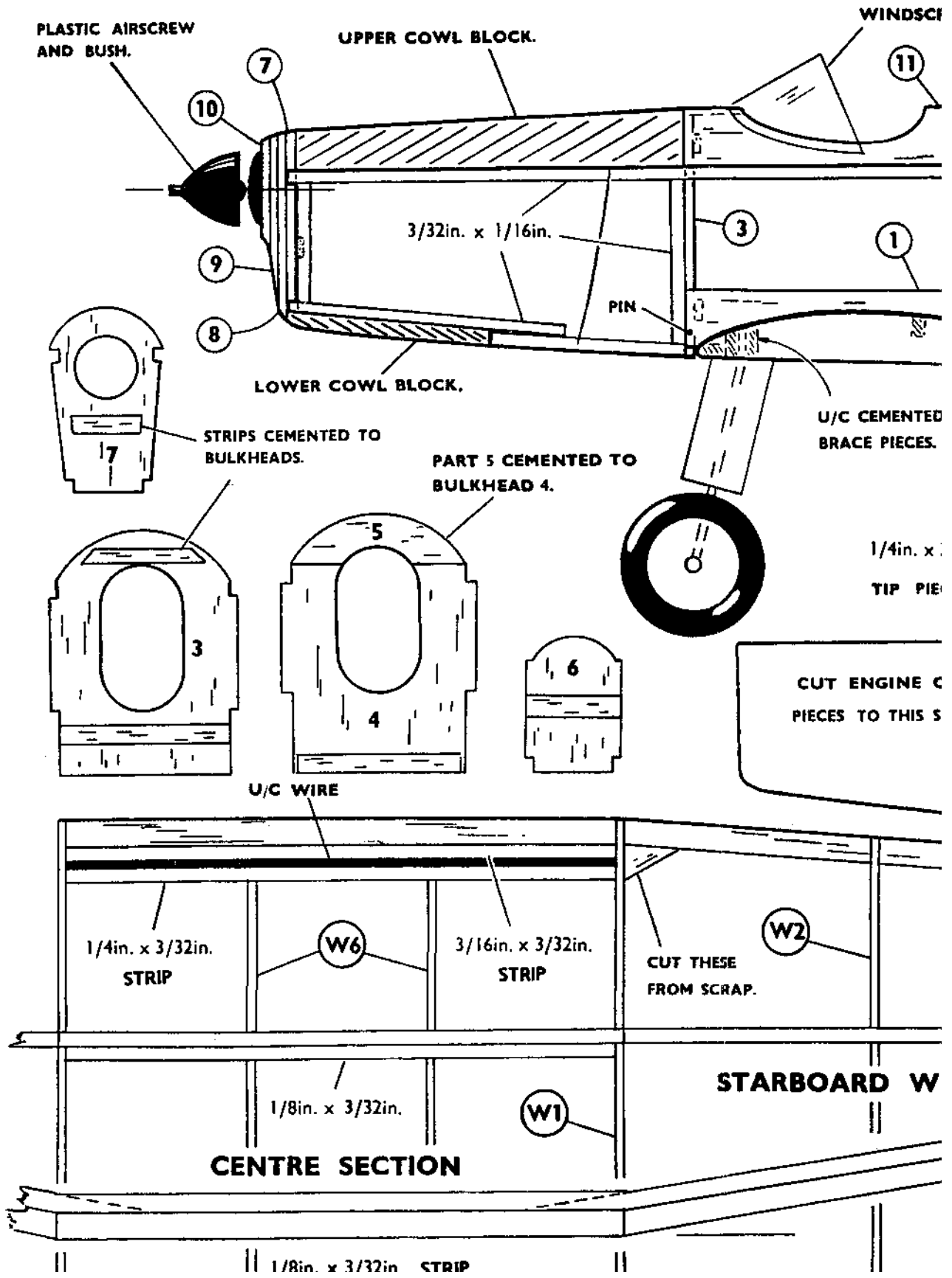




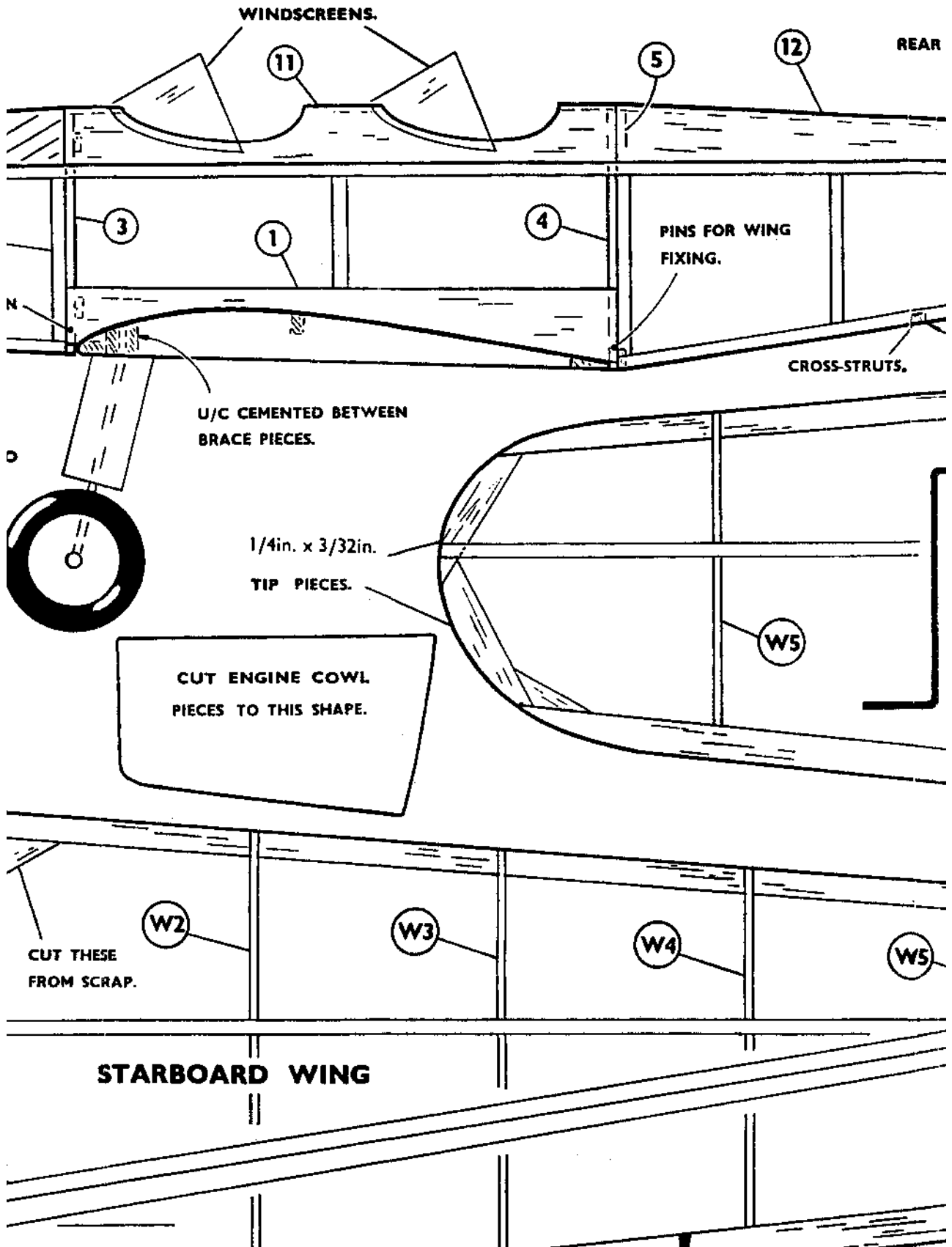
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SIDE

