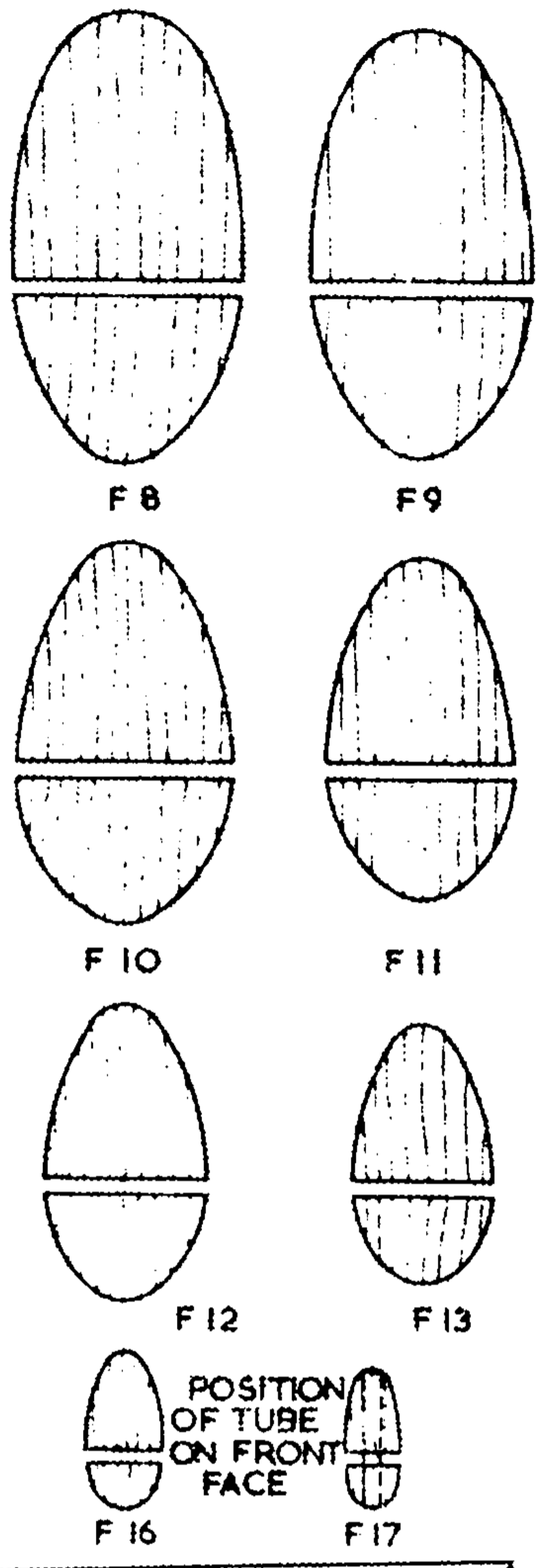
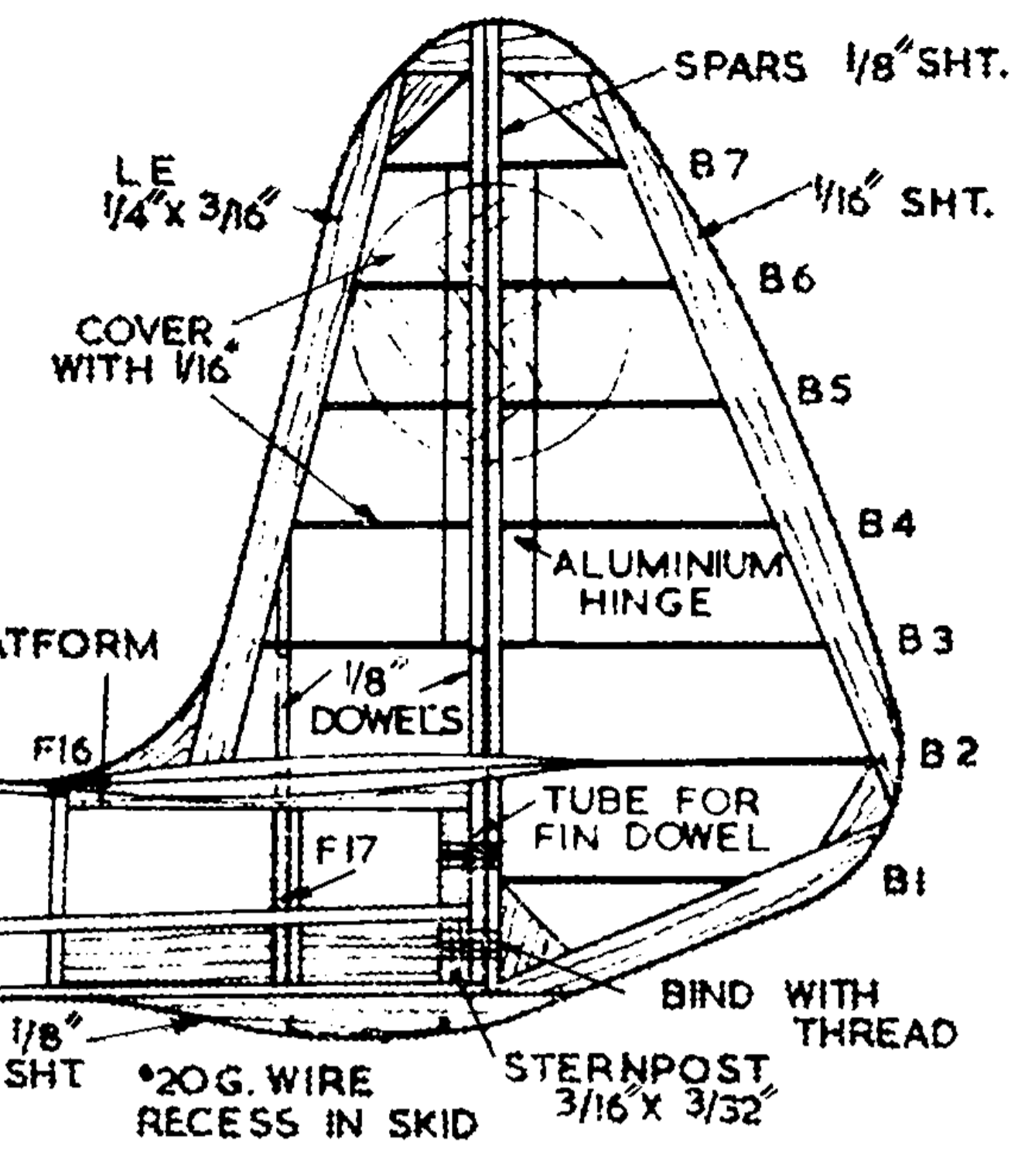
