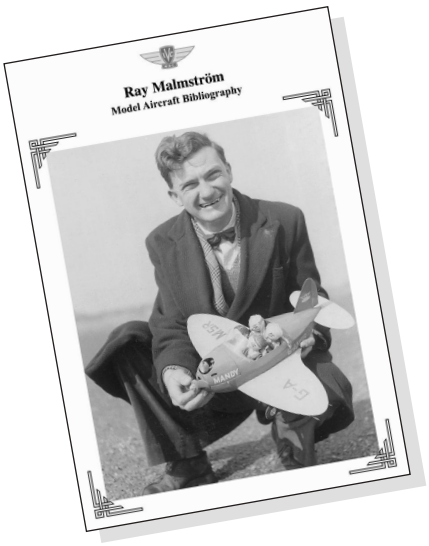
Plans for your delight

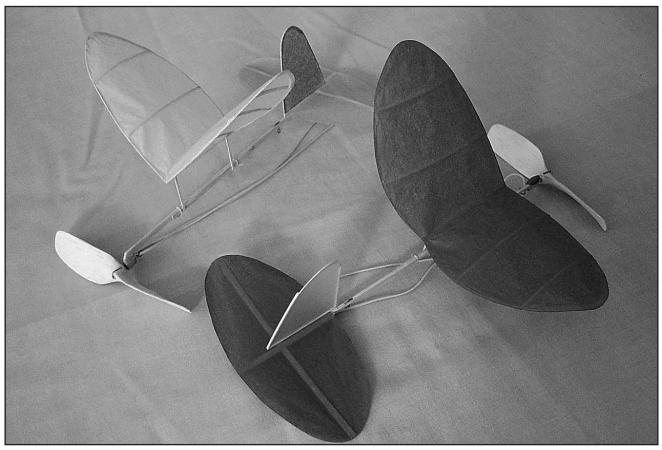


The following pages contain full size and reduced plans to copy and enlarge. All plans shown on the following pages are available full size which include a copy of the actual article describing building and flying instructions as printed in their respective publication.

A catalogue of Ray's designs is also available containing over 200 plans to purchase. For details go to www.ivcmac.co.uk or contact: John Valiant, 64 Ellison Lane, Hardwick, Cambridge CB23 7XH. Tel: 01954 211126.

THE PEE WEE

Designed by RAYMOND MALMSTRÖM



ALTHOUGH primarily designed for the beginner, the performance of this diminutive little 'plane should recommend it to all those who enjoy indoor flying in their own homes, and who have not, as yet, mastered the advanced technique of microfilm. The leisurely way in which it flies round even the smallest room makes the two or three hours spent in its construction more than worth while. The plan is full size, and can be worked from directly.

Fuselage.

The " fuselage " is simply a stick of medium hard balsa $\frac{1}{8}$ in. by $\frac{1}{16}$ in. by $6\frac{1}{4}$ in. A bloock of balsa $\frac{1}{4}$ in. by $\frac{1}{4}$ in. by $\frac{1}{8}$ in., shaped as Fig. 1, and through which a hole has been carefully bored with a fine needle (noting slight downthrust), is cemented to one end of the stick. The other end is notched. Into this notch a piece of $\frac{1}{32}$ in. sheet is cemented to carry the tail-plane. A small rear hook of ·014 gauge wire completes the motor stick.

Wing.

Trace off the rib and cut 5 from $\frac{1}{32}$ in. sheet. The ribs are shortened by cutting the trailing edges. The tips are 1-64 in. sheet. The leading and trailing edges are $\frac{1}{32}$ in. square. The wing is built up on the plan, and when dry cracked in the centre, and the correct amount of dihedral given, the crack then being recemented. A strip $\frac{1}{32}$ in. square joins the leading and trailing edges of the centre rib, and to this strip the two upright pieces, $\frac{1}{16}$ in. by $\frac{1}{32}$ in. are stuck. The lower ends of these two pieces are then stuck to another strip, $\frac{1}{8}$ in. by $\frac{1}{32}$ in. by 3 in. The wing is then attached to the motor stick by means of two pieces of $\frac{1}{32}$ in. square rubber, tied as shown in Fig. 2. The wings are covered with superfine tissue.