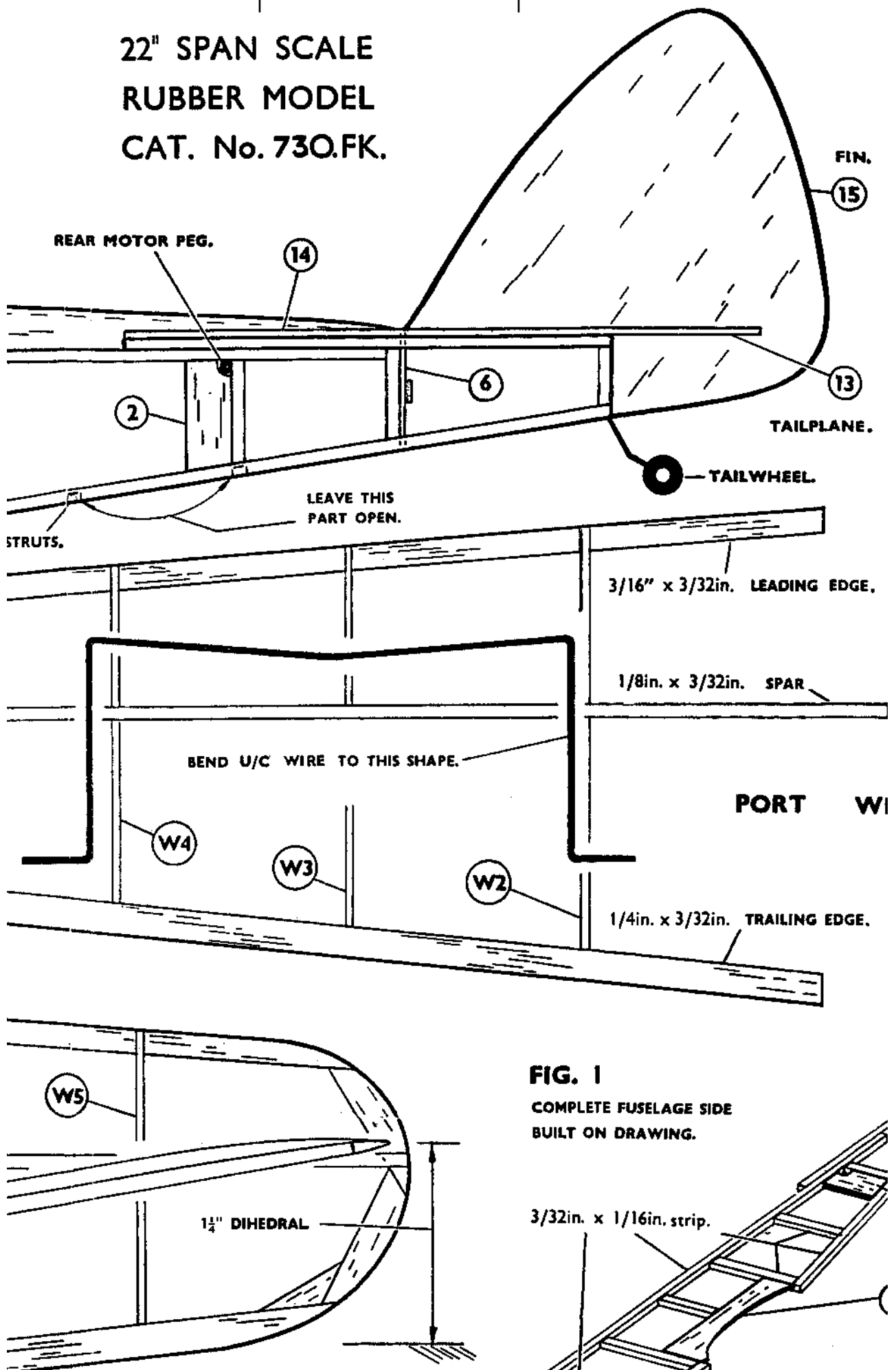


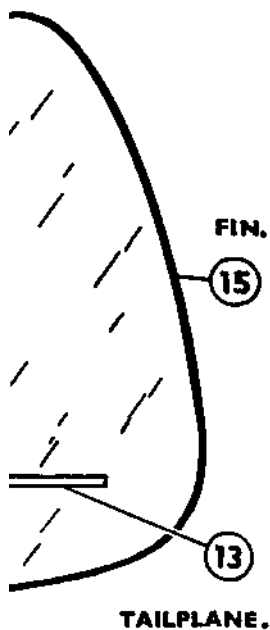
"MOTH MINOR"

SIDE VIEW (Full size)

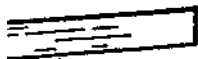


22" SPAN SCALE
RUBBER MODEL
CAT. No. 730.FK.

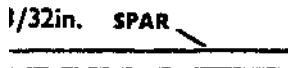




- TAILWHEEL.

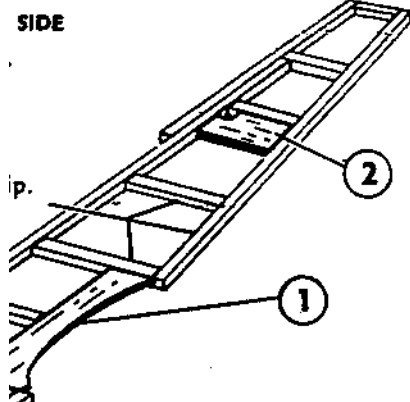


3/32in. LEADING EDGE.



PORT WING

3/32in. TRAILING EDGE.



INTRODUCTION.

THE FROG SENIOR SCALE SERIES covers a range of models which are based on the designs of service and light aircraft.

In common with other Frog models, they embody very simple construction methods having all the parts cut to shape, which only require cementing together.

