A 42" WINGSPAN WAKEFIELD MODEL

HEREWARD

Designed by

N. G. MARCUS

All wood balsa unless otherwise stated

WEIGHTS

FUSELAGE & FIN	1.78 OZS
WING	0.94 OZS.
PROPELLER ASSEMBLY	0.92 OZS.
TAILPLANE	0.27 OZS.
	3.91 OZS.

MAKE UP WEIGHT OF MODEL TO 8 OZS. WITH RUBBER. USE 16 OR 18 STRANDS 1/4" x 1/24" DUNLOP APPROXIMATELY 45" LONG.

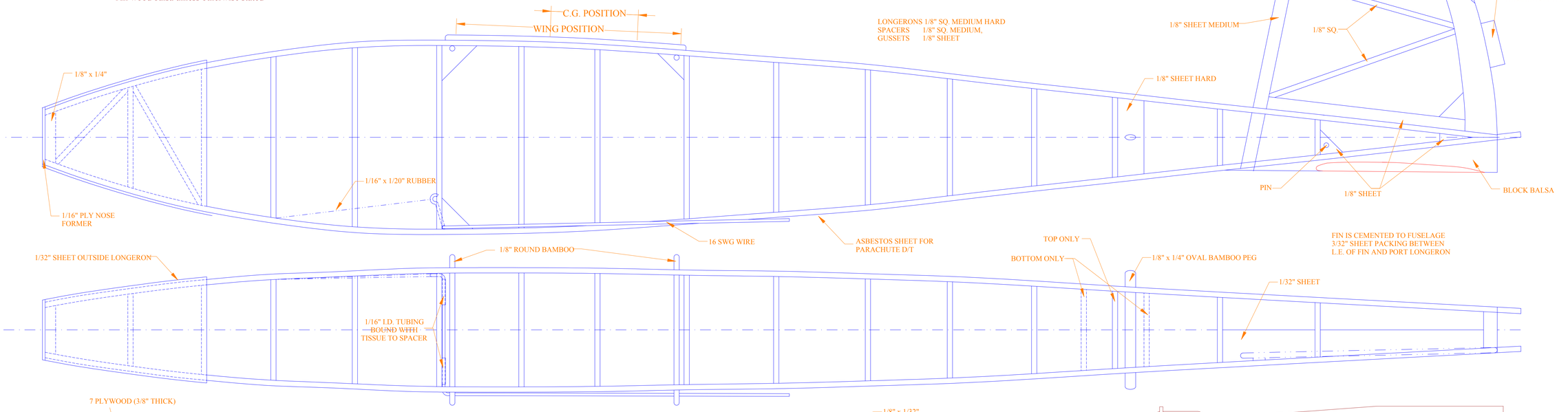
DATA

WINGSPAN	42 INS
WING AREA	208 SQ. INS
TAIL SPAN	19-1/2 INS
TAIL AREA	68 SQ. INS
LENGTH	37 INS

MAX FUSELAGE X SECTION 13.8 SQ. INS
C.G. POSITION 43% - 8% OF WING FROM L.E.

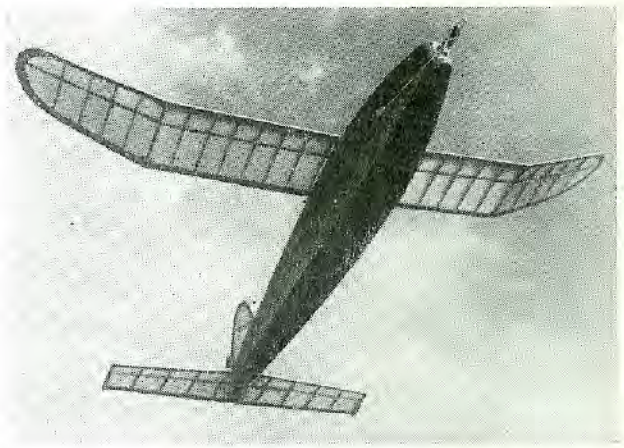
MATERIALS REQUIRED

12 STRIPS OF	1/8" x 1/8" x 36" BALSA	MISCELLANEOUS
2 STRIPS OF	1/8" x 1/4" x 36" BALSA	1 PIECE OF 7 PLY 2" x 2"
2 STRIPS OF	1/8" x 1/2" x 36" BALSA	1 PIECE OF 1/16" PLY 4" x 2"
1 STRIP OF	3/16" x 1/16" x 36" BALSA	8" OF 1/8" ROUND BAMBOO
1 SHEET OF	1/32" x 3" x 36" BALSA	3" OF 1/4" x 1/8" OVAL BAMBOO
1 SHEET OF	1/16" x 3" x 36" BALSA	WOOD SCREW, TUBING
1 SHEET OF	1/8" x 3" x 36" BALSA	16 & 14 SWG PIANO WIRE
1 BLOCK OF	9" x 2" 1-1/2" BALSA	14 SWG BUSH



BUILD NORMAN MARCUS' HIGH CLIMBER

Hereward "the wakefield"



HERE it is at last! A good, consistent and yet simple-to-build Wakefield, which has proved itself with the best of them.