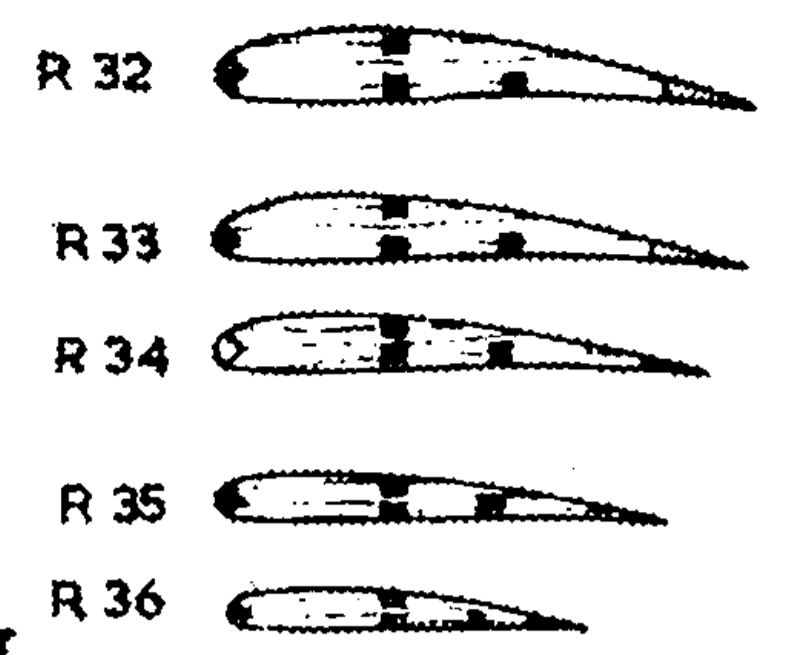