To ensure a satisfactory job, study the plan and check the parts with it before commencing. Assemble the model step by step as shown.

Cement and "dope" are not included in this kit, but they can be bought at any model shop. Use quick-drying balsa-cement (glue) such as Frog Universal. You will also need a balsa knife or razor blade and a few pins.

If you enjoy building this model, remember there are many others in this series equally attractive.

BUILDING INSTRUCTIONS.

FUSELAGE ASSEMBLY.

Carefully remove all the parts from the balsa sheets, using a balsa knife or a piece of razor blade to separate them with a clean edge.

Start by pinning parts 1 and 2 to the drawing and build the side-frame structure around them, using the 3/32in. x 1/16in. strips supplied, as shown in Fig. 1. Cut two sets of strips, and build the second side over the first with a piece of tracing paper between them. This ensures that they are identical. While these are setting, cement strips of scrap balsa to bulkheads 3, 4, 6 and 7 to stiffen them. Part 5 is cemented to bulkhead 4 as shown on the drawing. Cement bulkheads 3 and 4 to the side frames, see Fig. 2. When these have set, cement the rear ends of the fuselage together, and assemble bulkheads 6 and 7. Cut the lower cowl-block to length and cement it to the fuselage. Then fix the nose pieces 8, 9 and 10, to bulkhead 7. Damp the outside face of parts 11 and 12 to help them bend to shape; pre-shape them with the fingers, and cement them into place. Sandpaper a groove in the top cowl block, as shown in Fig. 3, then cut it to length and cement it in position. Shape it with a sharp knife and sandpaper the whole structure smooth.

TAILPLANE AND FIN.

Sandpaper the surfaces of the tailplane and fin, and cement them in position as in Fig. 4. The rear end of part 12 is sandpapered down to the tailplane; see side-view drawing.

Parts 14 are now sandpapered to fit the fuselage and fixed into place. Cut the two lower cross-struts to length and cement them in position shown in side-view. The tailwheel assembly is made from a lin. pin and a piece of spare sheet balsa cut to form a wheel. Bend it to shape, attach the wheel and cement it to the fuselage. Bend the undercarriage to the shape shown on the drawing, using the wire supplied.

WING ASSEMBLY.

This is built over the plan in three parts, the port wing, starboard wing and centre section. Build the two half-wings first. Cut the leading and trailing edges to length from the strips supplied and lay them over the drawing, holding them in place with pins. Next cut the tip pieces to shape from 1/4in. x 3/32in. strip and cement them in place, followed by the ribs W2, W3, W4 and W5. The spars are then cut to length and fixed in place in the rib slots and to the tip pieces. When they have set, remove the wings from the drawing and build the centre section. Pin down the leading and trailing edges, and cement the ribs W1, then cut a strip of 3/16in. x 3/32in. balsa to length and cement it in place against the leading edge. Cement a 1/4in. x 3/32in. strip the same length behind this with the undercarriage wire held between them (but not cemented). The ribs W6 can now be fixed in position and strips of 1/8in. x 3/32in. balsa cemented in place between the ribs at the trailing edge. The undercarriage wire can now be withdrawn from its position. Replace the starboard wing on the drawing and cement it to the centre-section with the tips raised 1/4in.; then do the same with the port wing.

The gussets are made from scrap sheet balsa and cemented into place. Cut two lengths of 1/8in. x 3/32in. strip 4in. long, one piece being the continuation of the spar; cut the ends to the angle shown, and cement the strip in place with the other strip behind it. When it has set, remove the whole structure from the drawing and sandpaper the trailing edge and tips to shape. Cement the undercarriage wire into position. Whilst this is drying make the undercarriage fairings, using either gummed paper or note-paper. Shape a piece of wood about 3in. x 1/2in. x 1/4in. to an oblong section, as shown in Fig. 5, and wrap the note-paper around it to form a tube. Three or four layers cemented together should be sufficient. When it has set remove it from the wood and cut the two fairings to the length shown on the side-view drawing.

Trim off the rear edges to allow movement of the undercarriage legs. Well cement these fairings in position, see Fig. 6. Fit the wheels in place, and bend over the ends of the wire, or cement small paper washers onto the axles to hold them on. The paper cowl pieces are cemented in place when the model is covered. These are cut to the shape given on the drawing and bent before they are fixed, see Fig. 7.

COVERING.

The fuselage and wing require covering with tissue paper supplied. Start with the fuselage and cover each side separately. Cut strips of tissue wide enough to allow a small overlap. Use dope or paste for sticking it to the framework. Apply some to one side of the fuselage, stretch a strip of the tissue over it and smooth out any wrinkles. Trim off any excess, and smooth down the edges. Repeat this for the other sides, leaving a gap on the bottom surface below the rear motor pin.

When the paste is dry, lightly spray the tissue with water to shrink it, and when it is thoroughly dry again, apply a coat of dope. This will also help to tighten the paper. Apply a thin coat of dope to each side of the