Tailplane and Fin.

The tailplane is simply cut from tissue (with no framework), and reinforced by the two pieces of 1-64 in. strip. The fin is a framework to which is stuck a piece of sharpened reed, and then is cemented into the motor stick. It should be set at the angle indicated.

Propeller.

This is one of the most important parts of the model. A 4 in. machine-cut balsa propeller, well sanded down to a light weight, will prove very satisfactory. The block measurements for those who wish to carve a propeller are furnished on the plan. A piece of ·014 wire is used for the shaft, and a tiny bead, with a washer cut from ·005 sheet aluminium, completes the propeller assembly.

For power the most suitable rubber is $\frac{1}{32}$ in. square. Of this you will need a loop roughly $10\frac{1}{2}$ in. long. Fold this in half, making 4 strands, approximately $5\frac{1}{4}$ in. in length. Smear with lubricant lightly, and put on to model.

Flying.

Before actual flying it is important to note that the leading edge of the port wing should be warped *up*, and and that of the starboard wing warped slightly *down*.

Although of such a small size, the Pee Wee will take 250—270 turns with complacency, and on this will turn in delightfully slow and stable flights of 30—40 seconds consistently, the flight path being circle to the left.

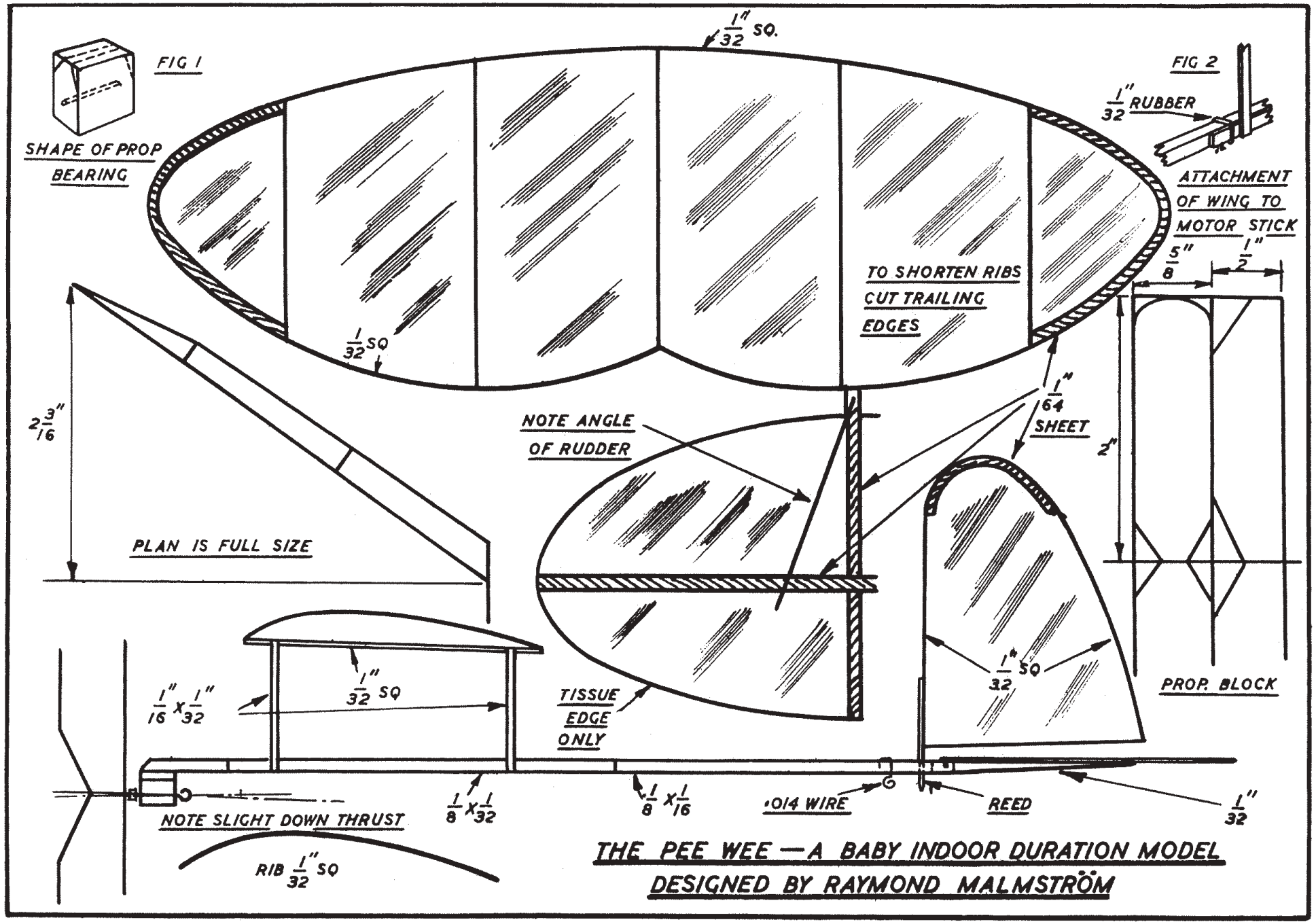
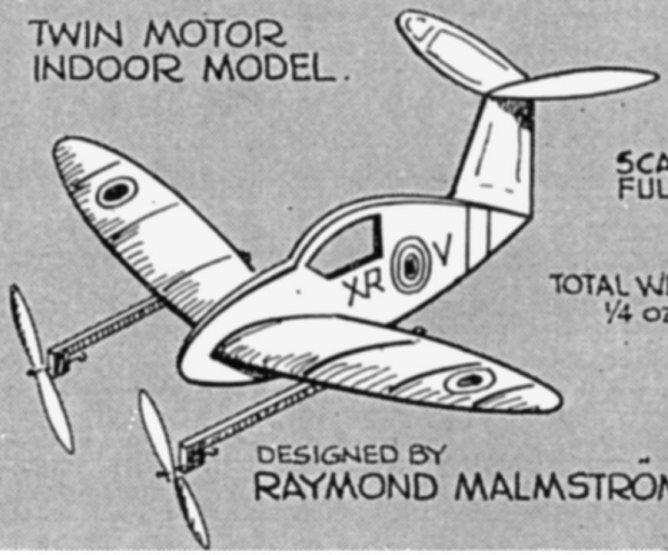


FIG 1
SHAPE OF PROP BEARING
1" / 32 SQ.
1/32 SQ
FIG 2
1" / 32 RUBBER
ATTACHMENT OF WING TO MOTOR STICK
5/8"
1/2"
TO SHORTEN RIBS CUT TRAILING EDGES
1" / 64 SHEET
2"
2 3/16"
PLAN IS FULL SIZE
NOTE ANGLE OF RUDDER
1" / 32 SQ
PROP. BLOCK
1/16" X 1/32"
1" / 32 SQ
TISSUE EDGE ONLY
1/8 X 1/32
1/8 X 1/16
.014 WIRE
REED
1" / 32
NOTE SLIGHT DOWN THRUST
RIB 1" / 32 SQ
THE PEE WEE — A BABY INDOOR DURATION MODEL
DESIGNED BY RAYMOND MALMSTRÖM