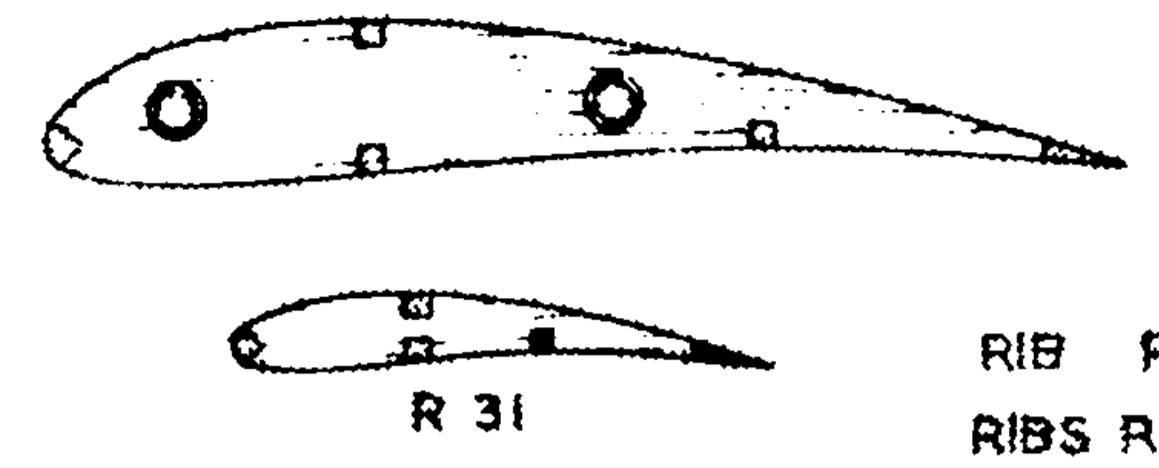
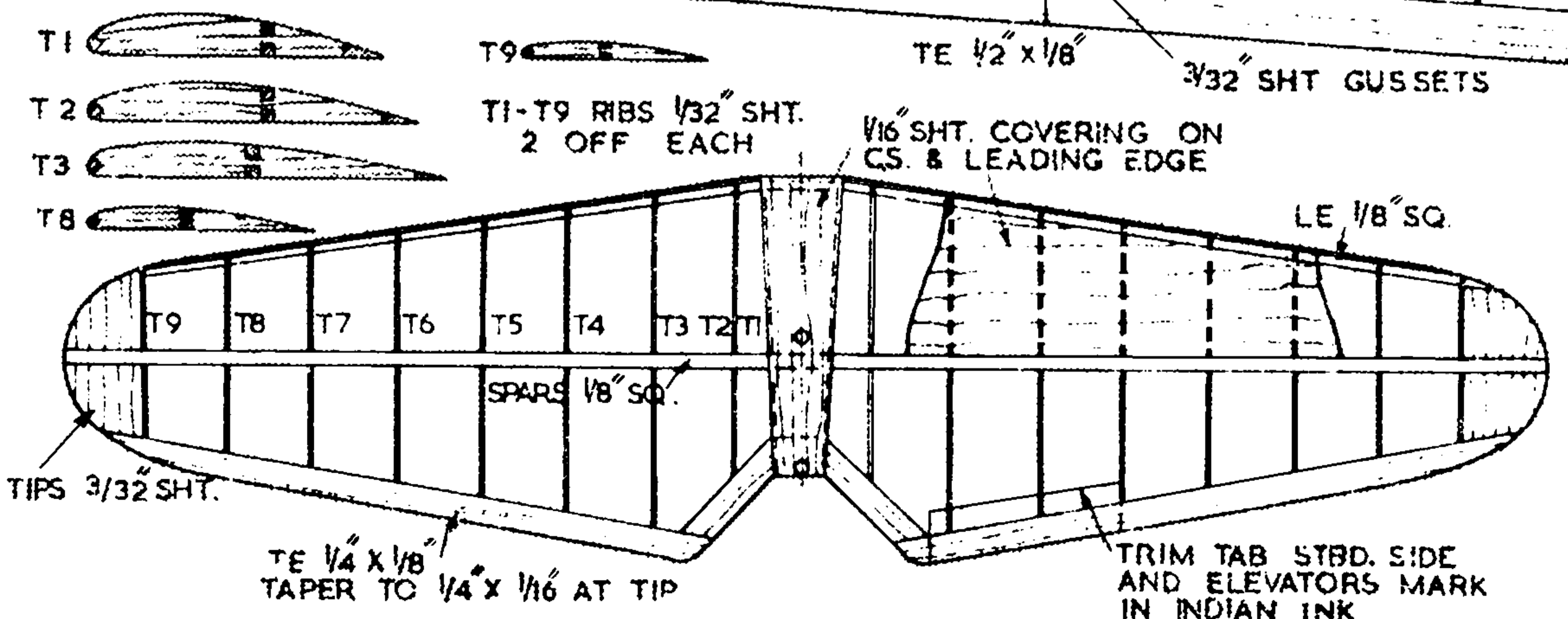