During 1949 this model came fifth in the Gutteridge Trophy with 763·4 seconds and seventh in the Wakefield Trials with 711·25 seconds. The model was renovated for 1950; at the Irish Nationals it came third with 508·4 seconds in spite of having no trimming flights for two months. Returning home it collected first in the Open Rubber event at St. Albans Rally. The model has so far completed five maximum flights and many over three minutes.

"Hereward"—the Wake—is suggested for newcomers to the hobby who have built a few rubber models. The construction should be simple enough for most up-and-coming enthusiasts. "Hereward" is built in the true Marcus tradition in that *no HARD balsa is used*—it breaks the razor blades!

Medium and soft balsa, when used discreetly, give ample strength (for normal use) with springiness and *light* weight. If this type of wood is used, however, it must be carefully picked, i.e., straight grained, and even textured.

Construction.

Build both sides of the fuselage together, on top of each other—when dry, remove sides and separate. Cut all top and bottom spacers and arrange in order: cement two, both top and bottom, at the widest point of the fuselage and hold the nose and tail spacers together with rubber bands. Allow to set, and then add the rest of the spacers (working away from the widest point), holding the longerons in position with the aid of bands. This method gives a perfect rectangular fuselage without the need for formers or jigs. Cement the fin on to the port longeron as shown, not forgetting the 3/32 in. packing piece. Finally add the undercarriage, sheeting, gussets, etc.

The wing is quite conventional and is built in the usual manner. The L.E. is cemented in position as a straight $\frac{1}{4} \times \frac{1}{8}$ in. strip. Add the leading edge sheeting after the centre dihedral has been fixed. N.B.—The L.E. shape is very important and no irregularities should be tolerated.

To build the tailplane, pin the L.E. and T.E. to the board, and cement the $\frac{1}{8} \times 1/16$ in. pieces of the ribs in position.

Now cement the spars in place, before adding the $\frac{1}{8} \times 1/32$ in. "uppers." The tail is covered, but *not* water-sprayed or doped, before adding the tip fins.

The propeller is carved from medium quarter grained balsa. The original was sanded to a maximum thickness of about 1/16 in. (beginners are advised to make the maximum thickness between 3/32 in. and $\frac{1}{8}$ in.), with a maximum camber of 3/32 in. Drill the hole for the 14G tubing, after the ply hub sides have been fixed. The 14G shaft has never bent in spite of repeated D.T. landings.

Credit must be given to Jack North for his ingenious non-slip, non-twist "S" hook device—seems so simple . . . now! This relieves the strain on the hinge when winding (and on the winder!) and the propeller is not subject to damage with rubber breakage.

The wing, tail and fin are covered with Jap tissue, whilst the fuselage is covered with heavyweight Modelspan. A shrinking-cum-waterproof mixture is made by adding banana oil ($\frac{1}{4}$), castor oil (a few drips per ounce) to clear dope ($\frac{3}{4}$). Apply two coats of this mixture to the fuselage and the centre part of the wing, and one coat to the tail, fin and wing tips.

Even if the weights of the individual parts differ from the original, the complete weight of the airframe should be kept below 4 ozs. if possible. The remainder of the required 8 ozs. is made up with 16 strands of $\frac{1}{4} \times 1/24$ in. Dunlop 6010 of approximately 45 ins. length.

The C.G. position is about 2 ins. in front of the T.E. but any difference up to 1 in. either way should not really affect the performance. Adjust the C.G. with ballast, or by moving the wing, if necessary.

Test on a calm evening, obtain a smooth flat glide, by adjusting wing incidence; there should be no tendency to stall. Downthrust may be needed when full turns are applied, to cure the initial stall.

The dethermaliser is of the parachute type, a diameter of 10 ins. being recommended.

New Rule Version.

Introduction of the new Wakefield rules prompts Norman Marcus to suggest that an extra 2 ins. be added to the centre section of the wing, giving a projected wing area of approximately 212 sq. ins., and the tail area increased to 80 sq. ins. by increasing the 4 ins. chord to $4\frac{1}{2}$ ins. at centre, 3 ins. to $3\frac{1}{2}$ ins. at tip, and the span to 20 ins.

The fuselage can be reduced in size (cross section) by thinning the sides to $3\frac{1}{4}$ ins. max. depth and retaining the plan view (i.e., 3 ins.). A wire pylon of 18 g. wire should be added to keep the wing in its original position. An increase in fin area will probably be required to retain stability.

FULL SIZE PLANS (SEE $\frac{1}{4}$ SCALE REPRODUCTION OPPOSITE) ARE AVAILABLE IN THE USUAL WAY FROM THE AEROMODELLER PLANS SERVICE.