The AVENGER

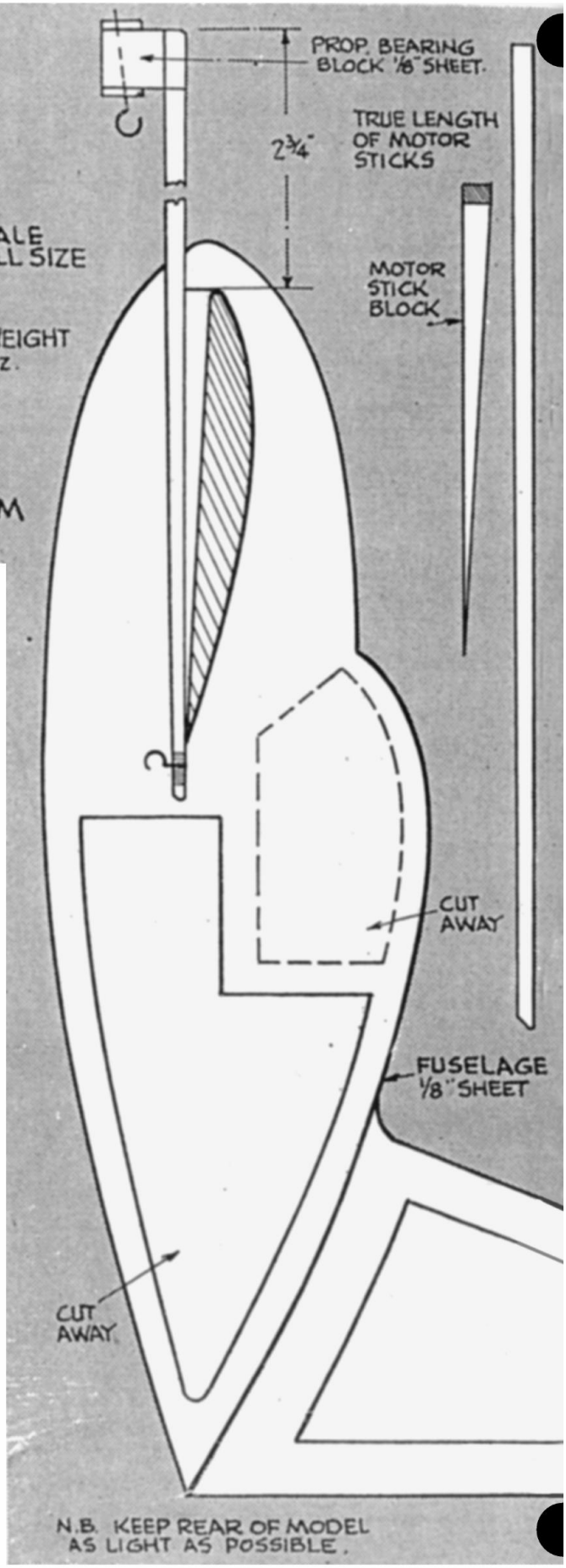
TWIN MOTOR INDOOR MODEL.



SCALE FULL SIZE

TOTAL WEIGHT ¼ oz.

DESIGNED BY RAYMOND MALMSTRÖM



Fuselage.

The fuselage shape is drawn on ⅛ in. sheet balsa and sanded to the sections indicated. The cockpit and rear of the fuselage are cut away, the former being covered with cellophane, and the latter with two pieces of thin notepaper.

Wings.

These are quite straightforward, the plan furnishing all details. The blocks shown at A on the plan, are cemented under rib No. 2. Cement completed wings to fuselage at correct dihedral angle and give one coat of banana oil No. 2.

Motor Sticks.

Shape from hard ⅛ in. square balsa. Small wire hooks are bound to the rear of each and cemented. To these sticks the propeller bearing blocks, suitably drilled (noting downthrust angle), are cemented, and secured by two thicknesses of tissue. A brake is fitted to the starboard motor, details at B on the plan. The motor sticks are then cemented to the blocks under each wing.

Tail Plane and Fin.

These are from 1/32 in. and 1/16 in. sheet, covered with tissue on one side only. Leave the tissue unstretched.

Propellers.