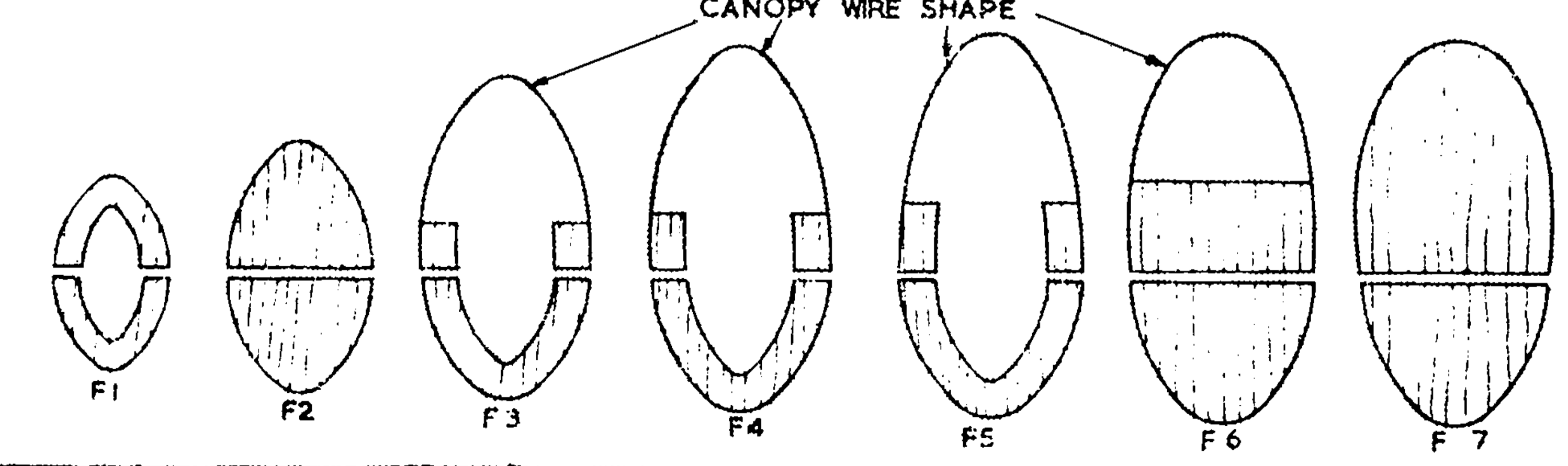