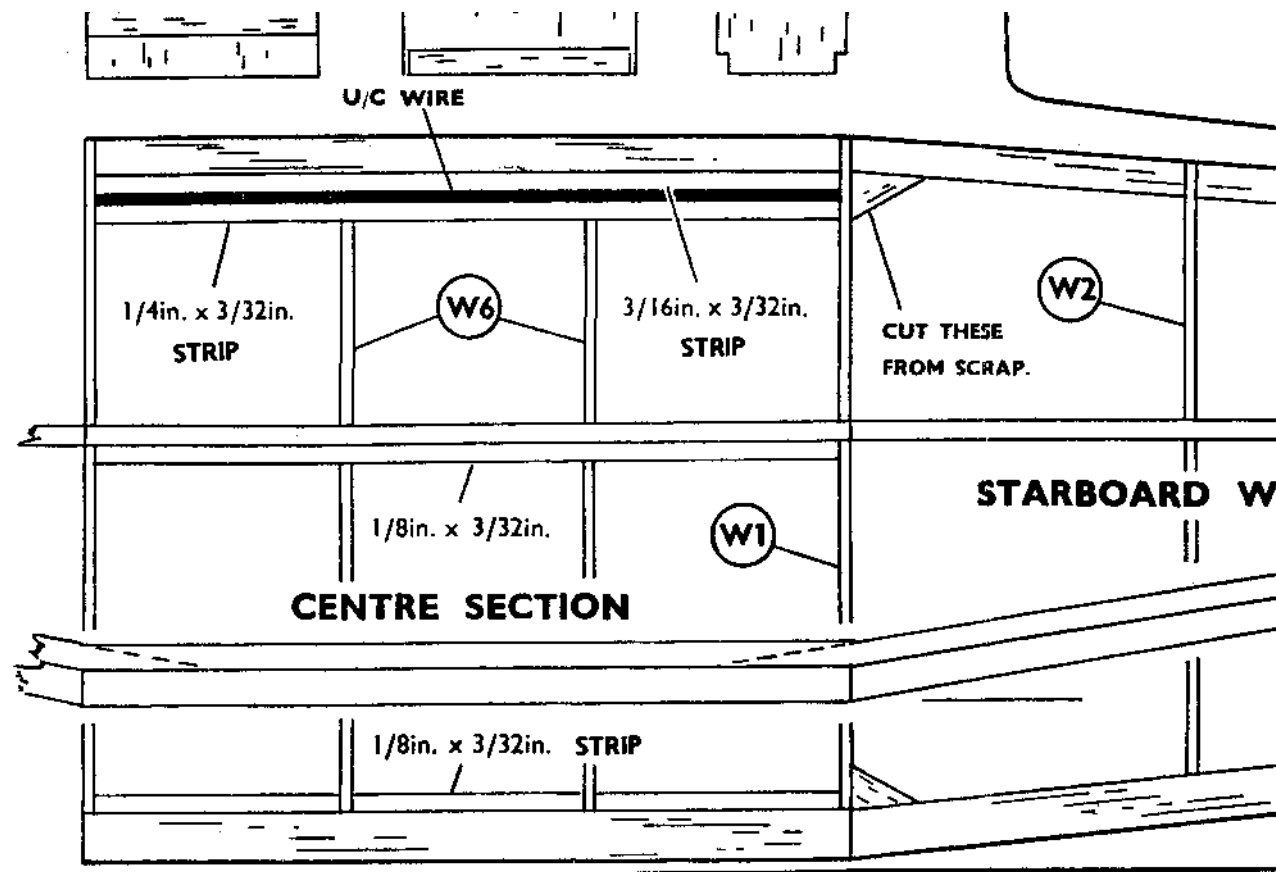


Fig. 2 ASSEMBLE BULKHEADS 3 AND 4 TO SIDE FRAMES.

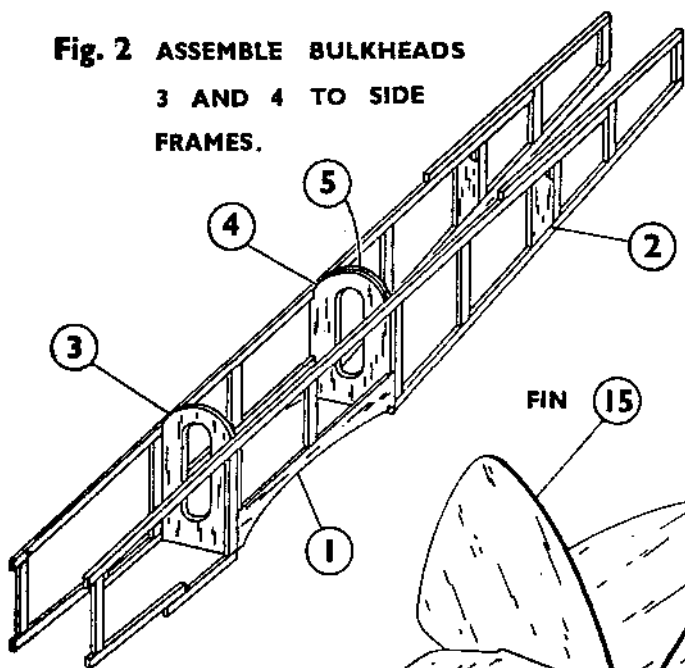
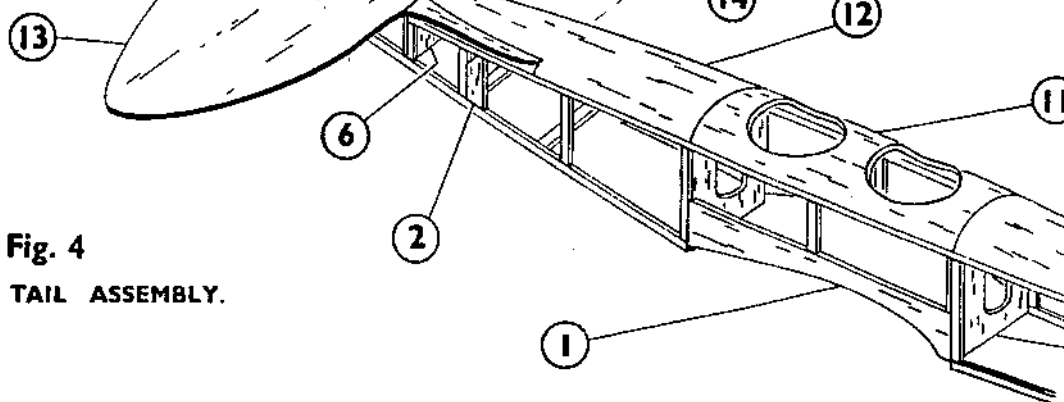


Fig. 3 BULKHEADS, COWL AND TOP DECKING TO FUSELAGE.