Dimensions for the propeller blocks are given on the plan. One must be a left-hand and the other a right-hand propeller. These must be the same pitch, and as near the same weight as possible. A simple free-wheel may be fitted. Without this refinement, as it were, the glide suffers accordingly.

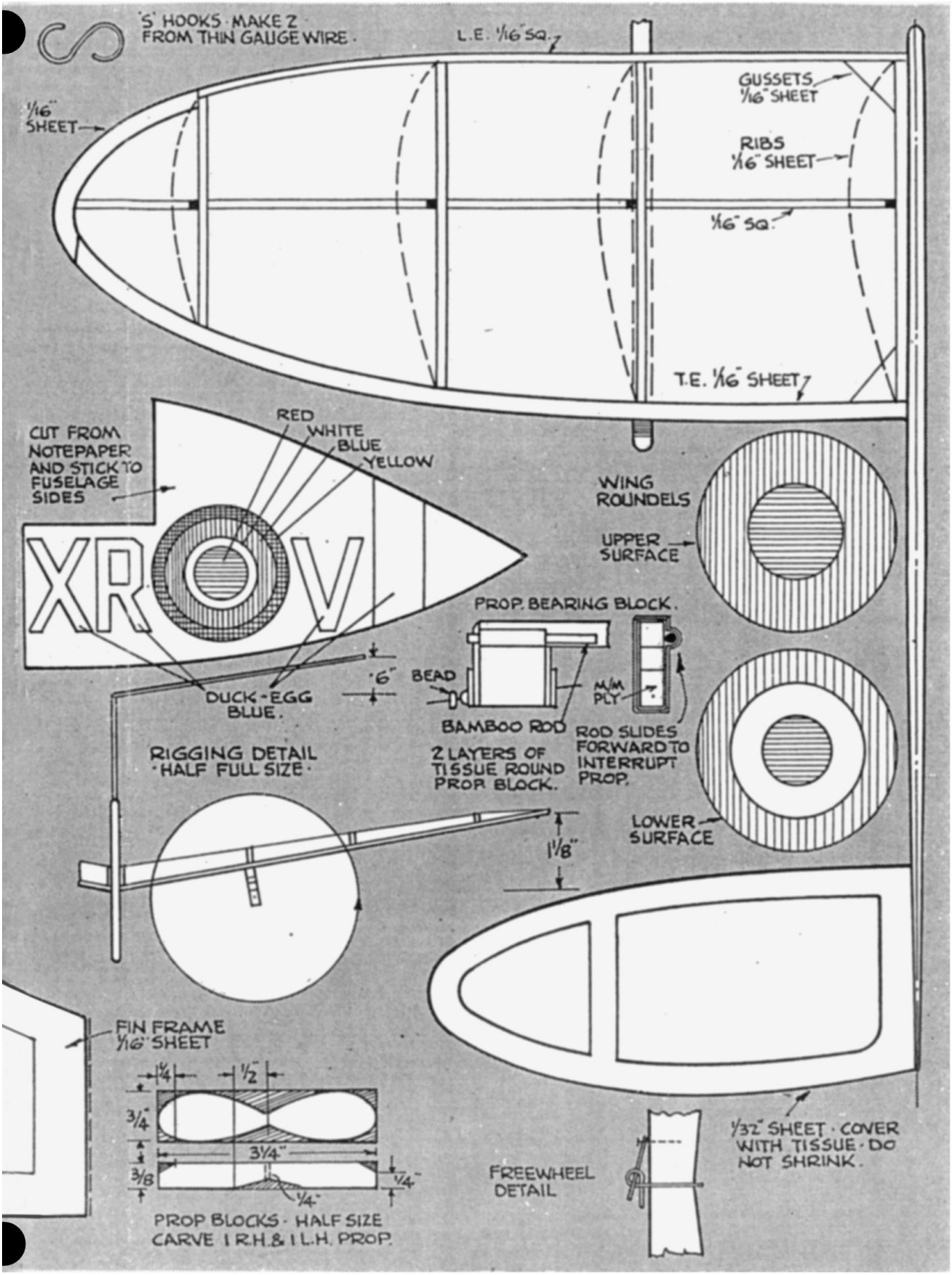
Power.