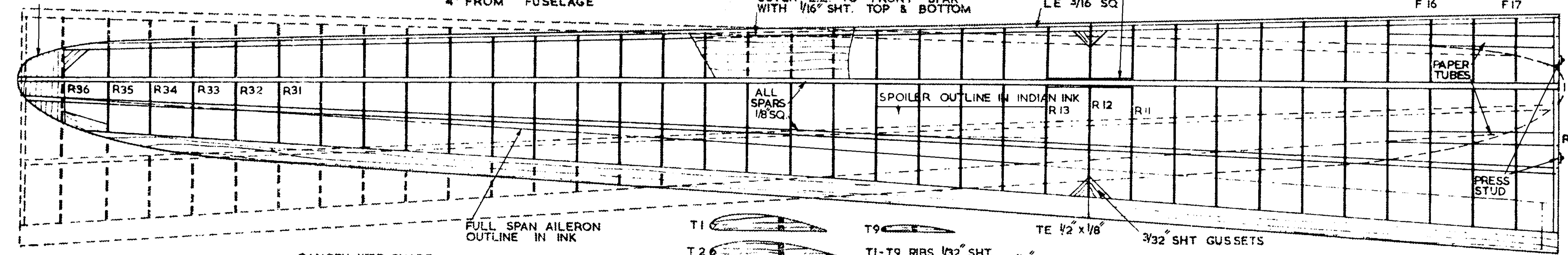
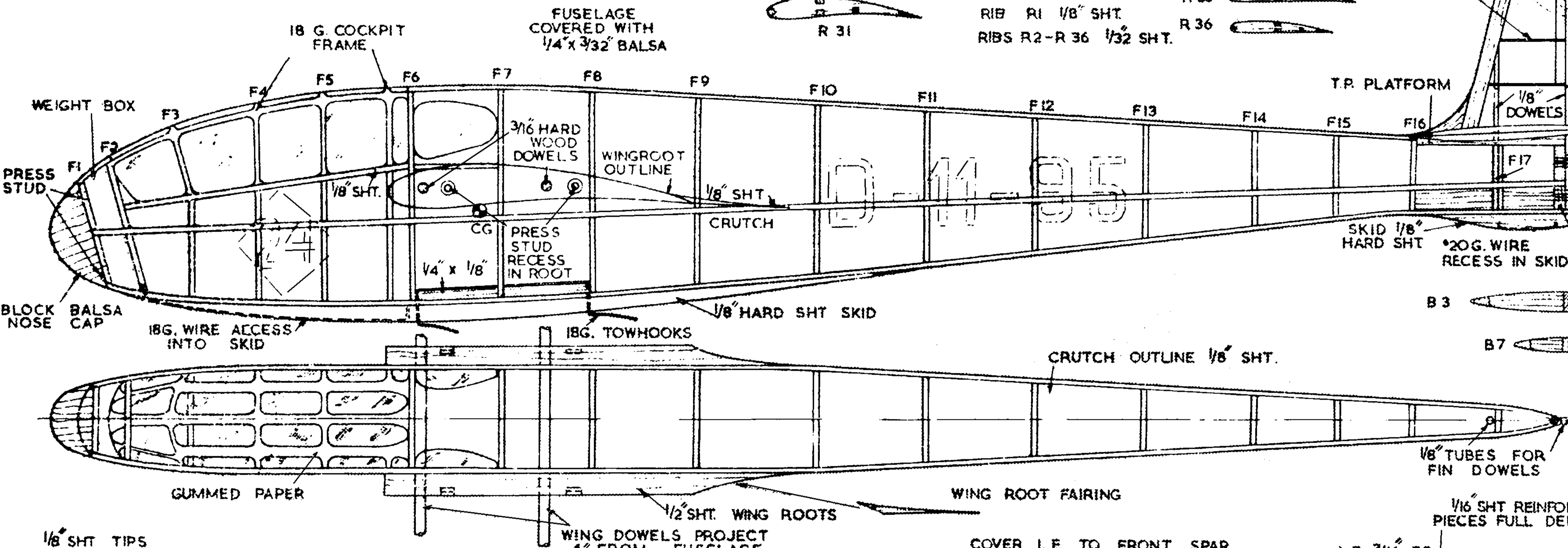


