AEROMODELLER

ANNUAL 1949

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AEROMODELLER ANNUAL - 1949

A review of the year's aeromodelling throughout the world in theory and practice; together with useful data, contest results and authoritative articles, produced by staff and contributors of the *AEROMODELLER*

Compiled by
D. J. LAIDLAW-DICKSON

and Edited by
D. A. RUSSELL, M.I.Mech.E.

Published by
THE MODEL AERONAUTICAL PRESS, LTD.
ALLEN HOUSE, NEWARKE STREET
LEICESTER
1949

Also Compiled by

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MODEL DIESELS

CONTROL LINE MODEL AIRCRAFT

AEROMODELLER ANNUAL - 1948

Distributors to the Book Trade

HORACE MARSHALL & SON LTD., LONDON, E.C. 4

Printed in Gt. Britain by

THE CROYDON TIMES, CROYDON, SURREY

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* *Fullsize drawings may be obtained from Aeromodeller Plans Service of these plans at the prices marked thereon.*

An entrant in this year's first British Radio Control Contest at Fairlop launching hopefully into the blue, with transmitter beside him to control its future movement. Though the crowds on this occasion appear to have been decently restrained at some distance, this is by no means typical—and usually their close presence proves an added handicap to the would be radio-control flyer

INTRODUCTION

THE 1949 PICTURE

THE contest season has been marked throughout by the greatly improved organisation that has made the principal meetings more enjoyable both from the contestants' and the spectators' viewpoint. It has been so often the heart cry of one and all that a little more managing would make for better meetings that we cannot but single out contest directors, whoever they may have been, for the year's brightest bouquet. There still remains, however, that unmanageable body—the aeromodellers themselves—who have yet to be persuaded to take their flights to suit the general convenience of the meeting, and not hide away until the last moment in the hopes of bigger and better thermals, and then come in a body at the very end. We suppose they will always be like that just so long as they fly for the fun of the thing, and heaven forbid that they should ever wish to fly for any other reason!

Herald of the sunniest summer for very many years was the Easter Control Line Meeting on the Kent County Cricket ground at Dover—first all control line meeting staged on such ambitious lines. As an example of what can be done when local authorities and model club work together it is classic, while the quality of the stunt and speed flying gave a foretaste of the nationally improved standards. We only regret that the experimental pylons were of a nature unacceptable to the S.M.A.E. Council and thus prevented three records claimed at the meeting from being passed. Nevertheless, we applaud the firmness of purpose of those concerned in rejecting them for rules made must be kept or their whole purpose is lost.

In spite of some misgivings on the venue the Whitsun Nationals held at Fairlop proved the most successful ever with a second day crowd estimated at 15,000. Large camping contingents and much of the "donkey work" were handled successfully by the local club, who also persuaded the Mayor of Ilford to open proceedings formally—another excellent example of civic interest in the aeromodelling movement. The meeting was distinguished as the scene of Britain's first Radio Control Contest, which attracted forty-two entries, and provided some indication of the future before this new and fascinating branch of the hobby. The Gold Trophy, for Aerobatic Control Line, demonstrated the strides that have been made since its inception last year at Sywell; while the revised methods of point allocation and judging produced a worthy winner.

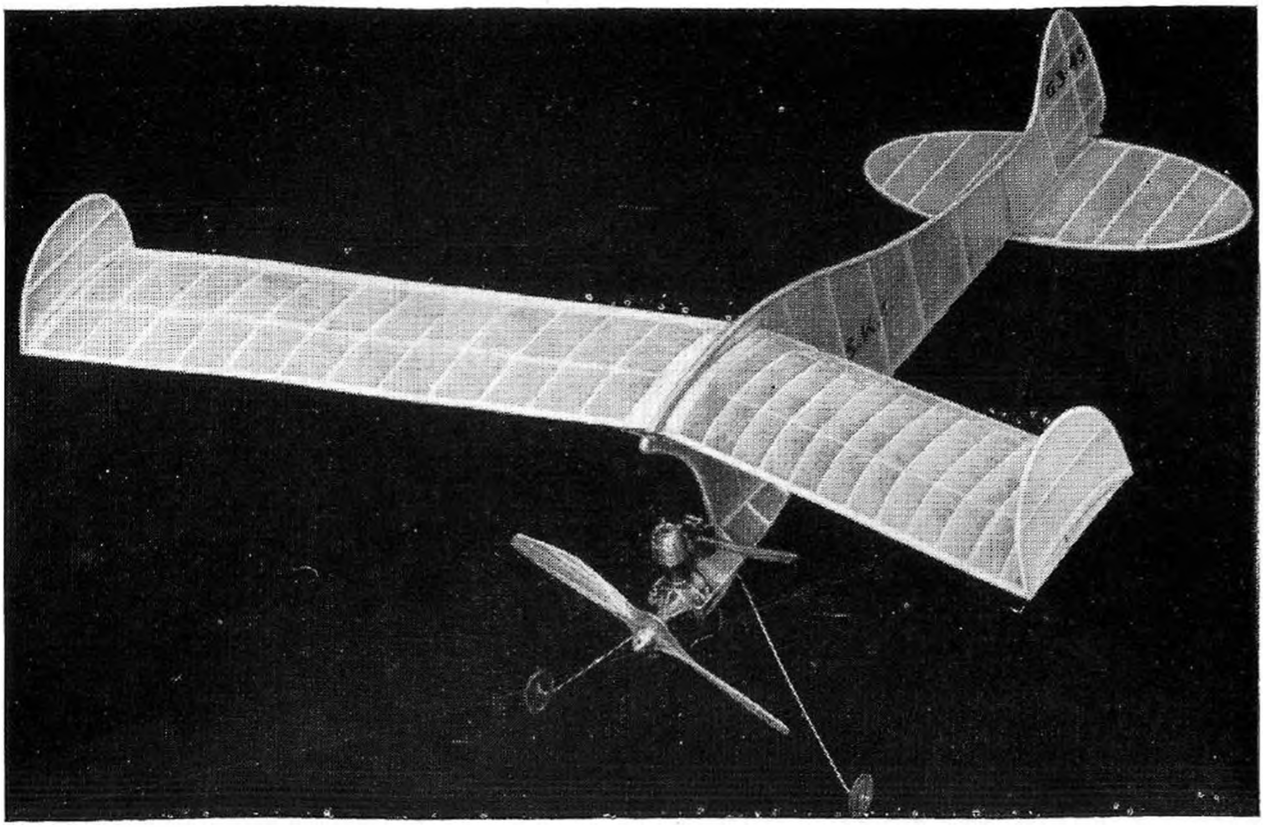
Speed control line fans still have their grouse, however, that no National status event is provided for them, although numerically they are probably stronger than the stunters.

But these events were really but curtain raisers for the most successful Wakefield Contest of all time, when, on July 31st, nineteen nations assembled at the College of Aeronautics, Cranfield, as guests of the S.M.A.E. No finer venue more worthy of the world-wide renown of the contests could have been chosen, as all those present were quick to declare, and a special word of appreciation is due to the Senate of the College and its Principal, Mr. E. F. Relf, for their farsighted action in making the air-field, and what is more, the exceptional college accommodation and catering, available to the world's aeromodellers. Only the weather failed to live up to the high quality of everything else provided, but, in spite of this, a truly classic contest was finally won by the lone representative from Finland—Aarne Ellila—closely followed by Sadorin of Italy and Fletcher of U.S.A. Early British promise could achieve no higher placing than ninth, in the shape of Eric Smith of Leighton Buzzard, making his first International appearance in the contest.

Progress during the year has been steady if not sensational. Radio control is beginning to attract a big following, though the very cost of the necessary apparatus will always prevent it from vieing with, say, free flight power, in popularity. But as prices come down—and increased sales and competition in the trade world will inevitably bring this about—then more and more will be attracted to it. Already in the British Isles we are leaping ahead of other less fortunate countries where operation is restricted to holders of P.O. transmitting licences. Let us hope that its growth will not get out of hand and so lead to the re-imposition of any such limitations. The answer is, of course, in the hands of the flyers themselves !

The trade has kept pace with the expanding hobby, and made successful efforts to cope with a steadily more critical buying public. Engine manufacturers have succeeded so well in their work that the possession of one or more American engines is no longer necessary for contest success in virtually every branch of the hobby. New engines have been evolved to meet the special needs of control line flyers ; a number of new 10 c.c. engines have made their appearance, and show considerable promise when early teething troubles have been eliminated. In the kit market it has become increasingly evident that the casual bundling of balsa and a plan is no longer sufficient to secure sales. Selective wood sorting, adequate accessories, well printed sheet, comprehensive plans and instructions, and, above all, a model really worth building have paid ample dividends to those manufacturers producing them.

We would pass on to the body of this our second *Aeromodeller Annual* with a word of thanks to those who bought our first, and so encouraged us to make this a regular event ; to those who have written criticising our earlier effort and guiding us in future productions ; to those who just praised it and so emboldened us to further effort ; and finally to those many foreign correspondents who have provided material, and the many foreign journals who have extended us the freedom of their columns to pick the best of the year's aeromodelling throughout the world.



The unusual Kitten employing all the cunning artifices expected of R. H. W. Annenberg in design, yet producing a suitcase-fitting potential winner for almost any power/ratio contest.

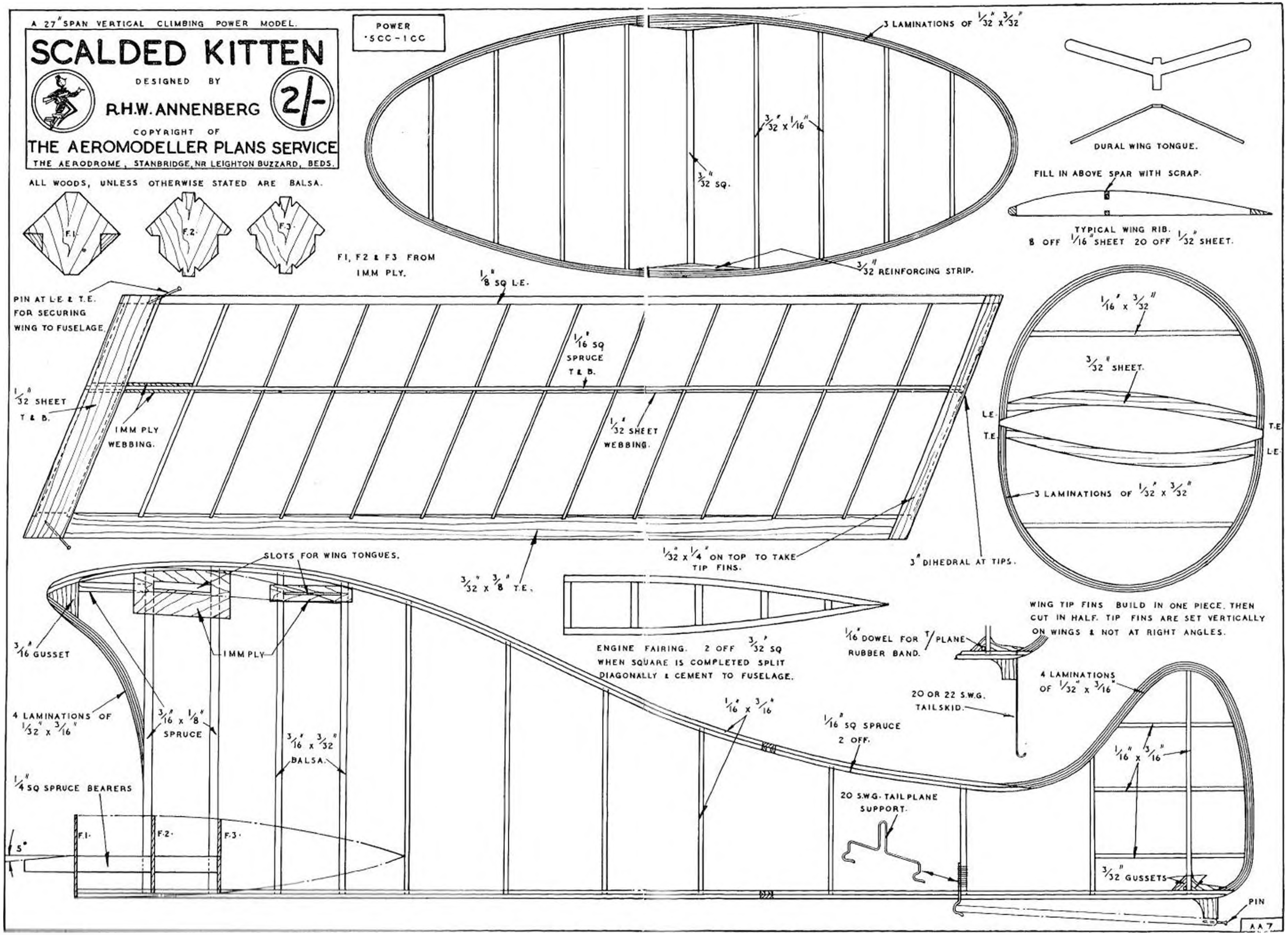
Scalded Kitten. Designed by R. H. W. Annenberg, B.Sc.,Eng.

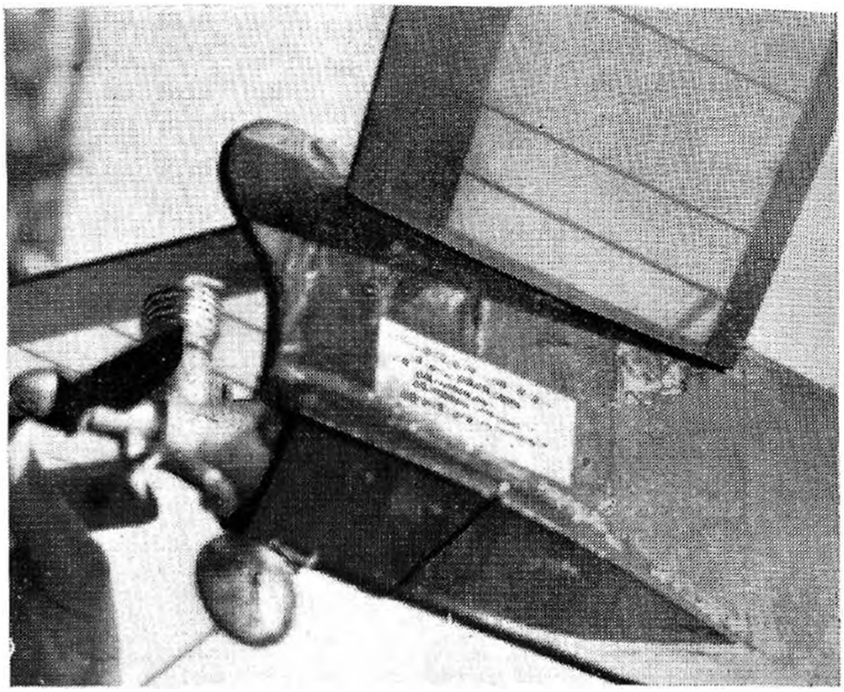
DESCRIPTION.—Any model from the L.S.A.R.A. stable is of interest to keen aeromodellers, and Scalded Kitten is of sufficiently startling design to whet the appetites of all contest flyers. Parallel chord swept forward wings with end plates are attached shoulder high to a profile fuselage to which a square pod like body has been added. Tail unit is attached below the fuselage. Construction is simple, embodying a careful mixture of balsa and spruce for great strength.

PERFORMANCE.—Scalded Cat—a development of this design but requiring considerable trimming skill—was demonstrated at this year's Nationals and had a climb excelling any model entered in power events at that meeting—nearly 3,000 feet per minute at an angle of about 85°. The Kitten will not quite achieve this, but is certainly offered as the simplest vertical climbing model we have yet seen. Those who wish to attempt Cat performance may enlarge the plan to 1½ times full size and fit an Elfin 1.8 c.c. in lieu of Amco .87 c.c., or similar fitted to Kitten.

POWER.—For Kitten, Amco Mk. II .87 c.c. fitted to original, but any engine of .5 to 1 c.c. will suit with modifications to "stick-on" fuselage body. Airscrew 7 in. diameter, 4-5 in. pitch.

WEIGHT (with Amco) 4 ozs. complete, including engine and airscrew when covered with jap tissue. Heavier engines will naturally affect performance. Smaller versions are also practicable using, say, the K .2 c.c. or Kalper .3 c.c. Annenberg is now trying out a 20½ in. span version with an Anderson Baby Spitfire.

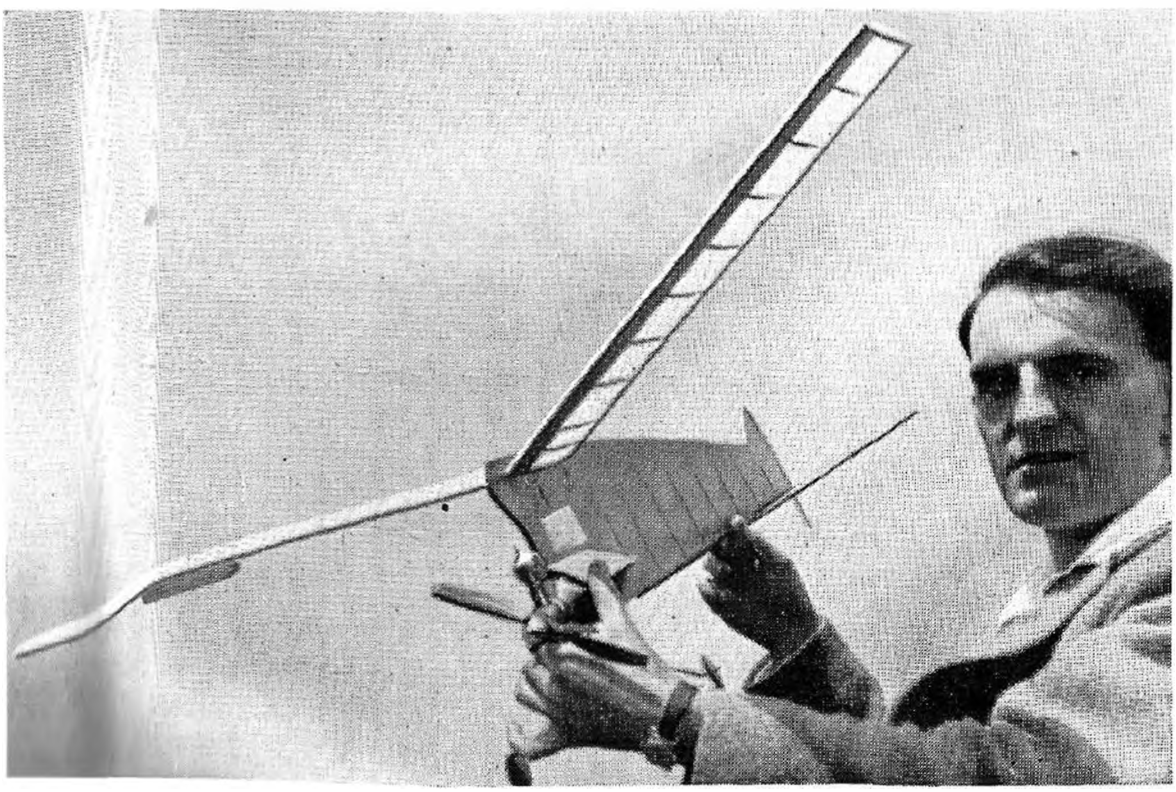

A 27" SPAN VERTICAL CLIMBING POWER MODEL.
SCALDED KITTEN
DESIGNED BY
R.H.W. ANNENBERG
2/-
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS.
ALL WOODS, UNLESS OTHERWISE STATED ARE BALSA.
POWER ·5CC–1CC
F.1 F.2 F.3
F1, F2 & F3 FROM 1MM PLY.
3 LAMINATIONS OF 1/32" x 3/32"
3/32" x 1/16"
3/32" SQ.
3/32" REINFORCING STRIP.
DURAL WING TONGUE.
FILL IN ABOVE SPAR WITH SCRAP.
TYPICAL WING RIB.
8 OFF 1/16" SHEET 20 OFF 1/32" SHEET.
PIN AT L.E. & T.E. FOR SECURING WING TO FUSELAGE.
1/8" SQ L.E.
1/16" SQ SPRUCE T & B.
1/32" SHEET T & B.
1MM PLY WEBBING.
1/32" SHEET WEBBING.
1/16" x 3/32"
3/32" SHEET.
L.E.
T.E.
T.E.
L.E.
3 LAMINATIONS OF 1/32" x 3/32"
1/32" x 1/4" ON TOP TO TAKE TIP FINS.
3" DIHEDRAL AT TIPS.
3/32" x 3/8" T.E.
SLOTS FOR WING TONGUES.
WING TIP FINS BUILD IN ONE PIECE. THEN CUT IN HALF. TIP FINS ARE SET VERTICALLY ON WINGS & NOT AT RIGHT ANGLES.
3/16" GUSSET
1MM PLY
ENGINE FAIRING. 2 OFF 3/32" SQ WHEN SQUARE IS COMPLETED SPLIT DIAGONALLY & CEMENT TO FUSELAGE.
1/16" DOWEL FOR T/PLANE RUBBER BAND.
4 LAMINATIONS OF 1/32" x 3/16"
20 OR 22 S.W.G. TAILSKID.
4 LAMINATIONS OF 1/32" x 3/16"
3/16" x 1/8" SPRUCE
3/16" x 3/32" BALSA.
1/16" x 3/16"
1/16" SQ SPRUCE 2 OFF.
1/16" x 3/16"
1/4" SQ SPRUCE BEARERS
20 S.W.G. TAILPLANE SUPPORT.
5°
F.1· F.2· F.3·
3/32" GUSSETS
PIN
AA 7

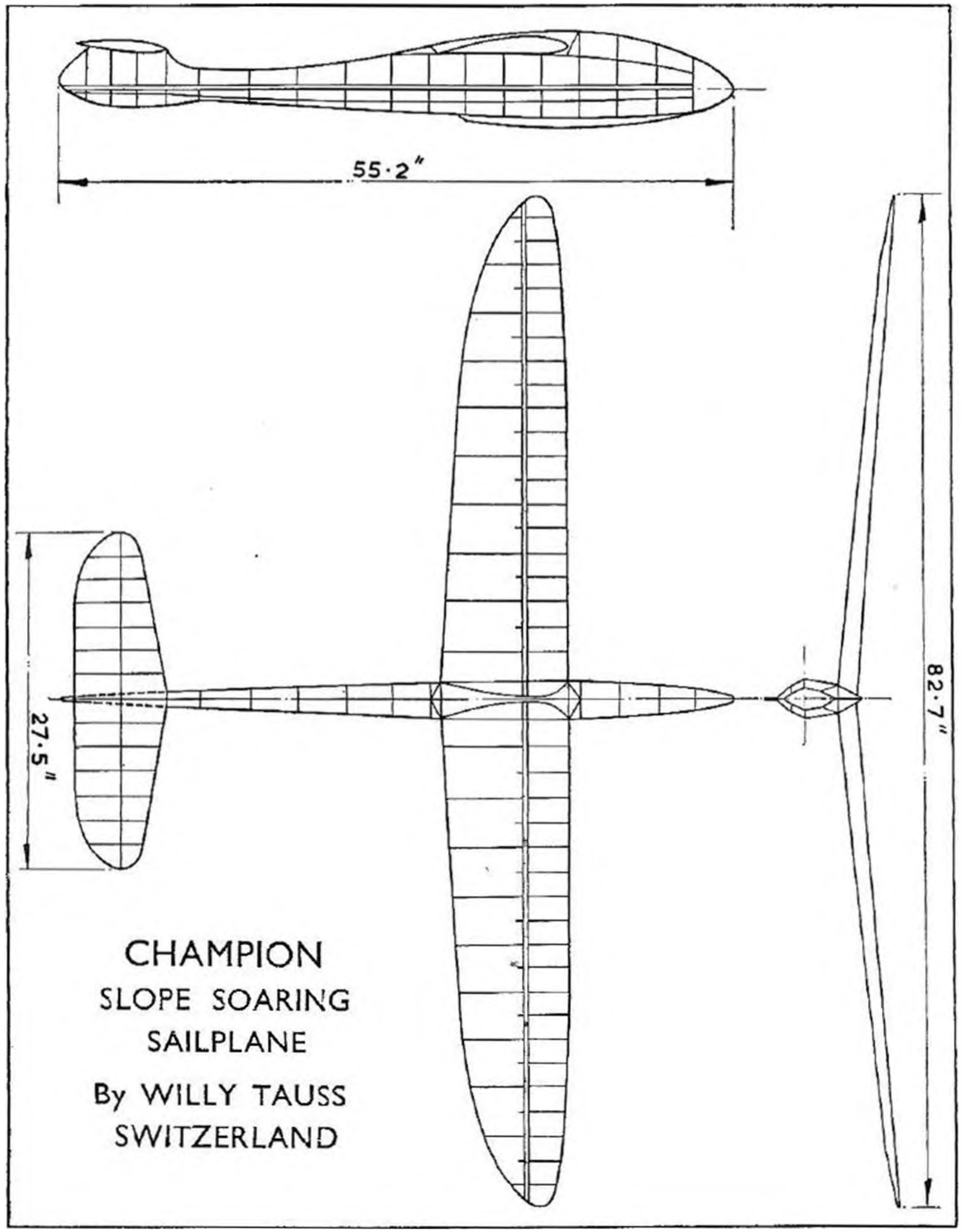


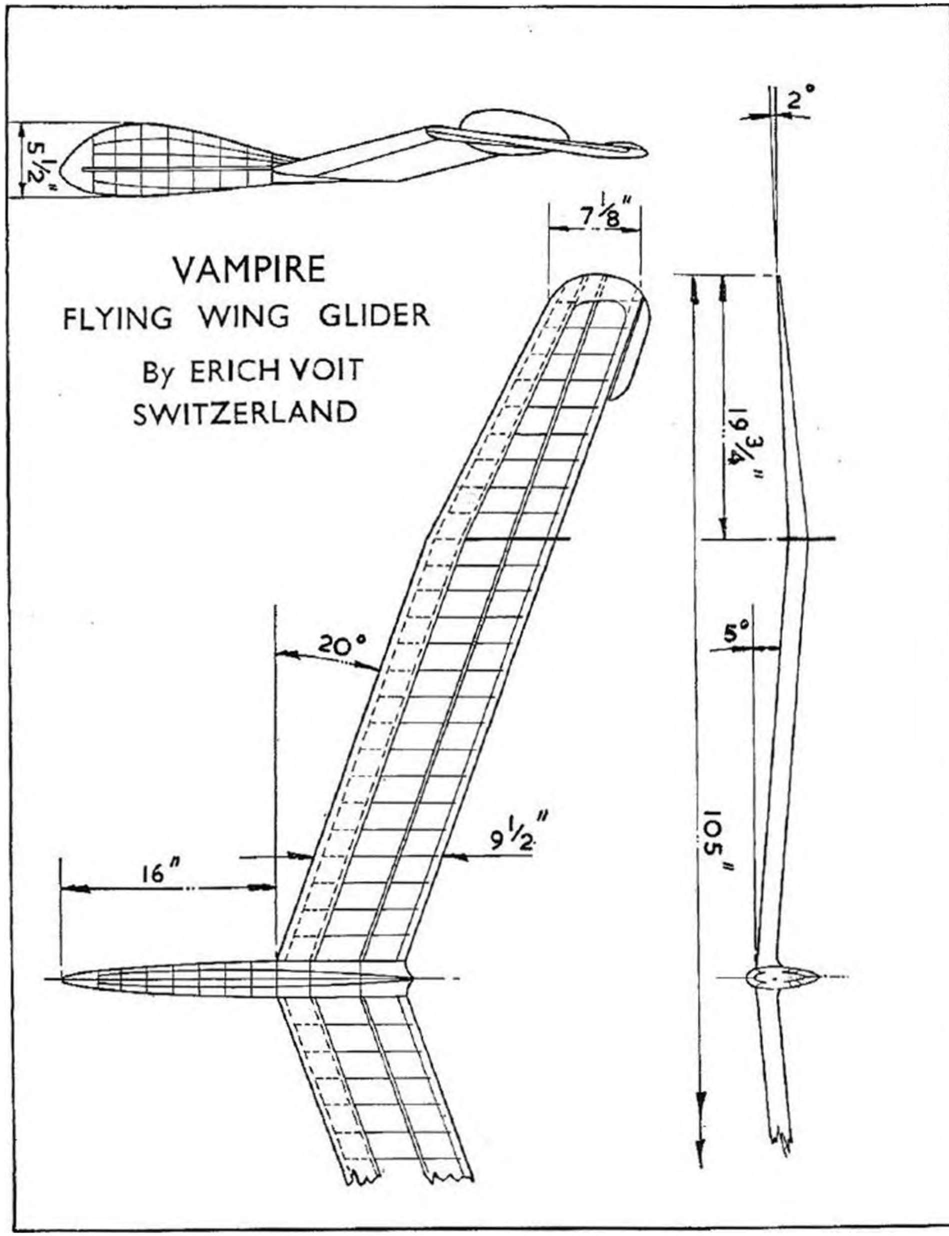
NOTES ON CONSTRUCTION.— All spruce - spruce or spruce - balsa joints should be made with Durofix or lePages' cement. Body is made separately from profile fuselage, slit diagonally and cemented each side of profile. Those desiring greater engine accessibility can move forward engine another $\frac{1}{4}$ in. Wing end-plates are set vertically, *not* at right-angles to wing. A small trim tab may be fixed to tailplane to assist in getting maximum climb angle. An optional trim tab may also be added to port wing, 3 in. by $\frac{3}{4}$ in., located with its centre 3 in. from tip.

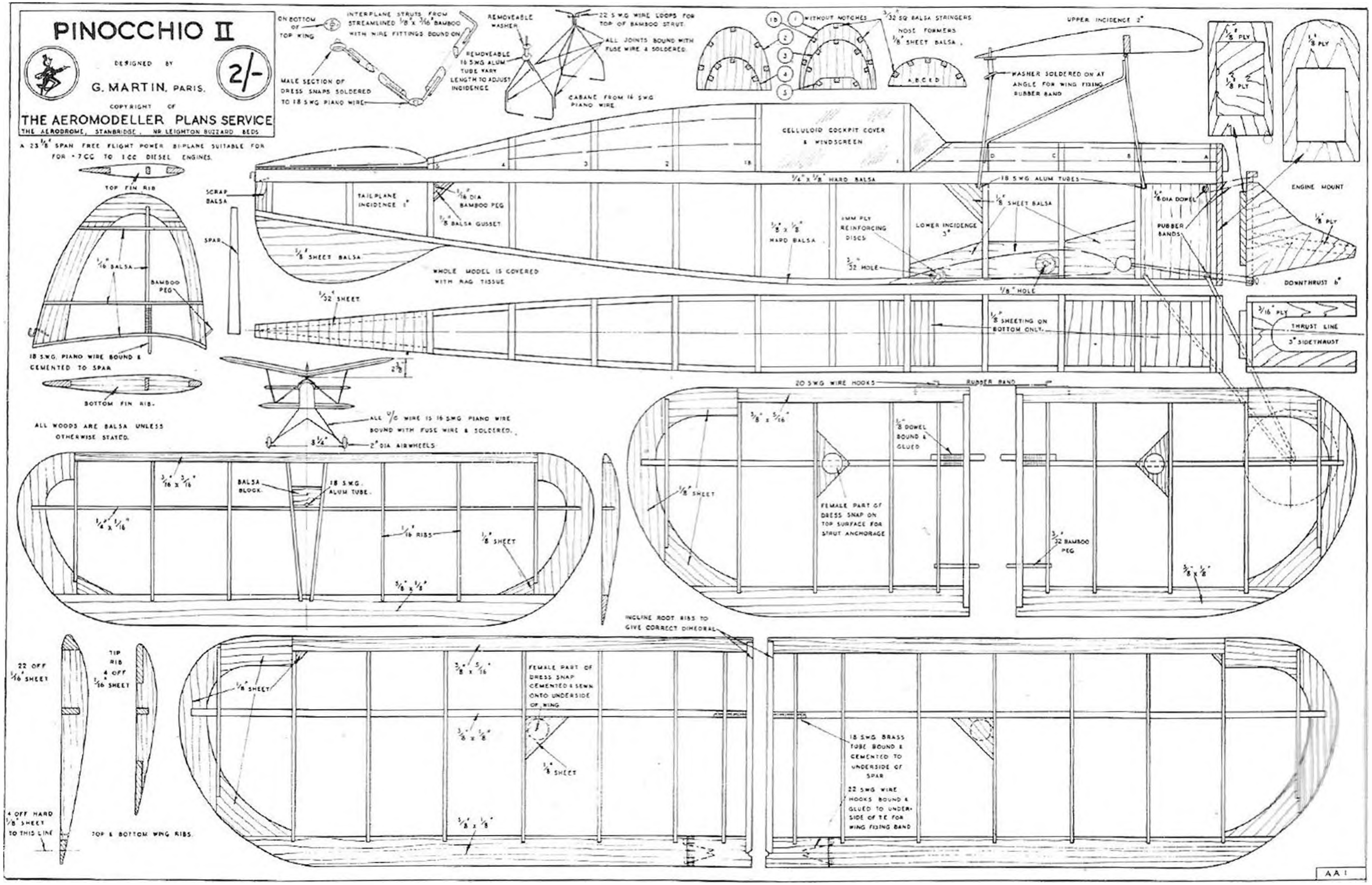
NOTES ON SCALDED CAT.—The larger version obtained by scaled up $1\frac{1}{2}$ times originally had a profile depth of $6\frac{1}{2}$ in., but straightforward scaling up will produce a reliable model. The final version illustrated without end plates to wings is very tricky to trim, though magnificent in performance, and builders are recommended to stick to plan design, at any rate until flying is fully mastered.

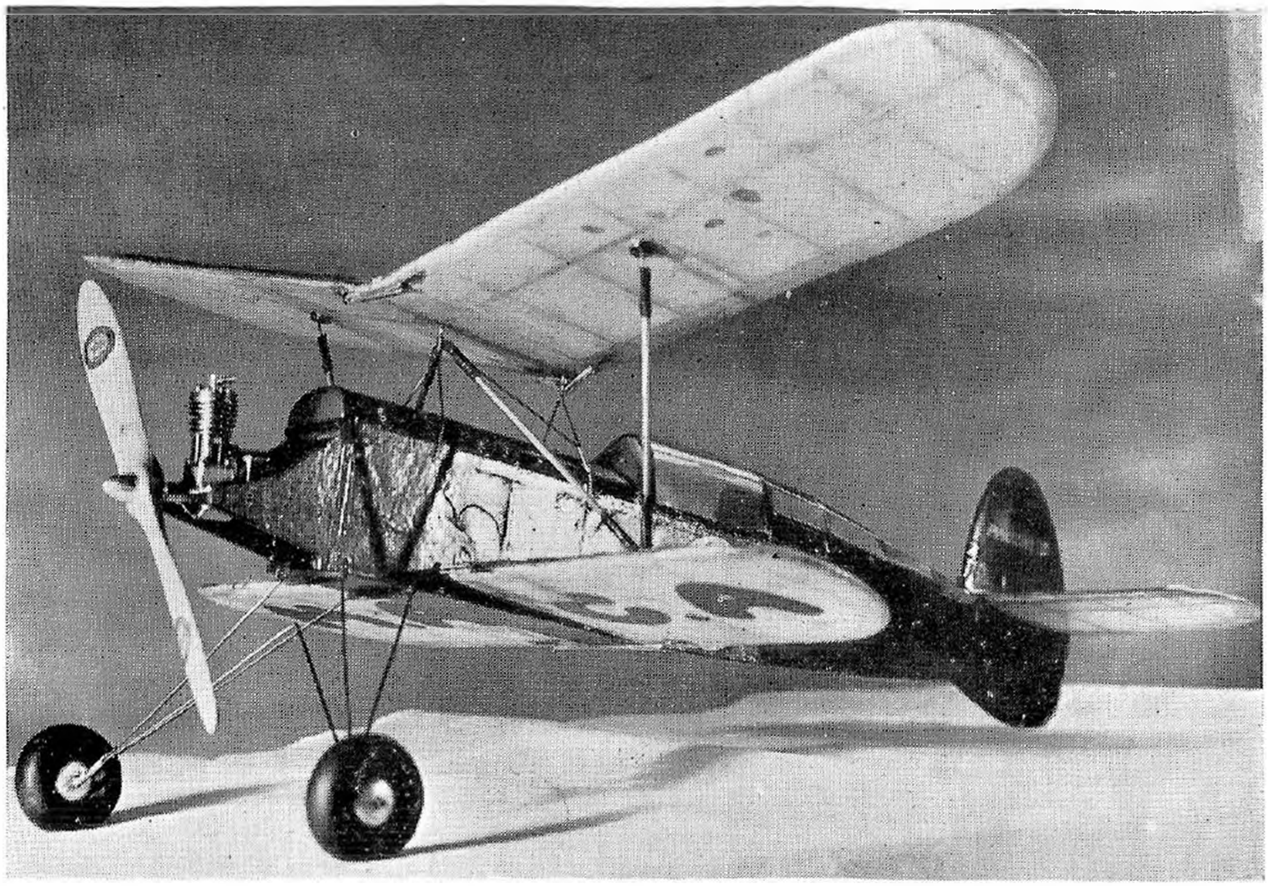
Below: Amenberg with Elfin 1.8 powered Scalded Cat—larger and modified version of the Kitten.
Above : Close-up of " body " fairing to profile fuselage.




55·2"
82·7"
27·5"
CHAMPION
SLOPE SOARING
SAILPLANE
By WILLY TAUSS
SWITZERLAND


5½"
7⅛"
2°
VAMPIRE
FLYING WING GLIDER
By ERICH VOIT
SWITZERLAND
19¾"
20°
5°
9½"
16"
105"

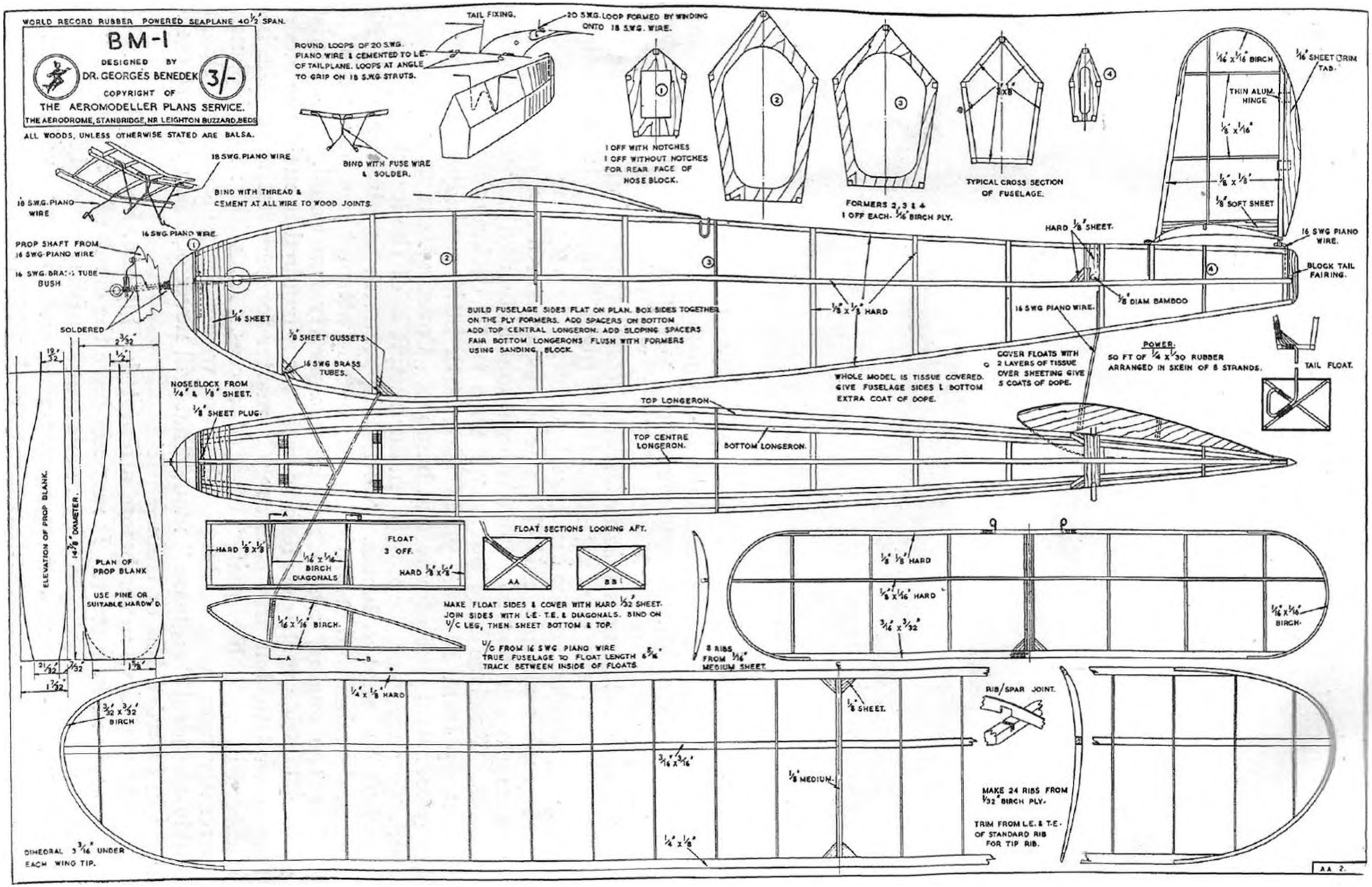

PINOCCHIO II
DESIGNED BY
G. MARTIN, PARIS.
2/-
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD BEDS
A 23 1/8" SPAN FREE FLIGHT POWER BI-PLANE SUITABLE FOR FOR ·7CC TO 1CC DIESEL ENGINES.
ON BOTTOM OF TOP WING
INTERPLANE STRUTS FROM STREAMLINED 1/8" x 3/16" BAMBOO WITH WIRE FITTINGS BOUND ON
MALE SECTION OF DRESS SNAPS SOLDERED TO 18 S.W.G PIANO WIRE
REMOVEABLE WASHER
REMOVEABLE 16 S.W.G ALUM TUBE VARY LENGTH TO ADJUST INCIDENCE
22 S.W.G WIRE LOOPS FOR TOP OF BAMBOO STRUT.
ALL JOINTS BOUND WITH FUSE WIRE & SOLDERED.
CABANE FROM 16 S.W.G PIANO WIRE
WITHOUT NOTCHES
3/32 SQ BALSA STRINGERS
NOSE FORMERS 1/8" SHEET BALSA.
UPPER INCIDENCE 2°
WASHER SOLDERED ON AT ANGLE FOR WING FIXING RUBBER BAND
1/8" PLY
CELLULOID COCKPIT COVER & WINDSCREEN
TOP FIN RIB
SCRAP BALSA
SPAR
3/4" x 1/8" HARD BALSA
18 S.W.G ALUM TUBES
TAILPLANE INCIDENCE 1°
1/16" DIA BAMBOO PEG
1/8" BALSA GUSSET
1/8" SHEET BALSA
3/8" x 1/8" HARD BALSA
1MM PLY REINFORCING DISCS
LOWER INCIDENCE 3°
3/32" HOLE
1/8" DIA DOWEL
RUBBER BANDS
ENGINE MOUNT
DOWNTHRUST 6°
1/16" BALSA
BAMBOO PEG
WHOLE MODEL IS COVERED WITH RAG TISSUE
1/8" HOLE
1/32" SHEET
1/8" SHEETING ON BOTTOM ONLY.
3/16" PLY
THRUST LINE
3° SIDETHRUST
18 S.W.G. PIANO WIRE BOUND & CEMENTED TO SPAR
BOTTOM FIN RIB.
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.
ALL U/C WIRE IS 16 S.W.G PIANO WIRE BOUND WITH FUSE WIRE & SOLDERED.
2" DIA AIRWHEELS
8 1/4"
20 S.W.G WIRE HOOKS
RUBBER BAND
3/8" x 5/16"
1/8" DOWEL BOUND & GLUED
1/8" SHEET
FEMALE PART OF DRESS SNAP ON TOP SURFACE FOR STRUT ANCHORAGE
3/32" BAMBOO PEG
3/8" x 1/8"
3/16" x 3/16"
BALSA BLOCK.
18 S.W.G. ALUM TUBE.
1/4" x 5/16"
1/16" RIBS
3/8" x 1/8"
INCLINE ROOT RIBS TO GIVE CORRECT DIHEDRAL
22 OFF 1/16" SHEET
TIP RIB 4 OFF 1/16" SHEET
FEMALE PART OF DRESS SNAP CEMENTED & SEWN ONTO UNDERSIDE OF WING
18 S.W.G BRASS TUBE BOUND & CEMENTED TO UNDERSIDE OF SPAR
22 S.W.G WIRE HOOKS BOUND & GLUED TO UNDERSIDE OF T.E FOR WING FIXING BAND
4 OFF HARD 1/8" SHEET TO THIS LINE
TOP & BOTTOM WING RIBS.
AA 1



Pinocchio II. Diesel Powered Biplane by G. Martin, Paris.