TAILPLANE

**Fig. 4
TAIL ASSEMBLY.**



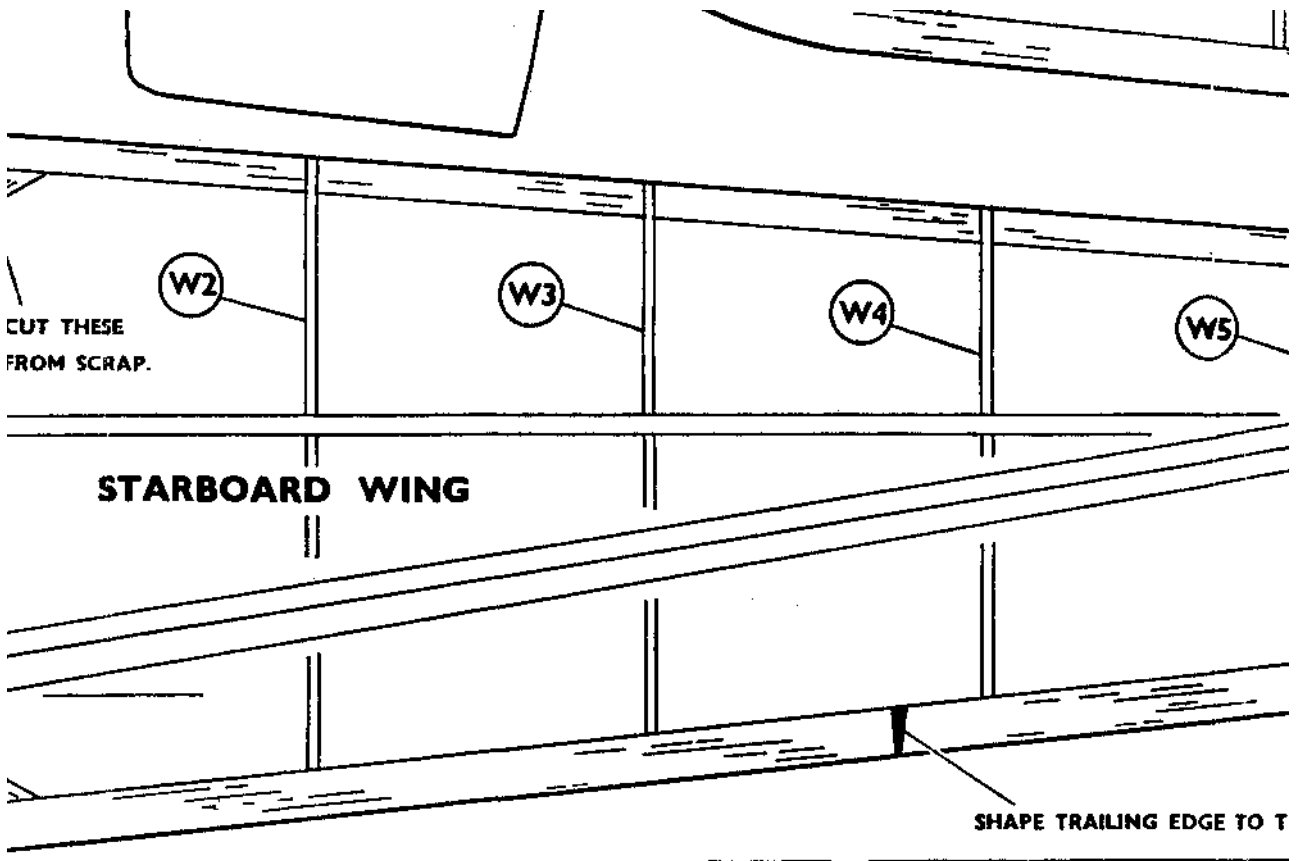


Fig. 3 BULKHEADS, COWL BLOCKS AND TOP DECKING ASSEMBLED TO FUSELAGE.

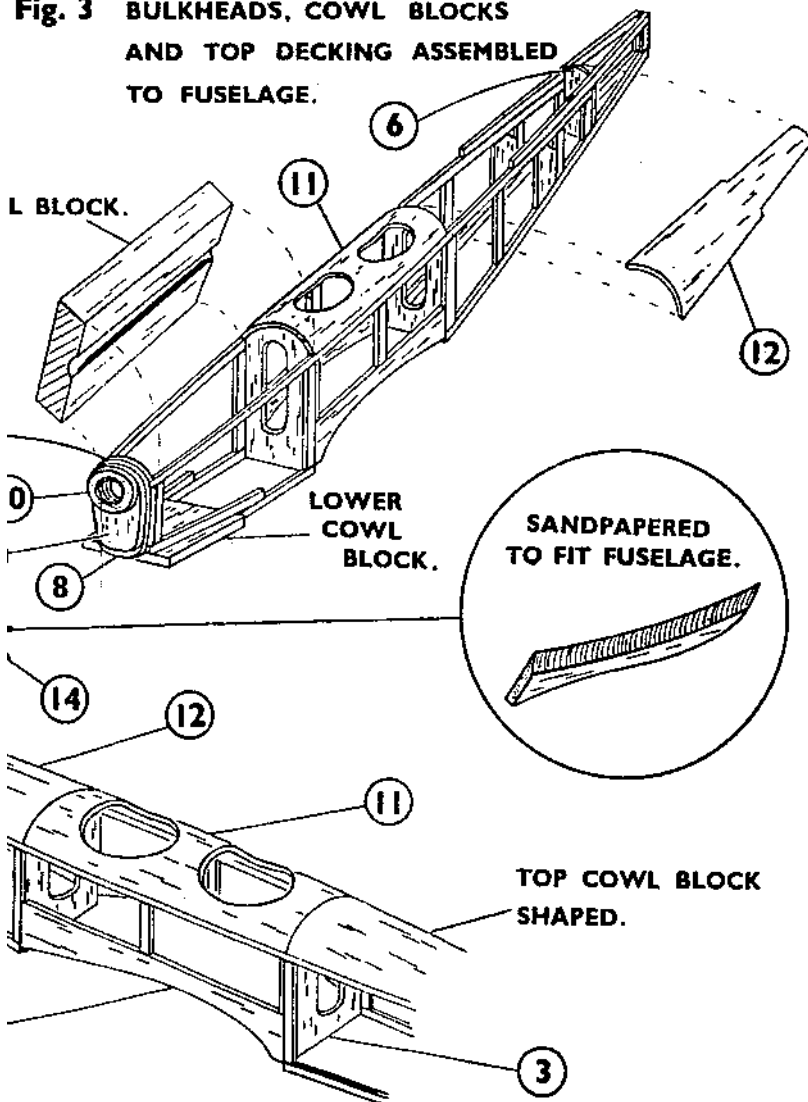


Fig. 5 U/C: FAIRING.

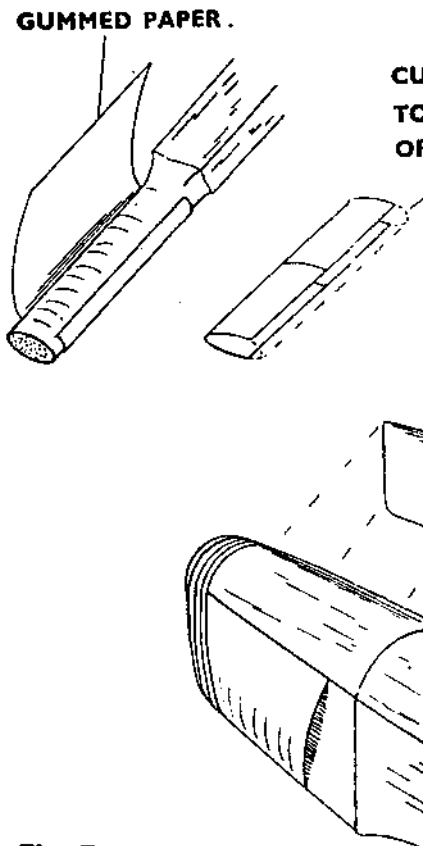


Fig. 7 PAPER COWL PIECES ARE CEMENTED IN PLACE AFTER MODEL IS COVERED.