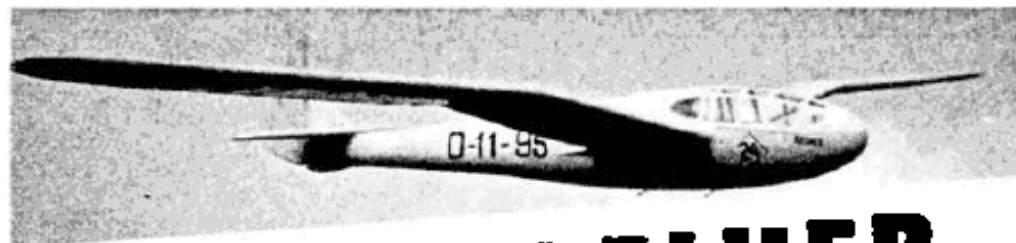
RIBS R2-R30 CUT BY SANDWICHING LAYERS OF 1/32 SHT. BETWEEN R1 & R31 AND SHAPING TOGETHER MAKE R32-R36 SEPARATELY



ALTERNATIVE CANOPY FROM MOULDED ACETATE SHEET



**D.F.S. REIHER**  
 MA 315 P.M.H. LEWIS 5/6  
 SPAN 75" LENGTH 30"  
 C MODEL AIRCRAFT 1959  
 19-20 NOEL ST. LONDON W1



# D.F.S. REIHER



**An unusual scale prototype, this 6 ft. 3 in. wingspan glider has all the grace of the original says designer PETER LEWIS**

**S**INCE the high-performance sailplane became an accomplished fact, purity of line has become a quality expected of it. The designer of powered aircraft is only comparatively rarely able to indulge in what is, to him, almost the last luxury but, in complete contrast, the creator of the glider is unhampered by considerations of load-carrying, power-plants, fuel tanks and the multitude of other components which go to make up an aeroplane which has to earn its living.

From Germany, foremost country in developing the sailplane during its early days, came one of the most elegant designs of all—the *Reiber*. This outstandingly refined and beautiful machine, with its gliding angle of 1 : 33, was flown in the International Gliding Championships held at the Rhön during July, 1937, the pilot chosen being the young Fraulein Hanna Reitsch, later to become prominent as a very capable test pilot.

The full-size machine's 67 ft. 4 in. wingspan has been scaled down to 6 ft. 3 in. for the model, which possesses all the grace of the original.

## Fuselage

This is built on the crutch principle for accurate alignment, and for speed and ease of construction. Use  $\frac{1}{8}$  in. hard sheet for the crutch itself, and after tracing the outline on to it cut out, at the same time removing the area occupied by the cockpit between formers F2 and F6 but leaving  $\frac{1}{4}$  in. sides. Mark the positions of all formers on the crutch and then cut F1 to F17 from  $\frac{1}{8}$  in. sheet. Cement the formers in place above and below the crutch, setting them at the

angles shown on the plan. The two tow-hooks are shaped from 18 G. wire and then bound and glued to their mount of hard  $\frac{1}{4} \times \frac{1}{8}$  in. balsa which is, in turn, fitted in place between F6 and F8.

