6, using the drawing as a guide. Bind with fuse wire and solder these to parts 35 which are supplied ready bent. Fit 4. Cement the fairings 36 to the legs and bind with tissue and dope. Cement the plastic wheel halves 37 together, fit to axles, and bend over the ends, or solder washer on.

NOSE ASSEMBLY: Cement together parts 39, 40, 41, 42 and two of 43, and bush 44. Fit six screws 45, and sand the edges to follow the finished shape of the fuselage.

AIRSCREW: Liberally cement the blades into the slots in the plastic hub 47 as shown in Fig. 8, with convex side of the blades forward. When rigidly secured on shaft, align blades, and add ply back plate 48. When dry, sandpaper blades smooth, an balance on shaft, sanding more off side which may be heavier.

Assemble airframe and nose block to shaft 49, with washer 50, and spring 51 which is held in place by another washer soldered to shaft. Bend over shaft to engage slot in hub. See note on rubber tensioner.

FIN: Build up outline on drawing, using parts 53, 54, 55, 56 and 57. Set, set, raise above drawing by packing strips and add wire 58, 59, 57A, 58A and 59. Cut through trailing edge where shown to detach rudder and refit with aluminium strips 60. Shape whole fin to section in plan view, and sandpaper to shape. After covering, it is cemented to the fuselage; the notch on the base fits in the slots in the keel.

COVERING: The fuselage, wings, tailplane and fin are covered with tissue. Use a flour and water or office paste for adhesive, and cover each side separately. Do not pull tissue tight, water and dope will do this. Aim at getting a uniform surface with no deep wrinkles. If using under-cambered wing section, stick tissue to each rib. Use a number of strips for fuselage. After covering, spray water over all the tissue, and handle carefully. Pin down wings and tailplane to prevent warping whilst water dries. Give one coat of dope to wings, tailplane and fin and pin down again. The fuselage should have two coats, and afterwards painted as desired.

RUBBER MOTOR: Make up motor into skein of 8 strands 2 1/2 in. long, or 6 strands 3 1/4 in. long (3/16 in. x 1/24 in. strip). Secure each end with small rubber bands and smear liberally with Castor Oil, Glycerine or Soft Soap, to preserve it and to obtain maximum turn. Loop one end on to the airframe shaft, and lower the other end down the fuselage and secure it by the rear dowl.

When flying, build up turns gradually by about 50 turns each flight, up to a maximum of 600 for the 8 strand motor, and 1,100 for the 6 strand one, when stretch wound, see flying.

RUBBER TENSIONER: This is a vital necessity for competition flying and consists simply of a wood screw stop 85, screwed into rear of nose block, as shown on drawing. As the free wheel spring pushes the shaft forward, the right angle projection on the rubber hook engages the head of the screw, thus retaining the last few turns on the motor. This serves the double purpose of preventing the motor bunching and upsetting the balance, and the nose block from falling out. When bending shaft in front of spring (see nose assembly), make sure that the hook is in the correct relative position to the screw so that it rides forward sufficiently to engage it.

ASSEMBLING: Having fitted the motor, airframe and nose block to fuselage, next fit the undercarriage: An elastic band is drawn through the paper tube with the aid of a piece of wire, and slipped over the ends of the front wire pieces 35. Slide tailplane through gap below fin, and secure by a 3 in. band passed over the top, and hooked on to a pin in the fuselage; see Fig. 12.

Fit the wings into their respective slots, which should be firm enough to hold them in place, but allowing them to knock out fairly easily.

FLYING: The complete model should balance at a point approximately 3/4 inch back from the L.E. of the wing if a flat bottomed section is used, or half-way back for the high-lift section. This may vary, but can be remedied by cementing lead shot in nose or tail of fuselage.

For your first flights wait for a calm day. Make a short flight first, and note the result. If it tends to nose up and stall, adjust the tailplane by slipping a piece of card under the L.E. and if it puts its nose down, and shows no sign of climbing, put a piece of card under the T.E. It is safer to have it nose-heavy at first, and allow it to take off from the ground. Set the trim tab straight at first, and adjust it according to the flight required. When the trim is satisfactory, increase the number of turns as given in the motor paragraph.

To obtain the greatest number of turns on the motor, it should be stretch-wound with a wheel brace.

A small ring should be bound and soldered to the front part of the airframe shaft as shown in drawing. Whilst one person holds the model, a second engages in this ring, a hook held in the chuck of a simple wheel brace, stretches the motor out two or three feet, and winds it slowly in. As these braces are usually geared up about 4:1, the process is far less tedious than winding by hand.