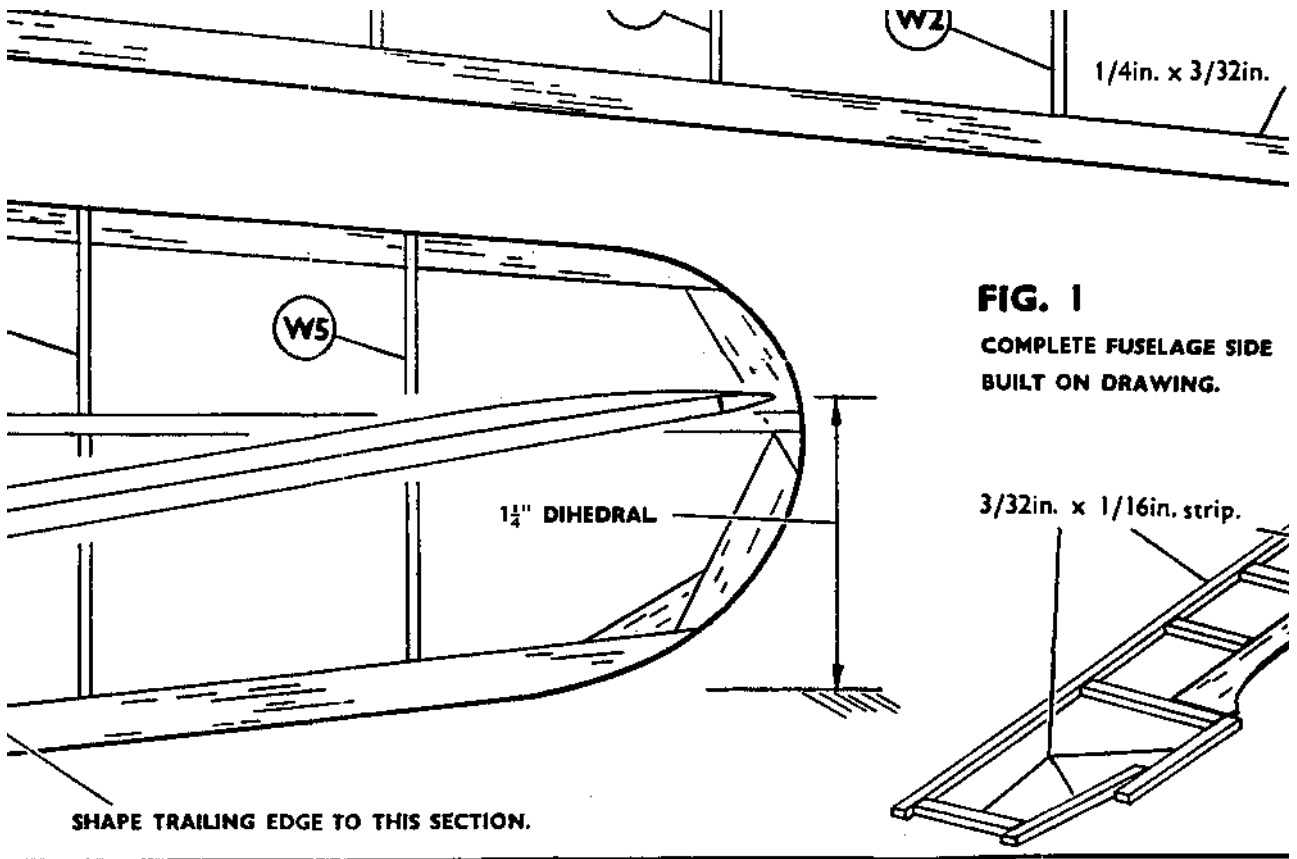
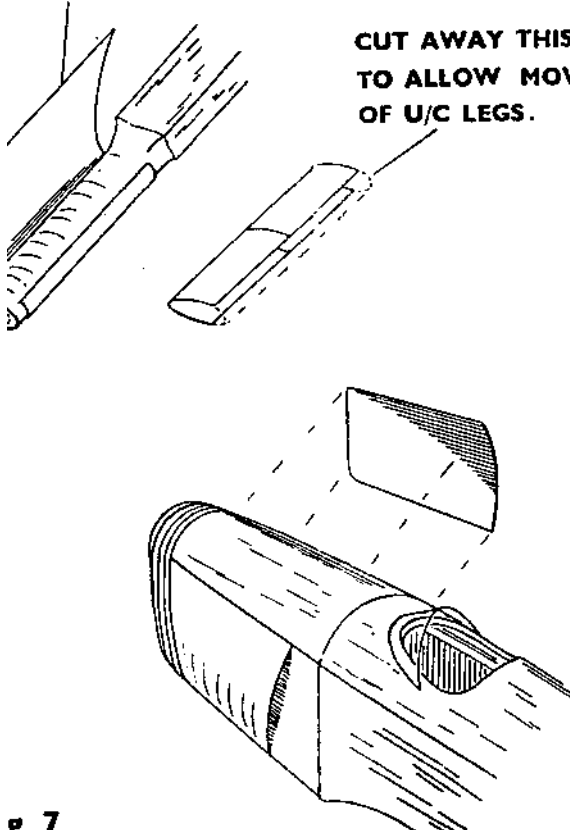


FIG. 1
COMPLETE FUSELAGE SIDE
BUILT ON DRAWING.

SHAPE TRAILING EDGE TO THIS SECTION.

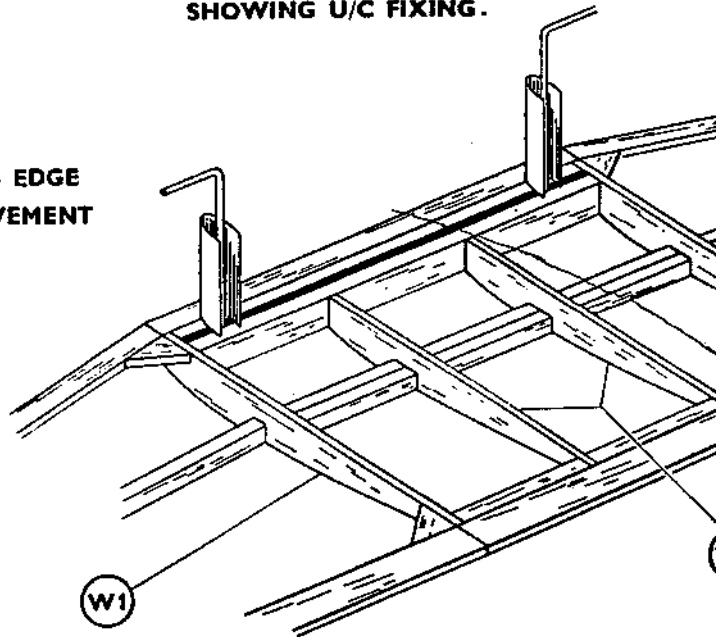
Fig. 5 U/C: FAIRING.

JMMED PAPER.



CUT AWAY THIS EDGE
TO ALLOW MOVEMENT
OF U/C LEGS.