The stage has now been reached where the planking of the fuselage can be started. Use strips of  $\frac{1}{4} \times \frac{3}{32}$  in. and commence on the sides, working above and below the crutch line—remember that the strips will need to be tapered to fit the decreasing space towards the front and the rear. Note that an  $\frac{1}{8}$  in. sheet platform is provided as seating for the tailplane. When the planking is complete, sandpaper the entire fuselage.

The next step is to provide the wing roots and fixings. Two pieces of  $\frac{3}{16}$  in. hardwood dowelling are employed as wing mountings; both of them are cut to length and steamed at the centre to the correct dihedral angle, which is finally set by binding and gluing to the dowels short lengths of 16 G. wire. Both front and rear dowels are passed through the holes made in the sides of the fuselage. The pair of wing root fairings are cut to shape from  $\frac{1}{8}$  in. sheet, passed along the dowels and cemented firmly in place.

The nose portion of the fuselage is removable to provide access to the weight box situated between formers F1 and F2, and it is retained by two press-studs sewn and cemented in position. Plastic wood is used to fair both the wing roots and the tailplane platform into the fuselage. The landing skid is cut from hard  $\frac{1}{8}$  in. sheet fixed to the underside of the fuselage and when it is firm, a piece of 18 G. wire is recessed into a

groove cut along the length of the skid. Two paper or aluminium tubes of  $\frac{1}{8}$  in. internal diameter are provided for the fin fixing dowels and are positioned as shown on the plan. A press-stud is sewn and glued to the top of the fuselage to anchor the tailplane.

## Tail unit

The fin, rudder and tailplane are constructed direct on the plan. Cut the fin's leading edge and spar from  $\frac{1}{8}$  in. sheet and pin down; a second spar running the full height of the rudder is now added and then the trailing edge. The  $\frac{1}{8}$  in. ribs and tips are cemented in place and the whole allowed to dry. After removal from the plan, the  $\frac{1}{8}$  in. bamboo dowels are inserted and the fin only covered on both sides with  $\frac{1}{8}$  in. sheet. A thin aluminium hinge joins the rudder to the fin. The one-piece tailplane/elevator structure is made in the same way,  $\frac{1}{16}$  in. sheet being used to cover the forward section back to the spar and also between the centre ribs,

## Wings

The same procedure as used for the tail unit is followed for the wings. The leading edge is from  $\frac{1}{16}$  in. sq.,  $\frac{1}{4}$  in. wedge section is used for the trailing edge, while the spars consist of  $\frac{1}{8}$  in. sq., and when these are pinned in place the ribs are cemented in position. (Ribs R1 to R32 are from  $1/32$  in. sheet and cut on the "sandwich" principle, i.e. R1 and R31 are cut out, and between them are sandwiched 29 suitably sized pieces of sheet, the whole is pinned together and cut and sandpapered to the contours of end ribs. The final ribs R32 to R36 are cut individually.) Add the upper spar and the sheet tips, then crack the spars at R12 and set the dihedral. Internal braces are installed as shown and  $\frac{1}{8}$  in. sheet is used to cover the upper and lower leading edges to the front spars.

Rolled paper tubes accommodate the wing-fixing dowels and press-studs are sewn and cemented on to the faces of the root ribs, with  $1/32$  in. sheet facings added so that there is no gap when the wings are in place.

## Covering and finishing

A smooth surface finish is essential to complement the fine lines of the *Reiber* and it is obtained by using sealer and sandpaper until the surfaces are filled completely.

The entire airframe is covered with medium-weight tissue. After water-spraying the tissue flying surfaces, several coats of clear dope are applied, alternating with sandpapering. White is used for the final finish, the markings D-11-95 on the rear fuselage and the competition number 24 in a diamond on the nose being in black. The name REIHER is just below the cockpit, and the red band around the fin and rudder carries a black swastika on each side in a white circle. Finally, the 18 G. wire cockpit frame is fitted, covered with celluloid, and the model is ready for assembly and flying.