DESCRIPTION.—This little miniature biplane powered in the original by a .8 c.c. Micron, and developed with the assistance of Micron designer Gladieux by G. Martin of Paris, who is chief draughtsman to French aeromodelling magazine *Modele Reduit d'Avion* offers a splendid introduction to the growing cult of free flight " bipes." This all-balsa example provides no constructional problems to any one who has ever built a rubber powered model. The wings are small and can be pinned down on any odd board or table top without difficulty, having flat undersurfaces. Fuselage is of box shape with turtle decking added. Cabane is bent up from 16 swg. piano wire, with incidence adjustment while interplane struts are of wire and bamboo. Covering is of tissue throughout. To encourage the novice, motor mount is of the knock-off variety attached by rubber bands. General appearance is pleasing with its semi-scale cabin and realistic layout, but no attempt has been made to enclose the engine, which remains completely functional. The purist may well decide that some form of enclosure is required to make the model truly complete, but this is entirely a matter for personal taste—the beginner will probably prefer ease of access. As with most biplanes, extremely light wing loading is achieved without large span, and this is surely the ideal " suitcase " model that will never occasion adverse comment in crowded bus or train.

If you have never before attempted a biplane, here is the model on which to make a start. It may not have the climb of a contest model, but at any rate it will give any amount of satisfying general flying week-end after week-end without expensive repairs and, as always with biplanes, will attract interested attention whenever it appears.

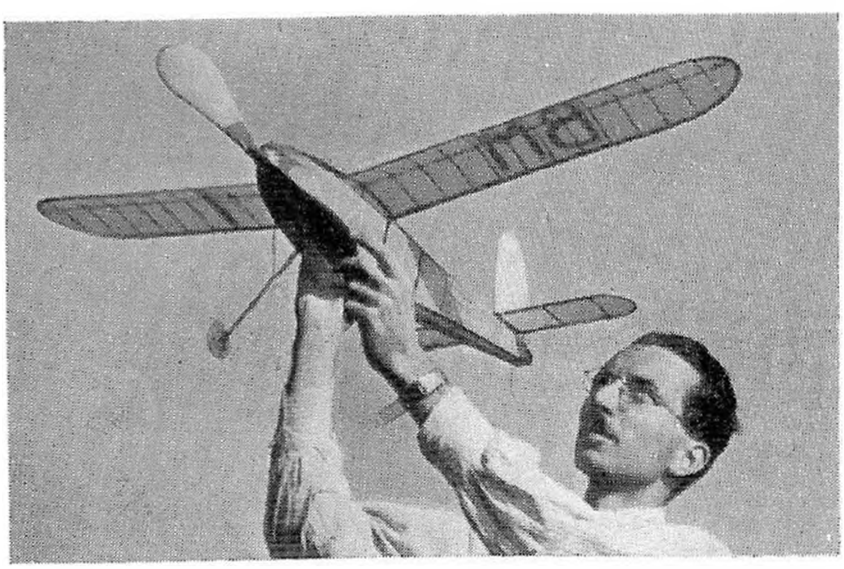

WORLD RECORD RUBBER POWERED SEAPLANE 40½" SPAN.
BM-1
DESIGNED BY
DR. GEORGES BENEDEK
3/-
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE.
THE AERODROME, STANBRIDGE, NR. LEIGHTON BUZZARD, BEDS.
ALL WOODS, UNLESS OTHERWISE STATED ARE BALSA.
TAIL FIXING.
20 S.W.G. LOOP FORMED BY WINDING ONTO 18 S.W.G. WIRE.
ROUND LOOPS OF 20 S.W.G. PIANO WIRE & CEMENTED TO L.E. OF TAILPLANE. LOOPS AT ANGLE TO GRIP ON 18 S.W.G. STRUTS.
BIND WITH FUSE WIRE & SOLDER.
18 S.W.G. PIANO WIRE
BIND WITH THREAD & CEMENT AT ALL WIRE TO WOOD JOINTS.
18 S.W.G. PIANO WIRE
16 S.W.G. PIANO WIRE
PROP SHAFT FROM 16 S.W.G. PIANO WIRE
16 S.W.G. BRASS TUBE BUSH
SOLDERED
1 OFF WITH NOTCHES
1 OFF WITHOUT NOTCHES FOR REAR FACE OF NOSE BLOCK.
FORMERS 2, 3 & 4
1 OFF EACH. 1/16" BIRCH PLY.
TYPICAL CROSS SECTION OF FUSELAGE.
1/16" x 1/16" BIRCH
1/16" SHEET TRIM TAB.
THIN ALUM. HINGE
1/8" x 1/16"
1/8" x 1/8"
1/8" SOFT SHEET
HARD 1/8" SHEET.
16 SWG PIANO WIRE.
BLOCK TAIL FAIRING.
1/8" DIAM BAMBOO
1/16" SHEET
1/8" SHEET GUSSETS
16 SWG BRASS TUBES.
BUILD FUSELAGE SIDES FLAT ON PLAN. BOX SIDES TOGETHER ON THE PLY FORMERS. ADD SPACERS ON BOTTOM ADD TOP CENTRAL LONGERON. ADD SLOPING SPACERS FAIR BOTTOM LONGERONS FLUSH WITH FORMERS USING SANDING BLOCK.
1/8" x 1/8" HARD
16 SWG PIANO WIRE.
COVER FLOATS WITH 2 LAYERS OF TISSUE OVER SHEETING GIVE 5 COATS OF DOPE.
POWER.
50 FT OF 1/4 x 1/30 RUBBER ARRANGED IN SKEIN OF 8 STRANDS.
TAIL FLOAT.
WHOLE MODEL IS TISSUE COVERED. GIVE FUSELAGE SIDES & BOTTOM EXTRA COAT OF DOPE.
NOSEBLOCK FROM 1/4" & 1/8" SHEET.
1/8" SHEET PLUG.
TOP LONGERON.
TOP CENTRE LONGERON.
BOTTOM LONGERON.
ELEVATION OF PROP BLANK.
14 7/8" DIAMETER.
PLAN OF PROP BLANK.
USE PINE OR SUITABLE HARDW'D.
HARD 1/8" x 1/8"
1/16" x 1/16" BIRCH DIAGONALS
FLOAT 3 OFF.
HARD 1/8" x 1/8"
FLOAT SECTIONS LOOKING AFT.
AA
BB
MAKE FLOAT SIDES & COVER WITH HARD 1/32" SHEET. JOIN SIDES WITH L.E. T.E. & DIAGONALS. BIND ON U/C LEG, THEN SHEET BOTTOM & TOP.
1/16" x 1/16" BIRCH.
U/C FROM 16 SWG PIANO WIRE TRUE FUSELAGE TO FLOAT LENGTH 6 5/16" TRACK BETWEEN INSIDE OF FLOATS.
8 RIBS FROM 1/16" MEDIUM SHEET.
1/8" 1/8" HARD
1/8" x 1/16" HARD
3/16" x 3/32"
1/16" x 1/16" BIRCH.
1/4" x 1/8" HARD
3/32" x 3/32" BIRCH
1/8" SHEET.
RIB/SPAR JOINT.
3/16" x 3/16"
1/8" MEDIUM.
MAKE 24 RIBS FROM 1/32" BIRCH PLY.
TRIM FROM L.E. & T.E. OF STANDARD RIB FOR TIP RIB.
1/4" x 1/8"
DIHEDRAL 3 3/16" UNDER EACH WING TIP.
AA 2.

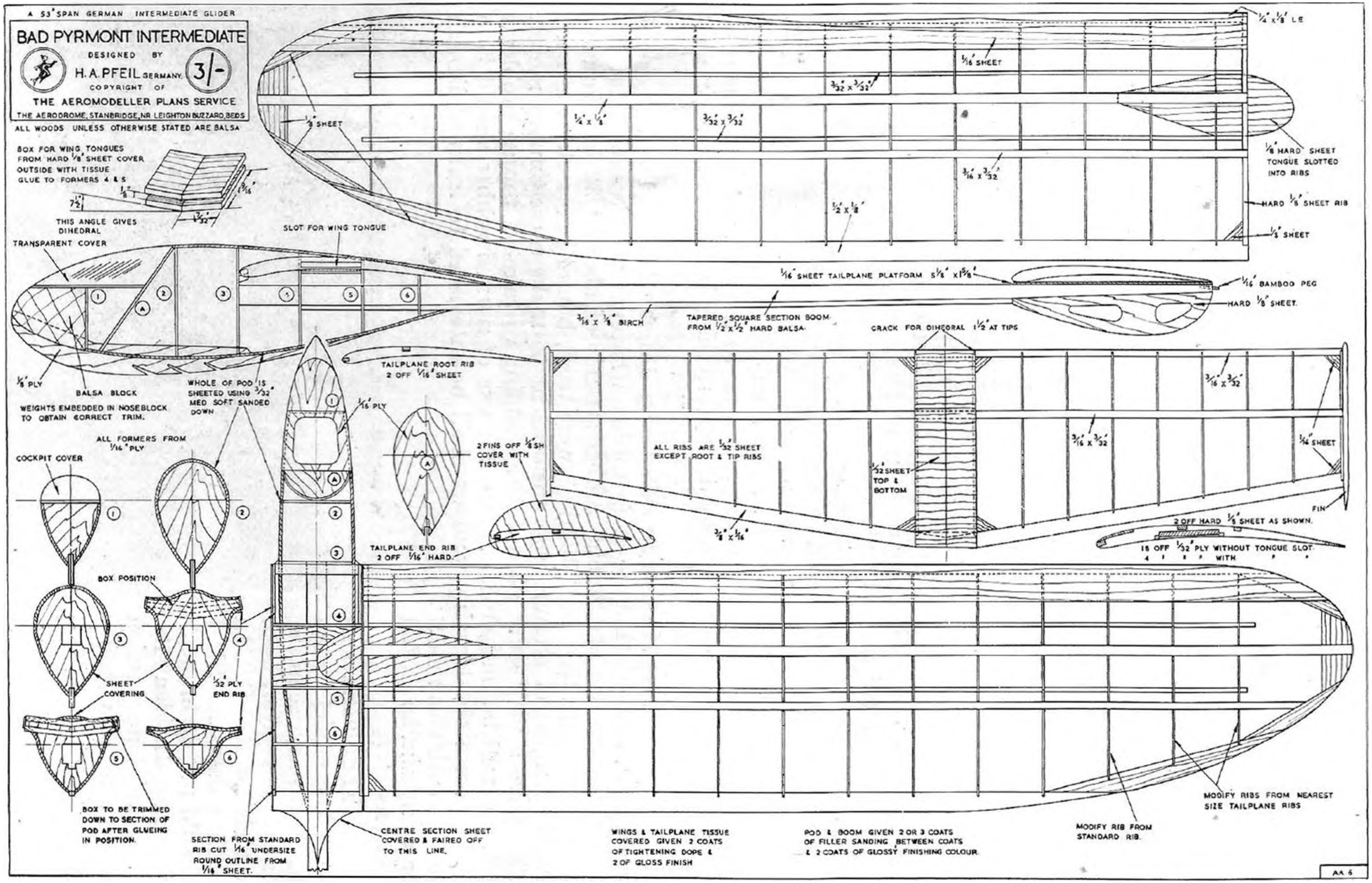
BM-1. World Record Rubber Powered Seaplane by Dr. Georges Benedek, Hungary.

DESCRIPTION.—The entry of Hungary into the realm of world record claims in the model aircraft sphere has coincided to some extent with its inclusion in the area of Soviet influence, but this must be regarded as no more than chance for the research that has helped Hungarian modellers forward was under way long before these political changes. Main feature of this and other Hungarian winners, is the adoption of their national airfoil section—a large series of which has been produced by Dr. Georges Benedek, some of the more useful being covered on other pages of this *Annual*. Balsa is a rare and almost unknown aid to Mid-European building, being husbanded for such essentials as tailplanes and fins. We have modified the plan to make greater use of the easier medium, and it should, therefore, have an even better potential performance. Owing to the thin nature of the ribs, however, it would be inadvisable to use anything but ply, and main spar should also be of hardwood.

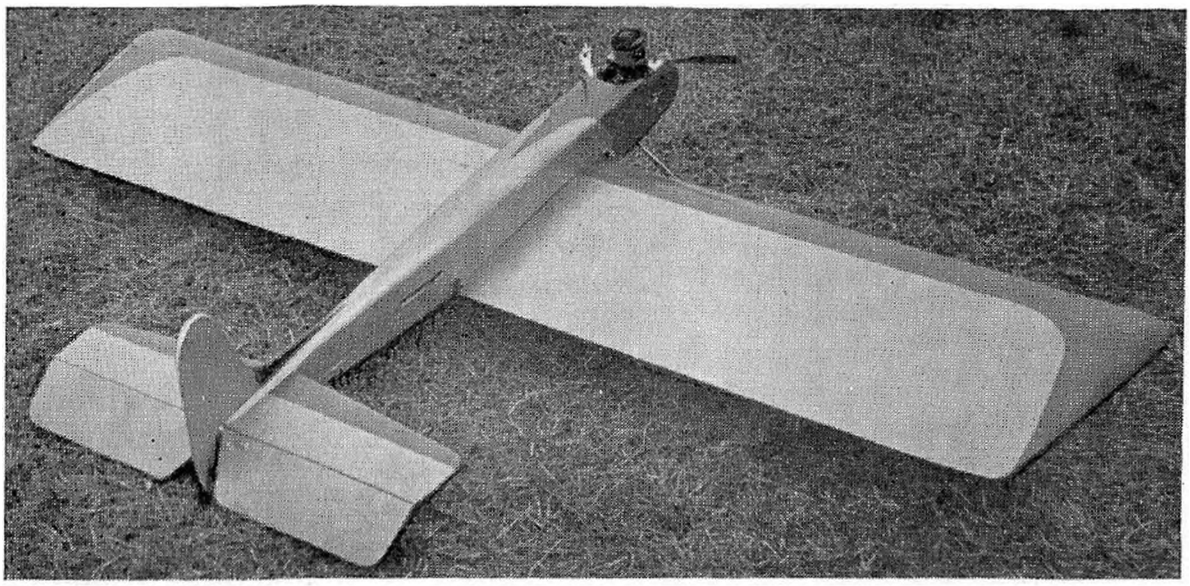
Some idea of Hungarian skill under difficulties, will be appreciated when it is realised that no strip rubber whatever was available for the record flight. Instead, round rubber strands of about 1/32 in. diameter unravelled from German "bunjy" were used, bound into a skein at each end as lengths of strands were insufficient to make a continuous motor. This gave a very short powerful run adding to take-off torque problems as may well be imagined. Again, the use of normal rubber should help performance considerably, and we shall be interested to learn of British results with this model or using similar airfoil sections.

The illustrations show the model equipped both as a seaplane and with conventional wheels for R.O.G. In both guises the BM-1 should put up interesting times. Incidentally, the landplane version holds world's distance record in its class with a flight of over thirty miles.



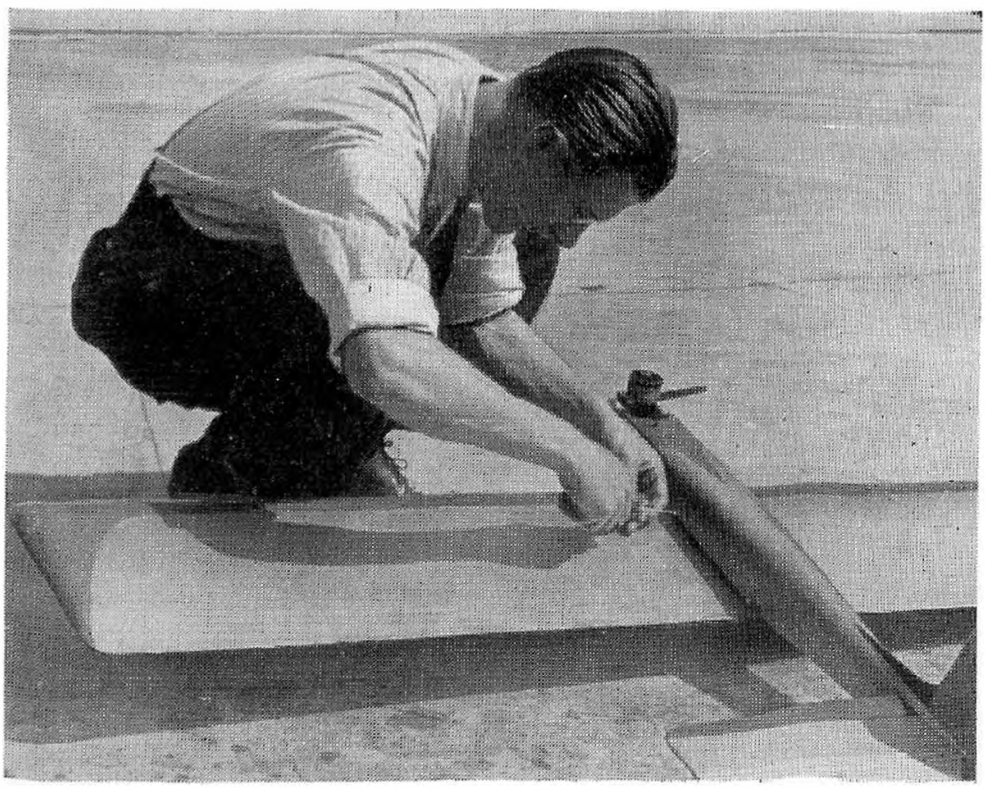


A 53" SPAN GERMAN INTERMEDIATE GLIDER
BAD PYRMONT INTERMEDIATE
DESIGNED BY H. A. PFEIL GERMANY.
3/-
COPYRIGHT OF THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS
ALL WOODS UNLESS OTHERWISE STATED ARE BALSA
BOX FOR WING TONGUES FROM HARD 1/8" SHEET COVER OUTSIDE WITH TISSUE GLUE TO FORMERS 4 & 5
THIS ANGLE GIVES DIHEDRAL
TRANSPARENT COVER
SLOT FOR WING TONGUE
1/8" PLY
BALSA BLOCK
WEIGHTS EMBEDDED IN NOSEBLOCK TO OBTAIN CORRECT TRIM.
WHOLE OF POD IS SHEETED USING 3/32" MED SOFT SANDED DOWN
ALL FORMERS FROM 1/16" PLY
COCKPIT COVER
BOX POSITION
SHEET COVERING
1/32" PLY END RIB
BOX TO BE TRIMMED DOWN TO SECTION OF POD AFTER GLUEING IN POSITION.
SECTION FROM STANDARD RIB CUT 1/16" UNDERSIZE ROUND OUTLINE FROM 1/16" SHEET.
CENTRE SECTION SHEET COVERED & FAIRED OFF TO THIS LINE.
TAILPLANE ROOT RIB 2 OFF 1/16" SHEET
1/16" PLY
TAILPLANE END RIB 2 OFF 1/16" HARD.
2 FINS OFF 1/8" SH COVER WITH TISSUE
3/16" x 1/8" BIRCH
TAPERED SQUARE SECTION BOOM FROM 1/2" x 1/2" HARD BALSA
1/16" SHEET TAILPLANE PLATFORM 5/8" x 1 5/8"
1/16" BAMBOO PEG
HARD 1/8" SHEET.
CRACK FOR DIHEDRAL 1 1/2" AT TIPS
ALL RIBS ARE 1/32" SHEET EXCEPT ROOT & TIP RIBS
1/32" SHEET TOP & BOTTOM
3/8" x 1/16"
3/16" x 3/32"
1/16" SHEET
FIN
2 OFF HARD 1/8" SHEET AS SHOWN.
18 OFF 1/32" PLY WITHOUT TONGUE SLOT
1/4" x 1/8" LE
1/16" SHEET
3/32" x 3/32"
1/4" x 1/8"
1/8" SHEET
3/16" x 3/32"
1/2" x 1/8"
1/8" HARD SHEET TONGUE SLOTTED INTO RIBS
HARD 1/8" SHEET RIB
1/8" SHEET
MODIFY RIBS FROM NEAREST SIZE TAILPLANE RIBS
MODIFY RIB FROM STANDARD RIB.
WINGS & TAILPLANE TISSUE COVERED GIVEN 2 COATS OF TIGHTENING DOPE & 2 OF GLOSS FINISH
POD & BOOM GIVEN 2 OR 3 COATS OF FILLER SANDING BETWEEN COATS & 2 COATS OF GLOSSY FINISHING COLOUR.
AA 6

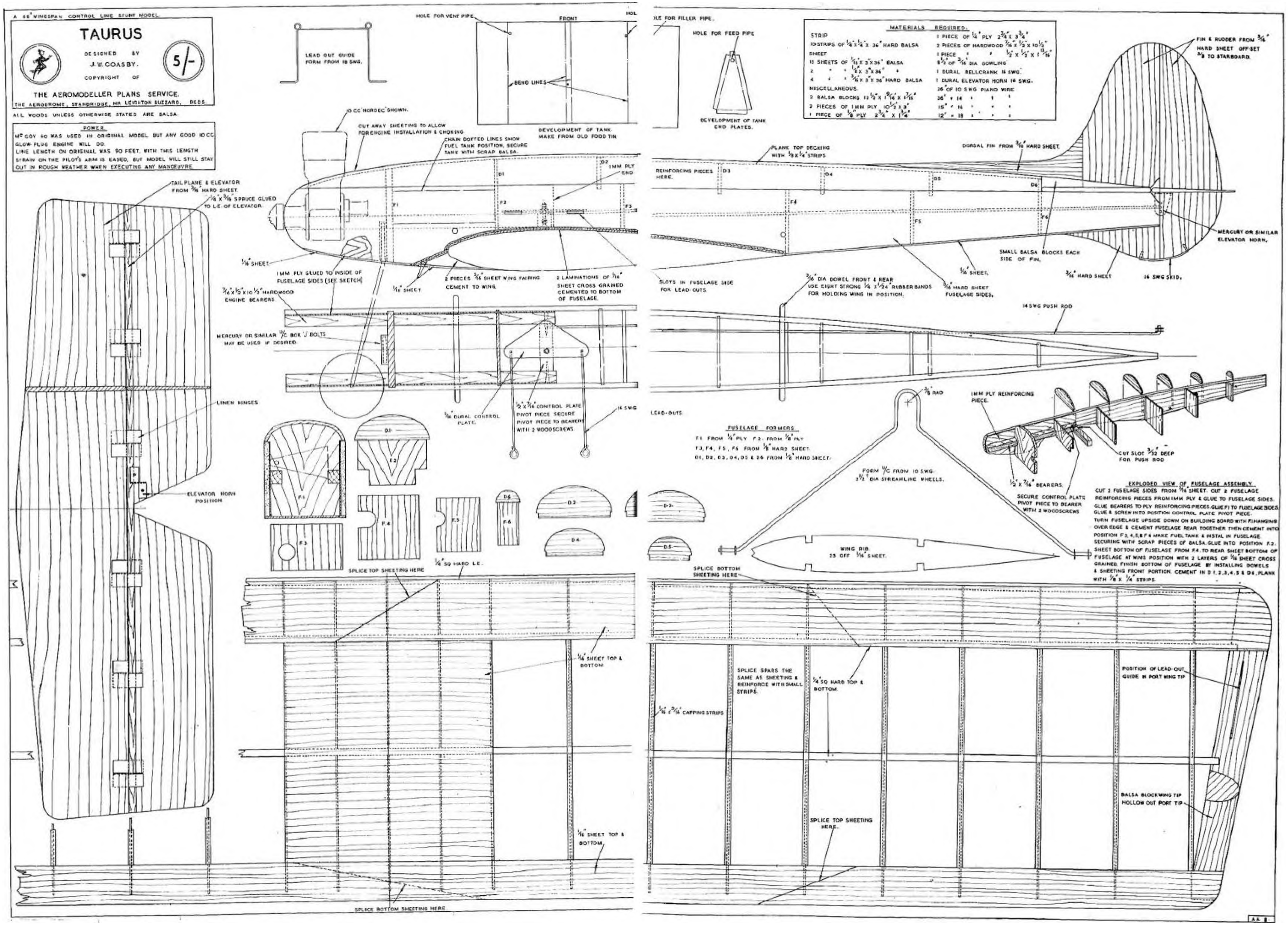


Taurus. 10 c.c. powered Stunt Control Liner by J. W. Coasby, Gt. Britain.

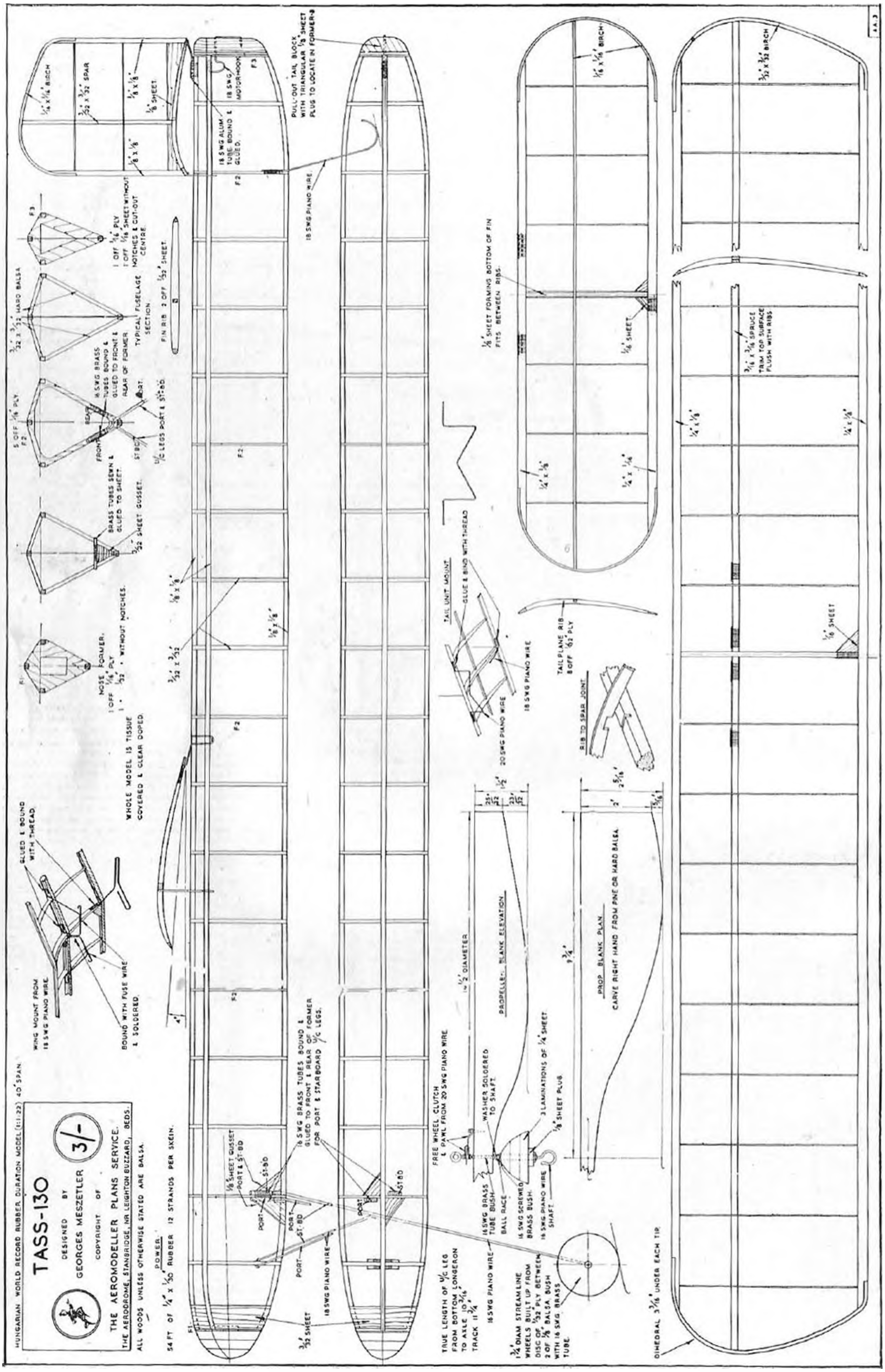
DESCRIPTION.—This model marks a return to " big stuff " for control line by designer Coasby, who is an *Aeromodeller* staff draughtsman, and responsible also for stunt biplane Yoicks and popular free flight power Eros. Those who feel that such big models are unduly expensive, will be cheered by the thought, that the whole of the material for Taurus cost less than 30s., including dope, tissue, wood cement and incidentals, but excluding engine and wheels. Particularly for control liners, who have suffered from adverse winds when flying small fry, we recommend a large job like this. In anything below hurricane force, it flies itself and can be abused without danger; there is no need to worry what section of the circle is used for stunts, while the comparatively unskilled can come to little harm. We should mention too that Taurus will perform the conventional " everything in the book."

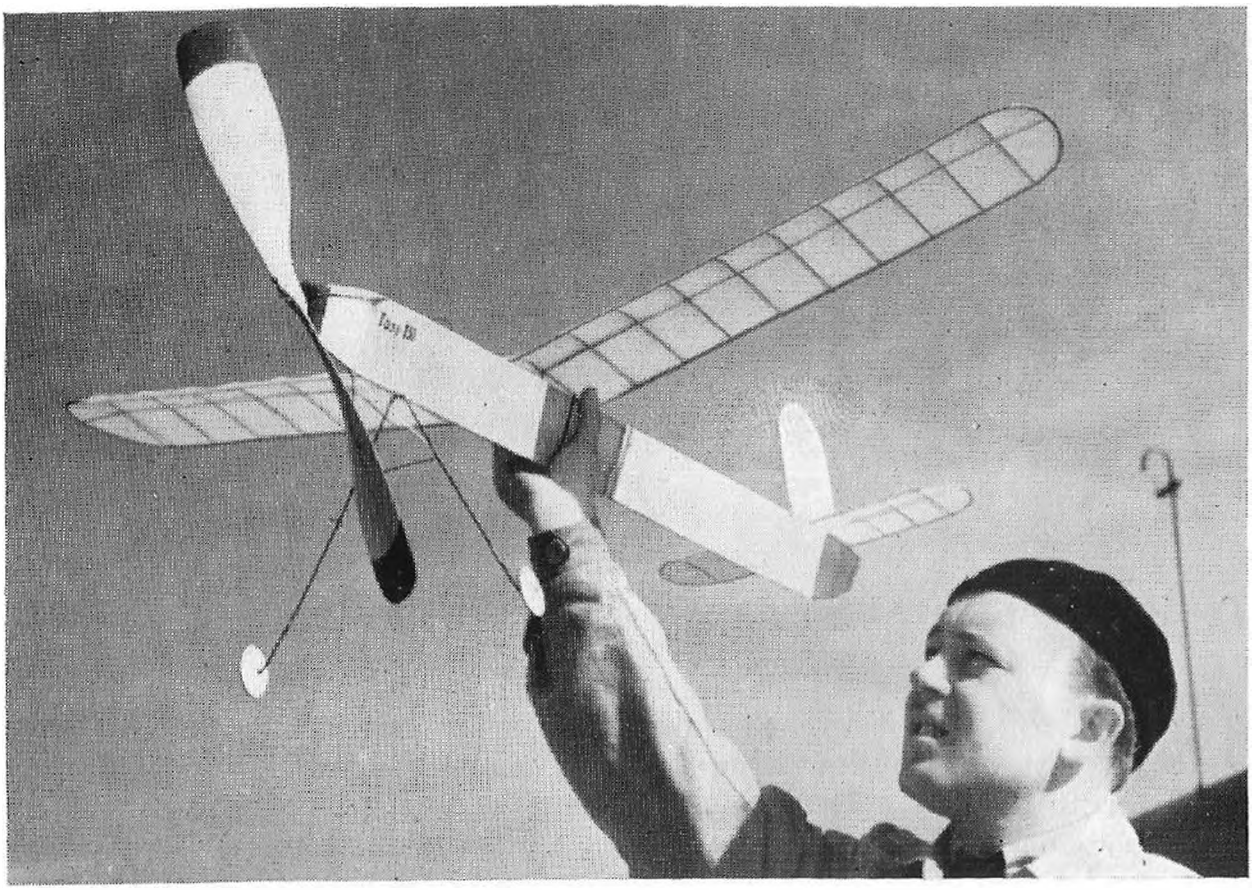


There are no frills on Taurus—and certainly no bull-like obstinancy. Its size can be gauged by illustration of designer connecting up lines, and both for this reason and on the score of reliability it makes a fine demonstration model at displays and similar occasions.



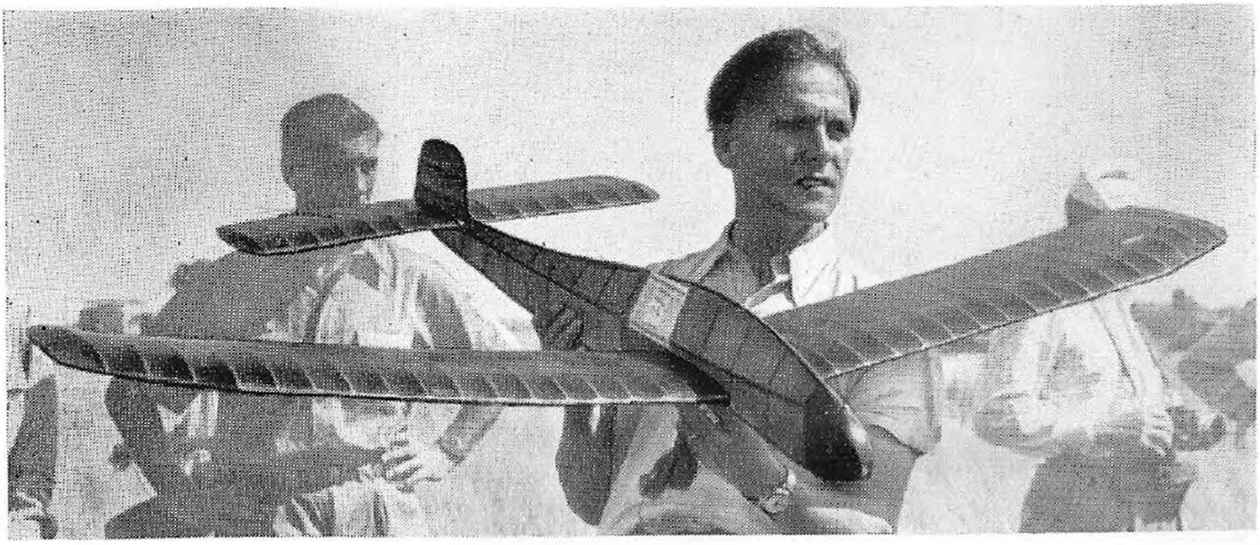
A 66" WINGSPAN CONTROL LINE STUNT MODEL.
TAURUS
DESIGNED BY J.W. COASBY.
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE.
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS.
5/-
ALL WOODS UNLESS OTHERWISE STATED ARE BALSA.
POWER.
McCOY 40 WAS USED IN ORIGINAL MODEL BUT ANY GOOD 10 CC GLOW-PLUG ENGINE WILL DO.
LINE LENGTH ON ORIGINAL WAS 90 FEET. WITH THIS LENGTH STRAIN ON THE PILOT'S ARM IS EASED, BUT MODEL WILL STILL STAY OUT IN ROUGH WEATHER WHEN EXECUTING ANY MANOEUVRE.
MATERIALS REQUIRED.
STRIP
10 STRIPS OF 1/4" X 1/4" X 36" HARD BALSA
SHEET
13 SHEETS OF 1/16" X 3" X 36" BALSA
2 " " 1/8" X 3" X 36" "
4 " " 3/16" X 3" X 36" HARD BALSA
MISCELLANEOUS.
2 BALSA BLOCKS 13 1/2" X 1 9/16" X 1 7/16"
2 PIECES OF 1MM PLY 10 1/2" X 3"
1 PIECE OF 1/8" PLY 2 3/4" X 1 3/4"
1 PIECE OF 1/4" PLY 2 3/4" X 3 3/4"
2 PIECES OF HARDWOOD 7/16" X 1/2" X 10 1/2"
1 PIECE " " 1/2" X 1/2" X 1 13/16"
8 1/2" OF 3/16" DIA DOWLING
1 DURAL BELLCRANK 16 SWG.
1 DURAL ELEVATOR HORN 16 SWG.
36" OF 10 SWG PIANO WIRE
36" " 14 " " "
15" " 16 " " "
12" " 18 " " "
LEAD OUT GUIDE FORM FROM 18 SWG.
HOLE FOR VENT PIPE
FRONT
BEND LINES
DEVELOPMENT OF TANK. MAKE FROM OLD FOOD TIN.
HOLE FOR FILLER PIPE.
HOLE FOR FEED PIPE
DEVELOPMENT OF TANK END PLATES.
10 CC 'NORDEC' SHOWN.
CUT AWAY SHEETING TO ALLOW FOR ENGINE INSTALLATION & CHOKING.
CHAIN DOTTED LINES SHOW FUEL TANK POSITION, SECURE TANK WITH SCRAP BALSA.
D2 1MM PLY END
1/16" SHEET.
1 MM PLY GLUED TO INSIDE OF FUSELAGE SIDES (SEE SKETCH)
7/16" X 1/2" X 10 1/2" HARDWOOD ENGINE BEARERS.
2 PIECES 3/16" SHEET WING FAIRING CEMENT TO WING.
2 LAMINATIONS OF 1/16" SHEET CROSS GRAINED CEMENTED TO BOTTOM OF FUSELAGE.
MERCURY OR SIMILAR 1/8" BOX 'J' BOLTS MAY BE USED IF DESIRED.
1/8" DURAL CONTROL PLATE.
1/2" X 7/16" CONTROL PLATE PIVOT PIECE SECURE PIVOT PIECE TO BEARERS WITH 2 WOODSCREWS
14 SWG
TAILPLANE & ELEVATOR FROM 3/16" HARD SHEET.
1/8" X 3/16" SPRUCE GLUED TO L.E. OF ELEVATOR.
LINEN HINGES
ELEVATOR HORN POSITION
PLANK TOP DECKING WITH 1/8" X 1/4" STRIPS
REINFORCING PIECES HERE.
DORSAL FIN FROM 3/16" HARD SHEET.
FIN & RUDDER FROM 3/16" HARD SHEET OFFSET 3/8 TO STARBOARD.
MERCURY OR SIMILAR ELEVATOR HORN.
SMALL BALSA BLOCKS EACH SIDE OF FIN.
1/16" SHEET.
3/16" HARD SHEET
16 SWG SKID.
SLOTS IN FUSELAGE SIDE FOR LEAD-OUTS.
3/16" DIA DOWEL FRONT & REAR USE EIGHT STRONG 1/4" X 1/24" RUBBER BANDS FOR HOLDING WING IN POSITION.
1/16" HARD SHEET FUSELAGE SIDES.
14 SWG PUSH ROD
LEAD-OUTS
3/8" RAD
FUSELAGE FORMERS
F1 FROM 1/4" PLY F2 FROM 1/8" PLY
F3, F4, F5, F6 FROM 1/8" HARD SHEET.
D1, D2, D3, D4, D5 & D6 FROM 1/8" HARD SHEET.
FORM U/C FROM 10 SWG. 2 1/2" DIA STREAMLINE WHEELS.
WING RIB. 23 OFF 1/16" SHEET.
1MM PLY REINFORCING PIECE.
CUT SLOT 3/32" DEEP FOR PUSH ROD
1/2" X 7/16" BEARERS.
SECURE CONTROL PLATE PIVOT PIECE TO BEARER WITH 2 WOODSCREWS
EXPLODED VIEW OF FUSELAGE ASSEMBLY.
CUT 2 FUSELAGE SIDES FROM 1/16" SHEET. CUT 2 FUSELAGE REINFORCING PIECES FROM 1MM PLY & GLUE TO FUSELAGE SIDES. GLUE BEARERS TO PLY REINFORCING PIECES. GLUE F1 TO FUSELAGE SIDES. GLUE & SCREW INTO POSITION CONTROL PLATE PIVOT PIECE. TURN FUSELAGE UPSIDE DOWN ON BUILDING BOARD WITH F1 HANGING OVER EDGE & CEMENT FUSELAGE REAR TOGETHER THEN CEMENT INTO POSITION F3, 4, 5, & F6 MAKE FUEL TANK & INSTAL IN FUSELAGE SECURING WITH SCRAP PIECES OF BALSA. GLUE INTO POSITION F2. SHEET BOTTOM OF FUSELAGE FROM F4 TO REAR. SHEET BOTTOM OF FUSELAGE AT WING POSITION WITH 2 LAYERS OF 1/16" SHEET CROSS GRAINED. FINISH BOTTOM OF FUSELAGE BY INSTALLING DOWELS & SHEETING FRONT PORTION. CEMENT IN D1, 2, 3, 4, 5 & D6. PLANK WITH 1/8" X 1/4" STRIPS.
SPLICE TOP SHEETING HERE
1/4" SQ HARD L.E.
1/16" SHEET TOP & BOTTOM
SPLICE BOTTOM SHEETING HERE
SPLICE SPARS THE SAME AS SHEETING & REINFORCE WITH SMALL STRIPS.
1/4" SQ HARD TOP & BOTTOM.
1/16" X 3/16" CAPPING STRIPS
POSITION OF LEAD-OUT GUIDE IN PORT WING TIP
BALSA BLOCK WING TIP HOLLOW OUT PORT TIP


TASS-130
DESIGNED BY
GEORGES MESZETLER
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE.
3/-
HUNGARIAN WORLD RECORD RUBBER DURATION MODEL
WHOLE MODEL IS TISSUE COVERED & CLEAR DOPED.
PROPELLER BLANK ELEVATION
PROP BLANK PLAN
CARVE RIGHT HAND FROM PINE OR HARD BALSA.
TAIL UNIT MOUNT
RIB TO SPAR JOINT
TYPICAL FUSELAGE SECTION
NOSE FORMER



Tass-130. World Record Rubber Duration Model by Georges Meszetler, Hungary.