Fig. 6 UNDERSIDE VIEW OF WING
SHOWING U/C FIXING.



WING-WALK PAINTED BLACK.

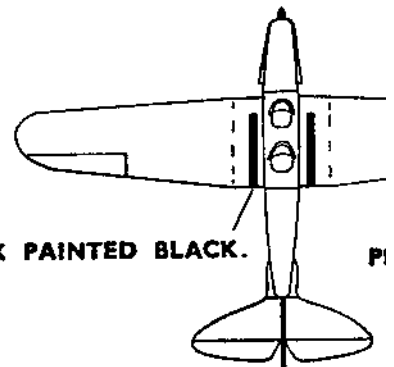
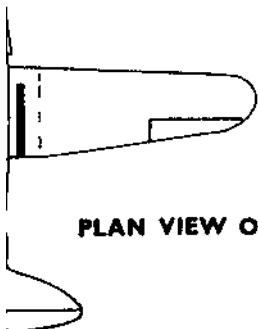
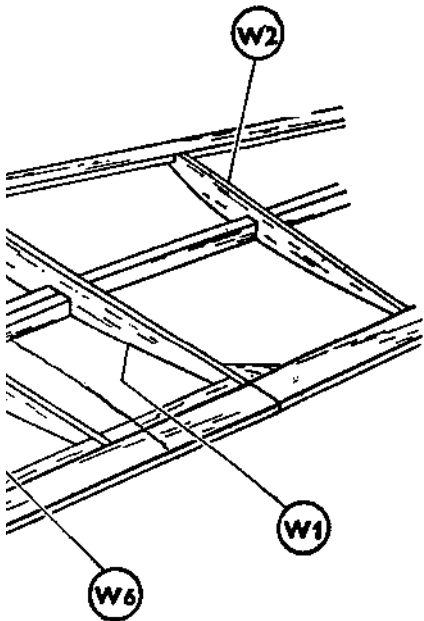
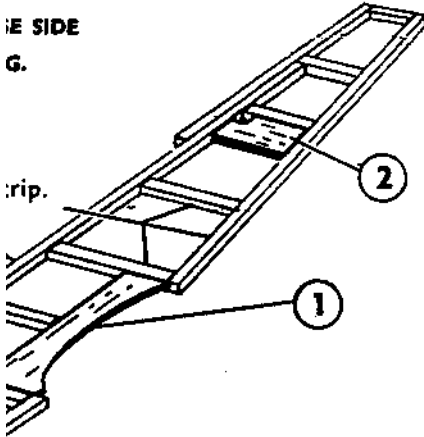


Fig. 7
UPPER COWL PIECES ARE CEMENTED
IN PLACE AFTER MODEL IS COVERED.

1/32in. TRAILING EDGE.



THE SIDE
G.



PLAN VIEW OF MODEL.

position and strips of 1/8in. x 3/32in. balsa cemented in place between the ribs at the trailing edge. The undercarriage wire can now be withdrawn from its position. Replace the starboard wing on the drawing and cement it to the centre-section with the tips raised 1/4in.; then do the same with the port wing.

The gussets are made from scrap sheet balsa and cemented into place. Cut two lengths of 1/8in. x 3/32in. strip 4in. long, one piece being the continuation of the spar; cut the ends to the angle shown, and cement the strip in place with the other strip behind it. When it has set, remove the whole structure from the drawing and sandpaper the trailing edge and tips to shape. Cement the undercarriage wire into position. Whilst this is drying make the undercarriage fairings, using either gummed paper or note-paper. Shape a piece of wood about 3in. x 1/2in. x 1/4in. to an oblong section, as shown in Fig. 5, and wrap the note-paper around it to form a tube. Three or four layers cemented together should be sufficient. When it has set remove it from the wood and cut the two fairings to the length shown on the side-view drawing.

Trim off the rear edges to allow movement of the undercarriage legs. Well cement these fairings in position, see Fig. 6. Fit the wheels in place, and bend over the ends of the wire, or cement small paper washers onto the axles to hold them on. The paper cowl pieces are cemented in place when the model is covered. These are cut to the shape given on the drawing and bent before they are fixed, see Fig. 7.

COVERING.

The fuselage and wing require covering with tissue paper supplied. Start with the fuselage and cover each side separately. Cut strips of tissue wide enough to allow a small overlap. Use dope or paste for sticking it to the framework. Apply some to one side of the fuselage, stretch a strip of the tissue over it and smooth out any wrinkles. Trim off any excess, and smooth down the edges. Repeat this for the other sides, leaving a gap on the bottom surface below the rear motor pin.

When the paste is dry, lightly spray the tissue with water to shrink it, and when it is thoroughly dry again, apply a coat of dope. This will also help to tighten the paper. Apply a thin coat of clear lacquer to both sides of the tailplane and fin.

Cover the wing with six separate pieces, starting with the bottom surface; apply the paste to the outer edges only. There is no need to stick the paper to each rib. When covering the top surface start at the centre-section and work towards the tips, remembering to keep the paper taut from end to end, to help preserve the airfoil shape.

DECORATING.

The appearance of the finished model can be improved considerably by the addition of a little cellulose paint. This should be restricted to the fuselage, to save weight, unless it is sprayed on lightly. It can be painted by hand, applying it quickly and evenly with a soft brush. Do not put it on heavily or the model will not fly well.

The transfers can be affixed to the wing or fin, and any other lettering or decoration required.

MOTOR.

This is composed of two 9in. elastic bands which are supplied. Lubricate them with Castor Oil or Frog Rubber Lubricant, and insert them into the fuselage with the help of a length of wire or thread. Bend a hook at one end of the wire and insert it into the front end of the fuselage. (If a thread is being used, tie a weight to one end and drop it through).

Hook the bands on to it through the opening at the rear and insert the rear motor pin (cane) through the holes in the fuselage and through the loops of elastic. Pull the bands out through the front, and hook them on to the airscrew shaft (complete with Airscrew).

The wing is held in place with two elastic bands stretched over the centre-section, and hooked onto the pins in the fuselage.

The model is now complete and ready for flying. A drop of thin oil on the airscrew shaft will improve the running.

FLYING.

This model is intended to be flown out of doors, but choose a calm day for your first test.

Test-glide the model first to check the balance. Hand-launch it in a slight downward direction. If it dives to the ground, carefully bend up the rear edges of the tailplane, known as elevators, or glue a small weight in the rear end of the fuselage. If the model climbs steeply and stalls, bend the elevators down slightly, and/or add a small weight to the nose of the fuselage. A small nail or drawing pin can be pushed into the cowl block for this.

When the glide seems satisfactory, put a few turns on the motor and launch the model (into wind) if any. The turn can be adjusted by bending the fin, or by twisting the wing slightly.