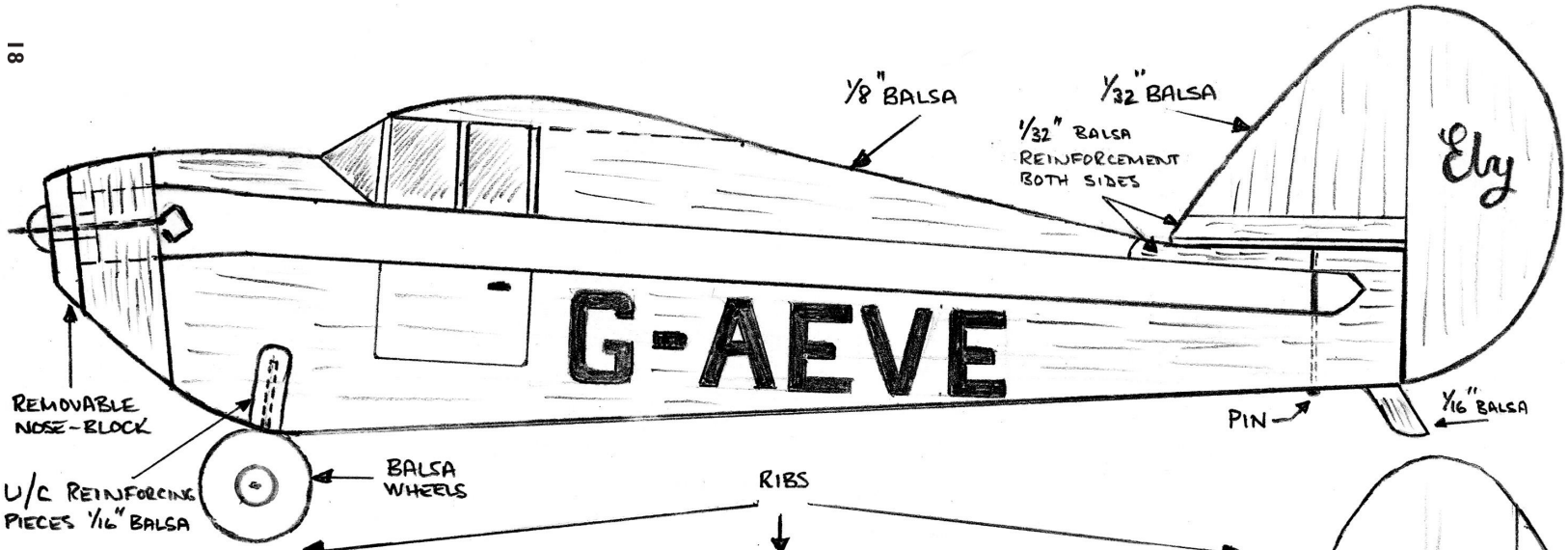
Excellent motors can be made from ⅛ in. by 1/32 in. strip, which has been cut carefully down the centre. Loops are then made approximately 9 in. long (one loop to each motor).

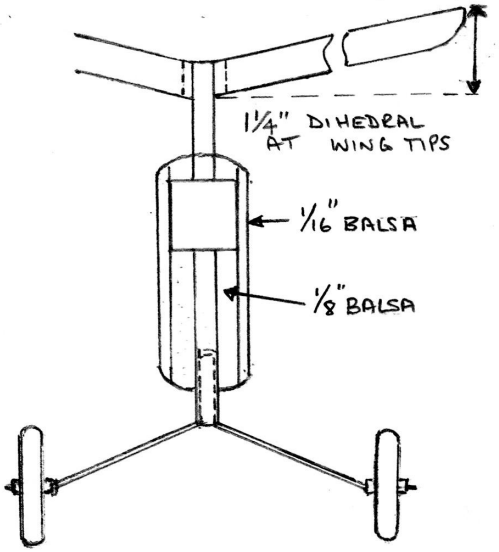
Flying.