DESCRIPTION.—Here is another Hungarian world record holder to consider. Nothing could be functionally simpler than this machine, with its long untapered fuselage of almost triangular section—for the flattish topped square-pear-shaped cross-section, is virtually little more. Ply formers at the nose and at intervals along the body help to preserve the shape which, after all, is theoretically quite sound. The usual rubber problem has something to do with the untapered shape for " bunjy," cannot very well be tensioned and only a rope the length of the fuselage could be employed. The usual halving method of fixing ribs and main-spar already noted in the BM-1, is again employed, as is the very neat bent wire wing fixing bracket, giving a maximum of attachment with a minimum of wire. Propeller is a good old paddle-shaped slow turning design, to retard the initial high revving proclivities of the motor as much as possible, with most of its area well out at the tips without any pretence at elegance. There is no doubt that this simple kind of job that can be quickly built, but is strong enough to take quite a lot of rough treatment without being knocked out of trim or over-weighted by extensive repairs, has much to commend it. Its world record flight of 1 : 1 : 22, must not be considered as a solitary achievement. In the hands of its designer, it has been regularly vieing for premier places in mid-European circles for some time against Benedek's BM-1 and several other machines nearly as good. It is a great pity that Hungary did not send over a Wakefield team this year—even if only to be flown proxy—for they certainly have done wonders since 1944, when their model activities took on new life after the stagnant war years.

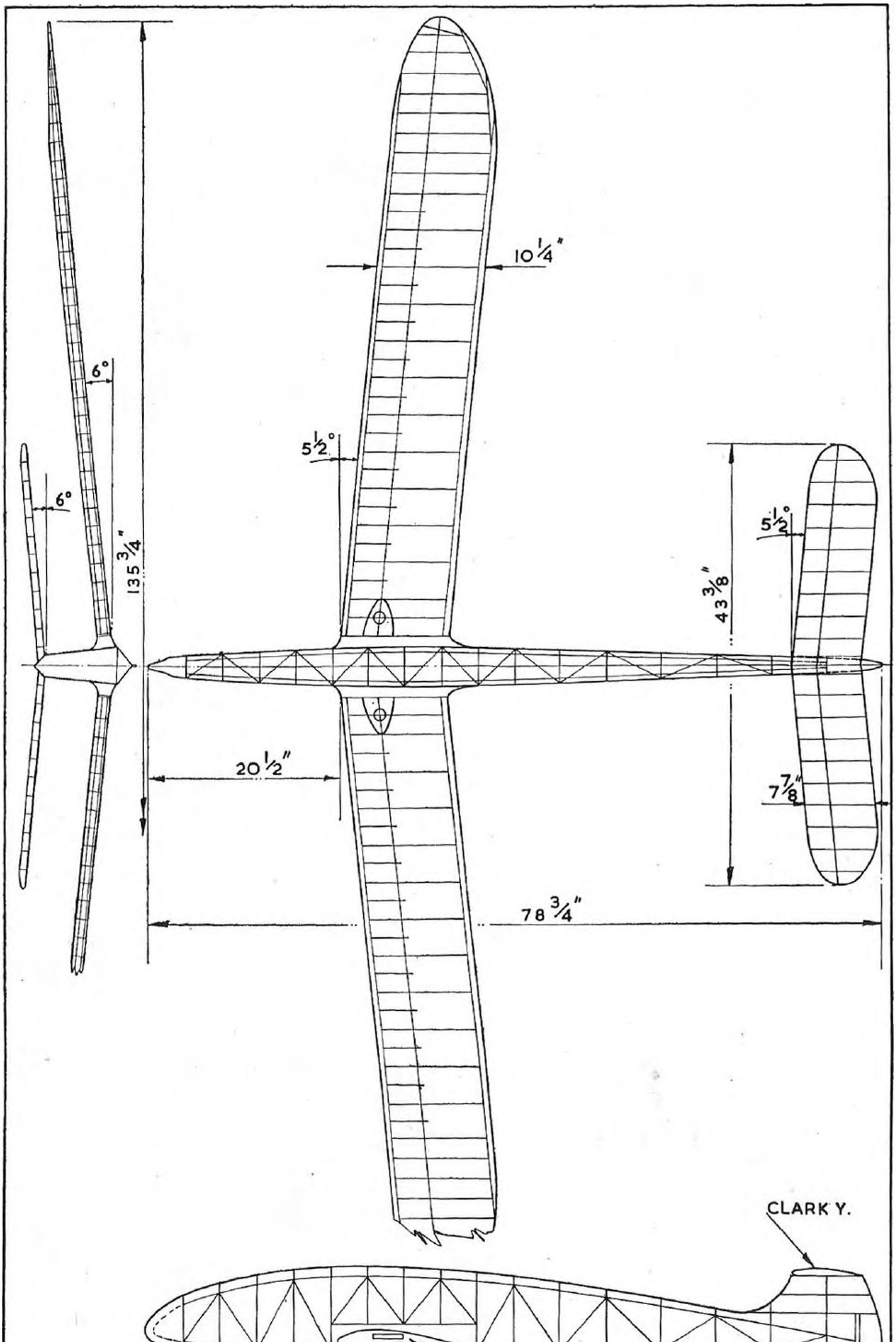


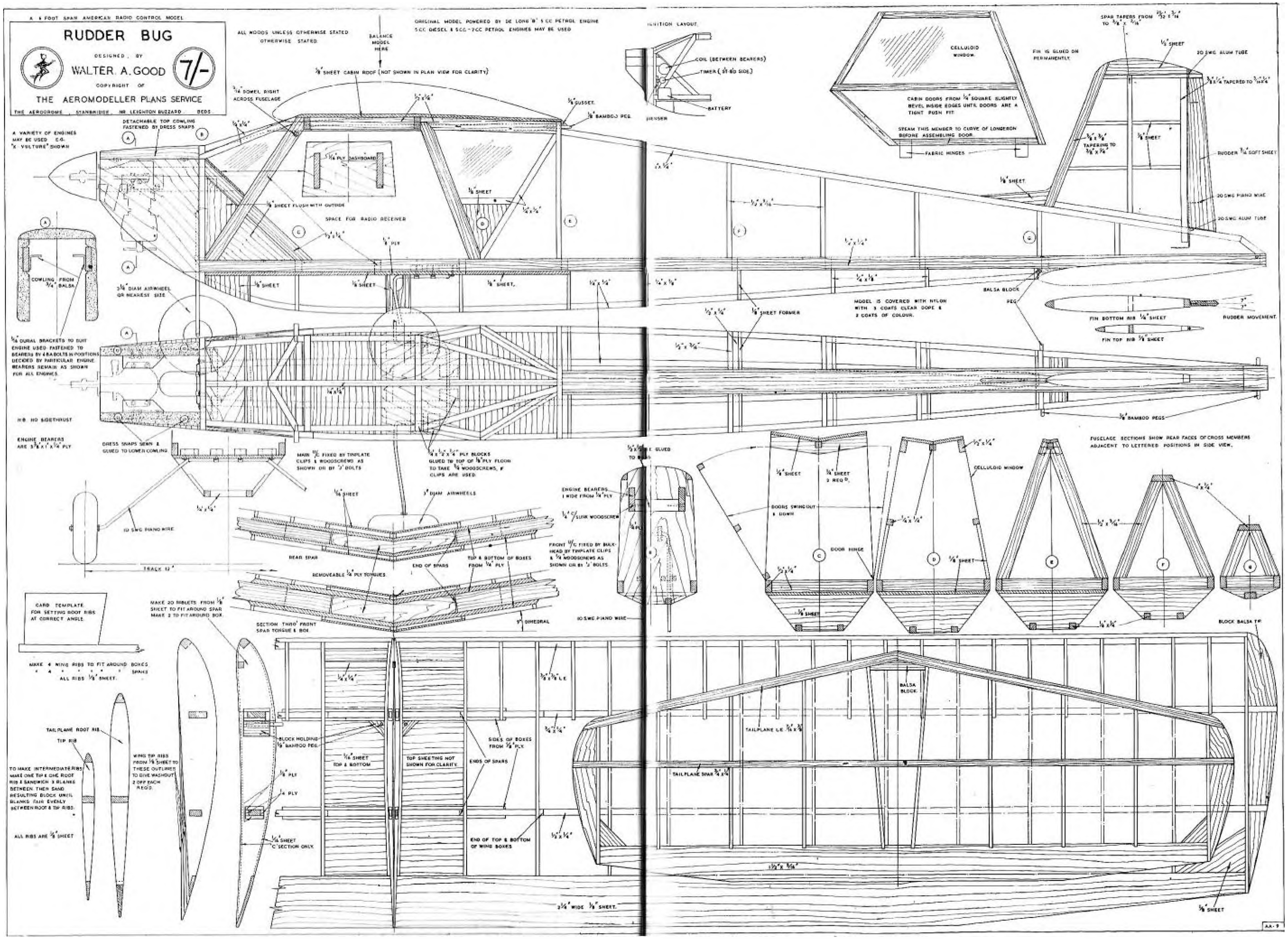
Condor. • Low-wing High Performance Sailplane by Hans Bollinger, Switzerland.

DESCRIPTION.—Last year's *Aeromodeller Annual* mentioned Swiss interest in the low-wing formula and contained details of their experimental D.129. Development has continued and they can now be described as of almost equal status with so-called conventional high wing gliders. Comparing the Condor with D.129, we find that the ugly functional lines of the experimental model have disappeared and given place to attractive curves and elliptic wing tips, while remaining faithful to the NACA series for mainplane—though now 6412 in place of 6409—and Clark Y for tailplane. Condor is built to the old span limit for F.A.I. machines and comes within the present area rule. Items to note are the slight sweep back of wings and tailplane—$5\frac{1}{2}°$ in each case—parallel chord and equal dihedral to both main and tailplanes. Arnold Degen, Swiss model section secretary, claims that low wings have special advantages in tow-launching as the CG is brought lower and nearer the launching hooks with improvement in line stability. Certainly exponents seem to launch them at the limit length of the lines. Another departure from traditional Swiss practice in Condor is the increased use of balsa, so long despised in their model circles, and the adoption of tongue and box wing fixing in lieu of one-piece wing attached by rubber bands.

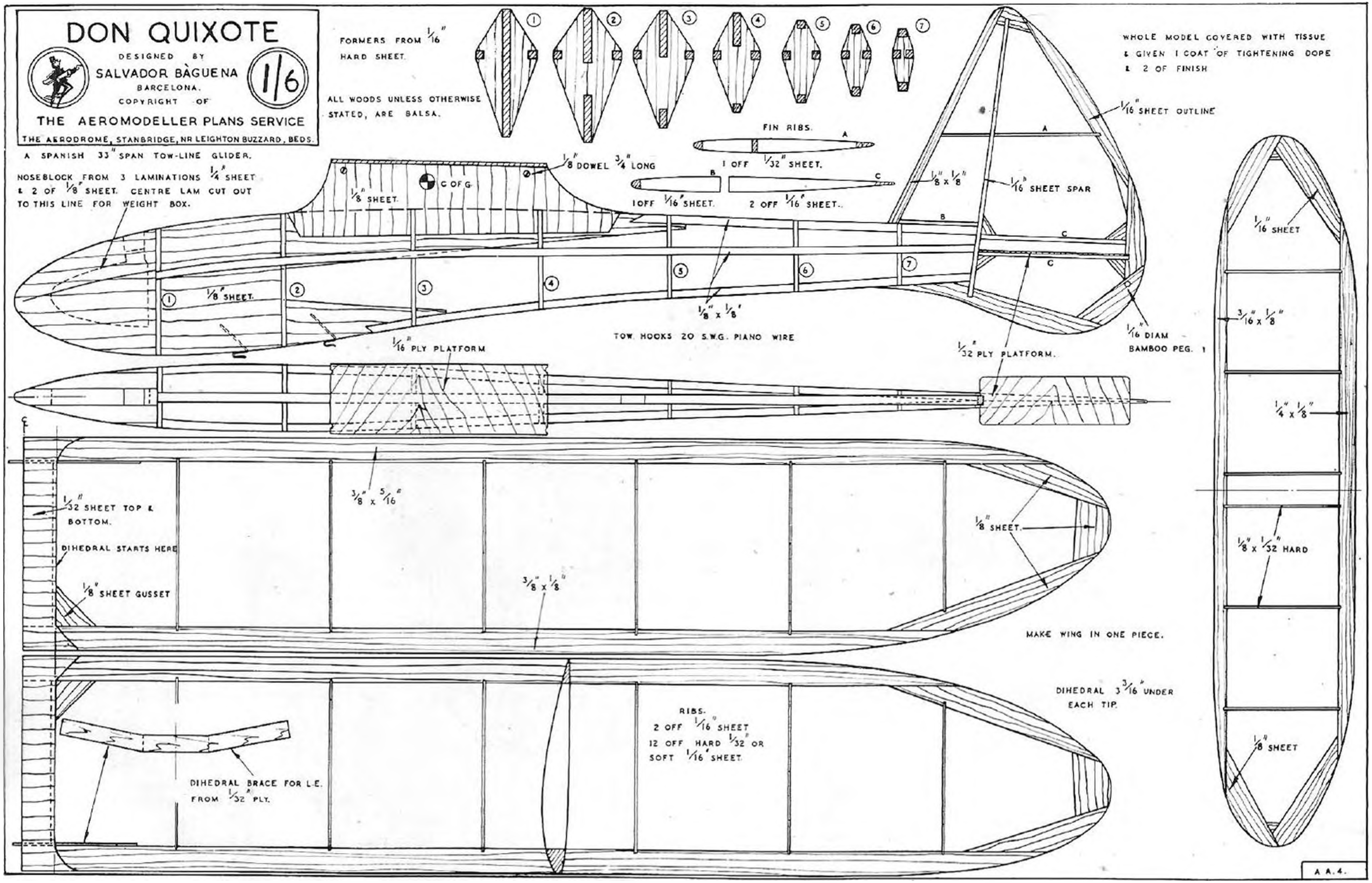
The model illustrated, is of course, not the Condor but another smaller design by Bodmer, flown in the Belgian International Meeting with considerable success. The cult of the low-wing is taking such a hold, that Bodmer even brought along a low-wing Wakefield—which, alas, pranged without a chance to show its possibilities.

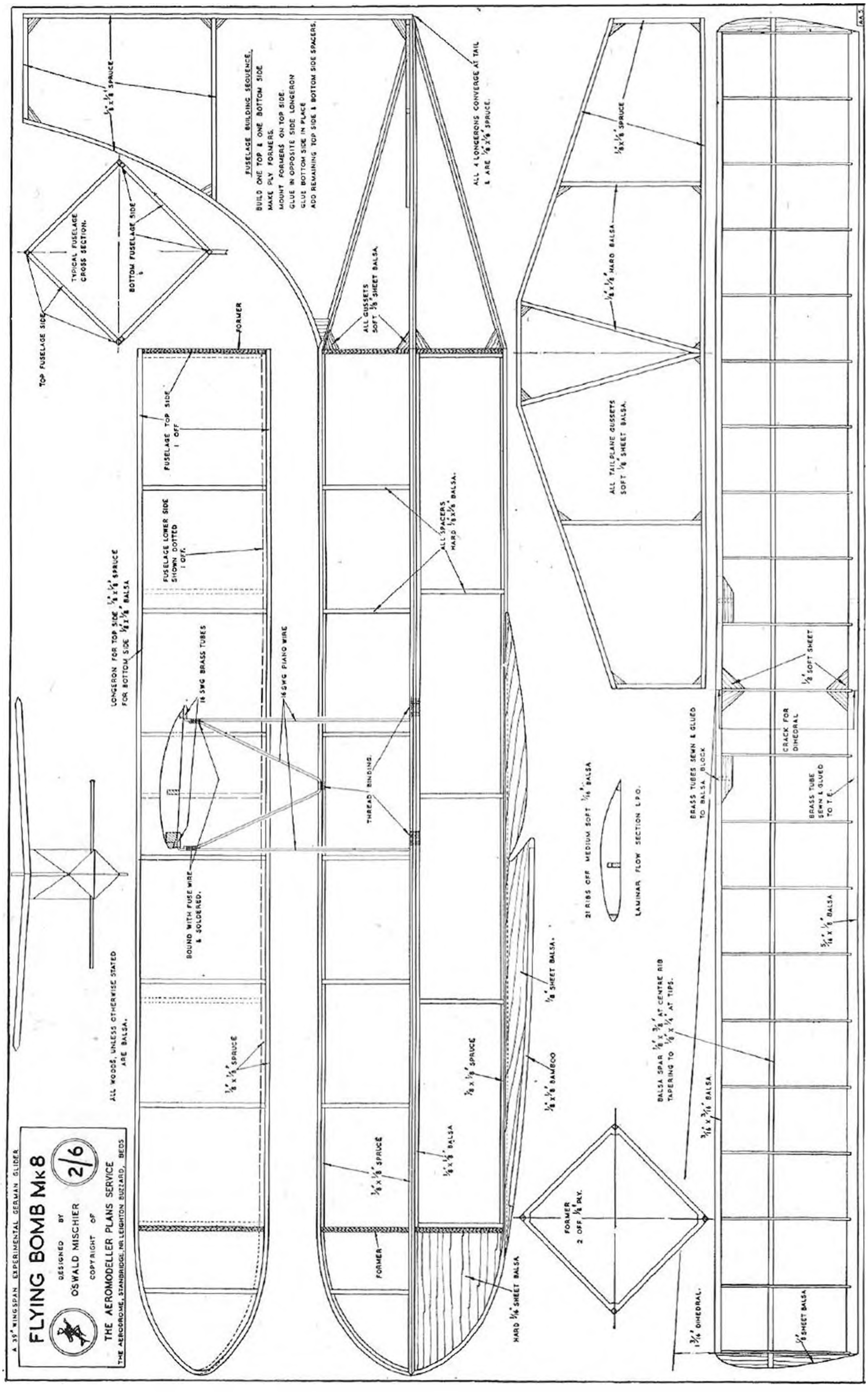
PERFORMANCE.—Condor has a gliding rate of fall estimated at 1 : 18, that is to say, equal to some of the best fullsize sailplanes. Normal flights from 100 m. (328 ft.) line without thermals average 3-4 minutes. Best flights officially recorded are 65 min., 36 min. and 11 min., and it would be a fine model high wing or otherwise that could better them. This is by no means exceptional, as the smaller model illustrated, clocked over 10 min. at Evere, and several others are all able to meet the best of the high wings on level terms. If the incentive to try something different is there—why not a low-wing sailplane for next season ?

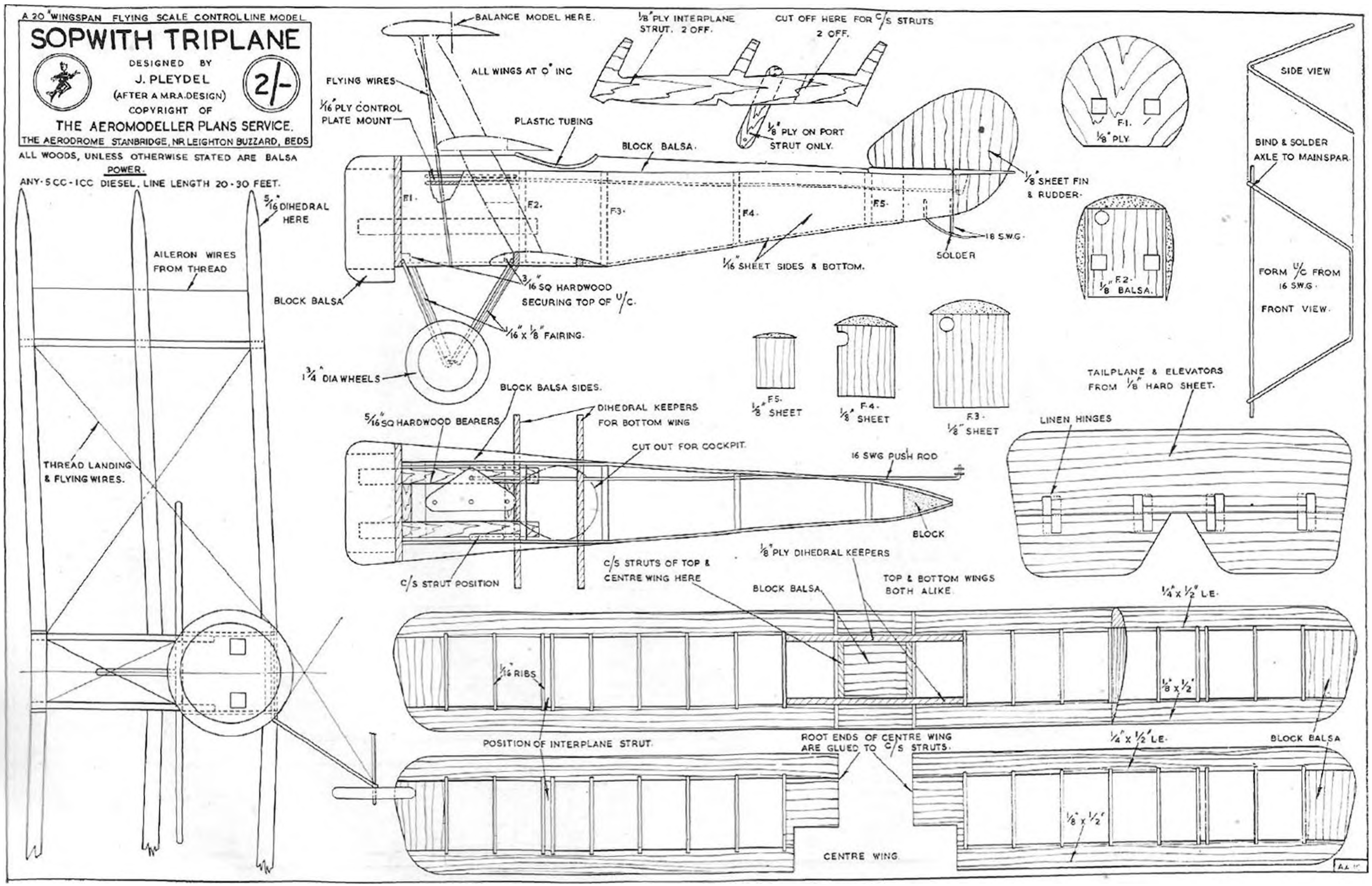

10¼"
6°
5½°
6°
135¾"
5½°
43⅜"
20½"
7⅞"
78¾"
CLARK Y.
N.A.C.A. 6412.

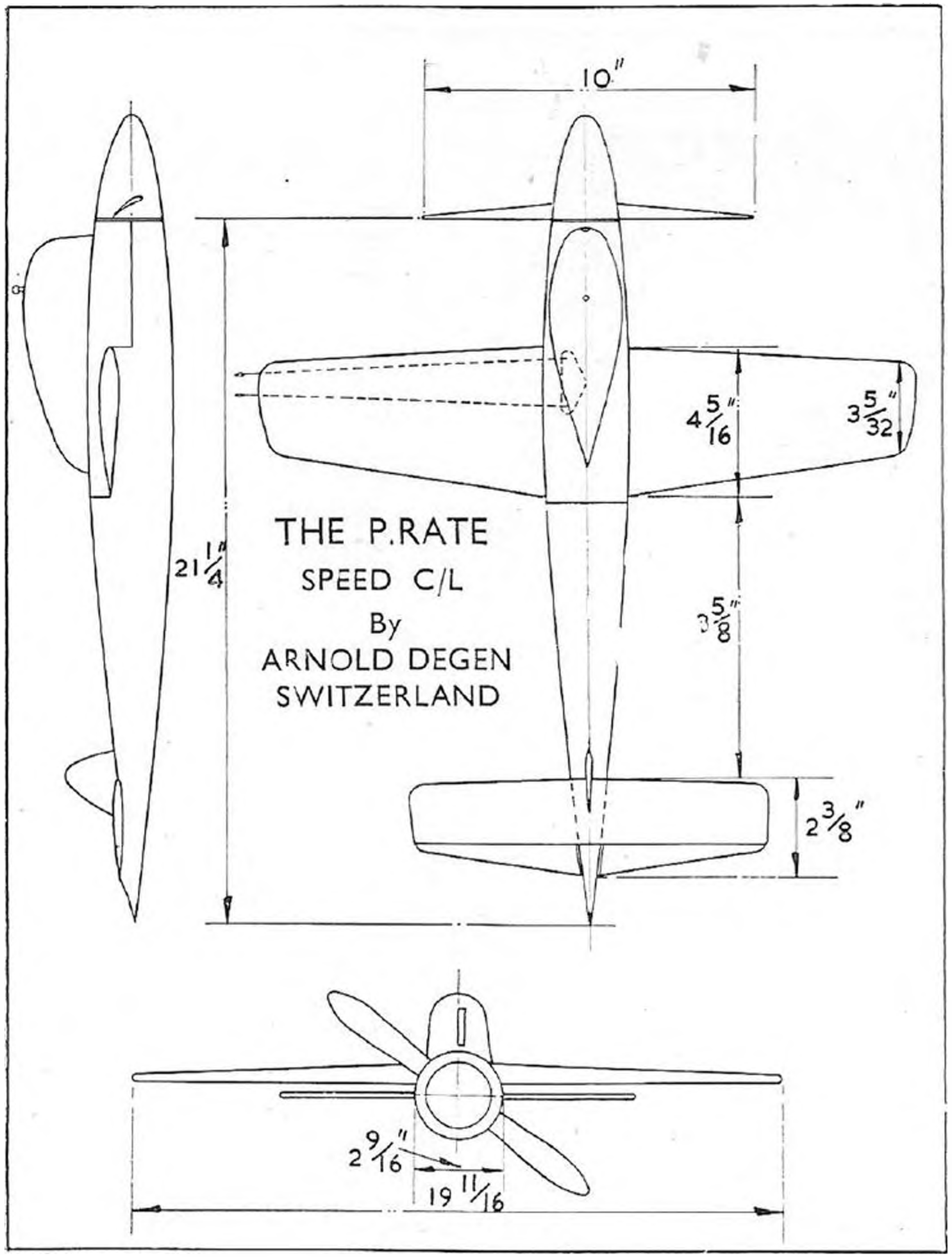


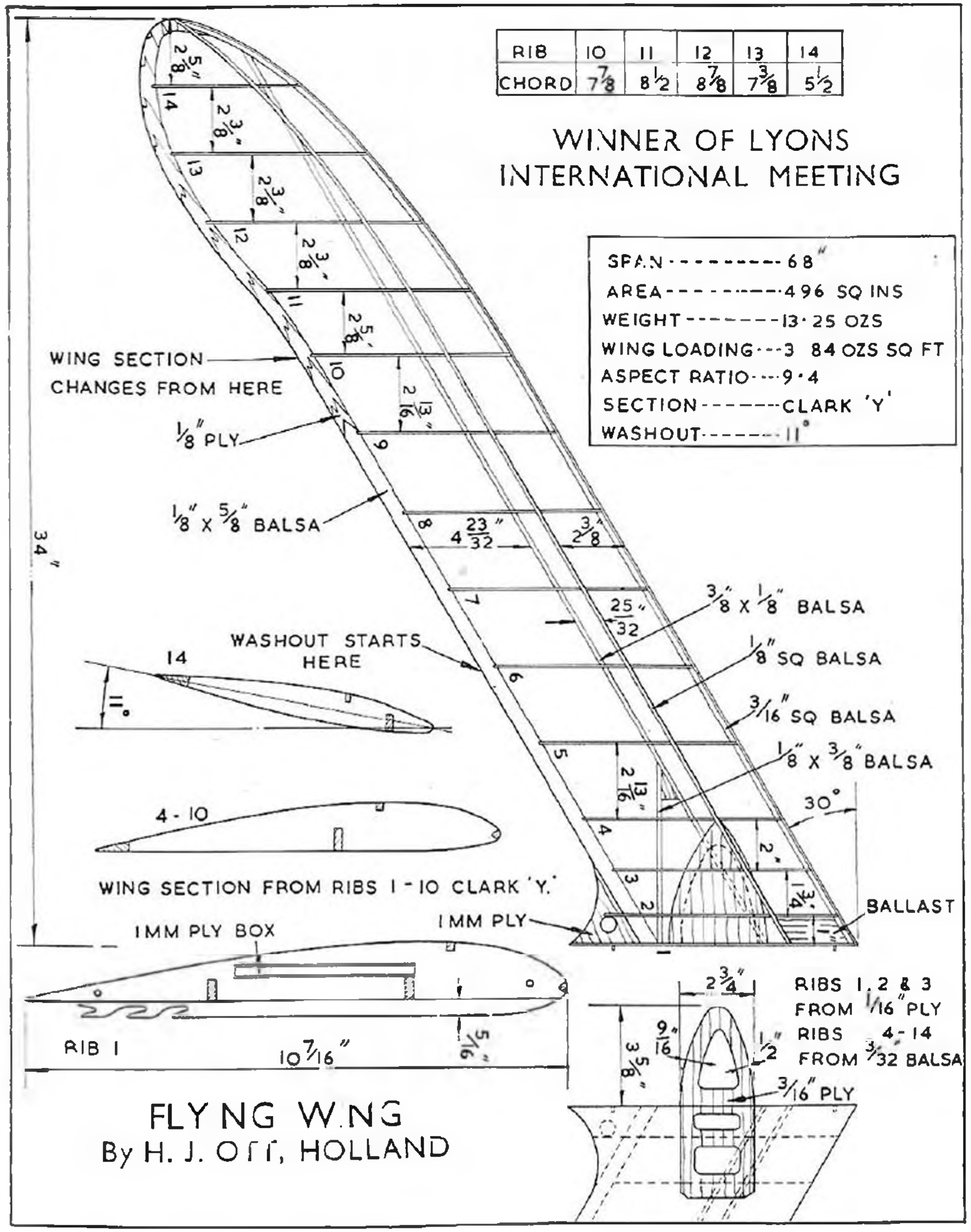
A 6 FOOT SPAN AMERICAN RADIO CONTROL MODEL
RUDDER BUG
DESIGNED BY
WALTER. A. GOOD
7/-
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS.
A VARIETY OF ENGINES MAY BE USED E.G. "X VULTURE" SHOWN
DETACHABLE TOP COWLING FASTENED BY DRESS SNAPS
ALL WOODS UNLESS OTHERWISE STATED
BALANCE MODEL HERE
SPACE FOR RADIO RECEIVER
IGNITION LAYOUT
BATTERY
CELLULOID WINDOW
FABRIC HINGES
FIN IS GLUED ON PERMANENTLY
RUDDER MOVEMENT
BALSA BLOCK
N.B. NO SIDETHRUST
10 SWG PIANO WIRE
CELLULOID WINDOW
DOOR HINGE
CARD TEMPLATE FOR SETTING ROOT RIBS AT CORRECT ANGLE
TAILPLANE ROOT RIB
TIP RIB
DIHEDRAL
TOP SHEETING NOT SHOWN FOR CLARITY
ENDS OF SPARS
BALSA BLOCK
BLOCK BALSA TIP
AA-9

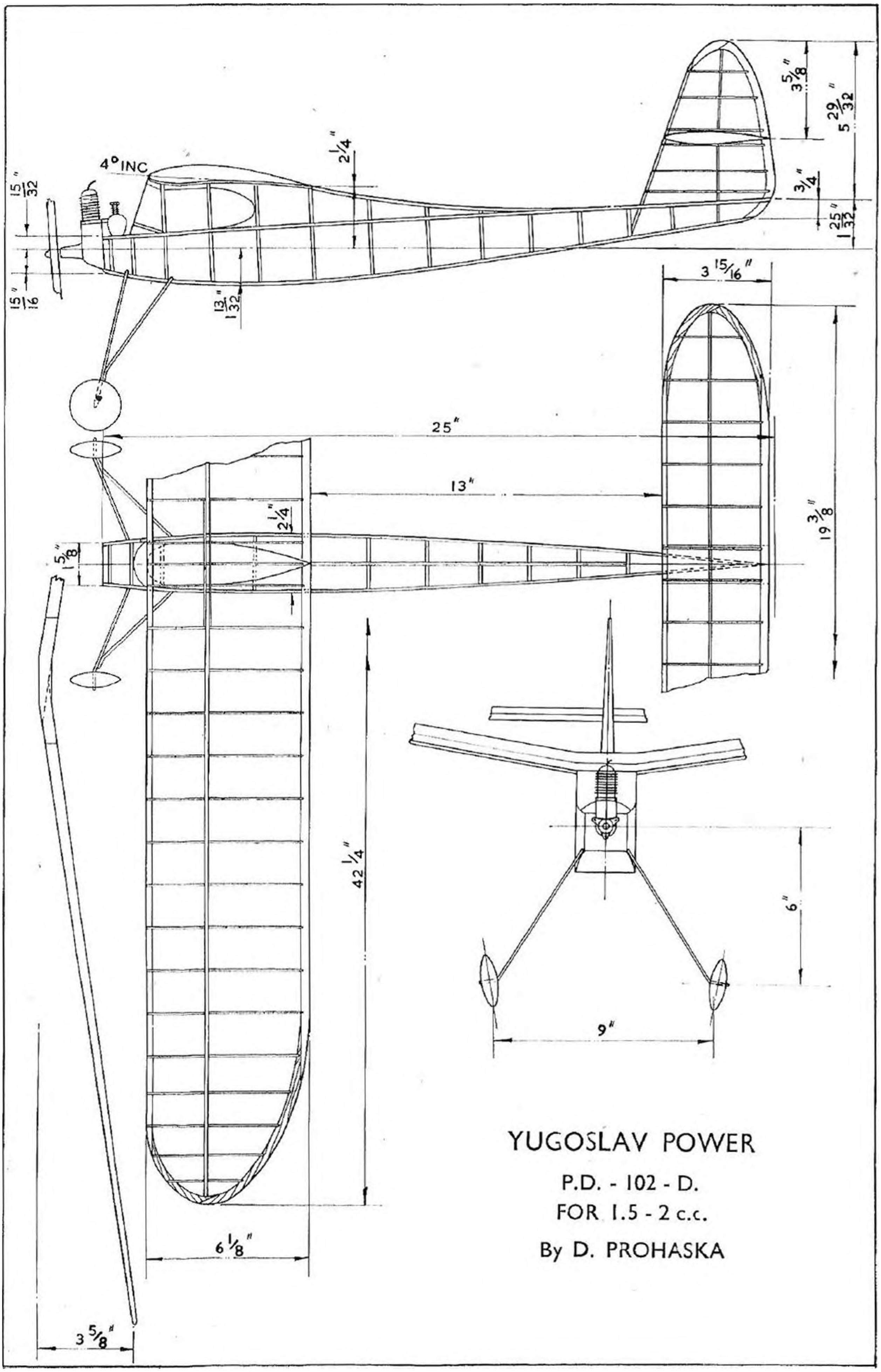

DON QUIXOTE
DESIGNED BY
SALVADOR BÀGUENA
BARCELONA.
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS.
1/6
A SPANISH 33" SPAN TOW-LINE GLIDER.
NOSEBLOCK FROM 3 LAMINATIONS 1/4" SHEET & 2 OF 1/8" SHEET. CENTRE LAM CUT OUT TO THIS LINE FOR WEIGHT BOX.
FORMERS FROM 1/16" HARD SHEET.
ALL WOODS UNLESS OTHERWISE STATED, ARE BALSA.
FIN RIBS.
1 OFF 1/32" SHEET.
1 OFF 1/16" SHEET.
2 OFF 1/16" SHEET.
1/8" DOWEL 3/4" LONG
1/8" SHEET.
C OF G.
1/8" SHEET.
1/8" x 1/8"
TOW HOOKS 20 S.W.G. PIANO WIRE
1/16" PLY PLATFORM
1/32" PLY PLATFORM.
1/8" x 1/8"
1/16" SHEET SPAR
1/16" SHEET OUTLINE
1/16" DIAM BAMBOO PEG.
WHOLE MODEL COVERED WITH TISSUE & GIVEN 1 COAT OF TIGHTENING DOPE & 2 OF FINISH
1/16" SHEET
3/16" x 1/8"
1/4" x 1/8"
1/8" x 1/32" HARD
1/8" SHEET
1/32" SHEET TOP & BOTTOM.
DIHEDRAL STARTS HERE
1/8" SHEET GUSSET
3/8" x 5/16"
3/8" x 1/8"
1/8" SHEET.
MAKE WING IN ONE PIECE.
DIHEDRAL 3 3/16" UNDER EACH TIP.
RIBS.
2 OFF 1/16" SHEET
12 OFF HARD 1/32" OR SOFT 1/16" SHEET.
DIHEDRAL BRACE FOR L.E. FROM 1/32" PLY.
A A. 4.


A 39" WINGSPAN EXPERIMENTAL GERMAN GLIDER
FLYING BOMB Mk8
DESIGNED BY
OSWALD MISCHIER
COPYRIGHT OF
2/6
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS
ALL WOODS, UNLESS OTHERWISE STATED ARE BALSA.
FUSELAGE BUILDING SEQUENCE.
TYPICAL FUSELAGE CROSS SECTION.
TOP FUSELAGE SIDE
BOTTOM FUSELAGE SIDE
FORMER
THREAD BINDING.
16 SWG BRASS TUBES
16 SWG PIANO WIRE
LAMINAR FLOW SECTION L.P.O.
CRACK FOR DIHEDRAL
3/4" DIHEDRAL.


A 20" WINGSPAN FLYING SCALE CONTROL LINE MODEL
SOPWITH TRIPLANE
DESIGNED BY
J. PLEYDEL
(AFTER A M.R.A. DESIGN)
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE.
THE AERODROME STANBRIDGE, NR LEIGHTON BUZZARD, BEDS
2/-
ALL WOODS, UNLESS OTHERWISE STATED ARE BALSA
POWER.
ANY ·5 CC - 1 CC DIESEL, LINE LENGTH 20-30 FEET.
5/16" DIHEDRAL HERE
AILERON WIRES FROM THREAD
THREAD LANDING & FLYING WIRES.
BALANCE MODEL HERE.
ALL WINGS AT 0° INC
FLYING WIRES
1/16" PLY CONTROL PLATE MOUNT
PLASTIC TUBING
BLOCK BALSA.
1/8" PLY INTERPLANE STRUT. 2 OFF.
CUT OFF HERE FOR C/S STRUTS 2 OFF.
1/8" PLY ON PORT STRUT ONLY.
F1.
F2.
F3.
F4.
F5.
1/8" SHEET FIN & RUDDER.
18 S.W.G.
SOLDER
1/16" SHEET SIDES & BOTTOM.
BLOCK BALSA
3/16" SQ HARDWOOD SECURING TOP OF U/C.
1/16" x 1/8" FAIRING.
1 3/4" DIA WHEELS
F1. 1/8" PLY
F2. 1/8" BALSA.
F5. 1/8" SHEET
F4. 1/8" SHEET
F3. 1/8" SHEET
SIDE VIEW
BIND & SOLDER AXLE TO MAINSPAR.
FORM U/C FROM 16 S.W.G.
FRONT VIEW.
TAILPLANE & ELEVATORS FROM 1/8" HARD SHEET.
LINEN HINGES
BLOCK BALSA SIDES.
5/16" SQ HARDWOOD BEARERS
DIHEDRAL KEEPERS FOR BOTTOM WING
CUT OUT FOR COCKPIT.
16 SWG PUSH ROD
BLOCK
C/S STRUT POSITION
C/S STRUTS OF TOP & CENTRE WING HERE
1/8" PLY DIHEDRAL KEEPERS
BLOCK BALSA.
TOP & BOTTOM WINGS BOTH ALIKE.
1/4" x 1/2" L.E.
1/16" RIBS
1/8" x 1/2"
POSITION OF INTERPLANE STRUT.
ROOT ENDS OF CENTRE WING ARE GLUED TO C/S STRUTS.
1/4" x 1/2" L.E.
BLOCK BALSA
1/8" x 1/2"
CENTRE WING.