Increase the turns on the motor gradually, up to a maximum of approximately 350; if the motor is not lubricated, the turns must be limited to 200. An unlubricated motor will wear and break very quickly. Stretching the elastic while winding will enable more turns to be obtained.

This model will take-off from the ground without assistance. Having wound the motor, place the model on a smooth surface, and release it directly into wind.

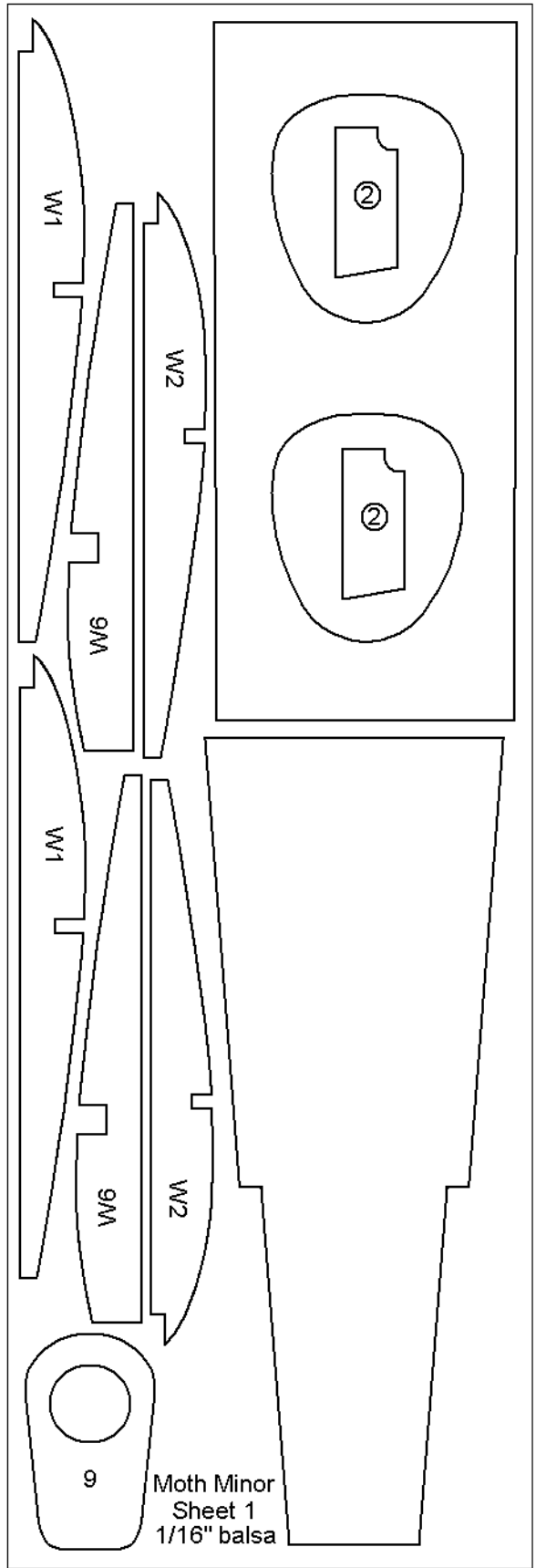
Designed and Made in England by
INTERNATIONAL MODEL AIRCRAFT LTD.

MORDEN ROAD :: MERTON :: LONDON, S.W.19
Printed in England.

R. S. P.

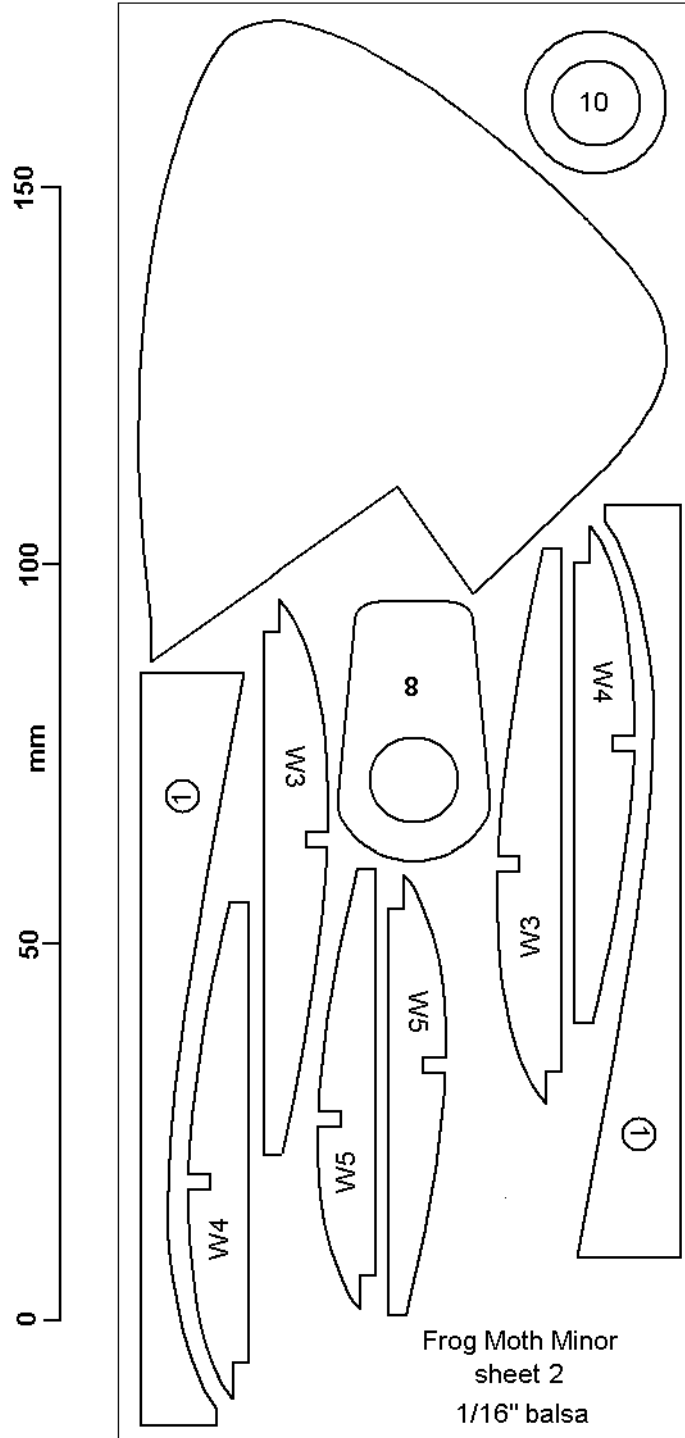
3 inch wide sheet

150
100
50
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mm



Moth Minor
Sheet 1
1/16" balsa

3 inch wide sheet



3 inch wide sheet