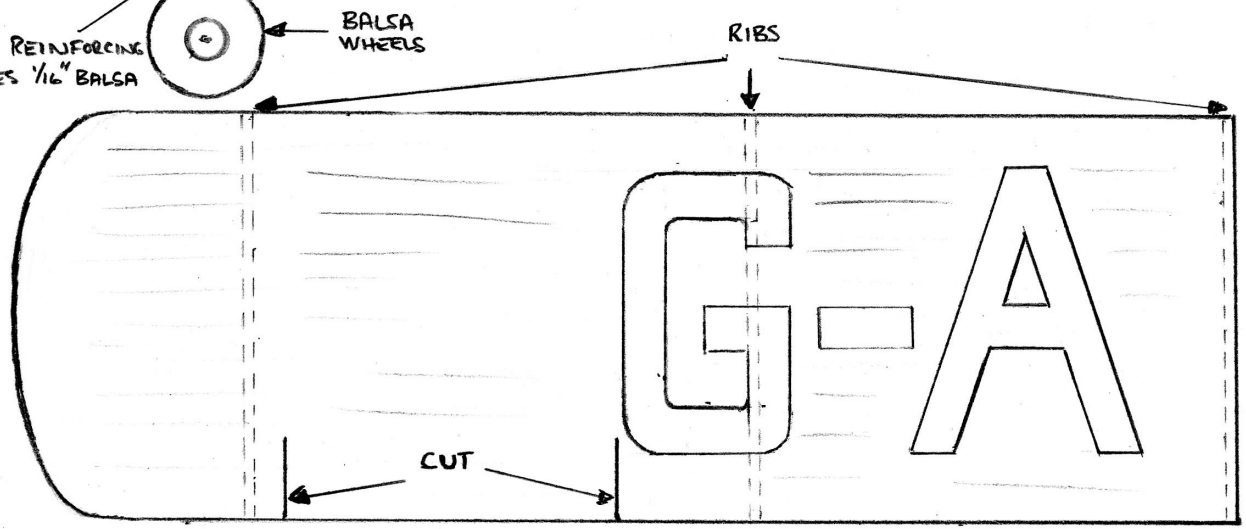
Wind from the rear by means of the little " S " hooks shown at Fig. C. The starboard motor is arrested by the brake until the port is wound. Launching is a matter of practice. One hand prevents the two propellers from turning, and the model is thrust gently forward with the other.

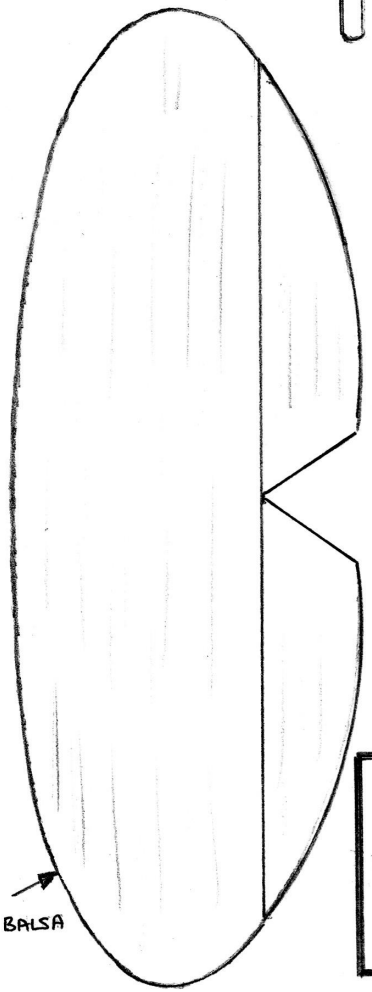
The Avenger with both motors in action presents a pleasing picture in the air, and may be relied upon to enliven any indoor meeting.