THE P.RATE
SPEED C/L
By
ARNOLD DEGEN
SWITZERLAND
10"
4 5/16"
3 5/32"
21 1/4"
3 5/8"
2 3/8"
2 9/16"
19 11/16


RIB 10 11 12 13 14
CHORD 7 7/8 8 1/2 8 7/8 7 3/8 5 1/2
WINNER OF LYONS
INTERNATIONAL MEETING
SPAN 68"
AREA 496 SQ INS
WEIGHT 13·25 OZS
WING LOADING 3 84 OZS SQ FT
ASPECT RATIO 9·4
SECTION CLARK 'Y'
WASHOUT 11°
WING SECTION
CHANGES FROM HERE
1/8" PLY
1/8" X 5/8" BALSA
34"
WASHOUT STARTS
HERE
11°
3/8" X 1/8" BALSA
1/8" SQ BALSA
3/16" SQ BALSA
1/8" X 3/8" BALSA
30°
BALLAST
WING SECTION FROM RIBS 1 - 10 CLARK 'Y.'
1MM PLY BOX
1MM PLY
RIB 1
10 7/16"
5/16"
2 3/4"
3 5/8"
9/16"
1/2"
3/16" PLY
RIBS 1, 2 & 3
FROM 1/16" PLY
RIBS 4 - 14
FROM 3/32 BALSA
FLY NG W.NG
By H. J. OTT, HOLLAND

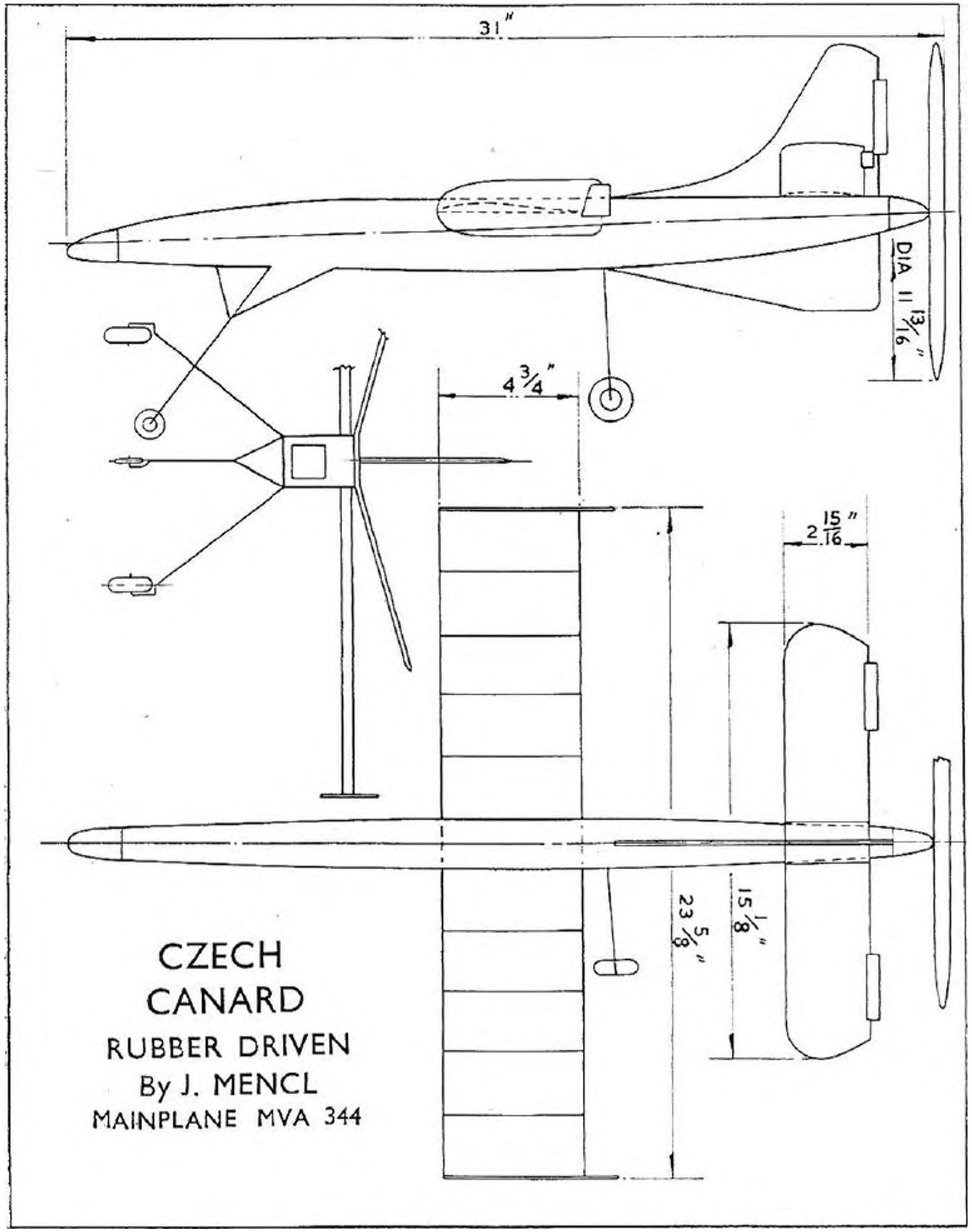


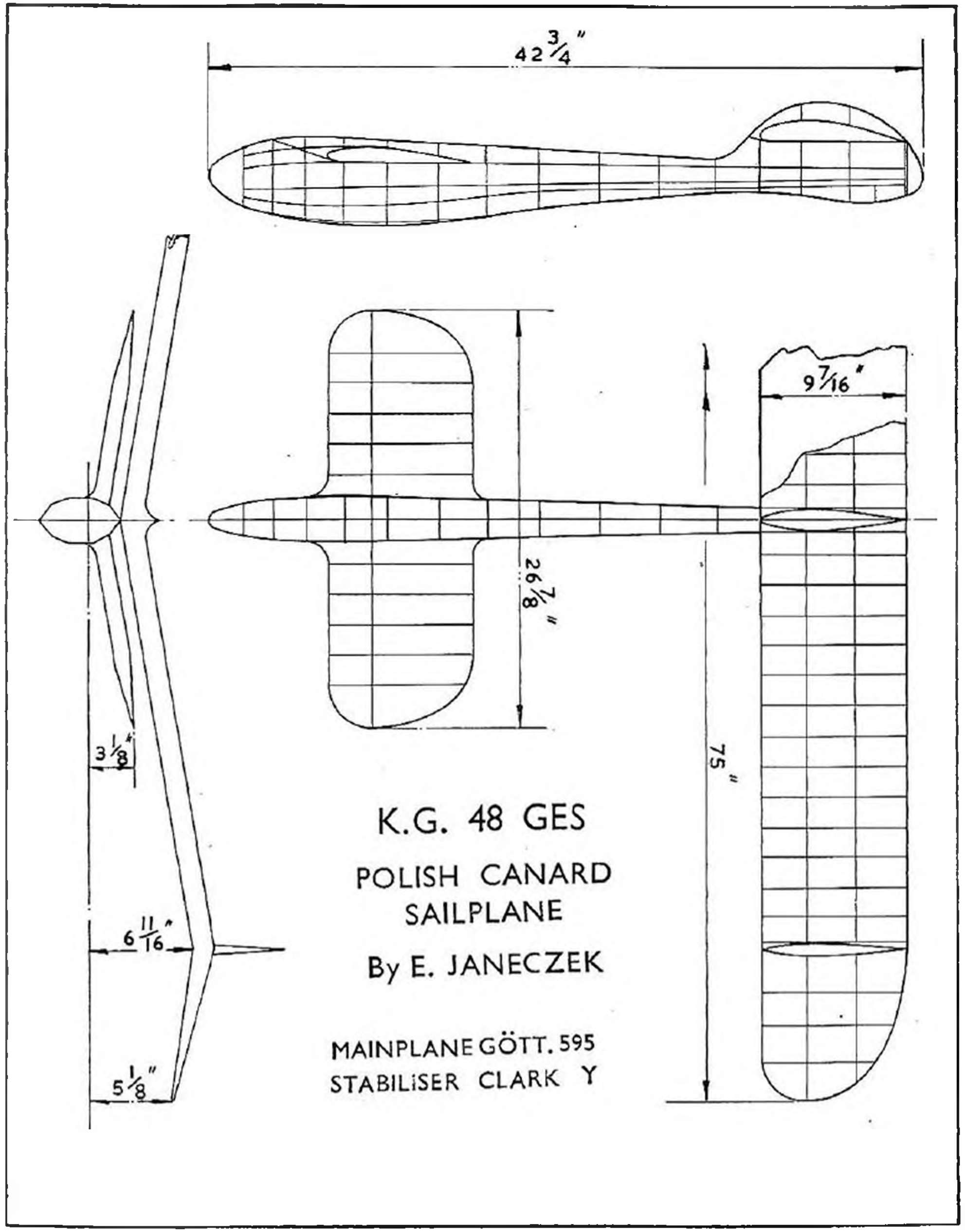
YUGOSLAV POWER

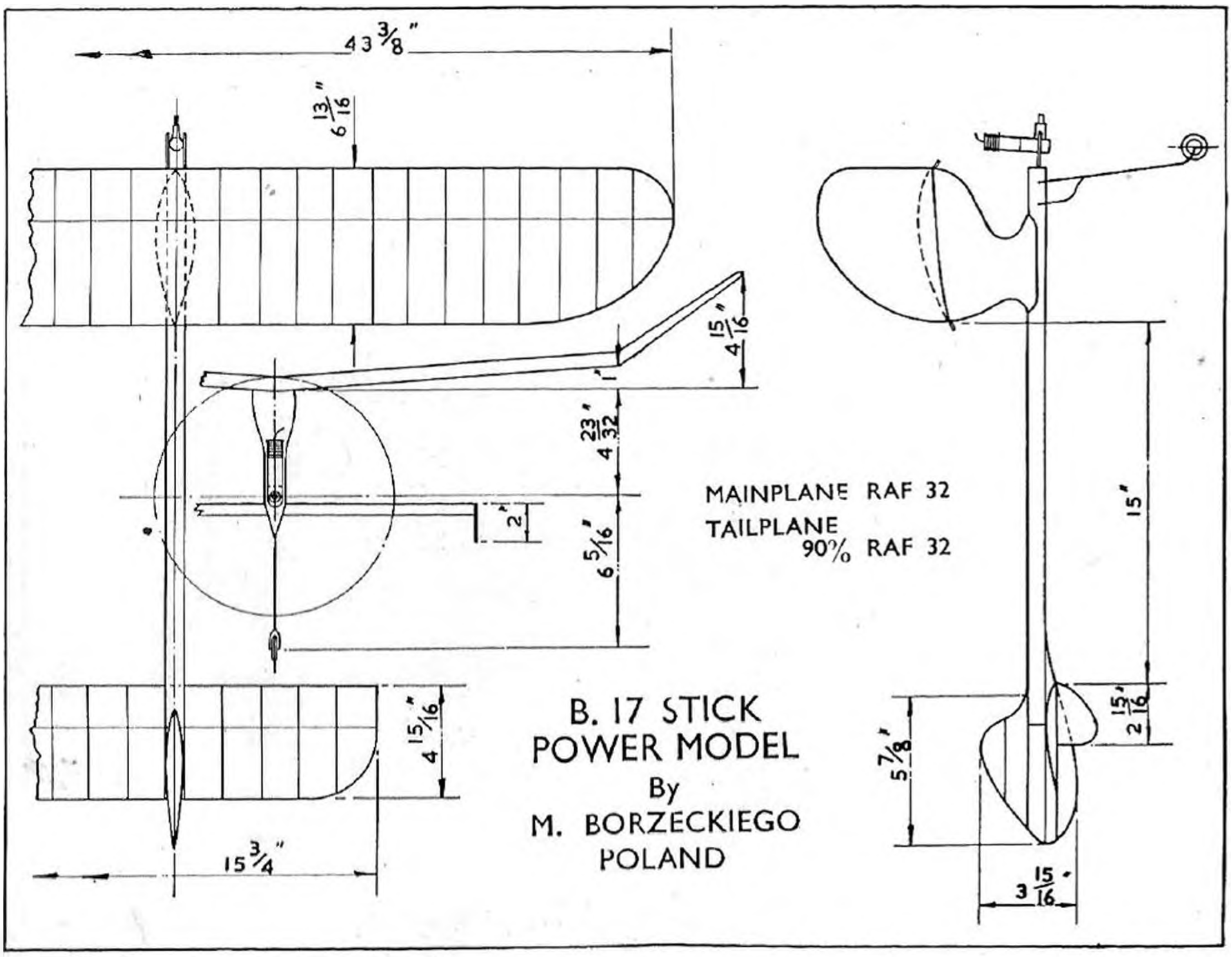
P.D. - 102 - D.

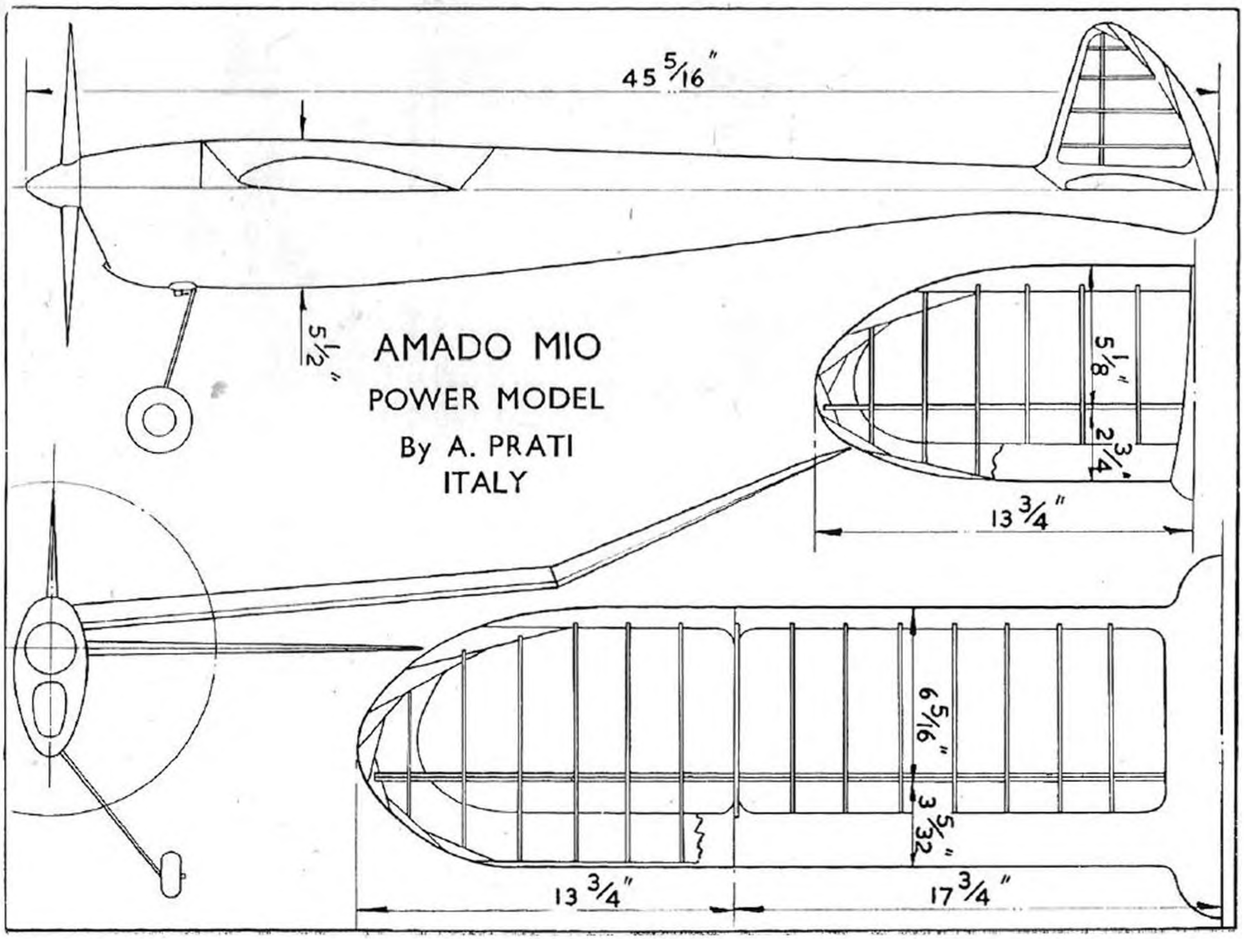
FOR 1.5 - 2 c.c.

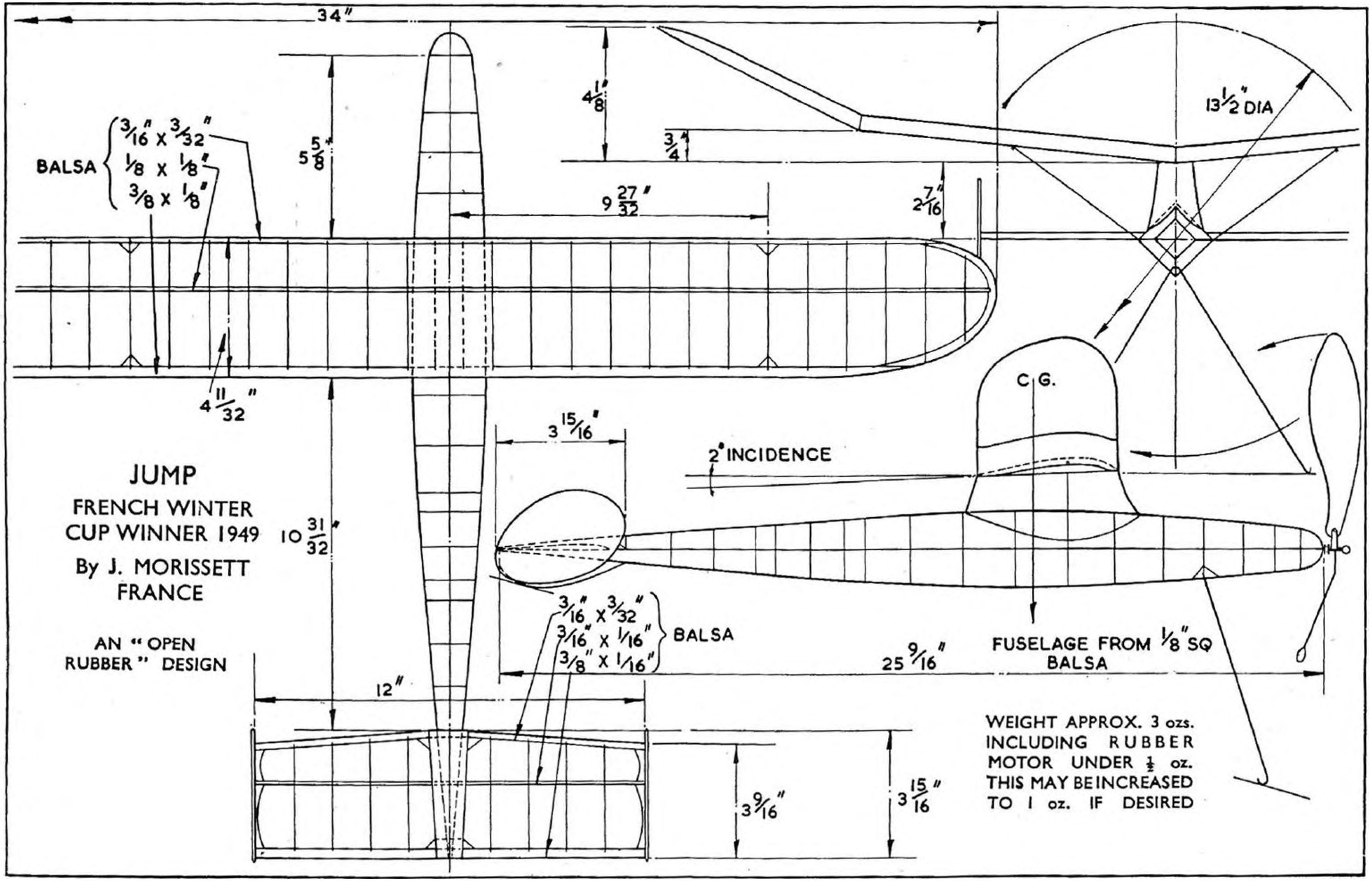
By D. PROHASKA

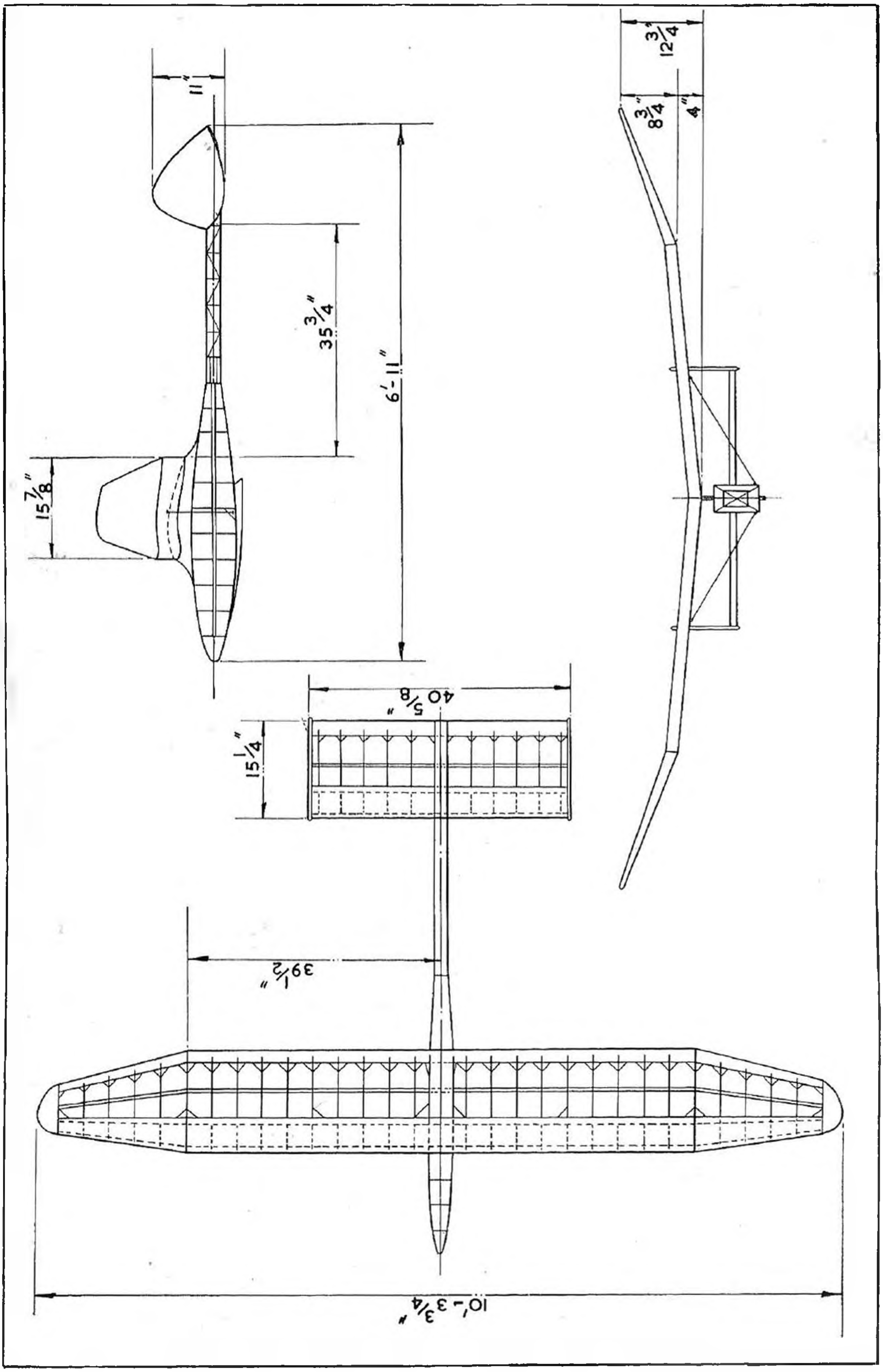

31"
DIA 11 13/16"
4 3/4"
2 15/16"
15 1/8"
23 5/8"
CZECH
CANARD
RUBBER DRIVEN
By J. MENCL
MAINPLANE MVA 344

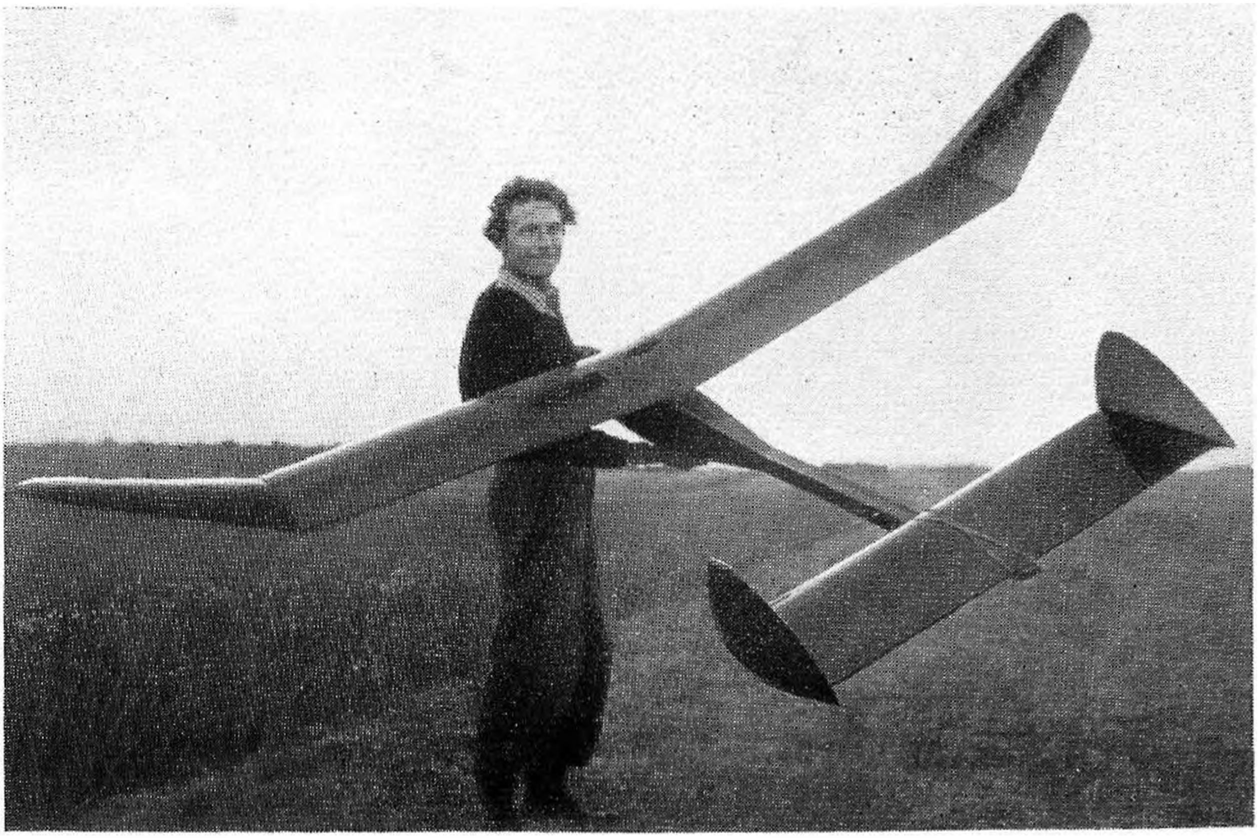

42 3/4"
9 7/16"
26 7/8"
75"
3 1/8"
6 11/16"
5 1/8"
K.G. 48 GES
POLISH CANARD
SAILPLANE
By E. JANECZEK
MAINPLANE GÖTT. 595
STABILISER CLARK Y


43 3/8"
6 13/16"
4 15/16"
1"
4 23/32"
2"
6 5/16"
MAINPLANE RAF 32
TAILPLANE
90% RAF 32
15"
B. 17 STICK
POWER MODEL
By
M. BORZECKIEGO
POLAND
4 15/16"
15 3/4"
2 15/16"
5 7/8"
3 15/16"


45 5/16"
5 1/2"
AMADO MIO
POWER MODEL
By A. PRATI
ITALY
5 1/8"
2 3/4"
13 3/4"
6 5/16"
3 5/32"
13 3/4"
17 3/4"


34"
13 1/2" DIA
4 1/8"
3/4"
5 5/8"
BALSA
3/16" X 3/32"
1/8 X 1/8"
3/8 X 1/8"
9 27/32"
2 7/16"
4 11/32"
C.G.
3 15/16"
2° INCIDENCE
JUMP
FRENCH WINTER
CUP WINNER 1949
By J. MORISSETT
FRANCE
AN "OPEN
RUBBER" DESIGN
10 31/32"
3/16" X 3/32"
3/16" X 1/16"
3/8" X 1/16"
BALSA
FUSELAGE FROM 1/8" SQ
BALSA
25 9/16"
12"
WEIGHT APPROX. 3 ozs.
INCLUDING RUBBER
MOTOR UNDER 1/2 oz.
THIS MAY BE INCREASED
TO 1 oz. IF DESIRED
3 9/16"
3 15/16"


11"
35 3/4"
6'-11"
15 7/8"
40 5/8"
15 1/4"
39 1/2"
10'-3 3/4"
12 3/4"
8 3/4"
4"



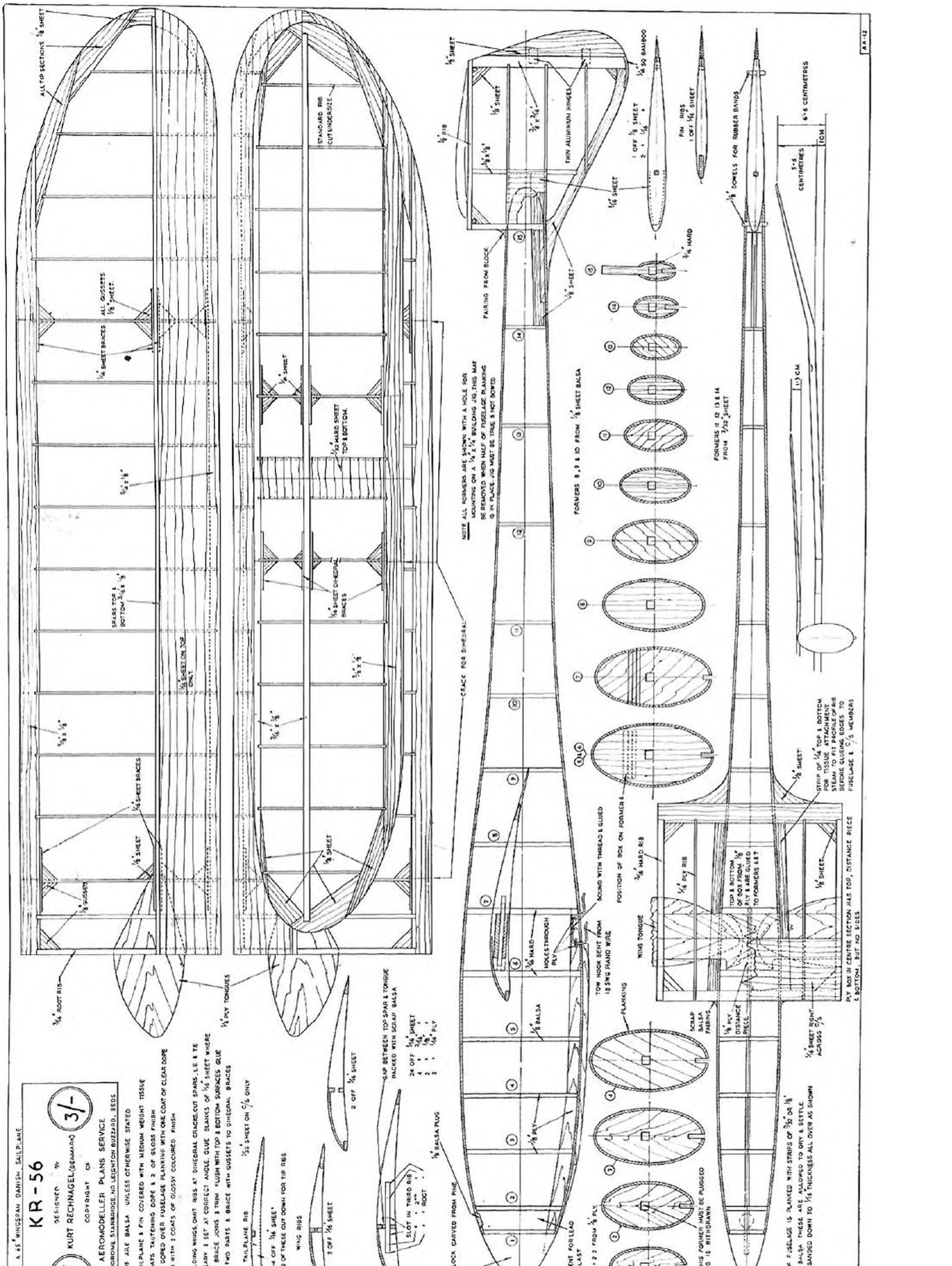
Dragon—French Sailplane Winner by Marc Cheurlot, Brienne-le-Chateau.

DESCRIPTION.—Dragon was designed to make full use of maximum F.A.I. area permitted under the new rules, and as such was first successful contest model to exploit them in Europe. Three points were particularly studied in its design: ease of transport, strength and launching material.

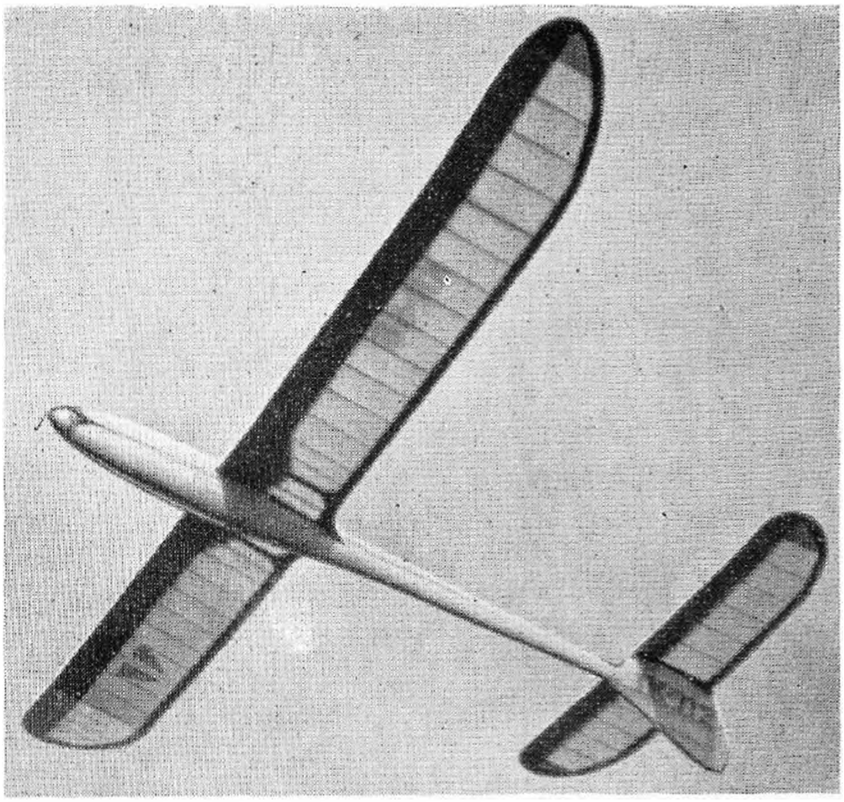
Transport of so large a machine is facilitated by having the wings in four pieces and the fuselage in two, the junction being aft of the pod fuselage, where the boom begins. Strength was obtained fairly lightly by the rectangular fuselage, stout hardwood backbone and skid, and hardwood nose made in two pieces and stuck to an extension of backbone. Bracing was employed to strengthen the boom. Covering is of the strongest paper available commercially in two layers, doped, painted and varnished.

For the towline, a specially strong four-stranded towline was made up as the designer had previously lost contests through his heavy machines breaking their cables. This, though adding to launching drag, and requiring harder work to launch, has paid ample dividends in peace of mind and contest success !

PERFORMANCE.—British modellers will remember Dragon at Eaton Bray in 1948, where after brief tests it was lost on its sole contest flight of 30 min. o.o.s., and so far as we know never recovered ! It was chased and kept in sight for 1½ hours, and finally lost over twenty miles away. Other French contest times include 6 min. at St. Dizier (2nd) and 14 : 53 at Compiegne (2nd). The designer has since built a Dragon II to replace the one lost—which is some token of his belief in its potentialities.


A 65" WINGSPAN DANISH SAILPLANE
KR-56
DESIGNED BY
KURT RECHNAGEL (DENMARK)
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS
3/-
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

KR.56 Nordic Champion Sailplane from Denmark
by K. Rechnagel.

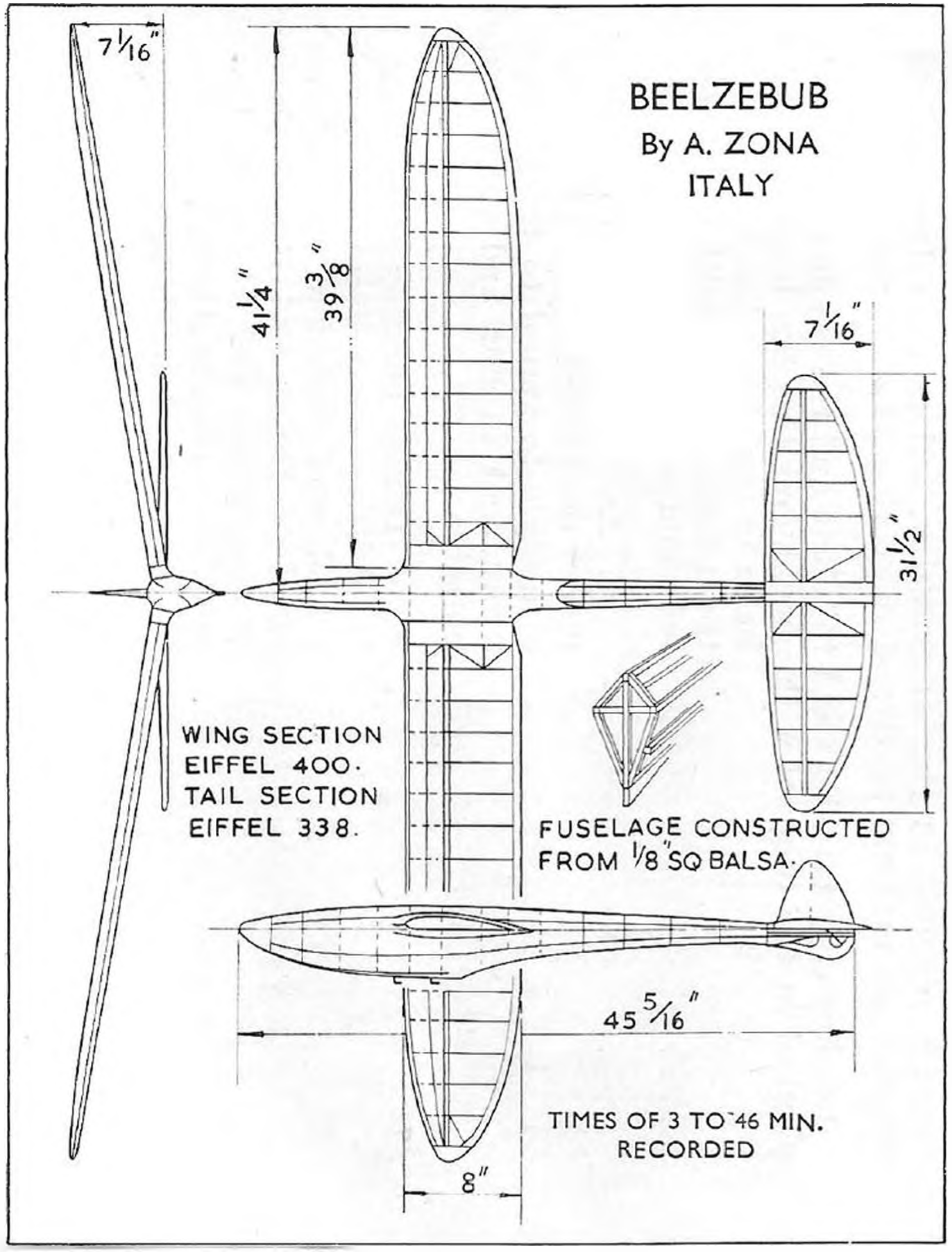


DESCRIPTION. — We have become so used to the typical Nordic model, all wings and very little more than a stick fuselage, that to find something capable of winning a *concours d'elegance* as well as putting up excellent flights, is all the more welcome. Kurt Rechnagel's KR.56 does just this and is the culmination of three years' modelling endeavour when it won the K.L.M. Concours Cup for him at the Danish Summer Camp this year. Rules of this cup presented in 1941 by K.L.M., are that no entrant may present the same model in successive years. Rechnagel has now won it outright with his third consecutive win. In 1947, he built a really large model, pictured in the *Aeromodeller*, but in both 1948 and 1949, concentrated on medium sized and more elegant machines.

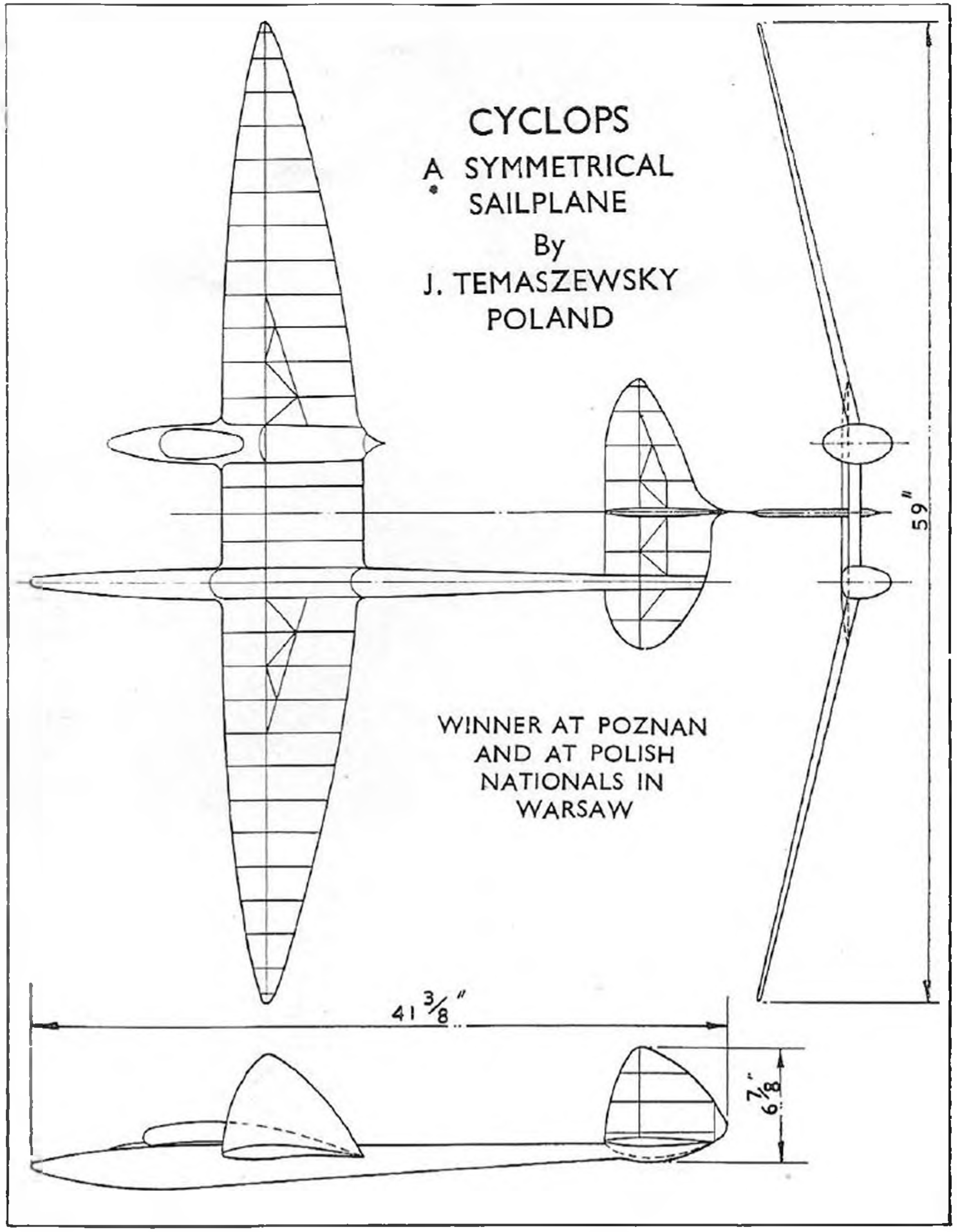
Leading edge on wings and tailplane and the whole of the fuselage was planked in the original with obechi, but this has been replaced by balsa in our plan. The high quality of the planking and finish did much to help him win the cup.