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THE AEROMODELLER PLANS SERVICE

THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.

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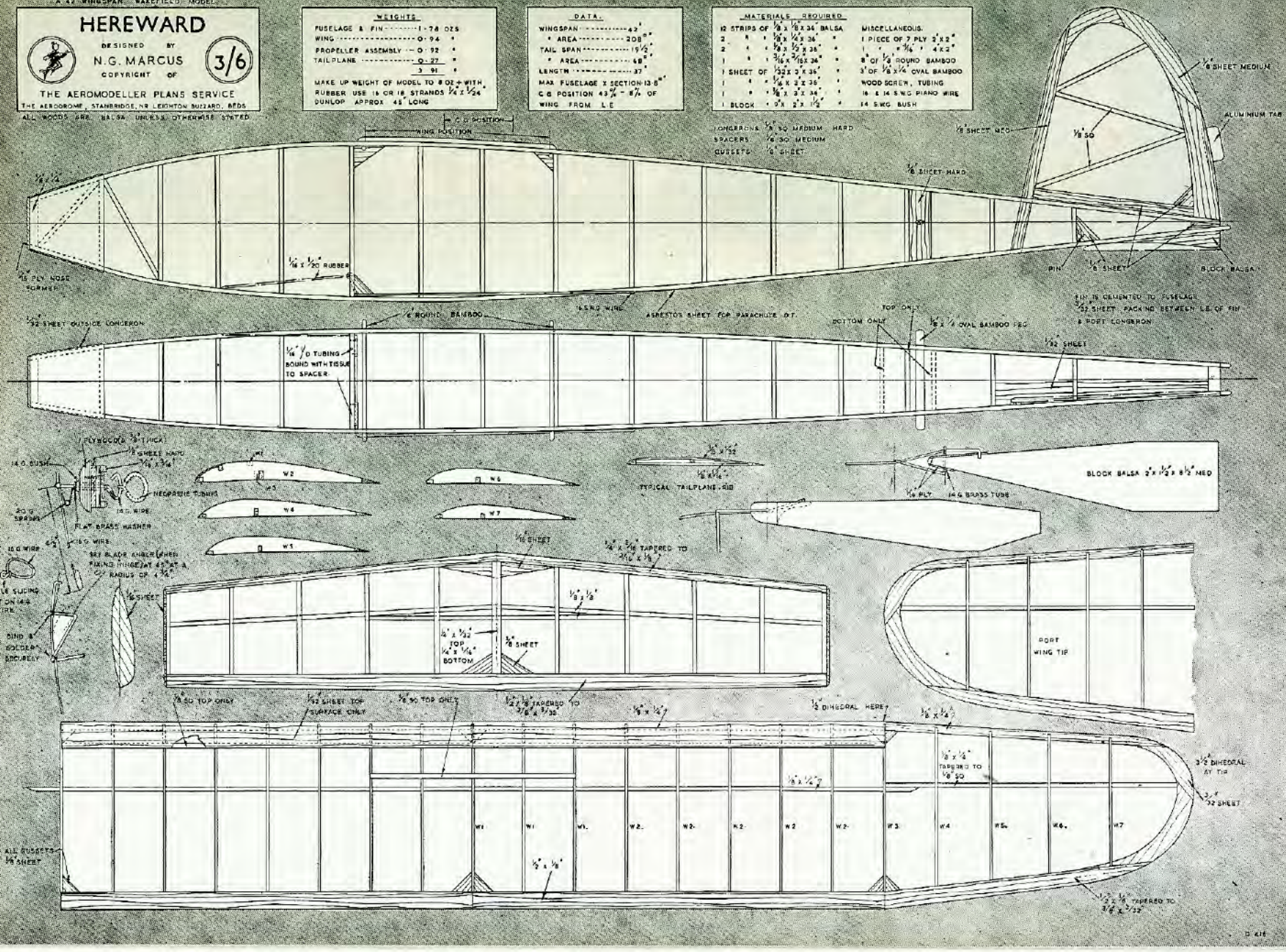
2 " "	1/8 x 1/2 x 35"	"	8" OF 1/8 ROUND BAMBOO
1 " "	3/16 x 3/16 x 36"	"	3' OF 1/8 x 1/4 OVAL BAMBOO
1 SHEET OF	1/32 x 3" x 36"	"	WOOD SCREW, TUBING
1 " "	1/16 x 2" x 36"	"	16 & 14 S.W.G PIANO WIRE
1 " "	1/8 x 2" x 36"	"	14 S.W.G BUSH
1 BLOCK	9" x 2" x 1 1/2"	"	

LONGERON & 1/8 SQ MEDIUM HARD
SPACERS 1/8 SQ MEDIUM
GUSSETS 1/8 SHEET



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