'S' HOOKS · MAKE 2 FROM THIN GAUGE WIRE ·
L.E. 1/16" SQ.
1/16" SHEET
GUSSETS 1/16" SHEET
RIBS 1/16" SHEET
1/16" SQ.
T.E. 1/16" SHEET
CUT FROM NOTEPAPER AND STICK TO FUSELAGE SIDES
RED
WHITE
BLUE
YELLOW
XROV
DUCK-EGG BLUE.
·6"
WING ROUNDELS
UPPER SURFACE
PROP. BEARING BLOCK.
BEAD
M/M PLY
BAMBOO ROD
ROD SLIDES FORWARD TO INTERRUPT PROP.
2 LAYERS OF TISSUE ROUND PROP BLOCK.
RIGGING DETAIL · HALF FULL SIZE ·
1 1/8"
LOWER SURFACE
FIN FRAME 1/16" SHEET
1/4
1/2
3/4"
3 1/4"
3/8
1/4"
1/4"
PROP BLOCKS · HALF SIZE
CARVE 1 R.H. & 1 L.H. PROP.
FREEWHEEL DETAIL
1/32" SHEET · COVER WITH TISSUE · DO NOT SHRINK.



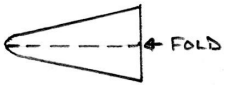


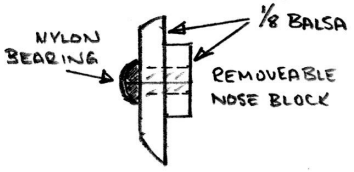


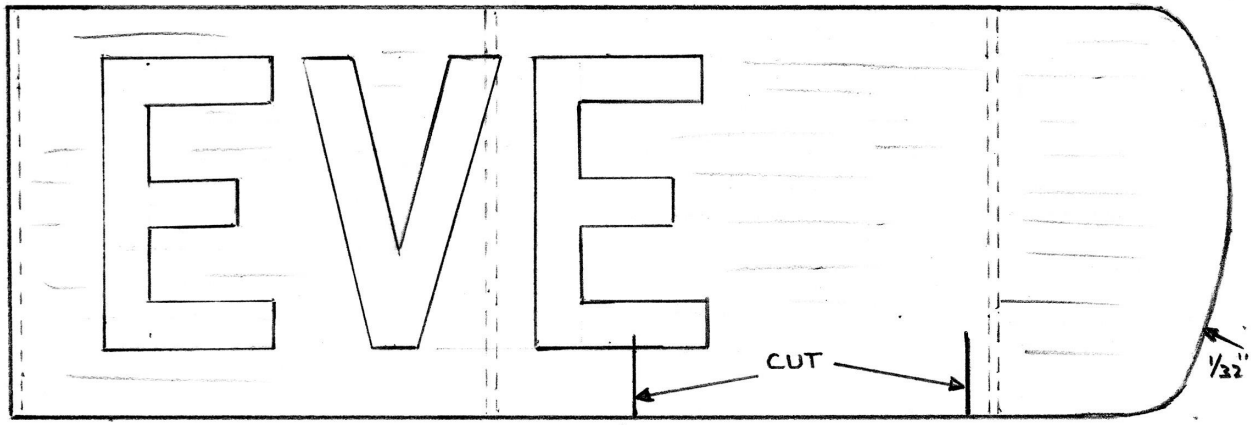


WING RIBS
6 OFF 1/16" BALSA

U/C FAIRINGS
2 OFF
MAKE FROM WRITING PAPER







POWER : 1 LOOP RUBBER

PROPELLER : 3½" DIA.

AERONCA 300

DESIGNED BY RAY MALMSTRÖM
DRAWN FROM ORIGINAL MODEL
BY CHRIS HINSON