As the illustrations show, the model does indeed look good, and is of a style to appeal to British tastes, being neat in line and easily transportable.

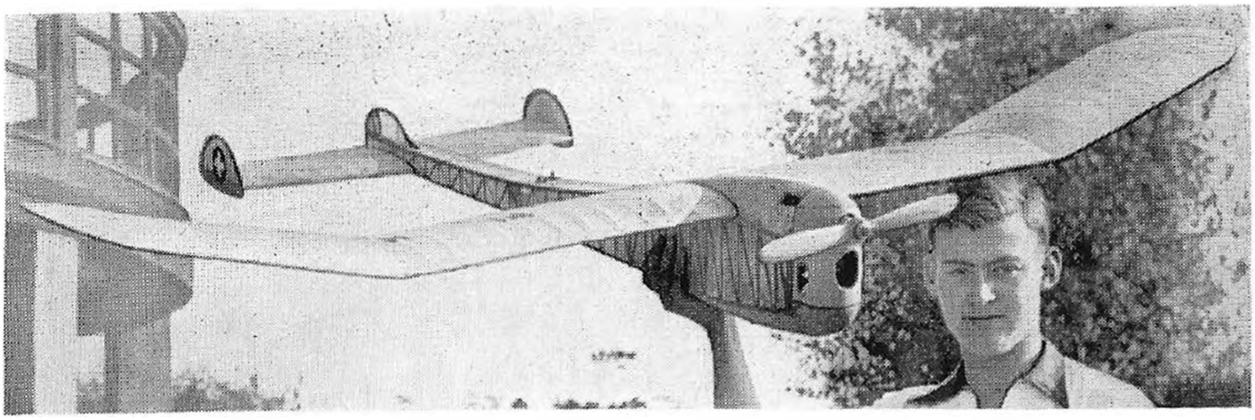
Danish building style seems to be drifting away from the Swedish school and becoming more closely allied to Dutch and British thought as comparison with the other Danish model listed in the *Annual*, the JAL 52 by Jens Arne Lauridsen, will serve to confirm.



BEELZEBUB
By A. ZONA
ITALY
7 1/16"
41 1/4"
39 3/8"
7 1/16"
31 1/2"
WING SECTION
EIFFEL 400.
TAIL SECTION
EIFFEL 338.
FUSELAGE CONSTRUCTED
FROM 1/8" SQ BALSA.
45 5/16"
TIMES OF 3 TO 46 MIN.
RECORDED
8"



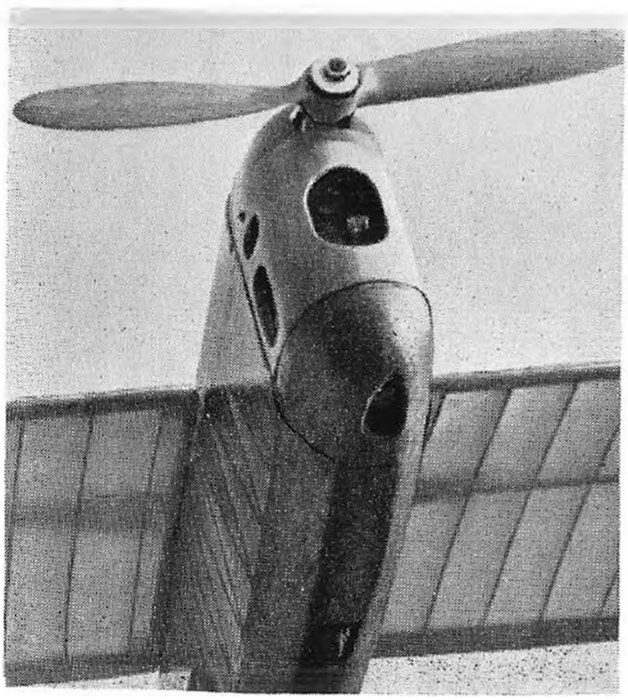
CYCLOPS
A SYMMETRICAL
SAILPLANE
By
J. TEMASZEWSKY
POLAND
59"
WINNER AT POZNAN
AND AT POLISH
NATIONALS IN
WARSAW
41 3/8"
6 7/8"

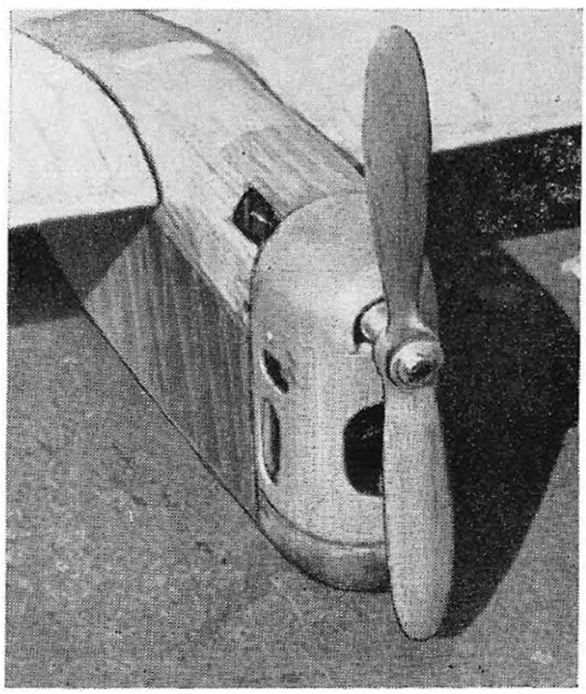


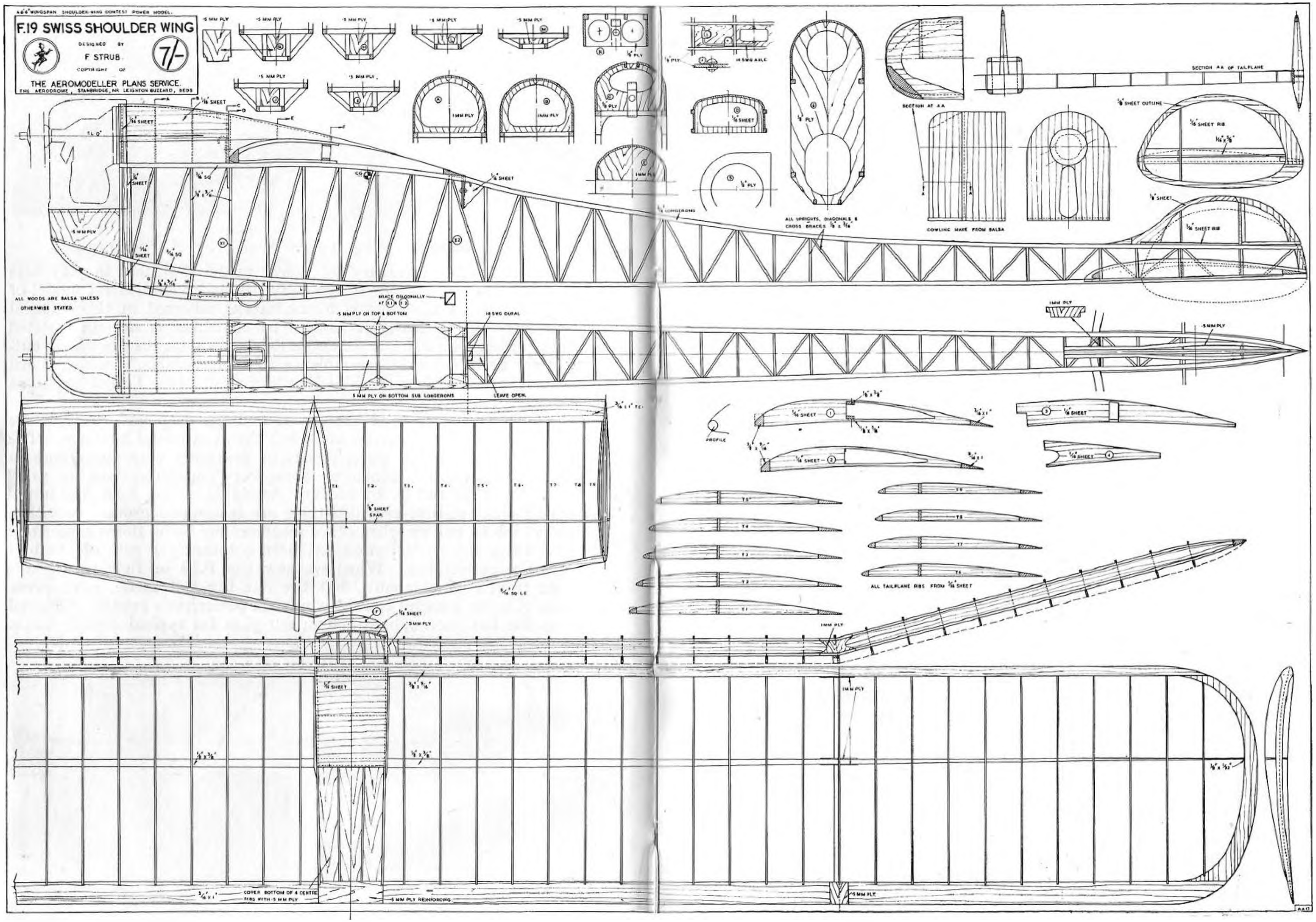
F.19. Swiss Shoulder Wing Power Model, by F. Strub, Basle.

DESCRIPTION.—The tendency of power model designers to play safe and deliver a reshuffle of the conventional pylon contest model or semi-scale precision machine, is by no means reflected in this unusual Swiss design. Arnold Degen assures us that this is not an isolated example, but one of a definite series of models based on the general layout. It certainly bears a family resemblance to Beny Schibler's model, flown at Frauenfeld in 1947, but considerable cleaning up of the design has taken place since then.

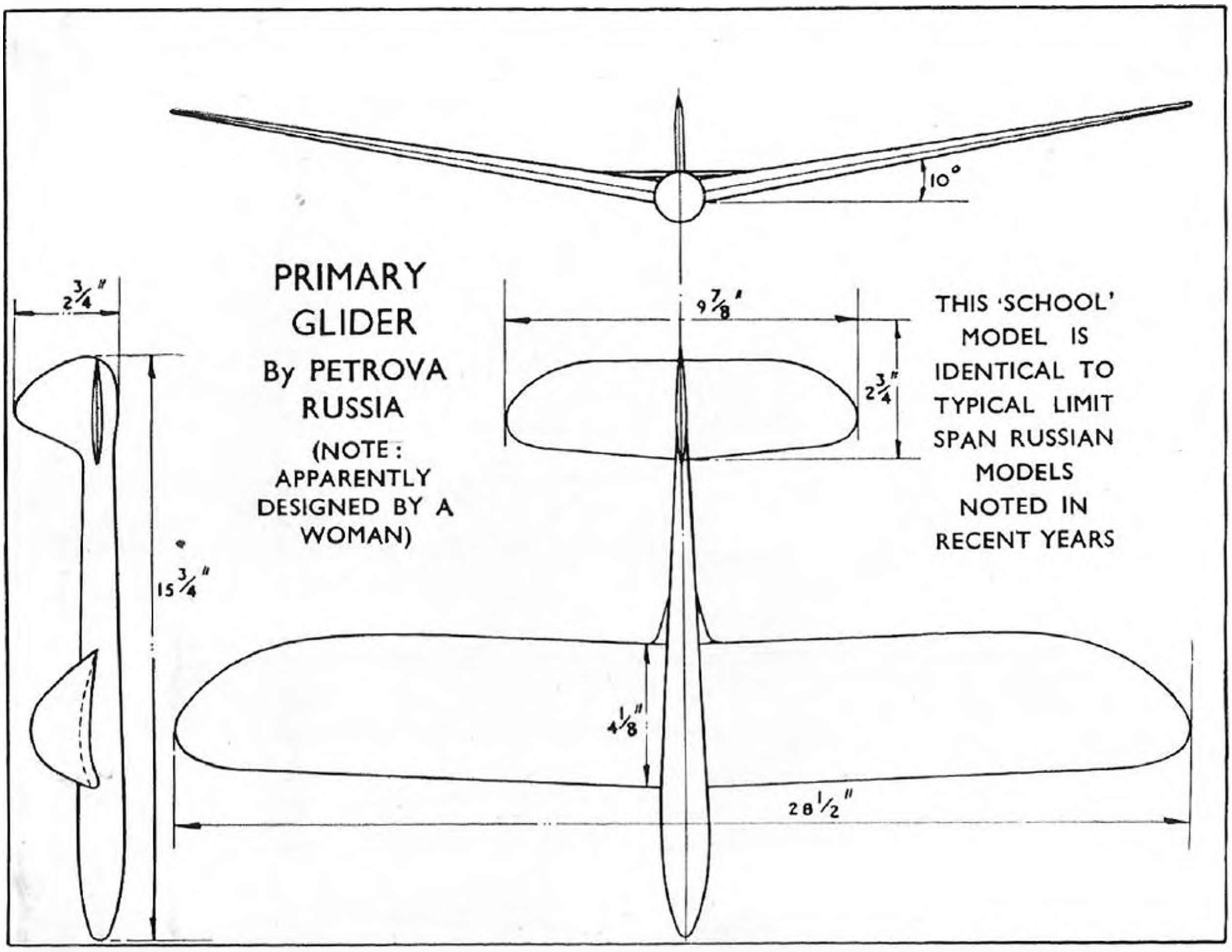
The high mounting of the engine and the deep underbelly, serve together to protect the airscrew in all but the most brutal landings. The tuck-under undercarriage wheel assists in providing very clean lines in flight, but does require tarmac or some very smooth surface for r.o.g. take-off. Take off run is, by modern standards, rather long, and initial climb very shallow, but, provided there are reasonable ground facilities, is an ideal job to put up when other machines are being flown hither and thither. Once full flying speed has been attained the rate of climb is considerably accelerated. When we saw the F.19 in Belgium, it was suffering from engine trouble, but the one flight it made, gave every evidence of being a useful contest winner in power/ratio events. Original Tigre engine has been substituted in our plan for typical British make.

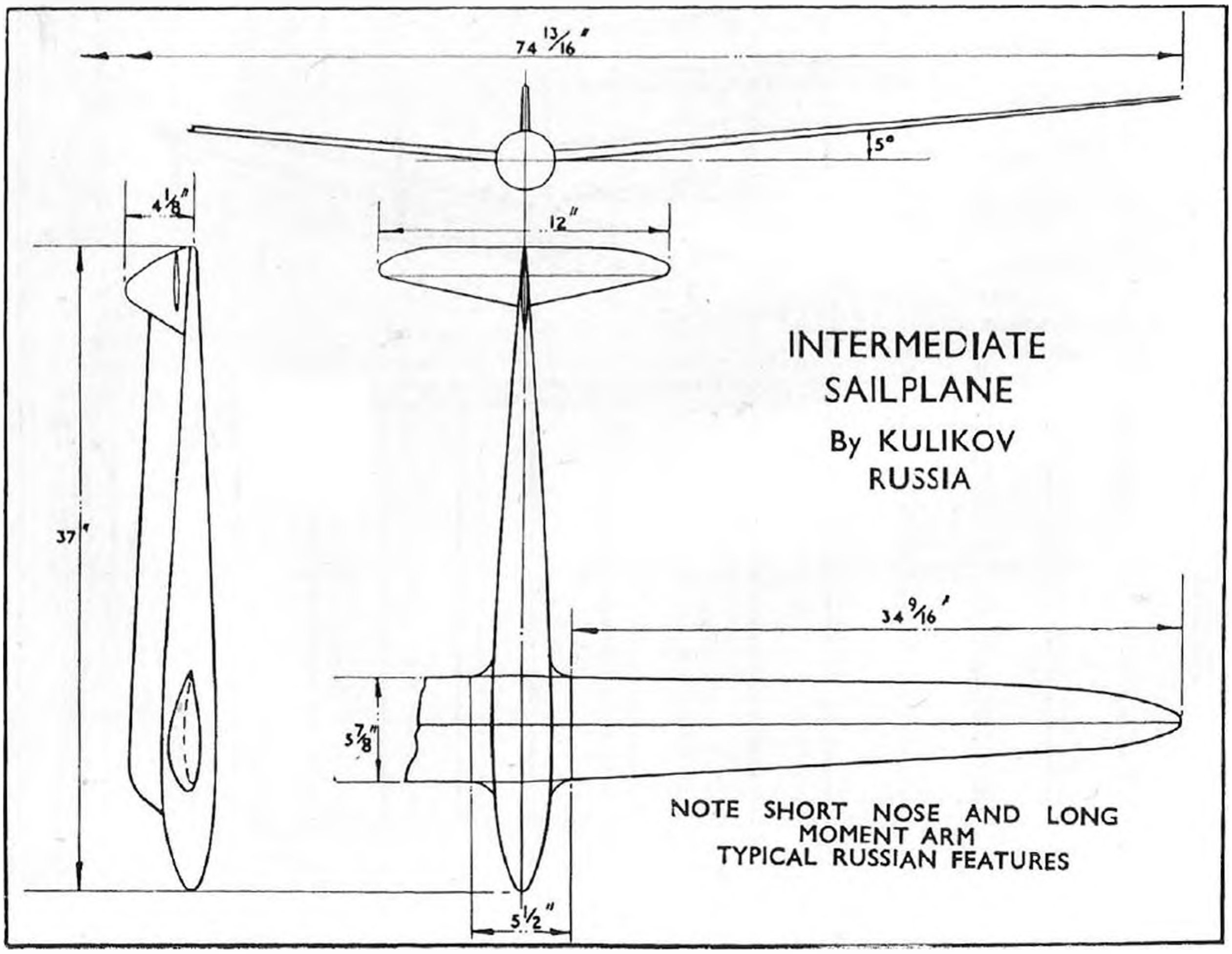


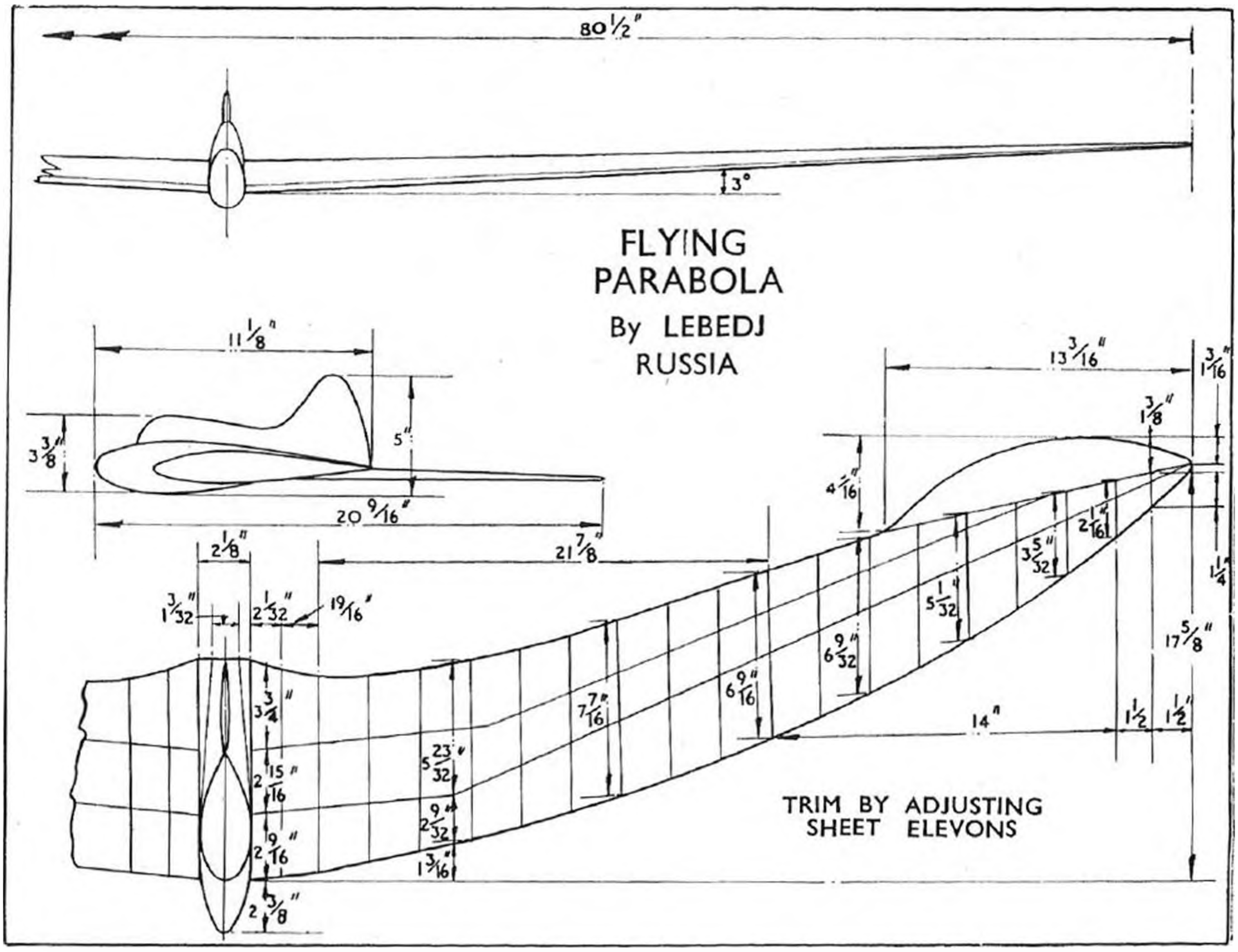


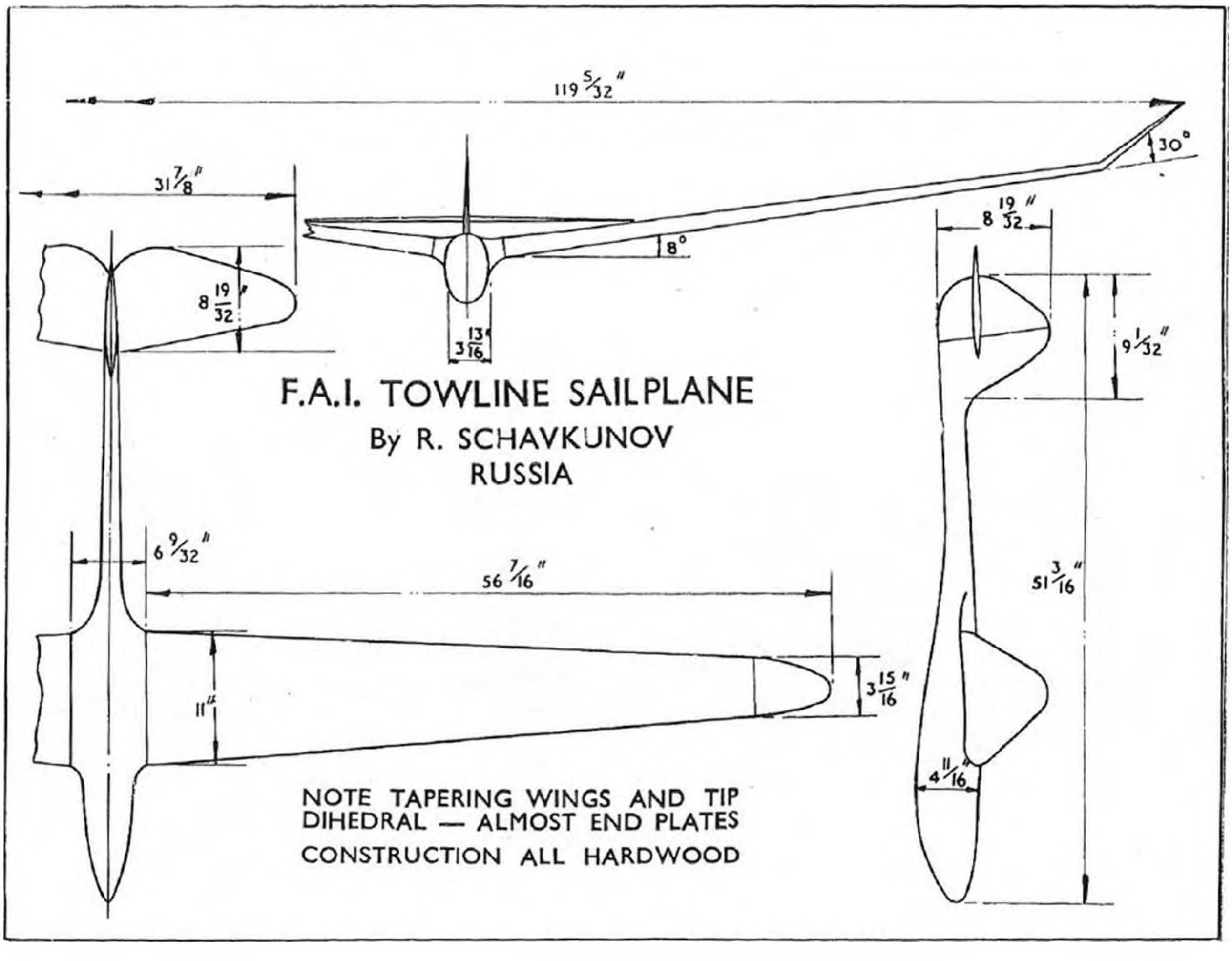


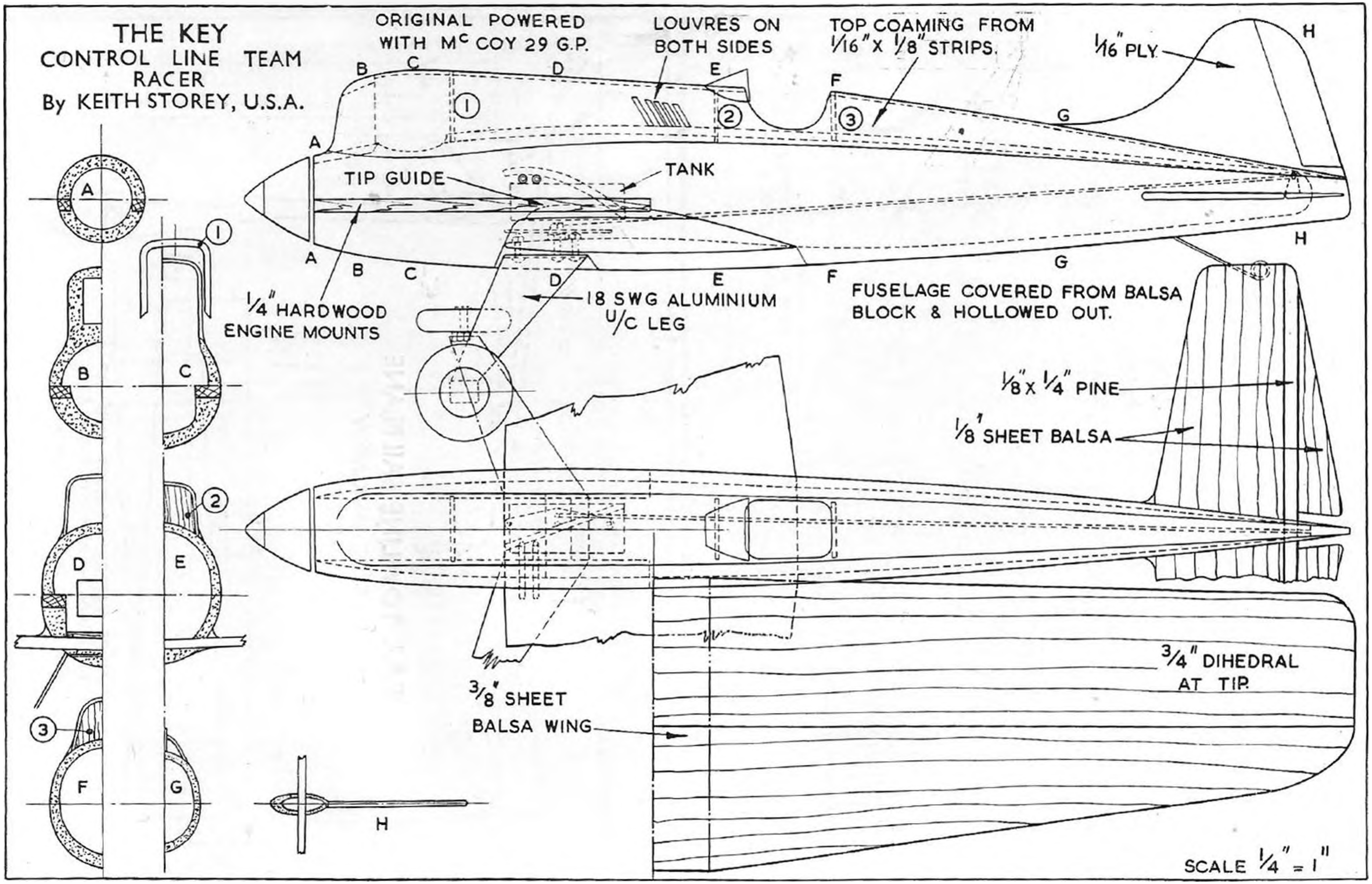
F.19 SWISS SHOULDER WING
DESIGNED BY
F STRUB
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE.
THE AERODROME, STANBRIDGE, NR. LEIGHTON BUZZARD, BEDS
7/-
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.
COWLING MADE FROM BALSA
ALL TAILPLANE RIBS FROM 1/16" SHEET

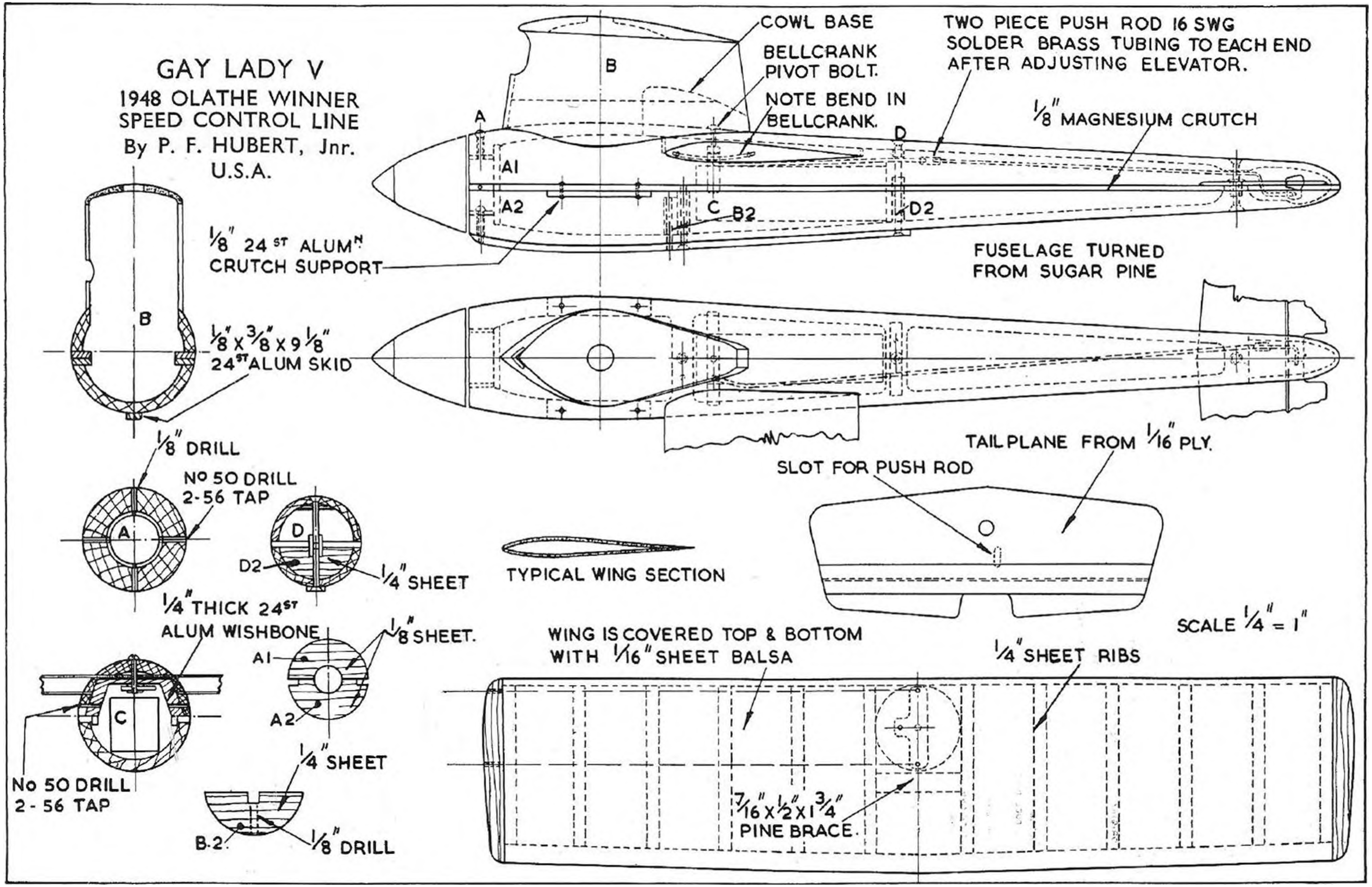

10°
PRIMARY
GLIDER
By PETROVA
RUSSIA
(NOTE:
APPARENTLY
DESIGNED BY A
WOMAN)
THIS 'SCHOOL'
MODEL IS
IDENTICAL TO
TYPICAL LIMIT
SPAN RUSSIAN
MODELS
NOTED IN
RECENT YEARS
2¾"
9⅞"
2¾"
15¾"
4⅛"
28½"

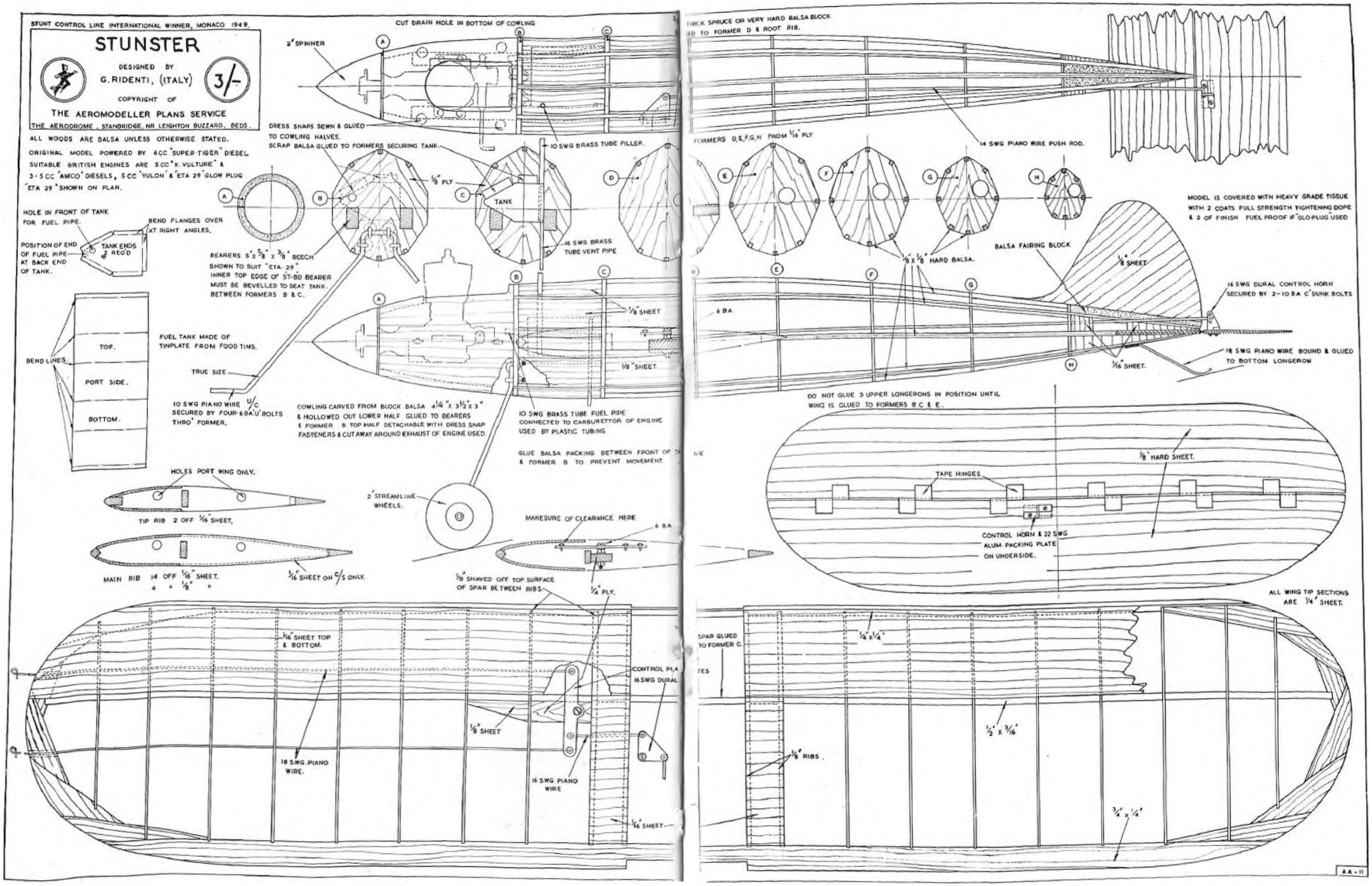

74 13/16"
5°
4⅛"
12"
INTERMEDIATE
SAILPLANE
By KULIKOV
RUSSIA
37"
34 9/16"
5⅞"
NOTE SHORT NOSE AND LONG
MOMENT ARM
TYPICAL RUSSIAN FEATURES
5½"

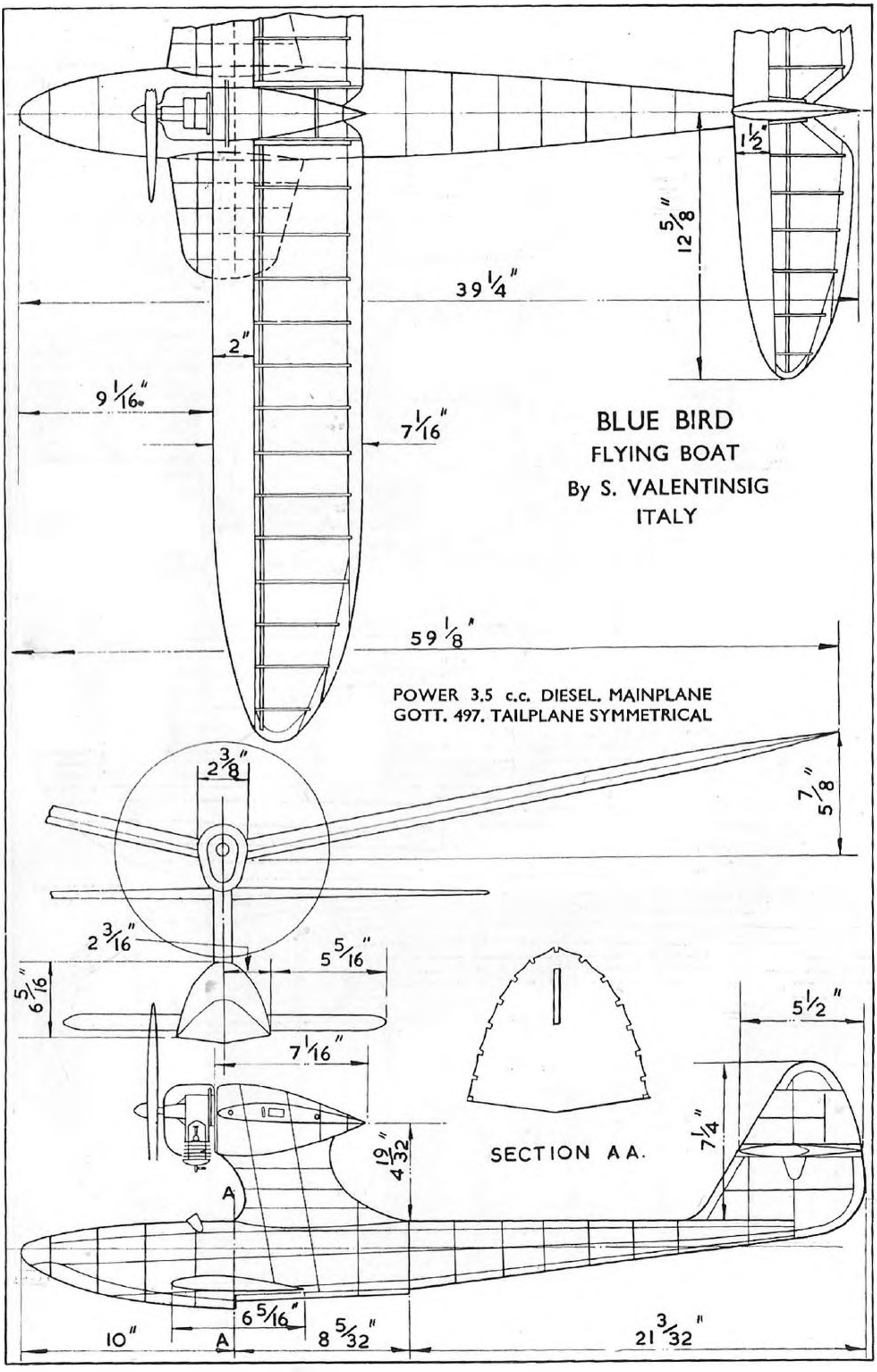

FLYING
PARABOLA
By LEBEDJ
RUSSIA
TRIM BY ADJUSTING
SHEET ELEVONS
80 1/2"
3°
14"

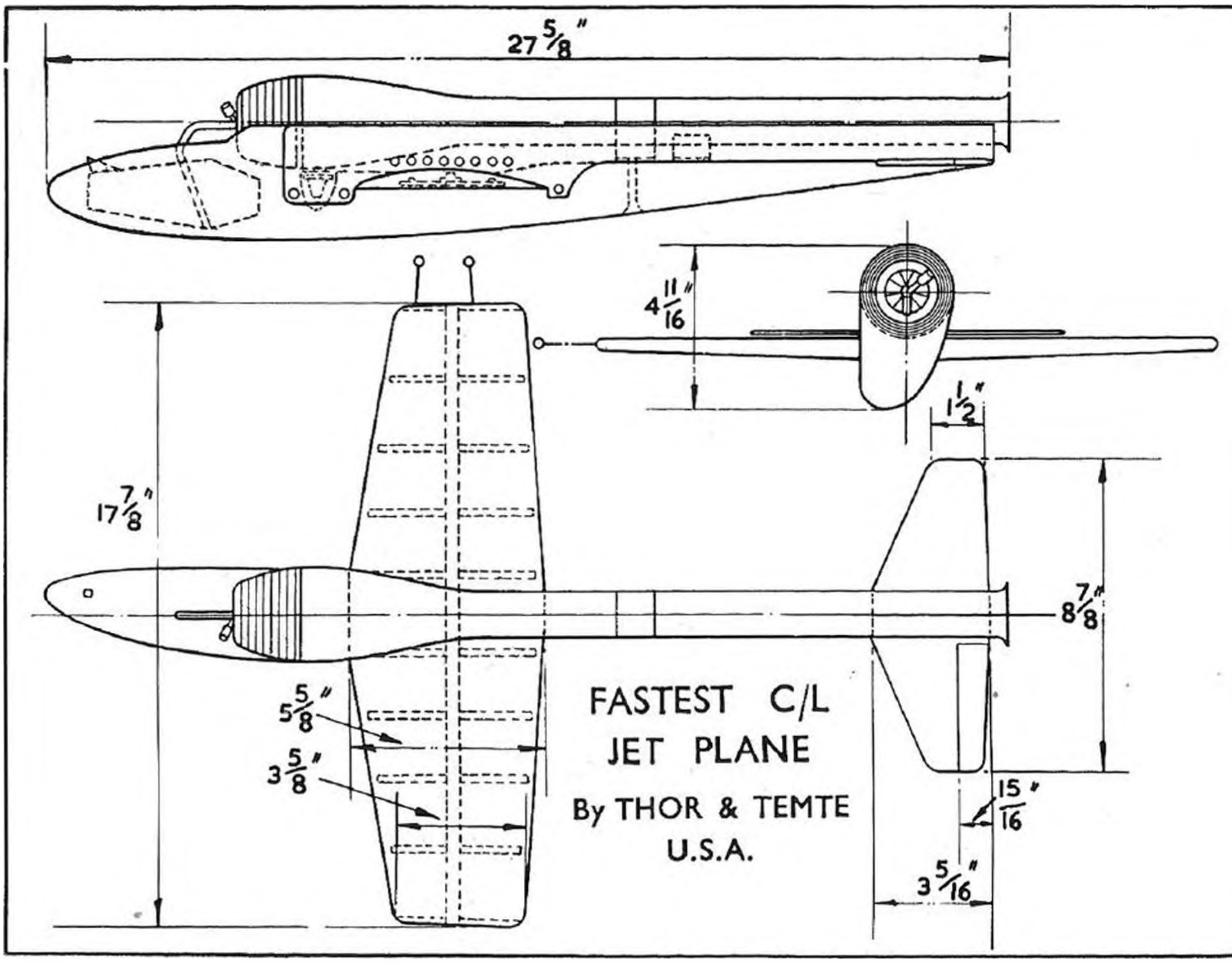

F.A.I. TOWLINE SAILPLANE
By R. SCHAVKUNOV
RUSSIA
NOTE TAPERING WINGS AND TIP
DIHEDRAL — ALMOST END PLATES
CONSTRUCTION ALL HARDWOOD
119 5/32"
30°
8°
11"


THE KEY
CONTROL LINE TEAM RACER
By KEITH STOREY, U.S.A.
ORIGINAL POWERED WITH Mc COY 29 G.P.
LOUVRES ON BOTH SIDES
TOP COAMING FROM 1/16" X 1/8" STRIPS.
1/16" PLY
TIP GUIDE
TANK
1/4" HARDWOOD ENGINE MOUNTS
18 SWG ALUMINIUM U/C LEG
FUSELAGE COVERED FROM BALSA BLOCK & HOLLOWED OUT.
1/8" X 1/4" PINE
1/8" SHEET BALSA
3/4" DIHEDRAL AT TIP
3/8" SHEET BALSA WING
SCALE 1/4" = 1"
A B C D E F G H
1 2 3

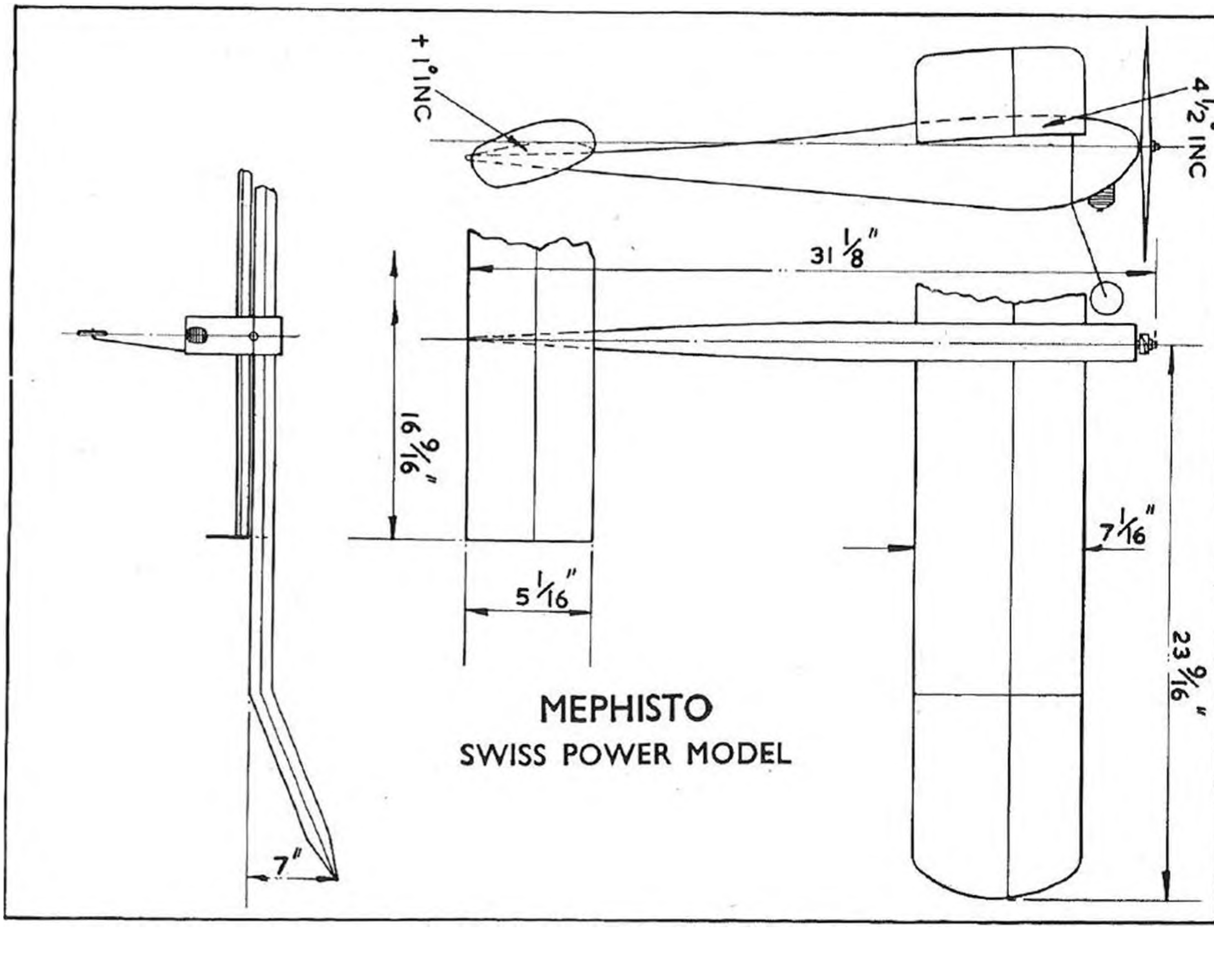

GAY LADY V
1948 OLATHE WINNER
SPEED CONTROL LINE
By P. F. HUBERT, Jnr.
U.S.A.
COWL BASE
BELLCRANK PIVOT BOLT.
NOTE BEND IN BELLCRANK.
TWO PIECE PUSH ROD 16 SWG SOLDER BRASS TUBING TO EACH END AFTER ADJUSTING ELEVATOR.
1/8" MAGNESIUM CRUTCH
1/8" 24 ST ALUMN CRUTCH SUPPORT
FUSELAGE TURNED FROM SUGAR PINE
1/8" X 3/8" X 9 1/8" 24ST ALUM SKID
1/8" DRILL
No 50 DRILL 2-56 TAP
1/4" SHEET
TYPICAL WING SECTION
SLOT FOR PUSH ROD
TAILPLANE FROM 1/16" PLY.
1/4" THICK 24ST ALUM WISHBONE
1/8" SHEET.
SCALE 1/4" = 1"
WING IS COVERED TOP & BOTTOM WITH 1/16" SHEET BALSA
1/4" SHEET RIBS
No 50 DRILL 2-56 TAP
1/4" SHEET
1/8" DRILL
7/16" X 1/2" X 1 3/4" PINE BRACE.


STUNT CONTROL LINE INTERNATIONAL WINNER, MONACO 1949.
STUNSTER
DESIGNED BY
G. RIDENTI, (ITALY)
3/-
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS.
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.
ORIGINAL MODEL POWERED BY 6CC "SUPER-TIGER" DIESEL
SUITABLE BRITISH ENGINES ARE 5CC "K. VULTURE" & 3·5CC "AMCO" DIESELS, 5CC "VULON" & "ETA 29" GLOW PLUG
"ETA 29" SHOWN ON PLAN.
CUT DRAIN HOLE IN BOTTOM OF COWLING
2" SPINNER
DRESS SNAPS SEWN & GLUED TO COWLING HALVES.
SCRAP BALSA GLUED TO FORMERS SECURING TANK.
10 SWG BRASS TUBE FILLER.
1/8" PLY
TANK
16 SWG BRASS TUBE VENT PIPE
HOLE IN FRONT OF TANK FOR FUEL PIPE.
BEND FLANGES OVER AT RIGHT ANGLES.
POSITION OF END OF FUEL PIPE AT BACK END OF TANK.
TANK ENDS 2 REQ'D
BEARERS 5" x 5/8" x 3/8" BEECH
SHOWN TO SUIT "ETA-29".
INNER TOP EDGE OF ST-BD BEARER MUST BE BEVELLED TO SEAT TANK.
BETWEEN FORMERS B & C.
FUEL TANK MADE OF TINPLATE FROM FOOD TINS.
TOP.
PORT SIDE.
BOTTOM.
BEND LINES.
TRUE SIZE
10 SWG PIANO WIRE U/C SECURED BY FOUR 6BA 'U' BOLTS THRO' FORMER.
COWLING CARVED FROM BLOCK BALSA 4 1/4" x 3 1/2" x 3" & HOLLOWED OUT LOWER HALF GLUED TO BEARERS & FORMER B. TOP HALF DETACHABLE WITH DRESS SNAP FASTENERS & CUT AWAY AROUND EXHAUST OF ENGINE USED.
1/8" SHEET
10 SWG BRASS TUBE FUEL PIPE CONNECTED TO CARBURETTOR OF ENGINE USED BY PLASTIC TUBING.
GLUE BALSA PACKING BETWEEN FRONT OF TANK & FORMER B TO PREVENT MOVEMENT.
HOLES PORT WING ONLY.
TIP RIB 2 OFF 3/16" SHEET.
MAIN RIB 14 OFF 1/16" SHEET. 4 " 1/8" "
1/16" SHEET ON C/S ONLY.
2" STREAMLINE WHEELS.
MAKESURE OF CLEARANCE HERE
6 BA
1/8" SHAVED OFF TOP SURFACE OF SPAR BETWEEN RIBS.
1/4" PLY.
1/16" SHEET TOP & BOTTOM.
CONTROL PLATE 16 SWG DURAL
1/8" SHEET
18 SWG. PIANO WIRE.
16 SWG PIANO WIRE
1/16" SHEET
THICK SPRUCE OR VERY HARD BALSA BLOCK GLUED TO FORMER D & ROOT RIB.
FORMERS D, E, F, G, H FROM 1/16" PLY
14 SWG PIANO WIRE PUSH ROD.
MODEL IS COVERED WITH HEAVY GRADE TISSUE WITH 2 COATS FULL STRENGTH TIGHTENING DOPE & 2 OF FINISH. FUEL PROOF IF GLO-PLUG USED
1/8" x 1/8" HARD BALSA.
BALSA FAIRING BLOCK
1/8" SHEET
16 SWG DURAL CONTROL HORN SECURED BY 2-10 BA C'SUNK BOLTS
6 BA
18 SWG PIANO WIRE BOUND & GLUED TO BOTTOM LONGERON
1/16" SHEET.
DO NOT GLUE 3 UPPER LONGERONS IN POSITION UNTIL WING IS GLUED TO FORMERS B C & E.
1/8" HARD SHEET.
TAPE HINGES
CONTROL HORN & 22 SWG ALUM. PACKING PLATE ON UNDERSIDE.
ALL WING TIP SECTIONS ARE 1/4" SHEET.
SPAR GLUED TO FORMER C.
1/4" x 1/4"
1/2" x 3/16"
1/8" RIBS
3/4" x 1/4"
AA-11

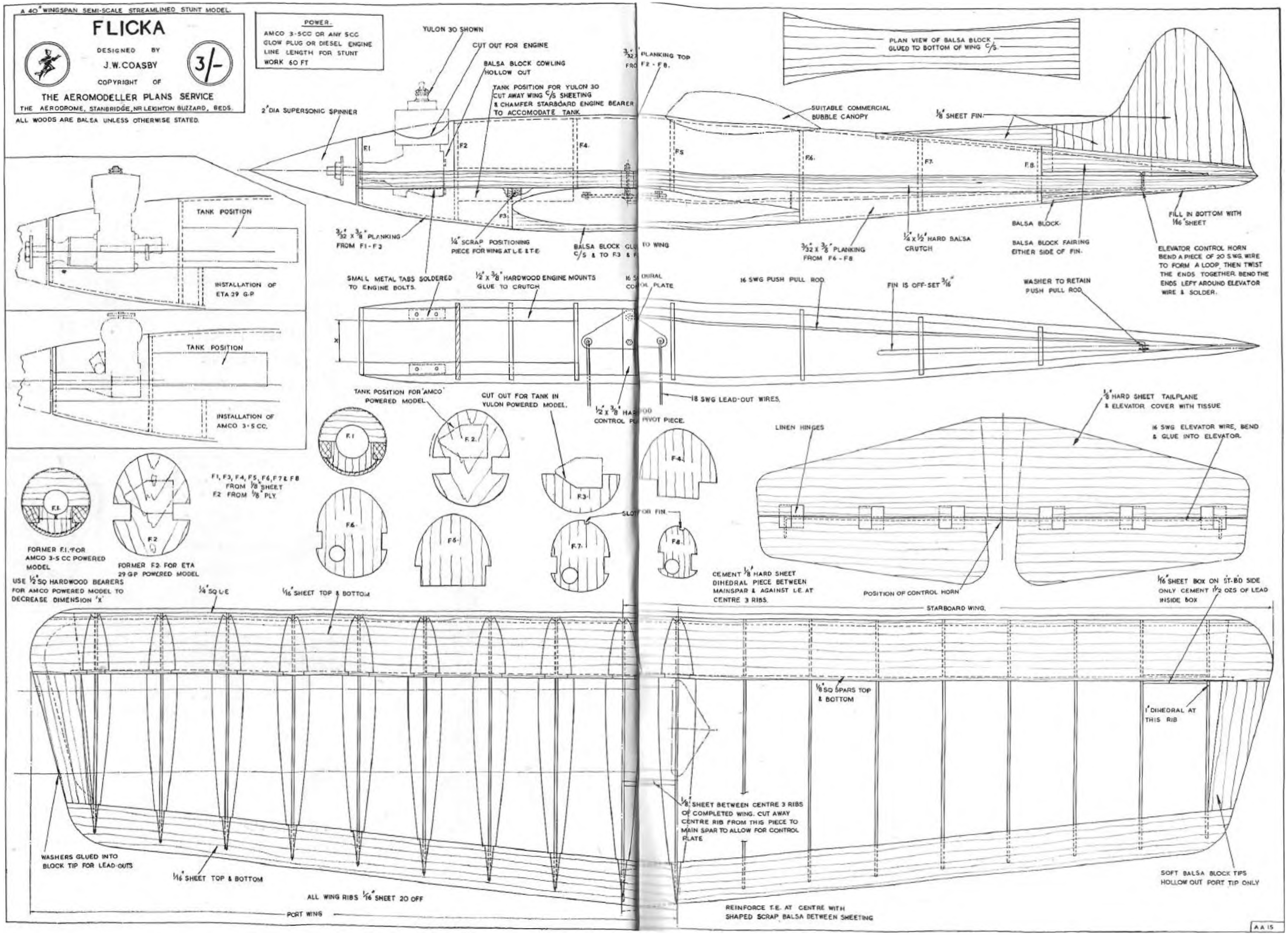

BLUE BIRD
FLYING BOAT
By S. VALENTINSIG
ITALY
POWER 3.5 c.c. DIESEL. MAINPLANE
GOTT. 497. TAILPLANE SYMMETRICAL
SECTION AA.
39 1/4"
59 1/8"
9 1/16"
2"
7 1/16"
12 5/8"
1 1/2"
2 3/8"
7 5/8"
2 3/16"
5 5/16"
6 5/16"
7 1/16"
5 1/2"
7 1/4"
4 19/32"
6 5/16"
10"
8 5/32"
21 3/32"
A



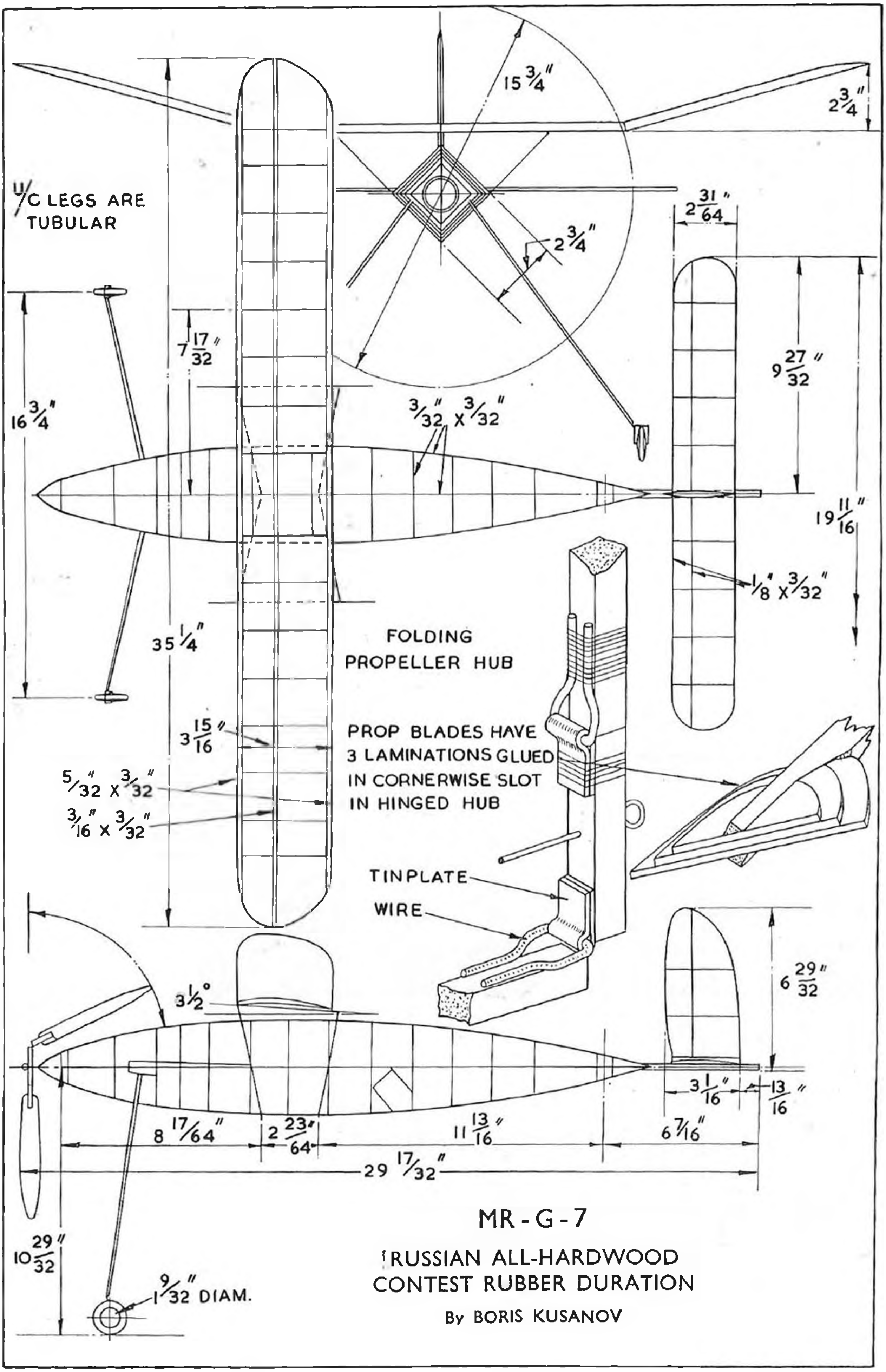
FASTEST C/L
JET PLANE
By THOR & TEMTE
U.S.A.



MEPHISTO
SWISS POWER MODEL



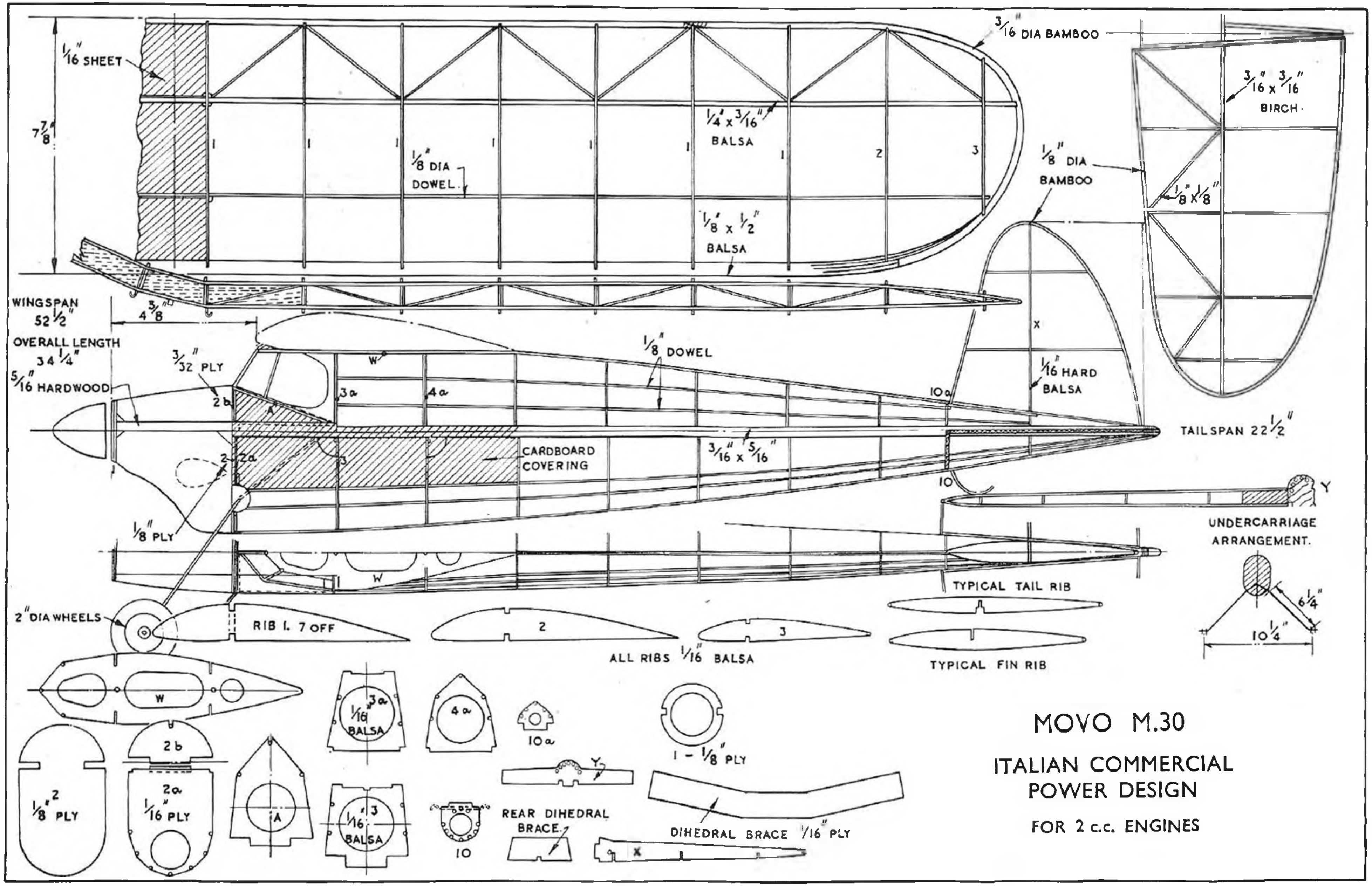
A 40" WINGSPAN SEMI-SCALE STREAMLINED STUNT MODEL.
FLICKA
DESIGNED BY
J.W.COASBY
3/-
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS.
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.
POWER.
AMCO 3·5CC OR ANY 5CC GLOW PLUG OR DIESEL ENGINE LINE LENGTH FOR STUNT WORK 60 FT
YULON 30 SHOWN
CUT OUT FOR ENGINE
BALSA BLOCK COWLING HOLLOW OUT
TANK POSITION FOR YULON 30 CUT AWAY WING C/S SHEETING & CHAMFER STARBOARD ENGINE BEARER TO ACCOMODATE TANK
2" DIA SUPERSONIC SPINNER
3/32" PLANKING TOP FROM F2 - F8.
SUITABLE COMMERCIAL BUBBLE CANOPY
1/8" SHEET FIN
PLAN VIEW OF BALSA BLOCK GLUED TO BOTTOM OF WING C/S.
TANK POSITION
INSTALLATION OF ETA 29 G-P
INSTALLATION OF AMCO 3·5 CC.
3/32 x 3/8" PLANKING FROM F1 - F3
1/4" SCRAP POSITIONING PIECE FOR WING AT L.E. & T.E.
BALSA BLOCK GLUED TO WING C/S & TO F3 & F
3/32 x 3/8" PLANKING FROM F6 - F8
1/4 x 1/2" HARD BALSA CRUTCH
BALSA BLOCK
BALSA BLOCK FAIRING EITHER SIDE OF FIN.
FILL IN BOTTOM WITH 1/16" SHEET
ELEVATOR CONTROL HORN BEND A PIECE OF 20 S.W.G. WIRE TO FORM A LOOP, THEN TWIST THE ENDS TOGETHER. BEND THE ENDS LEFT AROUND ELEVATOR WIRE & SOLDER.
SMALL METAL TABS SOLDERED TO ENGINE BOLTS.
1/2" x 3/8" HARDWOOD ENGINE MOUNTS GLUE TO CRUTCH
16 SWG DURAL CONTROL PLATE
16 SWG PUSH PULL ROD.
FIN IS OFF-SET 3/16"
WASHER TO RETAIN PUSH PULL ROD.
18 SWG LEAD-OUT WIRES.
1/2" x 3/8" HARDWOOD CONTROL PLATE PIVOT PIECE.
TANK POSITION FOR AMCO POWERED MODEL.
CUT OUT FOR TANK IN YULON POWERED MODEL.
1/8" HARD SHEET TAILPLANE & ELEVATOR COVER WITH TISSUE
LINEN HINGES
16 SWG ELEVATOR WIRE, BEND & GLUE INTO ELEVATOR.
F1, F3, F4, F5, F6, F7 & F8 FROM 1/8" SHEET
F2 FROM 1/8" PLY
FORMER F1 FOR AMCO 3·5 CC POWERED MODEL
FORMER F2 FOR ETA 29 G.P. POWERED MODEL
USE 1/2" SQ HARDWOOD BEARERS FOR AMCO POWERED MODEL TO DECREASE DIMENSION 'X'
SLOT FOR FIN.
CEMENT 1/8" HARD SHEET DIHEDRAL PIECE BETWEEN MAINSPAR & AGAINST L.E. AT CENTRE 3 RIBS.
POSITION OF CONTROL HORN
1/16" SHEET BOX ON ST-BD SIDE ONLY CEMENT 1/2 OZS OF LEAD INSIDE BOX
1/4" SQ L.E.
1/16" SHEET TOP & BOTTOM
STARBOARD WING.
1/8" SQ SPARS TOP & BOTTOM
1" DIHEDRAL AT THIS RIB
1/8" SHEET BETWEEN CENTRE 3 RIBS OF COMPLETED WING. CUT AWAY CENTRE RIB FROM THIS PIECE TO MAIN SPAR TO ALLOW FOR CONTROL PLATE
WASHERS GLUED INTO BLOCK TIP FOR LEAD-OUTS
1/16" SHEET TOP & BOTTOM
ALL WING RIBS 1/16" SHEET 20 OFF
PORT WING
REINFORCE T.E. AT CENTRE WITH SHAPED SCRAP BALSA BETWEEN SHEETING
SOFT BALSA BLOCK TIPS HOLLOW OUT PORT TIP ONLY
AA 15

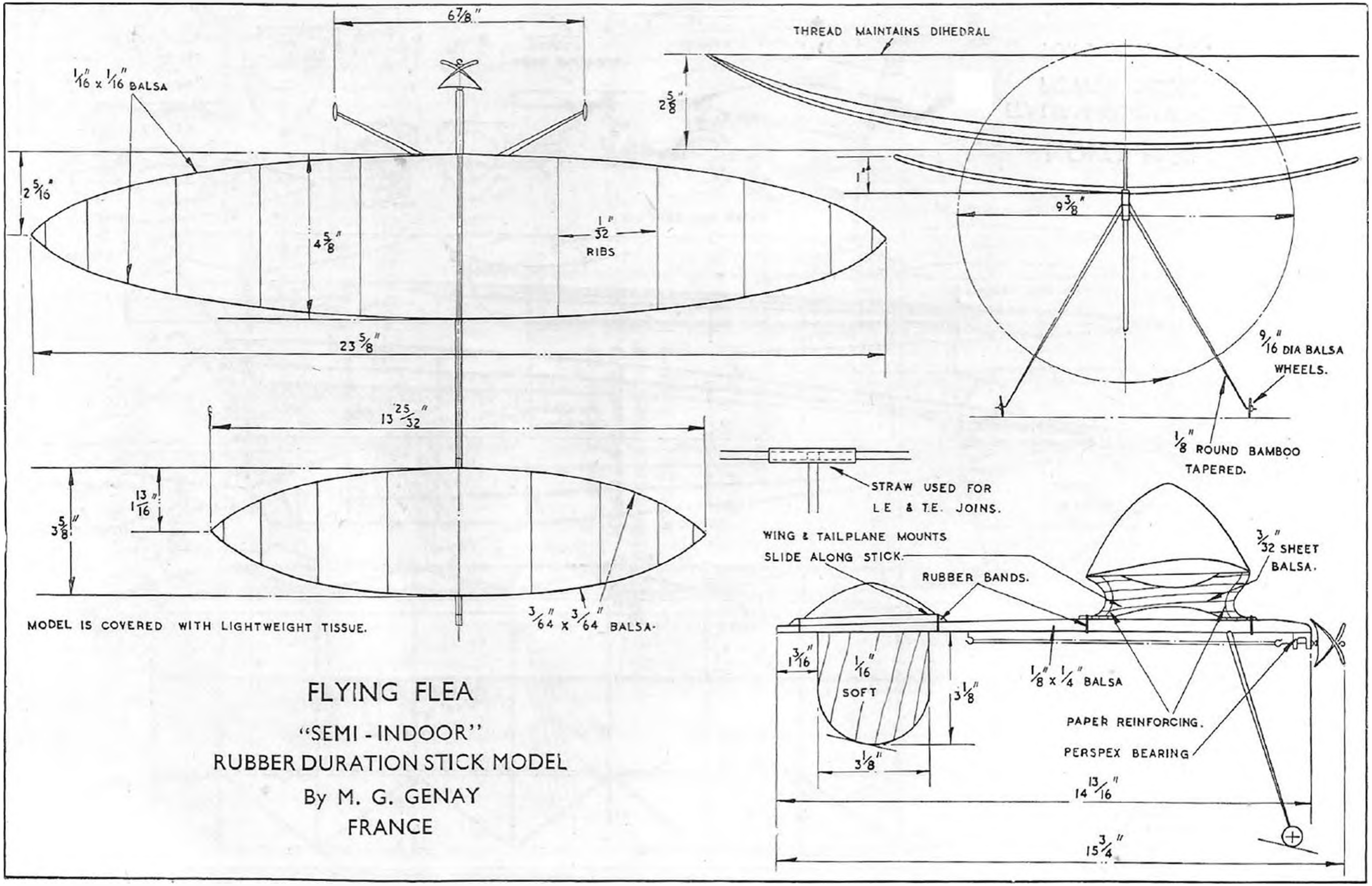


MR-G-7

RUSSIAN ALL-HARDWOOD CONTEST RUBBER DURATION

By BORIS KUSANOV


MOVO M.30
ITALIAN COMMERCIAL POWER DESIGN
FOR 2 c.c. ENGINES
1/16" SHEET
7 7/8"
3/16 DIA BAMBOO
1/4" x 3/16" BALSA
1/8" DIA DOWEL.
1/8" x 1/2" BALSA
3/16" x 3/16" BIRCH
1/8" DIA BAMBOO
1/8" x 1/8"
WINGSPAN 52 1/2"
4 3/8"
OVERALL LENGTH 34 1/4"
5/16" HARDWOOD
3/32 PLY
1/8" DOWEL
1/16" HARD BALSA
TAILSPAN 22 1/2"
CARDBOARD COVERING
3/16" x 5/16"
1/8" PLY
UNDERCARRIAGE ARRANGEMENT.
TYPICAL TAIL RIB
2" DIA WHEELS
RIB 1. 7 OFF
ALL RIBS 1/16" BALSA
TYPICAL FIN RIB
6 1/4"
10 1/4"
1/8" PLY
1/16" PLY
1/16" BALSA
1 - 1/8" PLY
REAR DIHEDRAL BRACE.
DIHEDRAL BRACE 1/16" PLY



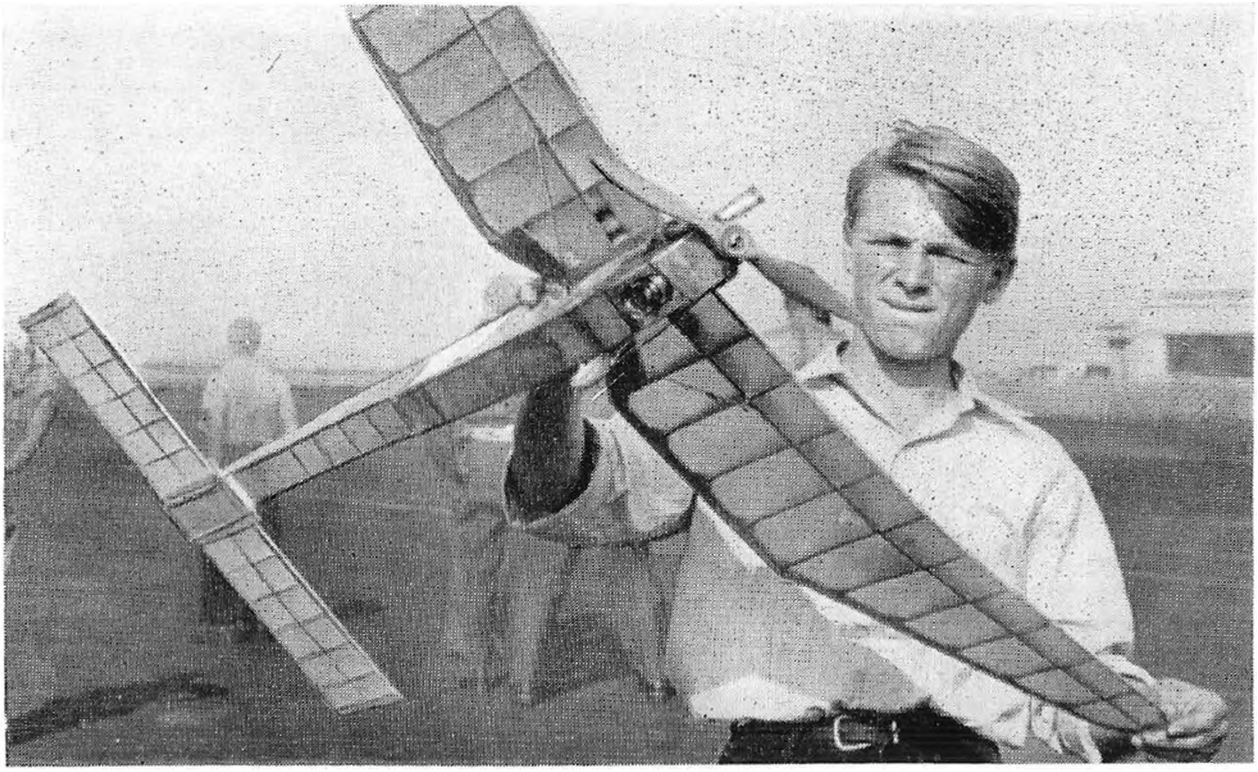
FLYING FLEA

"SEMI - INDOOR"

RUBBER DURATION STICK MODEL

By M. G. GENAY

FRANCE

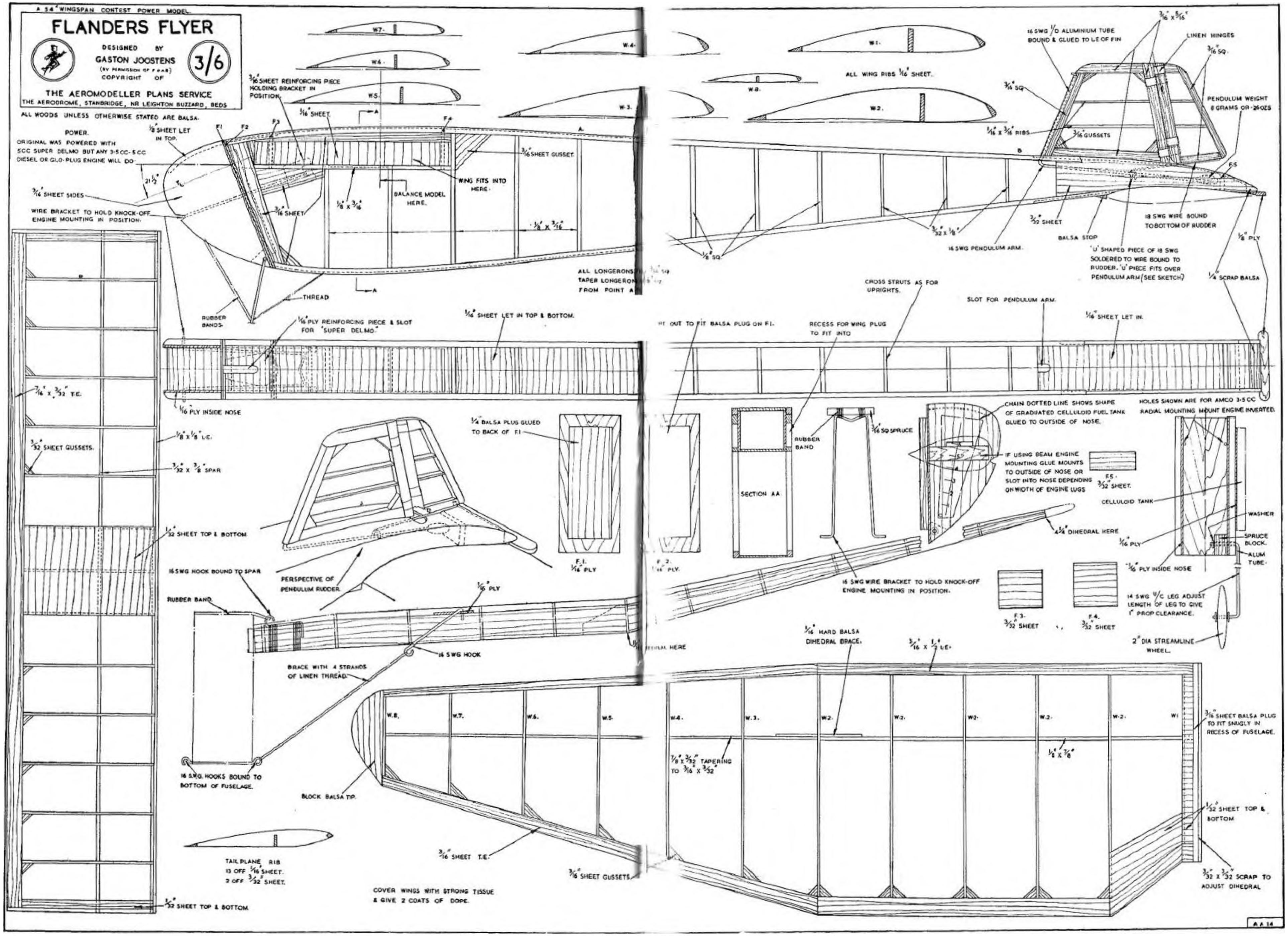


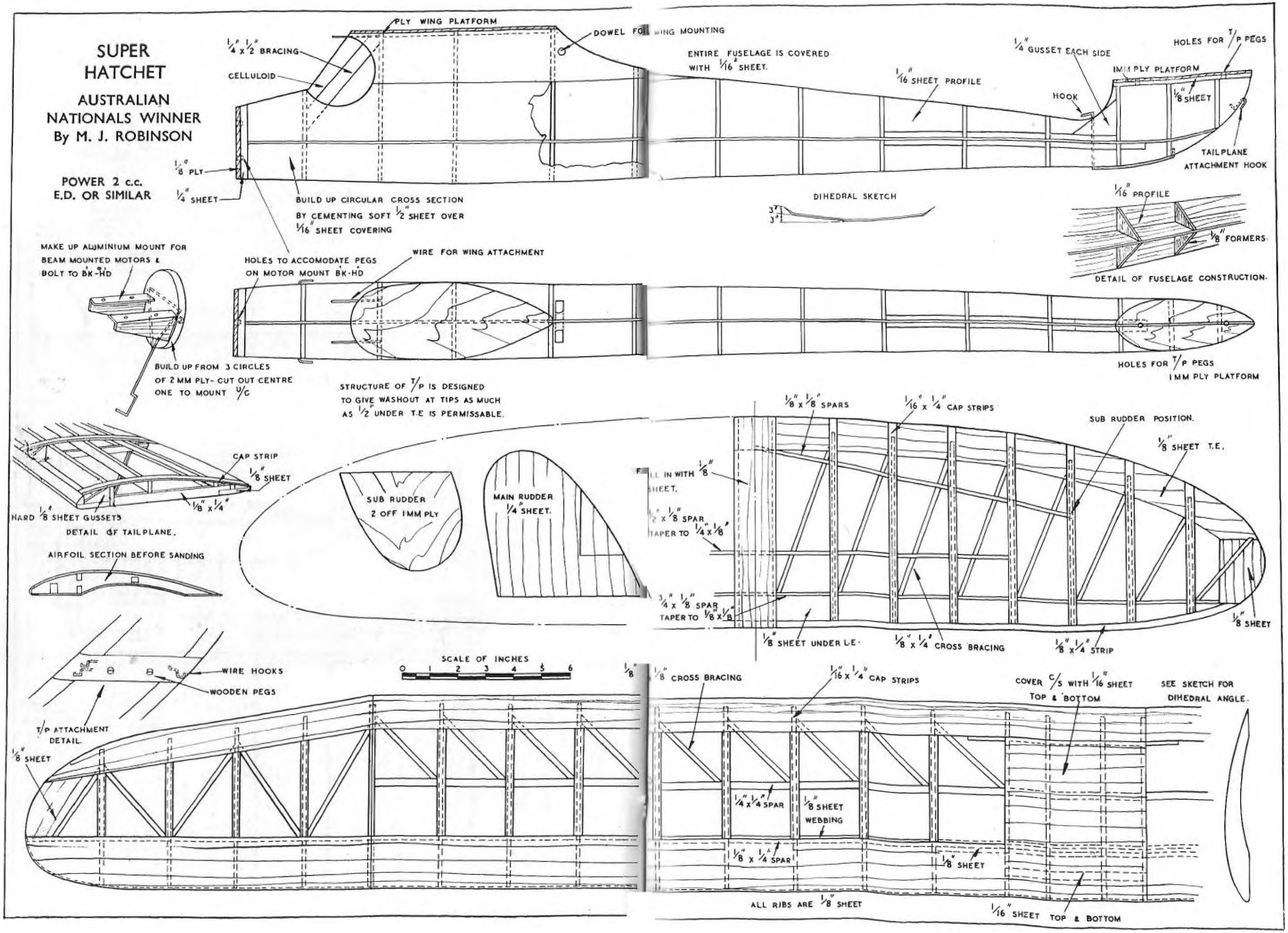
Flanders Flyer. International Belgian Power Champ. by G. Joostens and Technical Staff of F.P.A.B.

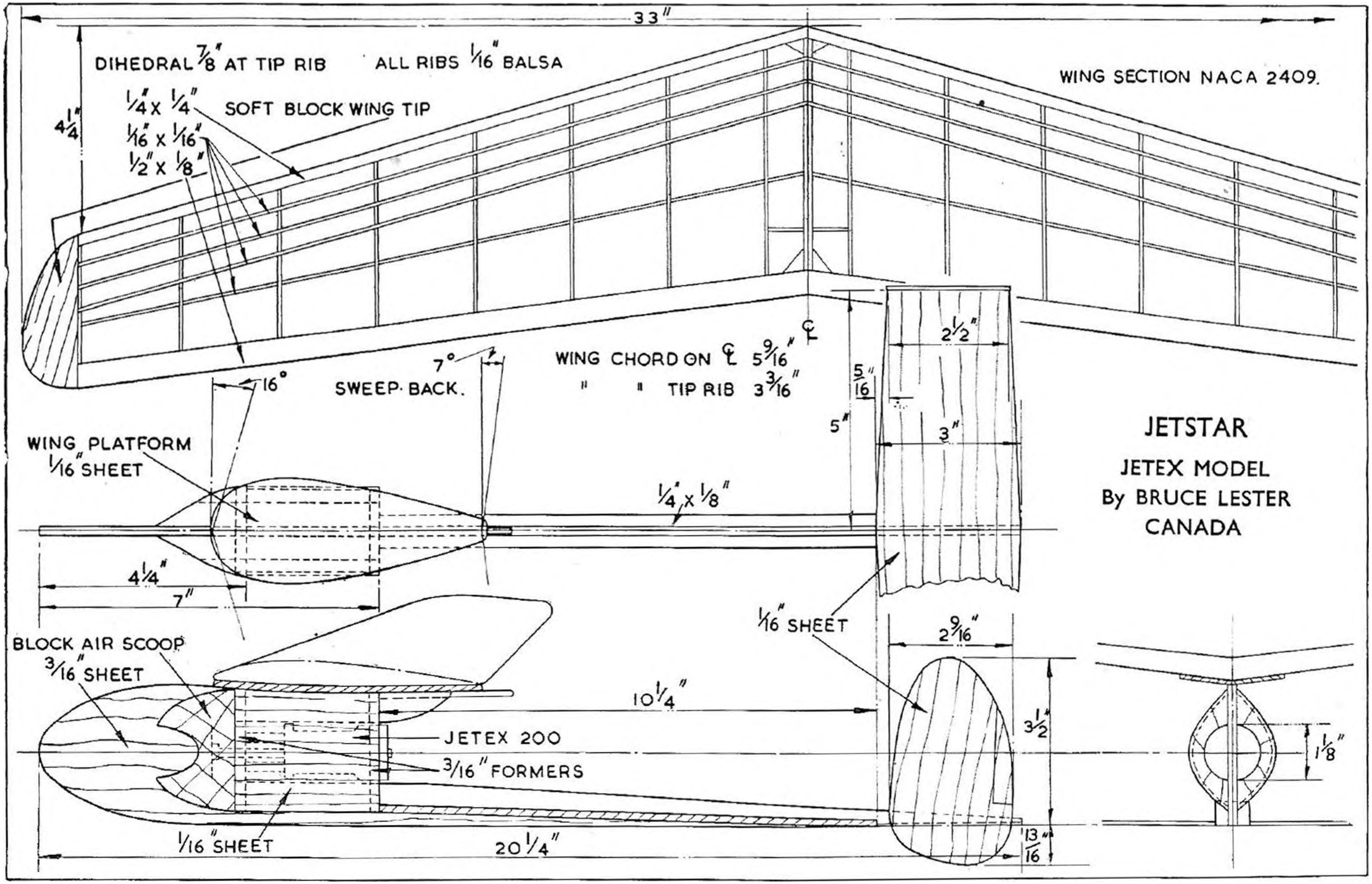
DESCRIPTION.—When a model consistently wins contests in a variety of hands and is generally developed over a number of years to near perfection, one can forgive its ugliness and apparent contradictions and rest content, that it has certainly got something. We have seen the very first prototype model fitted with conventional spark ignition, the first Delmo powered winner that won at Eaton Bray, and now offer the ultimate version with reduced fuselage cross-section that has as yet appeared only in the hands of Joostens Junior. Built round the Super Delmo 5 c.c., best diesel available in Belgium, it can be still further improved by the installation of latest British engines such as the Amco 3.5 c.c., which gives equal or better output than the Delmo.

Three radical features will be noticed. First the enormous amount of built-in downthrust to the engine. Do not be tempted to reduce this, it is one of the secrets of its success ! Next the entirely Belgian and highly successful automatic rudder, that will keep it out of trouble in the most difficult conditions. This rudder has been successfully copied by *Aeromodeller* staff for scale models, such as Bishop's Nieuport and is a good thing to have even on a contest model. Finally, note the curious but effective wing fixing, by a flat box and tongue method exclusively continental. This is secured in place by the underbelly thread braces, and enables a really light wing to be built. This flutters alarmingly in flight, but after a while ceases to disturb.

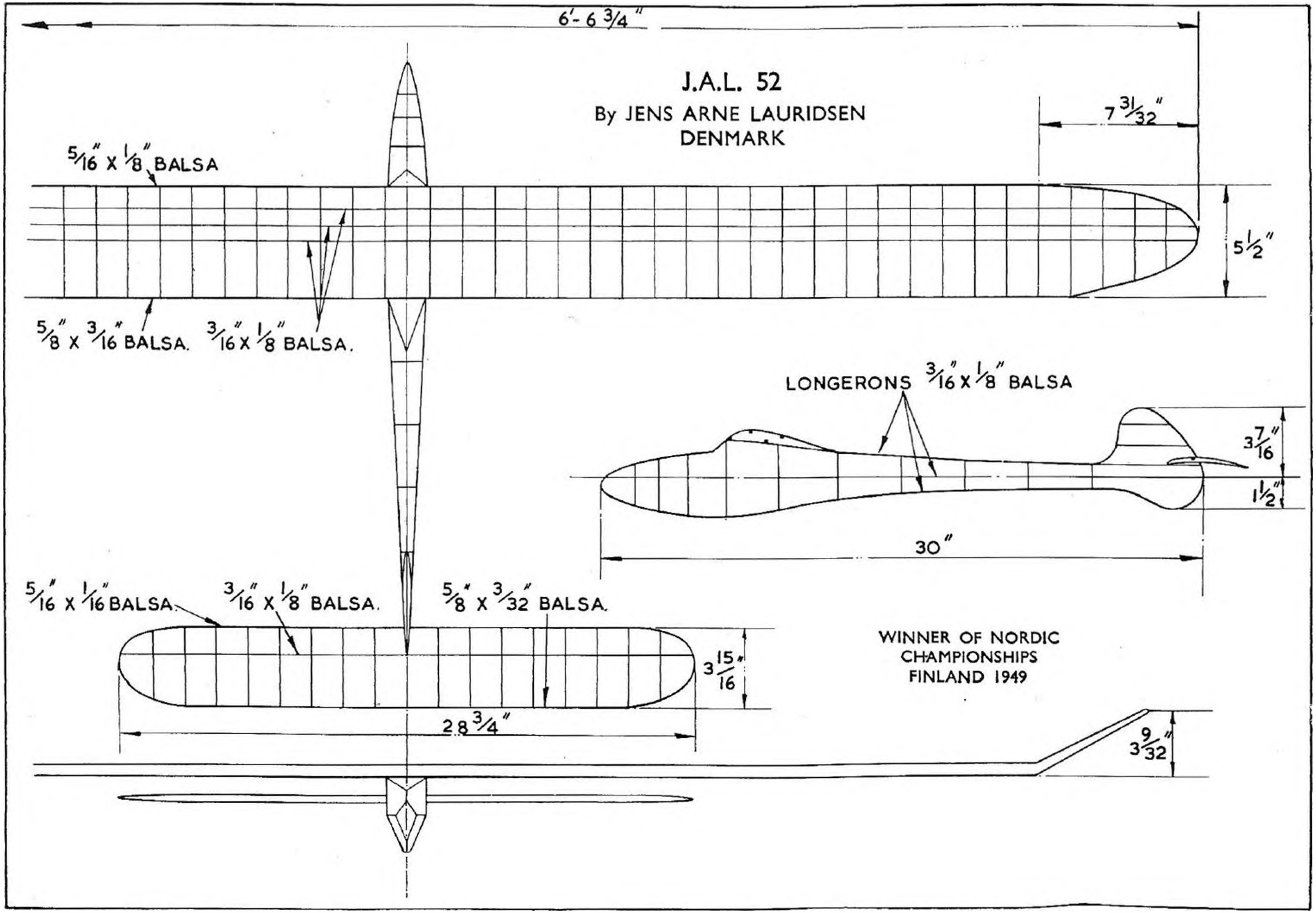
The graduated fuel tank on side can be improved by the addition of a small header tank, which appears just above the airscrew in the illustration. This avoids topping up before flight, as the model is held back until header has drained. Altogether Flanders Flyer, as we have named it, is well worth building for contest flying, and is the final design of that briefly described in our first *Annual*.


A 54" WINGSPAN CONTEST POWER MODEL.
FLANDERS FLYER
DESIGNED BY GASTON JOOSTENS
(BY PERMISSION OF F.P.A.B.)
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS
3/6
ALL WOODS UNLESS OTHERWISE STATED ARE BALSA.
POWER.
ORIGINAL WAS POWERED WITH 5CC SUPER DELMO BUT ANY 3·5CC-5CC DIESEL OR GLO-PLUG ENGINE WILL DO.
1/8" SHEET LET IN TOP.
3/16" SHEET SIDES
WIRE BRACKET TO HOLD KNOCK-OFF ENGINE MOUNTING IN POSITION.
3/16" SHEET REINFORCING PIECE HOLDING BRACKET IN POSITION.
1/16" SHEET
3/16" SHEET GUSSET.
WING FITS INTO HERE.
BALANCE MODEL HERE.
1/8" x 3/16"
ALL LONGERONS
THREAD
RUBBER BANDS.
1/16" PLY REINFORCING PIECE & SLOT FOR 'SUPER DELMO.'
1/16" SHEET LET IN TOP & BOTTOM.
1/16" PLY INSIDE NOSE
ALL WING RIBS 1/16" SHEET.
16 SWG I/D ALUMINIUM TUBE BOUND & GLUED TO L.E. OF FIN
LINEN HINGES
3/16" SQ.
PENDULUM WEIGHT 8 GRAMS OR ·28 OZS
1/16" x 3/16" RIBS
3/16" GUSSETS
3/32" SHEET
BALSA STOP
16 SWG PENDULUM ARM.
18 SWG WIRE BOUND TO BOTTOM OF RUDDER
'U' SHAPED PIECE OF 18 SWG SOLDERED TO WIRE BOUND TO RUDDER. 'U' PIECE FITS OVER PENDULUM ARM (SEE SKETCH)
1/8" PLY
1/4" SCRAP BALSA
CROSS STRUTS AS FOR UPRIGHTS.
SLOT FOR PENDULUM ARM.
1/16" SHEET LET IN.
RECESS FOR WING PLUG TO FIT INTO
7/16" x 3/32" T.E.
3/32" SHEET GUSSETS.
1/8" x 1/8" L.E.
3/32" x 3/8" SPAR
1/32" SHEET TOP & BOTTOM
1/4" BALSA PLUG GLUED TO BACK OF F1
F.1. 1/16" PLY
SECTION AA
RUBBER BAND
3/16" SQ SPRUCE
CHAIN DOTTED LINE SHOWS SHAPE OF GRADUATED CELLULOID FUEL TANK GLUED TO OUTSIDE OF NOSE.
HOLES SHOWN ARE FOR AMCO 3·5CC RADIAL MOUNTING MOUNT ENGINE INVERTED.
IF USING BEAM ENGINE MOUNTING GLUE MOUNTS TO OUTSIDE OF NOSE OR SLOT INTO NOSE DEPENDING ON WIDTH OF ENGINE LUGS
F.5. 3/32" SHEET.
CELLULOID TANK
WASHER
SPRUCE BLOCK.
ALUM TUBE.
1/16" PLY
1/16" PLY INSIDE NOSE
4 3/4" DIHEDRAL HERE
16 SWG HOOK BOUND TO SPAR
PERSPECTIVE OF PENDULUM RUDDER.
1/16" PLY
RUBBER BAND
16 SWG HOOK
BRACE WITH 4 STRANDS OF LINEN THREAD.
16 SWG HOOKS BOUND TO BOTTOM OF FUSELAGE.
BLOCK BALSA TIP.
16 SWG WIRE BRACKET TO HOLD KNOCK-OFF ENGINE MOUNTING IN POSITION.
F.3. 3/32" SHEET
F.4. 3/32" SHEET
14 SWG O/C LEG ADJUST LENGTH OF LEG TO GIVE 1" PROP CLEARANCE.
2" DIA STREAMLINE WHEEL.
1/16" HARD BALSA DIHEDRAL BRACE.
3/16" x 1/2" L.E.
3/8" x 3/32" TAPERING TO 3/16" x 3/32"
1/8" x 3/8"
3/16" SHEET BALSA PLUG TO FIT SNUGLY IN RECESS OF FUSELAGE.
1/32" SHEET TOP & BOTTOM
3/32" x 3/32" SCRAP TO ADJUST DIHEDRAL
TAILPLANE RIB 13 OFF 1/16" SHEET. 2 OFF 3/32" SHEET.
3/16" SHEET T.E.
3/16" SHEET GUSSETS.
COVER WINGS WITH STRONG TISSUE & GIVE 2 COATS OF DOPE.
1/32" SHEET TOP & BOTTOM
A.A. 14


SUPER HATCHET
AUSTRALIAN NATIONALS WINNER
By M. J. ROBINSON
POWER 2 c.c. E.D. OR SIMILAR
PLY WING PLATFORM
1/4" x 1/2" BRACING
CELLULOID
1/8" PLY
1/4" SHEET
DOWEL FOR WING MOUNTING
BUILD UP CIRCULAR CROSS SECTION BY CEMENTING SOFT 1/2" SHEET OVER 1/16" SHEET COVERING
ENTIRE FUSELAGE IS COVERED WITH 1/16" SHEET.
1/16" SHEET PROFILE
1/4" GUSSET EACH SIDE
HOLES FOR T/P PEGS
1MM PLY PLATFORM
1/8" SHEET
HOOK
TAILPLANE ATTACHMENT HOOK
DIHEDRAL SKETCH
1/16" PROFILE
1/8" FORMERS
DETAIL OF FUSELAGE CONSTRUCTION.
MAKE UP ALUMINIUM MOUNT FOR BEAM MOUNTED MOTORS & BOLT TO BK-HD
HOLES TO ACCOMODATE PEGS ON MOTOR MOUNT BK-HD
WIRE FOR WING ATTACHMENT
BUILD UP FROM 3 CIRCLES OF 2 MM PLY- CUT OUT CENTRE ONE TO MOUNT U/C
STRUCTURE OF T/P IS DESIGNED TO GIVE WASHOUT AT TIPS AS MUCH AS 1/2" UNDER T.E IS PERMISSABLE.
HOLES FOR T/P PEGS
1MM PLY PLATFORM
CAP STRIP
1/8" SHEET
1/8" x 1/4"
HARD 1/8" SHEET GUSSETS
DETAIL OF TAILPLANE.
AIRFOIL SECTION BEFORE SANDING
SUB RUDDER 2 OFF 1MM PLY
MAIN RUDDER 1/4" SHEET.
1/8" x 1/8" SPARS
1/16" x 1/4" CAP STRIPS
SUB RUDDER POSITION.
1/8" SHEET T.E.
FILL IN WITH 1/8" SHEET.
1/2" x 1/8" SPAR TAPER TO 1/4" x 1/8"
3/4" x 1/8" SPAR TAPER TO 1/8" x 1/8"
1/8" SHEET UNDER L.E.
1/8" x 1/4" CROSS BRACING
1/8" x 1/4" STRIP
1/8" SHEET
WIRE HOOKS
WOODEN PEGS
T/P ATTACHMENT DETAIL.
1/8" SHEET
SCALE OF INCHES
0 1 2 3 4 5 6
1/8"
1/8" CROSS BRACING
1/16" x 1/4" CAP STRIPS
COVER C/S WITH 1/16" SHEET TOP & BOTTOM
SEE SKETCH FOR DIHEDRAL ANGLE.
1/4" x 1/4" SPAR
1/8" SHEET WEBBING
1/8" x 1/4" SPAR
1/8" SHEET
ALL RIBS ARE 1/8" SHEET
1/16" SHEET TOP & BOTTOM



33"
DIHEDRAL 7/8" AT TIP RIB
ALL RIBS 1/16" BALSA
WING SECTION NACA 2409.
4 1/4"
1/4" x 1/4"
SOFT BLOCK WING TIP
1/16" x 1/16"
1/2" x 1/8"
7°
SWEEP·BACK.
WING CHORD ON ℄ 5 9/16"
" " TIP RIB 3 3/16"
16°
℄
2 1/2"
5/16"
5"
3"
JETSTAR
JETEX MODEL
By BRUCE LESTER
CANADA
WING PLATFORM
1/16" SHEET
1/4" x 1/8"
4 1/4"
7"
1/16" SHEET
BLOCK AIR SCOOP
3/16" SHEET
2 9/16"
10 1/4"
JETEX 200
3/16" FORMERS
3 1/2"
1 1/8"
1/16" SHEET
20 1/4"
13/16"


6'-6 3/4"
J.A.L. 52
By JENS ARNE LAURIDSEN
DENMARK
7 31/32"
5/16" X 1/8" BALSA
5 1/2"
5/8" X 3/16" BALSA.
3/16" X 1/8" BALSA.
LONGERONS 3/16" X 1/8" BALSA
3 7/16"
1 1/2"
30"
5/16" X 1/16 BALSA.
3/16" X 1/8" BALSA.
5/8" X 3/32" BALSA.
3 15/16"
WINNER OF NORDIC
CHAMPIONSHIPS
FINLAND 1949
28 3/4"
3 9/32"

DESIGN CHARTS — PURPOSE AND USE

THE following detailed analyses of all classes of models have been made by Ron Warring as a result of discussions on the type of data necessary to give the *untechnically minded* a fair picture of the main characteristics of as large a number of models as possible, as an aid to design. It is common knowledge that in fullsize aircraft practice, design is carried out by averaging the virtues of a number of successful machines, and just as carefully avoiding the defects of the less successful. As an all-out custom such methods would quickly lead to stagnation in design, and it is by no means our contention that this is all that the successful designer requires, but it does provide an immediate basis from which a design can be worked up. To give a concrete example from fullsize practice, almost any of the better known Japanese warplanes can be directly traced to European or American prototypes, whilst many of the " latest " Russian bomber types show the influence of Fortress and similar aircraft. But the Asiatic mind is prone to imitation, and it may be as well that in their copying many of the design faults—since eradicated in the prototypes—found their way into the imitations. Exceptions, of course, abound in the shape of such machines as the Zero fighter.

The would-be model designer intent on producing a successful " own design " can find in these tables a wealth of information that would take him—and *did* take Ron Warring—many weeks of painstaking research, even provided he had at his finger-tips data from models built all over the world. But before starting his inspection of the tables it is as well that he should clearly understand the extent to which they can help him.

Heading each section is a general summary of present trends, with points for and against certain tendencies, and indicating profitable lines of future progress. These should be read and digested as they expose possible pitfalls and suggest cures, as well as being illustrated with typical three-view drawings and pictures of the year's more promising models. The tables themselves offer first a general summary of models, giving information on size, engine, span, area, aspect ratio, in fact all the " gen " on what sort of a model is being described. Further tables are on design data, location and type of wings, tailplane and elevator, fin area. Then, where appropriate, follow tables on rigging and finally tables on materials used and methods of construction.

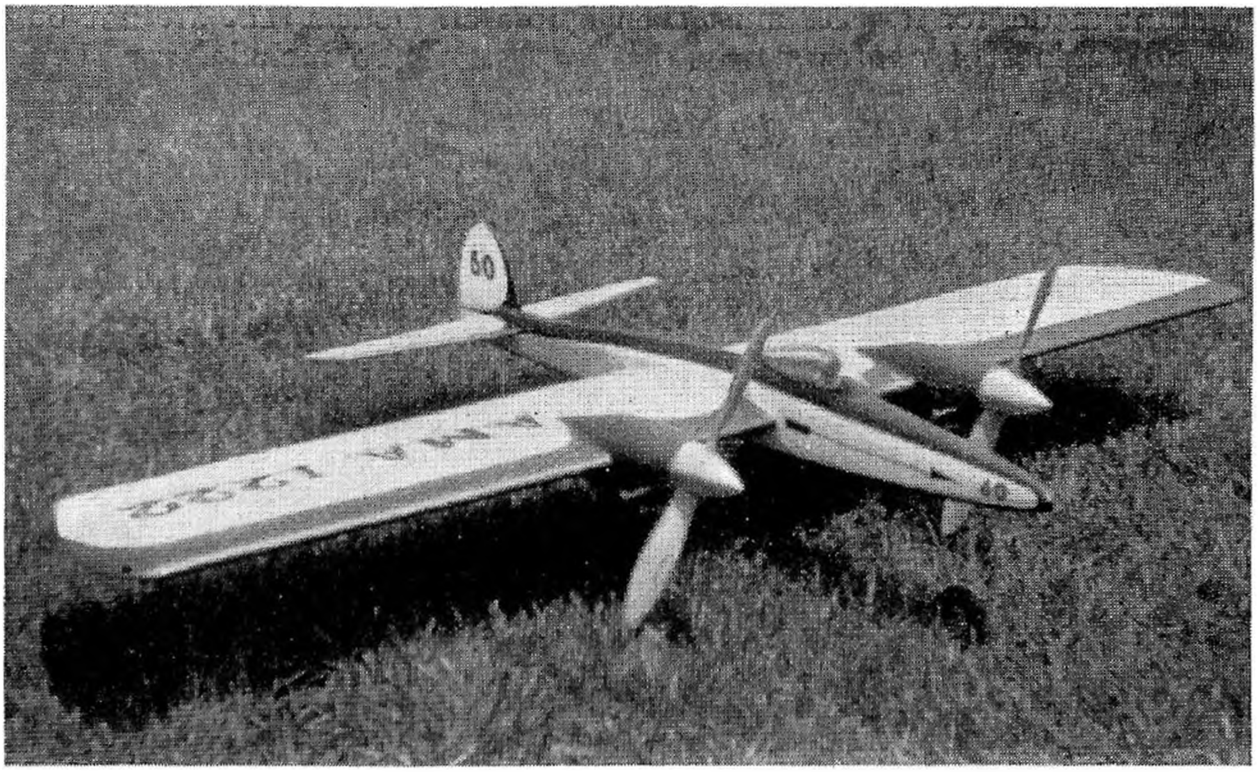
Now, if an attempt was made to total up all characteristics of every model and arrive at an average figure, some very odd aircraft would appear ! It is most important that the designer should select *only* aircraft from the list that are of *similar* type to the model he has in mind. For example, he may already possess an engine of 2 c.c. capacity and require a stunt model for it. He must then ignore all models that are not built round engines of *approximately* that capacity. To include, say, Drone engined models in his selection would be unwise and spoil his chance of finding *average* data on which to work. Perhaps eight or nine models meet this requirement. From the list the designer then omits two or three which have characteristics he does not require. For example, he may favour parallel chord wings, and will then, rightly, drop those with elliptical from his selection.

He can now *rough* out on the drawing board approximate span and chord of his wing, length of fuselage, size of tailplane, area of fin, and their respective locations. This will give him a general outline of his model. It still remains for him, as *designer*, to decide such details as the curvature of the fin, the exact shape of the wing tips, the cross-section of the fuselage, and so on. If half a dozen modellers sat down to design separate models for the same engine, using these data tables as their basis, it would be almost impossible for any two of them to produce an identical aircraft—though if faithfully followed, the aerodynamic make-up of each model would be virtually identical.

Once the general outlines have been decided, then the tables continue to be of help in deciding the thickness, section and nature of the structure, spars, formers, longerons, undercarriages and other parts. From consideration of the successful models given the builder can be assured of adequate strength in the right places, and equally protected, in the case of formula models, from building in ounces of unnecessary weight and strength where it is not required.

We claim that Ron Warring's tables will enable any comparative beginner to design a model with at least as much information at his disposal as the most experienced builder with ten or twenty years of trial and error behind him. Set out as it is the opportunities for arriving at wrong conclusions from the information supplied is reduced to a minimum. As an exercise—and to give the potential user faith in this design method—we suggest that any particularly successful model is selected at random and then carefully analysed to see how it conforms to the average for its class of *similar* models. We guarantee that 90% of the data will be near enough " spot-on." As to the missing 10% that must be chalked up to the particular designer's private know-how, and *may* account for the model being that much better. Let us suppose that the successful model chosen is also known to have certain vices, for example, a propensity to spin if not perfectly trimmed, or something like that. Then regard that difference from the average with suspicion for in it lies the probable answer to the problem : perhaps if re-designed it might be possible to make an even more successful machine.

Well, here are the tables embracing all types of popular models, together with summaries of the year's activities compiled by Ron Warring. With his knowledge to guide you there is no knowing what new figures may not spring into prominence in next season's contests—so good building and good flying ! We shall be interested to hear of successful models designed around these tables, and if support is sufficient will publish feature articles on them in future issues of the *Aeromodeller*.



Peak of stunt control line perfection ? A beautifully finished semi-scale twin engined model, powered with a brace of K & B Torpedo 29s, seen at a recent American meeting. Unfortunately no details of its flying performance are available, but if it flies as well as it looks . . . . .

CONTROL LINE STUNT

Control line stunt flying has reached a particularly high degree of perfection during 1949. In all the major contests there have been upwards of a dozen individual entrants all capable of performing the whole stunt schedule and often the results have only been decided on a matter of chance, where one fellow's luck ran out and his motor began to run rough at the critical moment, or the lines snagged on him for no apparent reason.

Almost without exception the successful contest models have been small or medium sized, with a definite predominance of small types. Not so very long ago it was thought that only large 10 c.c. powered control line models could make good stunt machines, but British development of the 1 to 2 c.c. stunt model, started in 1948 and brought to near-perfection in 1949, has proved otherwise.

As far as the standard of stunt flying goes, the leading British fliers are no doubt every bit as good as their American contemporaries—and both are considerably in advance of Continental standards. Control line flying on the Continent has been approached in rather a different fashion and they are considerably stronger on speed than aerobatics. Almost any good-average British " club " modeller would stand a good chance of winning a Continental control line stunt event. But the best Continental speed fliers are getting slightly higher figures than their British contemporaries.

In the detail tables we have deliberately listed quite a number of the larger American stunt models. Stunt flying with small models is undoubtedly the best approach for contest work, since such types survive even serious crashes with little or no damage, but are seldom satisfactory from the spectacle point of view.

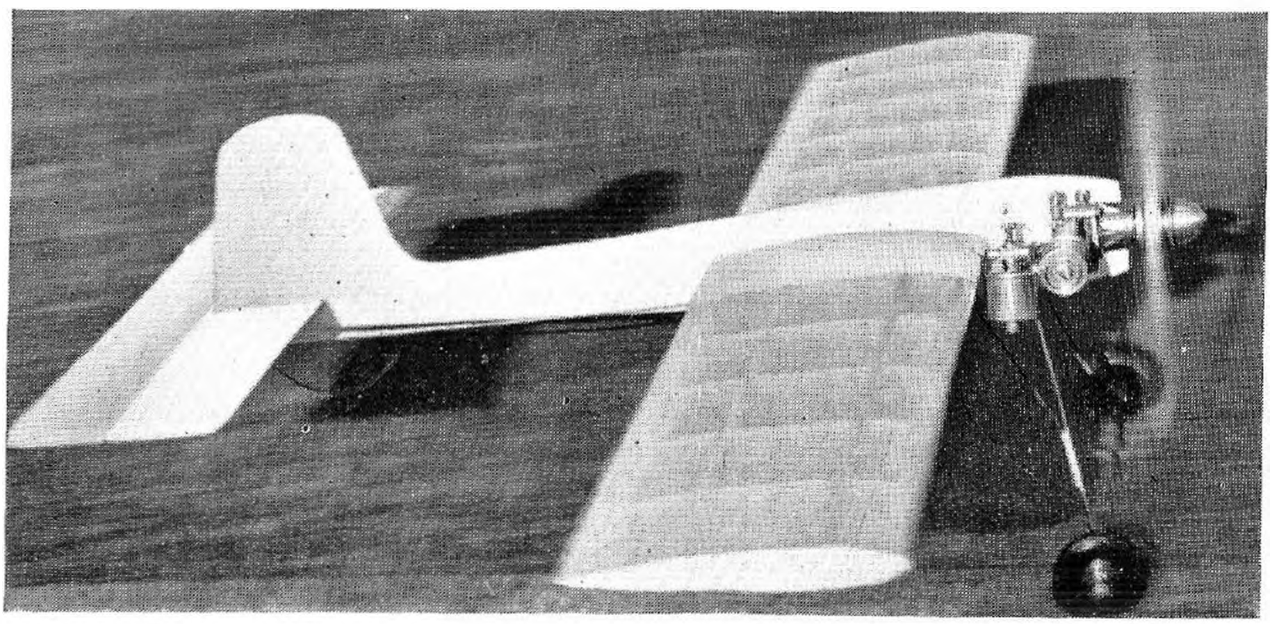
Many modellers who took up stunt flying with enthusiasm found their interest waning once they had reached a certain level of proficiency, only to recapture the old thrill of control line flying again once they went over to really large jobs.

As things are at present, the person who enters a large model in a stunt contest is at a serious disadvantage. Should he crash—and it may be through no particular fault of his own—he has eliminated himself from the running and possibly written off a model which took some weeks to build. Until competition rules are altered, with definite classes for stunt flying, small models will undoubtedly top the lists in the majority of cases. But for pure satisfaction of achievement, a fully aerobatic stunt model of 400 sq. in. wing area or more with a powerful 10 c.c. motor will be hard to beat, as well as being *thrilling* to fly. When a large model gets out of control momentarily it is a real thrill for both pilot and spectators. When the same thing happens with a small model, nobody is particularly perturbed—least of all the pilot, who can crash land in the grass and pick the model up, start the motor and get away to another flight !

The smallest model listed in the tables—the Infant Wagon—is virtually a toy, designed to be flown on the 0.33 c.c. K & B Infant glow-plug motor. Maximum line length is about 15 ft.

The Infant Wagon is, of course, directly scaled down from de Bolt's Stuntwagon—a 607 sq. in. giant which represents about the limit of the late 1948 American trend towards shorter and shorter moment arms for stunt work. This problem—long or short tail moment arm—was, for a time, a controversial point. But undoubtedly rapid manoeuvrability and small turning radius came from short moment arms and so fuselages became shorter and shorter. The next logical step was, of course, to do away with the fuselage and tailplane entirely and hinge the elevator

Profile fuselage stunt model with sidewinder engine—in this case with standard tank fitted, though it is usual to fit wedge or other suitable stunt tank.



Dennis Allen starts up his Marlin, semi-scale stunt model that has proved one of the year's more popular commercial kit models, and first in the field to demonstrate that elegance and performance could be happily combined.

directly on to the trailing edge of the wing. Whence the flying wing stunt model !

There is no doubt that it is easier to stunt-fly a short moment arm model. That is to say, the same range of manoeuvres can be performed with less skill on the part of the pilot. Carried to these extremes, however, there is the ever present danger of over-control, when the model responds too rapidly to control movement and the flight path is erratic rather than smooth.

The short moment-arm design, and particularly flying wing types, are apt to be rather critical as regards C.G. position. A forward C.G. position is very safe, but tends to make the model sluggish. Moving the centre of gravity back towards the pivot point a position for optimum trim is reached, beyond which instability sets in.

Short moment arm stunters are a definite trend and the layout will probably remain in favour. Leading British example in this field is a commercial model—the Monitor, designed by H. J. Nicholls and kitted by Mercury Models. Stuntwagon influence is obvious here, although the actual model differs in several details. Particularly interesting is the fact that it is rigged " true " with no thrust or rudder offset and the wings also have a fairly generous dihedral angle.

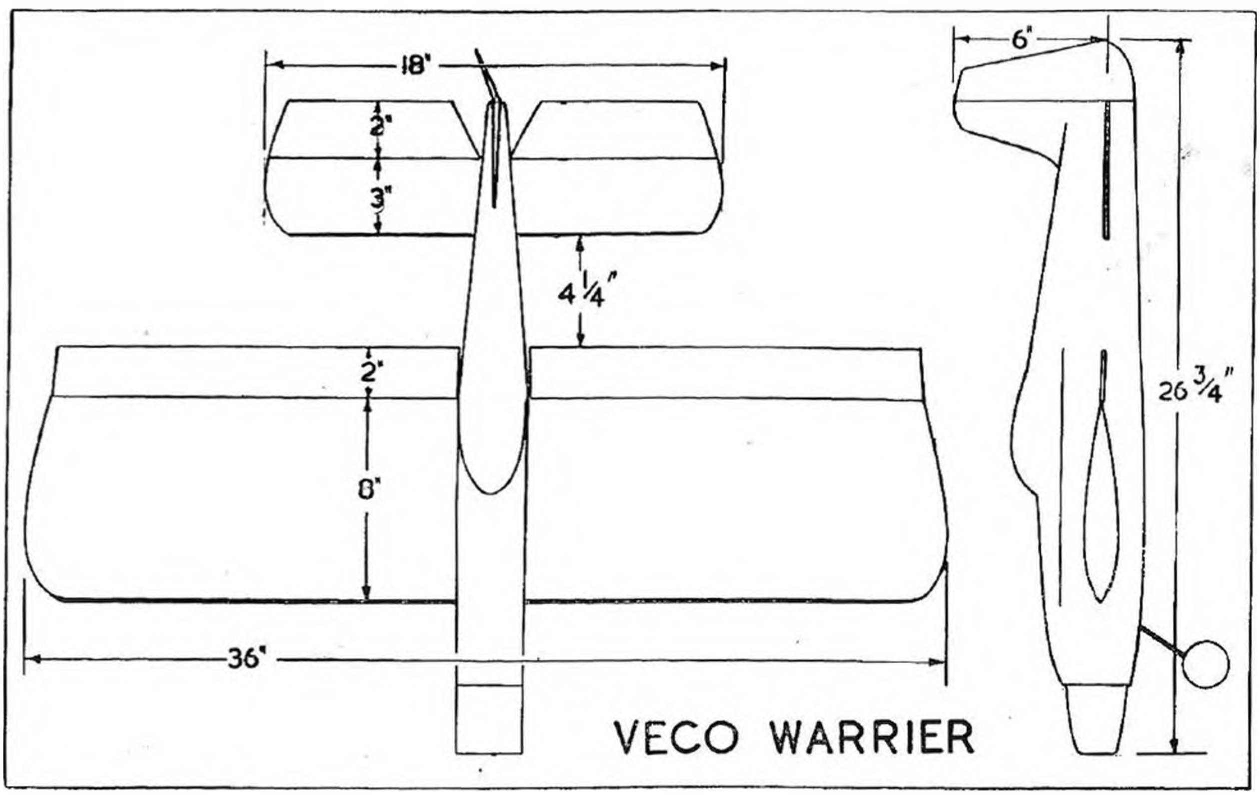
Another feature contributing towards good manoeuvrability was found to be thick wings. Small turning (*i.e.*, looping) radius did not necessarily follow from exaggerated elevator area and range of movement. Excessive elevator control, in fact, tends to stall a model on pull out and reduce manoeuvrability. With other refinements in design, many of today's successful stunt models employ small area elevators with not more than 30 degrees up and down movement.

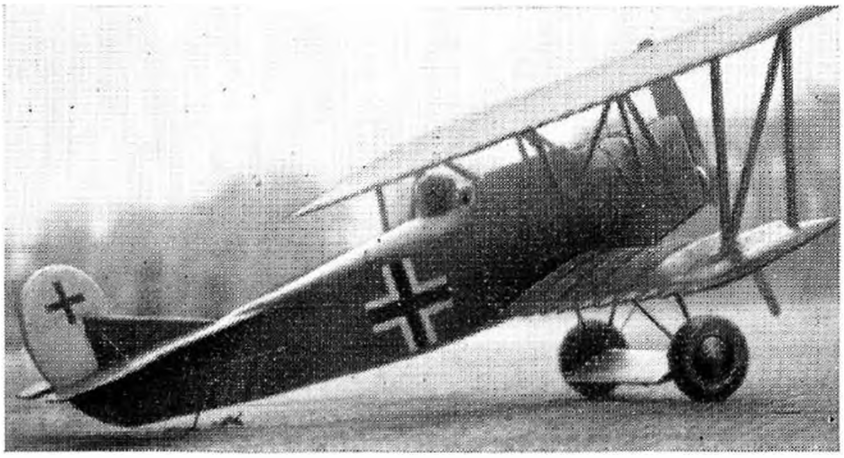
Design development reached the stage in 1949 where models became too manoeuvrable—more often than not the result of excessive elevator power coupled with the recently introduced trend to move the C.G. back towards the pivot point (a certain way of making a model more sensitive) and some " taming " device was thought desirable. Wing flaps, operating in the opposite direction to elevators produced this effect, reducing the tendency to mush or stall after a sharp pull out and thus make for smoother flying. The Veco Warrior is a typical example employing full span flaps—and also an example of the 1949 trend towards larger wing areas per c.c. motor capacity.

The year 1949 also proved that the true-outline flying scale control line model could be made fully aerobatic. Two particularly good examples are, again, both commercial designs—the Sea Fury and Spitfire 22, by P. Smith. Both rely on exaggerated elevator area for control response, with flaps for smoother control. In the contest field some remarkable performances have been put up with flying scale models of 1914-18 war fighters, particularly the Fokker D-7. In fact, possibilities in this field appear far more open than was at first thought, there being a wealth of suitable prototypes on which to draw.

Since the majority of British stunt models are in the smaller sizes, diesels have been the most popular power plant. The E-D Comp. Special does not appear to have lived up to the promise it gave in Pete Cock's 1948 Nationals winner, but both the Mills and Alfin 1.8 have been widely used with considerable success. The Frog 160 has also shown itself an extremely good motor in capable hands, being particularly suited to the Vandiver.

Those modellers flying the larger stunt jobs have almost invariably retained spark ignition—economy alone being a great point in its favour.



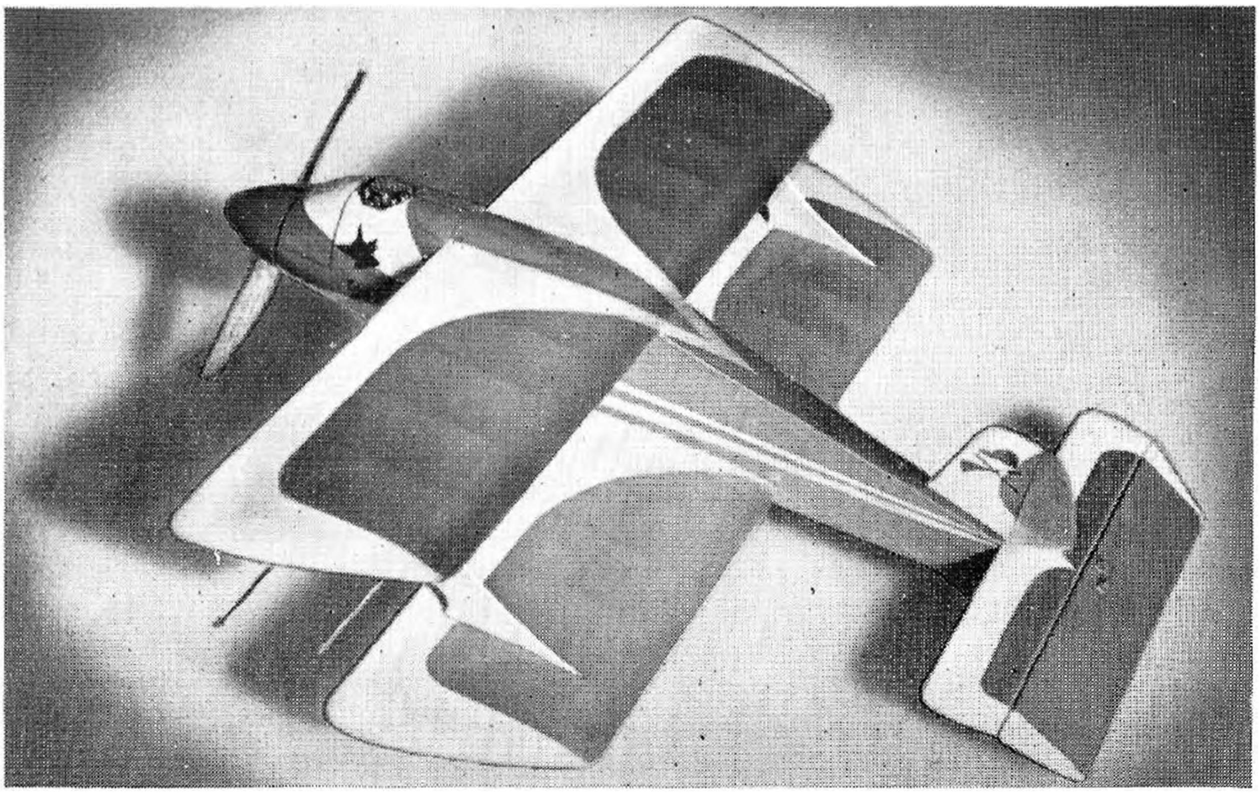


On the left : Scale stunt model —these old biplanes from World War I are immensely popular and highly successful stunters, so that Spads and Fokkers, S.E.5s and Camels are fighting their battles again, this time in miniature.

Below : Yoicks, stunt biplane by J. W. Coasby that reveals the continuing influence of the deBolt Bipe on nearly all medium powered designs.

But it has been significant to note that with these larger motors the ring types have shown themselves to have an extremely long working life, although essentially racing motors. Orthodox motors like the Ohlsson 60 show definite signs of wear after a number of hours flying.

Probably one of the most successful British motors for stunt control line work has been the Yulon, introduced in the early part of the year. Of unprepossessing appearance, this motor is exceptionally powerful and steady and powering models flown by members of the South Birmingham club, notably Messrs. Long, Yule and Hewitt, has captured a considerable number of high places in major aerobatic events. This is a glow-plug motor, yet extremely flexible and easy to handle. One of the few British designs, in this size, in fact, which is not directly based on contemporary American practice and yet has a performance which is at least comparable.



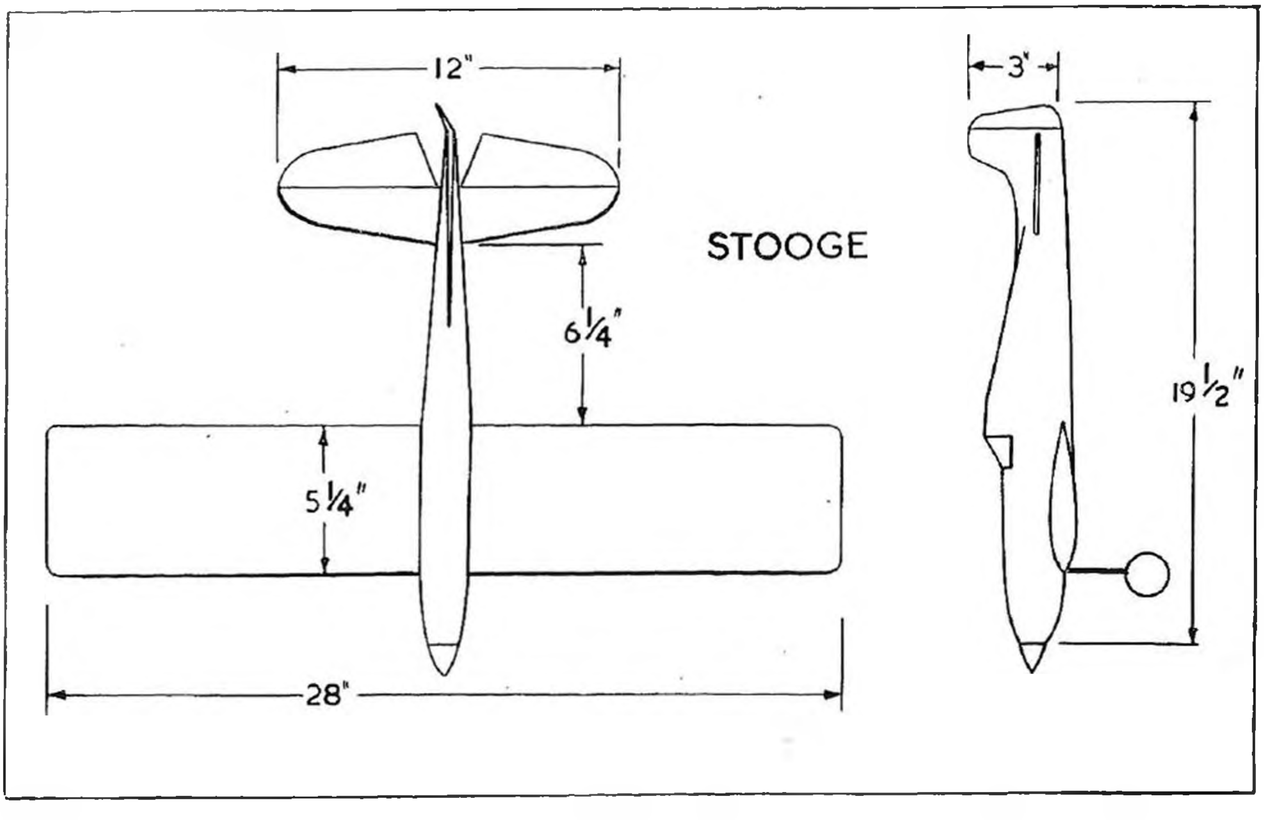
It should provide the ideal equivalent for modellers wishing to build stunt models proportioned for the American 29's.

Biplane stunt models have not figured high in the major competition results, yet are usually particularly smooth and nice to fly. The model which really started the biplane trend was the original de Bolt Bipe—a heavily staggered, short-moment arm design of fairly heavy construction and "lifting" aerofoil section. (Almost without exception present stunt sections are symmetrical.)

A new version of the Bipe has been produced in 1949 and is listed in the tables, also the Super Bipe derivative. Both are full aerobatic and both retain the smooth handling characteristics of the original. The British biplane stunters which have appeared have, almost exclusively, followed closely on de Bolt lines. All biplanes, of course, have the inherent disadvantage of being more vulnerable in a crash landing.

Summarising the stunt control line position at the end of 1949, it may be said that the era of the purely functional, small stunter has come and gone. The breed will persist as all purely functional designs inevitably retain their following, particularly for contest work. Small moment arms are now almost the general rule on new designs and control response is being achieved by rather reduced elevator power and more rearward centre of gravity position. Flaps have been tried and proved and may be expected to come into more general use.

At the same time, there is a definite desire for realism creeping in to the movement. Not necessarily in the form of flying scale stunters, but rather semi-scale effect with attention to fuselage lines and incorporating a cabin. The Monitor, for example, is infinitely more pleasing in appearance than the Stuntwagon without any sacrifice in performance; and even the smaller jobs can be made to look nice, as witness the Stooge and Dervish.



C-L STUNT GENERAL

MODEL	DESIGNER	MOTOR	CAPACITY C C	CAPACITY CU IN	SPN.	AREA	A.R.	TAIL AREA SQ.IN	TAIL AREA %S_W	LOADING OZ/ SQ.FT.	LOADING OZ/ 100 S.I.	LOAD PER CC OZ.	LOAD PER CC SQ. IN.	CIRCUIT	MODEL
INFANT WAGON	H. DE BOLT	K&B INFANT	·33	·020	20	80	5·0	25	31	5·0	3·44	6·7	24	CLOCKWISE	INFANT WAGON
VANDIVER	J.VANDERBEEK	FROG 160	1·6	·102	26	120	5·6	37	30	9·7	6·7	5·0	75	ANTI CLOCK	VANDIVER
SMALL FRY	R.PRENTICE	MILLS 1·3	1·3	·08	28	122	6·4	38 5	31	9·4	6·5	6·2	94	ANTI CLOCK	SMALL FRY
DERVISH	C.SHAW	MILLS II	1·3	·08	28	134	5·8	29	22	8·6	6·0	4·6	100	ANTI CLOCK	DERVISH
GLO BUG	C.GOLDBERG	OHLSSON 19	3·2	·195	27½	138	5·5	37	27	13·5	9·4	3·5	94	ANTI CLOCK	GLO BUG
PLAYBOY	R.WARRING	ARDEN O99	1·6	O99	30	144	6·0	40	27·5	10	6·9	6·2	90	ANTI CLOCK	PLAYBOY
SEA FURY	P.SMITH	E-D COMP	2·0	·122										ANTI CLOCK	SEA FURY
SPITFIRE 22	P.SMITH	ELFIN 2·4	2·4	·15	28	146	5·4	20	13·7				61	ANTI CLOCK	SPITFIRE 22
STOOGE	F.DOBSON	MILLS II	1·3	·08	28	146	5·4	36	25	8·5	5·6	6·5	58	ANTI CLOCK	STOOGE
STUNTMASTER	W.A.DEAN	MILLS II	1·3	·08	30	150	6·0	40	27	9·35	6·25	7·5	115	ANTI CLOCK	STUNTMASTER
STOOPLATE	L.STEWART	MILLS II	1·3	·08	14½	165							127	ANTI CLOCK	STOOPLATE
MILLSBOMB II	M.BOOTH	ELFIN 1·8	1·8	·11	32	168	6·1	42	25				93	ANTI CLOCK	MILLSBOMB II
ARIEL	R.J.NORTH	ELFIN 1·8	1·8	·11	30	180	5·0	35	19·5	6·4	4·45	4·45	100	ANTI CLOCK	ARIEL
TIPSY JNR	HUNDLEBY	ELFIN 1·8	1·8	·11	28½	184	4·4	34	18·5	10·6	7·3	7·5	104	ANTI CLOCK	TIPSY JUNIOR
BABY BIPE	R.MOULTON	MILLS 1·3	1·3	·08	22	200		40	20				154	ANTI CLOCK	BABY BIPE
KAN DOO	P.COCK	E-D COMP	2·0	·122	29	200	4·15	50	25				100	ANTI CLOCK	KANDOO
DE BOLT NEW BIPE	H.DE BOLT	DRONE	4·9	·299	23	200		64	32	20	14·0	5·7	41	CLOCKWISE	NEW BIPE
MARLIN	D.ALLEN	ELFIN 1·8	1·8	·11	32	200	5·1	46	23	6·85	4·75	5·3	111	ANTI CLOCK	MARLIN
LIL' ZILCH	G.SAFTIG		5·0	·305	34	252	5·6			14·4	10·0	5·0	50	ANTI CLOCK	LIL' ZILCH
SUPER LOOPER	H.COLE	FORSTER 29	4·9	·29	39	270	6·9	45	16·5	9·6	6·7	3·7	54	ANTI CLOCK	SUPER LOOPER
BOXCAR	D.ALLEN	SUPER CYKE	10·0	·607	39½	336	4·2	80	24	11·5	8·0	2·8	34	ANTI CLOCK	BOXCAR
DEFENDER	F.MCELWEE	DRONE	4·9	·299	41	276	6·1	65	24					ANTI CLOCK	DEFENDER
SUPER BIPE	H.DE BOLT	DRONE	4·9	·299	26½	278		66	24	16·6	11·5	6·5	57	CLOCKWISE	SUPER BIPE
FLIP FLOP	R.BORDEN	DRONE	4·9	·299	37	296				9·7	6·75	4·0	60	ANTI CLOCK	FLIP FLOP
MONITOR	H.J.NICHOLLS	AMCO 3·5	3·5	214	39	300	4·9	78	26	8·15	5·7	4·85	66·6	ANTI CLOCK	MONITOR
GO DEVIL JNR	R.PALMER	4-7CC	4-7	·23-49	40	315	5·1	76	24					ANTI CLOCK	GO DEVIL JNR
MAGICIAN	W.BABCOCK	SPORTSMAN	6·0	·35	40	316	5·0	58	18	11·8	8·2		56	ANTI CLOCK	MAGICIAN
VECO WARRIER	JOHNSON	OHLSSON 29	4·9	·29	36	354	3·65	88	25				71	ANTI CLOCK	VECO WARRIER
STUNTWAGON 30	H.DE BOLT	GLO TORP	5·0	·302	44	375	5·2	88	23 5	9·0	5·9	4·4	74	CLOCKWISE	STUNTWAGON 30
MADMAN	J.C.YATES	ORWICK	10·0	·604	49	390	6·2	80	20 5				39	ANTI CLOCK	MADMAN
EASY	F.EHLING	8-12 CC	8-12		50	500	5·0	100	20				42-62	ANTI CLOCK	EASY
SUPER ZILCH	G.SAFTIG	SUPER CYKE	10·0	·607	54	500	7·5	75	15	12	8·4	4·2	50	ANTI CLOCK	SUPER ZILCH
GO DEVIL	R.PALMER	ORWICK	10·0	·604	53	575	4·9	120	21				57·5	ANTI CLOCK	GO DEVIL
STUNTWAGON	H.DE BOLT	ATWOOD	10·0	·607	58	665	5·1	156	23·5	104	7·2	4·8	66·5	CLOCKWISE	STUNTWAGON

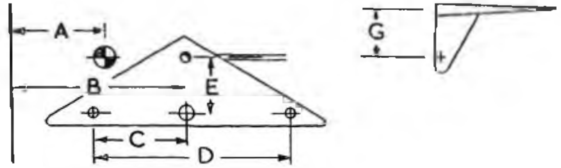
C-L STUNT DESIGN DATA

MODEL	WINGS SPN	CHD	AREA	PLAN	TYPE	%	POSITION
D.B. INFANT WAGON	20	5	80	ST. TAPER	SYMM.	12·5	SHOULDER
VANDIVER	26	4 3/4	120	PARALLEL	SYMM	10	MID
SMALL FRY	28	5 1/2	122	PARALLEL	SYMM	10	HIGH
DERVISH	28	5 9/16	134	ST. TAPER	SYMM	15	LOW
GLO BUG	27 1/2	5 1/2	138	PARALLEL	SYMM	5	MID
PLAYBOY	30	5	145	PARALLEL	SYMM	10	MID
SEA FURY				ELLIPTIC	SYMM	10	LOW
SPITFIRE 22	28	6	146	ELLIPTIC	SYMM	10	LOW
STOOGE	28	5 1/4	146	PARALLEL	SYMM	15	LOW
STUNTMASTER	30	5 1/4	150	ST. TAPER	SYMM	12·5	MID
STOOPLATE	14 1/2		165	CIRCULAR	SYMM	10	
MILLSBOMB II	32	6 1/4	168	ST. TAPER	SYMM	10	LOW
ARIEL	30	6	180	PARALLEL	SYMM	15	LOW
TIPSY JUNIOR	28 4	6 1/2	184	PARALLEL	LIFT	15	LOW
BABY BIPE	22/17		200	PARALLEL	SYMM	15	BIPLANE
KAN DOO	29	7	200	PARALLEL	SYMM	12·5	HIGH
DE BOLT NEW BIPE	23	5	200	PARALLEL	SYMM	10	BIPLANE
MARLIN	32	7	200	ELLIPTIC	SYMM	10	LOW
LIL' ZILCH	34	6 3/4	252	PARALLEL	SYMM	15	LOW
SUPER LOOPER	39	7 1/4	270	PARALLEL	SYMM	15	HIGH
DEFENDER	41	7	276	PARALLEL	SYMM	15	MID
DE BOLT SUPER BIPE	26/24	6/5	278	PARALLEL	SYMM	12·5	BIPLANE
FLIP FLOP	37		296		SYMM	10	TAILLESS
MONITOR	39	9	300	ST. TAPER	SYMM	12·5	LOW
GO DEVIL JNR	40	8	315	PARALLEL	0018	18	LOW
MAGICIAN	40	8	316	PARALLEL	SYMM	15	LOW
BOXCAR	39 1/2	9	336	PARALLEL	SYMM	15	MID
VECO WARRIER	36	10	354	PARALLEL	SYMM	18	MID
STUNTWAGON 30	44	10	375	ST. TAPER	SYMM	12·5	SHOULDER
MADMAN	49	8 1/2	390	ST. TAPER	SYMM	18	LOW
EASY	50	10 1/4	500	PARALLEL	SYMM	15	MID
SUPER ZILCH	54	10	500	PARALLEL	SYMM	14	LOW
GO DEVIL	53	11	575	PARALLEL	0018	18	LOW
STUNTWAGON	58	13	665	ST. TAPER	SYMM	15	SHOULDER

LOA	TAILPLANE & ELEVATORS MNT	SPN	AREA	% SW	EL.A.	% ST	FIN AREA	% SW	WEIGHT OZ.	MODEL
10 1/2	5/8	10	25	31	12·5	50	3	3·75	2 3/4	INFANTWAGON
18 1/4	6	11	37	30	18	49	6	5·0	8	VANDIVER
16 1/2	5 3/4	13	38·5	31	26	67	6	5·0	8	SMALL FRY
18	4 3/4	9 3/4	29	22	12	40	8	6	8	DERVISH
21 3/4	8	12	37	27	36	98	6	4·3	13	GLO BUG
	8	12	40	27·5	20	50	7	5	10	PLAYBOY
										SEA FURY
22 3/4	8 1/4	8	20	13·7	15	75				SPITFIRE 22
19 1/2	6 1/4	12	36	25	18	50	9	6·1	8 1/2	STOOGE
17 1/4	7 1/2		40	27	18	45			9 3/4	STUNTMASTER
14 1/2					20		4·5	2·5		STOOPLATE
20 3/4	7 1/4	11 1/2	42	25	21	50	8	4·8		MILLSBOMB II
18 1/2	8 1/4	10	35	19·5	17·5	50	10	5·5	8	ARIEL
22	6 1/2	10	34	18·5	16	47			13 1/2	TIPSY JUNIOR
21	4	11	40	20	20	50	11	10		BABY BIPE
22 1/2	6	14	50	25	30	60				KAN DOO
21 1/4	2 1/2	13	64	32	30	46	14	7	28	NEW BIPE
21 1/2	8	14	46	23	20	43	10	5	9 1/2	MARLIN
	9								25	LIL' ZILCH
21 3/4	8	12	45	16·5	20	45	8	3	18	SUPER LOOPER
26	8 5/8	14	65	24	32	50	14	5		DEFENDER
23 3/4	2 1/2	14	66	24	30	45	15	5·4	32	SUPER BIPE
19	0				34		15	5	20	FLIP FLOP
26 1/2	4 1/8	15	78	26	30	38·5	20	6·6	17	MONITOR
27 1/2	8	18	76	24	34	45				GO DEVIL JNR
25 3/8	8 1/2	13	58	18	19	33	13	4·1		MAGICIAN
29	10	18	80	24	45	56	14	4·2	28	BOXCAR
26 3/4	4 1/4	18	88	25	36	41	25	7		VECO WARRIER
20 1/4	1/2	18	88	23·5	44	50	6	1·2	22	STUNTWAGON
33	9	18	80	20·5	40	50				MADMAN
35	11	18	100	20	54	54	34	7		EASY
	9		75	15	30	40				SUPER ZILCH
33	8 1/2	23	120	21	52	42	33	5·8		GO DEVIL
30	1 5/8	24	156	23·5	78	50	15	2·25	48	STUNTWAGON

MOMENT ARM MEASURED FROM T.E. OF WING TO L.E. OF TAILPLANE

C-L STUNT RIGGING



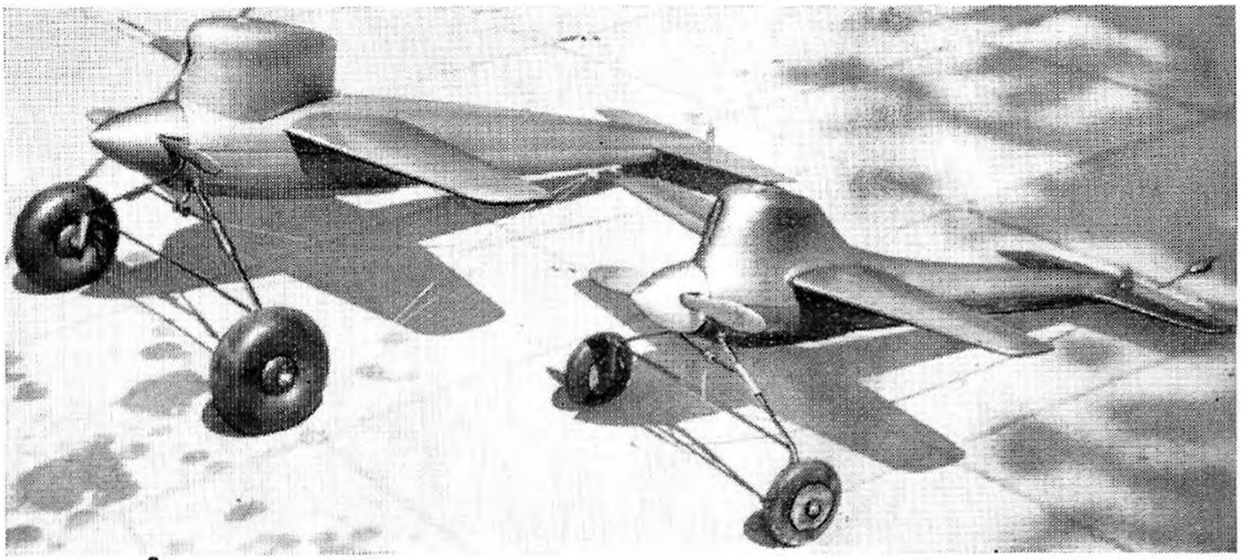
MODEL	INCID. W	INCID. T	RUDDER	ELEVATOR UP	ELEVATOR DN	C.G. A	B	C	D	E	G
INFANT WAGON	0	0	4° LEFT	30	30	1/2	1 5/8	1	2	1/4	1/4
VANDIVER	0	0	3/16 RIGHT	30	30	0 1/2	2 7/16	1 1/4	2 1/2	9/16	1/2
SMALL FRY	0	0	15° RIGHT	30	30		3 1/4	15/16	1 7/8	5/8	3/8
DERVISH	0	0	15° RIGHT	45	40		2 1/8	1	2	9/16	3/8
GLO BUG	0	0	3° RIGHT	45	45	1 1/2	2 3/4	1 1/4	2 1/2	3/8	1/2
PLAYBOY	0	0	3/8 RIGHT	45	45	1	2	1	2	3/8	3/8
SEA FURY	0	0	20° RIGHT	45	45			15/16	1 7/8	7/16	3/8
SPITFIRE	0	0	20° RIGHT	45	45		3	15/16	1 7/8	7/16	3/8
STOOGE	0	0	7/16 RIGHT	45	45		2 1/8	1	2	1/2	7/16
STUNTMASTER	0	0	10° RIGHT	45	45	1 1/4	2 1/2	1 1/4	2 1/2	3/8	3/8
STOOPLATE	0		10° RIGHT	30	30	2 1/2	3 1/2	1 1/16	2 1/8	1/2	3/8
MILLSBOMB II	0	0	3/8 RIGHT	45	45		2	3/4	1 1/2	1/2	3/8
ARIEL	0	0	3/8 RIGHT	45	45	1 1/2	3	1 1/2	3	3/4	1/2
TIPSY JUNIOR	+1	0	15° RIGHT			2	2 3/4	1	2	1/2	1/2
BABY BIPE	U-2	0	5° RIGHT	45	45		2	1	2		
KAN DOO	0	0	15° RIGHT	45	45	2	3 1/2	1	2	1	1/2
SUPER BIPE	U-2	0	NEUTRAL	45	45	1 1/2	1 7/8	1 1/8	2 1/4		5/16
NEW BIPE	U-2	0	1/4 LEFT	45	45	2	2 5/8	1	2		3/8
MARLIN	0	0	10° RIGHT	40	40		2 3/4	1	2	9/16	9/16
LIL ZILCH	0	0	10° RIGHT	30	30	1 3/4	2 1/16	3/4	1 1/2	3/4	7/8
SUPER LOOPER	0	0		35	40	1 1/2	5	1 1/2	3	5/8	3/4
DEFENDER	0	0	NEUTRAL	45	45		2 1/2	1 1/2	3	5/8	1/2
FLIP FLOP	0					1	2 1/2	1 1/2	3	5/8	1/2
MONITOR	0	0	NEUTRAL	30	30		2 3/16	1	2	9/16	1/2
GO DEVIL JNR	0	0	5° RIGHT	30	30	1 7/8	2 3/4	1 3/4	3 1/2	9/16	9/16
MAGICIAN	0	0	10° RIGHT	30	30	2 1/2	3 3/4	1	2	3/4	3/4
BOXCAR	0	0	10° RIGHT	35	30	2 1/2	3 3/4	1	2	3/4	3/4
VECO WARRIER	0	0	5° RIGHT	30	30	2	3	1 1/2	3	5/8	3/4
STUNTWAGON 30	0	0	5/16 LEFT	35	35	2 1/4	3 3/8	1 1/2	3	1/2	1/2
MADMAN	0	0	5° RIGHT	30	30	2 3/8	3 1/2	1 3/4	3 1/2	9/16	9/16
EASY	0	0	NEUTRAL	30	30						
SUPER ZILCH	0	0	10° RIGHT	30	30	2 3/8	3 1/2	1 3/4	3 1/2	3/4	3/4
GO DEVIL	0	0	5° RIGHT	30	30	2 3/4	3 1/2	1 3/4	3 1/2	9/16	9/16
STUNTWAGON	0	0	3/8 LEFT	35	35	3	4	1 3/4	3 1/2	3/4	3/4

THRUST DN.	THRUST SIDE	BALLAST	LINE RAKE	MOTOR	PROP D.	PROP P.	MODEL
·	·	OUTER TIP	·	K&B INFANT	5	3	INFANT WAGON
	2°R			FROG 160	8	5	VANDIVER
0	0			MILLS 1·3	8	5	SMALL FRY
0	2°R		1/2" BACK	MILLS II	8	8	DERVISH
0	0		1" BACK	OHLSSON	10	6	GLO BUG
0	0			ARDEN 099	9	5	PLAYBOY
0	0			E-D COMP	8	8	SEA FURY
0	0			ELFIN	9	8	SPITFIRE
0	0			MILLS II	8	5	STOOGE
0	0			MILLS II	8	5	STUNTMASTER
0	0			MILLS 1·3	8	5	STOOPLATE
0	0			ELFIN			MILLSBOMB II
0	0	1/2 OZ R.TIP		ELFIN 1·8	8	6	ARIEL
0	0			ELFIN 1·8	8	6	TIPSY JUNIOR
0	2°R			MILLS 1·3	8	12	BABY BIPE
0	0			E-D COMP	9	8	KAN DOO
0	0			DRONE	11	10	SUPER BIPE
0	0			DRONE	11	10	NEW BIPE
0	0	OUTER TIP		ELFIN	9	8	MARLIN
0	0		5/8" BACK				LIL ZILCH
0	0			FORSTER 29	10	6	SUPER LOOPER
0	0			DRONE	11	8	DEFENDER
0	0		3/4" BACK	DRONE	11	8	FLIP FLOP
0	0	1/2 OZ R.TIP		AMCO	9	8	MONITOR
0	0		3/4" BACK				GO DEVIL JNR
0	0	OUTER TIP		SPORTSMAN	9	5	MAGICIAN
0	4°R			SUPER CYKE	11	8-10	BOXCAR
0	0	OUTER TIP		OHLSSON 29	10	8	VECO WARRIER
0	0	2 OZ L.TIP		GLO-TORP	10	6	STUNTWAGON 30
0	0			ORWICK			MADMAN
0	0			8-12 CC			EASY
0	0		1" BACK	SUPER CYKE	12	8	SUPER ZILCH
0	0		1" BACK	ORWICK			GO DEVIL
0	0	4 OZ L.TIP		ATWOOD			STUNTWAGON

C-L STUNT CONSTRUCTION

MODEL	TYPE	WINGS TYPE	WINGS L E	WINGS SPARS	WINGS T E	WINGS RIBS	COVERING	FUSELAGE TYPE	FUSELAGE MAIN MEMB	FUSELAGE TOP	FUSELAGE COVERING	TAIL	HINGE	U-C LEG	U-C DIA
INFANT WAGON	INTEGRAL	SPARLESS				3/32	1/16 SHT SKINS	BOX	1/16 SHT. SIDES		1/16 SHEET	1/8 SHEET	GAUZE		
VANDIVER	WING DETACH	SPARLESS	3/8X1/2		1X3/16	1/16	TISSUE	BOX	1/16 SHT. SIDES	BLOCK	1/16 SHEET	3/32SHEET	TAPE	14 G•	2
SMALL FRY	INTEGRAL	MONOSPAR	1/8 SQ	1/8 SQ	3/4X3/16	1/16	TISSUE	BOX	1/8 SQ		TISSUE	1/8 SQ	TAPE		
DERVISH	INTEGRAL	SPARLESS	1/2 X 1/8		1X1/16-V	1/16	TISSUE	BOX	1/8 SQ & 1/8 SHT.	BLOCK	TISSUE	1/8 SHEET	TAPE	16G•	1 3/4
GLO BUG	INTEGRAL	SOLID					1/4 SHEET	PROFILE	3/8 SHEET			1/8 SHEET	CLOTH	14G	2
PLAYBOY	INTEGRAL	SPARLESS	1/2 SQ		1 X 1/4	1/16	TISSUE	CRTCH.	3/16 SQ	1/16 SHT.	1/16 SHEET	3/32 SHEET	TAPE	14 G	2
SEA FURY	INTEGRAL	TWO SPAR	1/8 SQ	1/16 SHEET	1/16 SHT	1/16	TISSUE	SHELL	1/16 KEEL	1/16 SQ	TISSUE	1/8 SHEET	TAPE	14 G•	1 3/4
SPITFIRE 22	INTEGRAL	TWO SPAR	1/8 SQ	1/16 SHEET	1/16 SHT	1/16	TISSUE	SHELL	1/16 KEEL	1/16 SQ	TISSUE	1/8 SHEET	TAPE	14 G•	1 1/2
STOOGE	INTEGRAL	SPARLESS	3/4 X 1/8		1 1/4 X 1/8	1/16	TISSUE	BOX	1/8 SQ		TISSUE	1/8 SHEET	TAPE	16G•	2
STUNTMASTER	INTEGRAL	MONOSPAR	1/4 SQ	2 - 3/16 SQ	13/16X1/4	1/8	SHEETLE	PROFILE	1/2 SHEET			3/16 SHEET	CLOTH	3/32•	2
STOOPLATE	INTEGRAL	TWO SPAR	3/32 SHT	3/32 SHEET	3/32 SHT	3/32	TISSUE						TAPE		
MILLSBOMB II	INTEGRAL	TWO SPAR	1/4 X 3/8	1/2 X 1/8	5/8 X 3/16	1/16	TISSUE	BLT. UP	1/8 SHT. SIDES	1/4X1/8 PLANKING		1/4 SHEET	TAPE	14G	2
ARIEL	INTEGRAL	SPARLESS	1/2 SQ		3/4X3/16	1/16	TISSUE	BOX	3/32 SHT. SIDES		3/32 SHEET	1/16 SHEET	TAPE		
TIPSY JUNIOR	INTEGRAL	MONOSPAR	1/8 SQ	1/8 SQ	1 X 5/16	1/16	TISSUE		1/16 SHT. SIDES	1/8X1/16	TISSUE	1/4 SHEET	TAPE	14 G	1 3/4
BABY BIPE	INTEGRAL	TWO SPAR	3/8 X 3/16	1/8 SQ	1/2 X 1/8	1/16	TISSUE	PROFILE	3/8 SHEET		1/16 SHEET	1/8 SHEET	TAPE	16 G	
KAN DOO	INTEGRAL	MONOSPAR	3/16 SQ	2 - 1/8 SQ	1 X 1/4	1/16	TISSUE	PROFILE	3/16 PLY			1/8 SHEET	TAPE	14G	2
DE BOLT NEW BIPE	INTEGRAL	SPARLESS	1 1/4X1/2		1 X 1/4	1/8	TISSUE	BOX	1/8 SHT. SIDES	SHEET	1/8 SHEET	3/16 SHEET	DOWEL	1/8	2
MARLIN	INTEGRAL	MONOSPAR	3 3/16X1/16	1/2 X 1/8	3/4X1/16V	1/16	TISSUE	CRTCH.	3/16 SQ	1/16 PLANKING		1/8 SQ	TAPE		
LIL ZILCH	INTEGRAL	MONOSPAR				3/32	SILKSPAN	BOX	3/16 SQ		SILKSPAN	1/4 SHEET	TAPE	3/32	2 1/4
SUPER LOOPER	INTEGRAL	MONOSPAR	1/4 SQ	1/2X3/16	1X 5/16	1/16	SILKSPAN	CRTCH.	1/4 SHEET		1/16 SHEET	1/8 SHEET	METAL	3/32	2 1/2
DEFENDER	INTEGRAL	MONOSPAR	1/4 SQ	2 - 1/4 X 1/8	1 X 5/16	1/8	SILKSPAN	CRTCH.	1/2 X 1/4	SHEET	1/8 SHEET	1/8 SHEET	TAPE	1/8	2 1/2
DE BOLT SUPERBIPE	INTEGRAL	SPARLESS	3/4X1/2		3/32-V	1/8	SILKSPAN	BOX	1/8 SHT. SIDES	SHEET	1/8 SHEET	3/16 SHEET	DOWEL	1/8	2 1/4
FLIP FLOP	INTEGRAL	TWO SPAR	1/4 SQ	1/4 SQ	1X1/16-V	3/32	SILKSPAN		3/32 SHT. SIDES	SHEET	3/32 SHEET		CLOTH		
MONITOR	WING DETACH	MONOSPAR	3/8 SQ	3/4 X 3/16	1 1/2X1/16V	1/16	TISSUE	CRTCH.	1/2 X 1/4	PLANKED		3/16 SQ	TAPE		
GO DEVIL JUNIOR	INTEGRAL	TWO SPAR	3/8 SQ	3/4X1/4&3/16	1X 1/4	1/16	SILKSPAN	BOX	1/8 SHT. SIDES		SILKSPAN	3/16 SHEET	TAPE	14 G	1 3/4
MAGICIAN	INTEGRAL	TWO SPAR	1/4 SQ	5/8&3/8X1/4	1 X 3/8	1/16	SILKSPAN	BOX	1/16 SHT. SIDES	1/2 SHT.	1/16 SHEET	1/8 SHEET	TAPE	12G	2
BOXCAR	WING DETACH	MONOSPAR	1/4 SQ	3/4 X 1/8	1X1/16-V	1/16	TISSUE	BOX	1/4 SQ			1/4 SQ	TAPE	10G	2
VECO WARRIER	INTEGRAL	SPARLESS	1 SQ		1 X 1/2	1/8	SILKSPAN	BOX	1/8 SHT. SIDES		SILKSPAN	3/16 SHEET	TAPE	3/32	2
STUNTWAGON 30	INTEGRAL	SPARLESS	3/4 SQ		3/32 SHT	3/32	SILKSPAN	S-SLD.	1/8 SHT. SIDES	BLOCK	BLOCK	3/16 SHEET	DOWEL		
MADMAN	INTEGRAL	TWO SPAR	1/4 SQ	1 & 5/8 X 1/4	7/8 X 1/4	3/32	SILKSPAN	BOX	SHEET SIDES	BLOCK	1/8 SHEET	3/8 SHEET	METAL	10G	2 1/2
EASY	INTEGRAL	SPARLESS	1 1/4 SQ		1 X 5/8	1/8	SILKSPAN	CRTCH.	1/4 SHT. SIDES			1/4 SHEET	TAPE	1/8	2 1/2
SUPER ZILCH	INTEGRAL	TWO SPAR	3/8 SQ	1/2&1/4X1/4	2X1/16-V	3/32	SILKSPAN	BOX	1/4 SQ	1/8 SQ	SILKSPAN	5/16 SHEET	METAL	10G	3
GO DEVIL	INTEGRAL	TWO SPAR	3/16 SQ	1/2&3/16X1/4	1X 3/8	3/32	SILKSPAN	BOX	1/8 SHT. SIDES	BLOCK	1/8 SHEET	1/4 SHEET	METAL	10G	2 1/2
STUNTWAGON	INTEGRAL	MONOSPAR	1 X 1/2	2 - 1/4 SQ	1/8 SH.V	1/8	SILKSPAN	S-SLD.	1/4 SHT. SIDES	BLOCK	BLOCK	SHT SKINS	DOWEL		

• DROP OUT UNDERCARRIAGE



CONTROL LINE SPEED

Control line speed has not, as yet, reached great heights in this country. Standardisation of speed classes, records and flight requirements was reached in the early part of 1949, but since that date there have only been two speed meetings on any large scale, apart from the S.M.A.E. speed contests scheduled for September. Record requirements laid down that an approved-type anti-whip post must be used for all attempts and these could only be made at official meetings or under similar official sanction. Thus the speed boys have not had a great deal of opportunity to prove their worth on a National scale.

Once again it is evident that American influence is widespread. Probably the most popular single design which British modellers have copied directly or modified to their own needs is the Little Rocket, by J. L. Sadler. This model is typical of late 1948 American practice. Slim fuselage, hooded motor cowling, no fin, parallel chord high aspect ratio wings being typical design features.

Actually the Little Rocket has very little wing area per c.c., particularly in the Class C and Class D versions, which really means that best results can only be obtained in these classes with the lightest possible overall weight. With excessive weight, the model would have to be flown nose-up all the time to generate enough lift to maintain level flight, and thus increase the overall drag value.

Most of the other leading American designs are similar in design layout. Hooded motors are now almost the universal rule, with generally the complete disappearance of the vertical tail surfaces. The tailplane itself may be dihedralled—often from purely practical considerations such as saving it from damage in a belly landing. Dihedralled tailplanes, however, can equally well be damaged in such landings if the model turns over on to its back and so a small fin may be retained, if only to act as a " crash pylon."

Most of the early speed models were all Class D, *i.e.*, the largest size with 10 c.c. racing motors. Hollow log construction was almost universal, with pine or similar hardwood as the basic material. These were developed up to quite fine aerodynamic limits and one of the first really successful British speed models—John Wood's Racer—incorporates most of these features. This model had beaten the 100 m.p.h. mark by the end of 1948 and improved on this by some 15 m.p.h. during the present year. Yet it appears to have reached its limit with the standard Nordec, which is still some 20 m.p.h. slower than contemporary American speeds in the same class.

New materials of construction were investigated during 1948 and 1949 saw the introduction of the all-metal Invader to this country. Again this model is typically orthodox as regards design layout, but the airframe is fabricated almost completely from Alclad sheet, spot welded together. Forming of the wings is quite simple. The sheet is bent round to produce a conventional symmetrical aerofoil section and spot welded along the trailing edge.

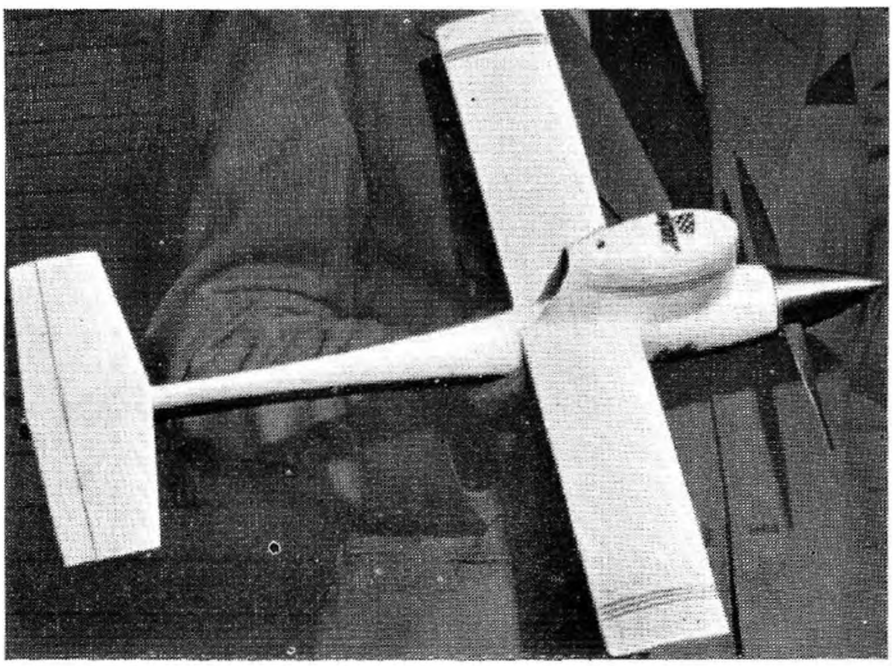
Pure stressed skin construction of this nature is not strong enough on its own and so each wing half is mounted on a hardwood stub spar projecting from the fuselage shell, being secured in place by small countersunk woodscrews. Such a wing is light, robust and presents a good smooth surface.

Similar wing construction has been used on otherwise orthodox airframes, Don Newberger's Whirlaway, using .012 sheet aluminium wings on an oak stub spar with a conventional hollow log fuselage.

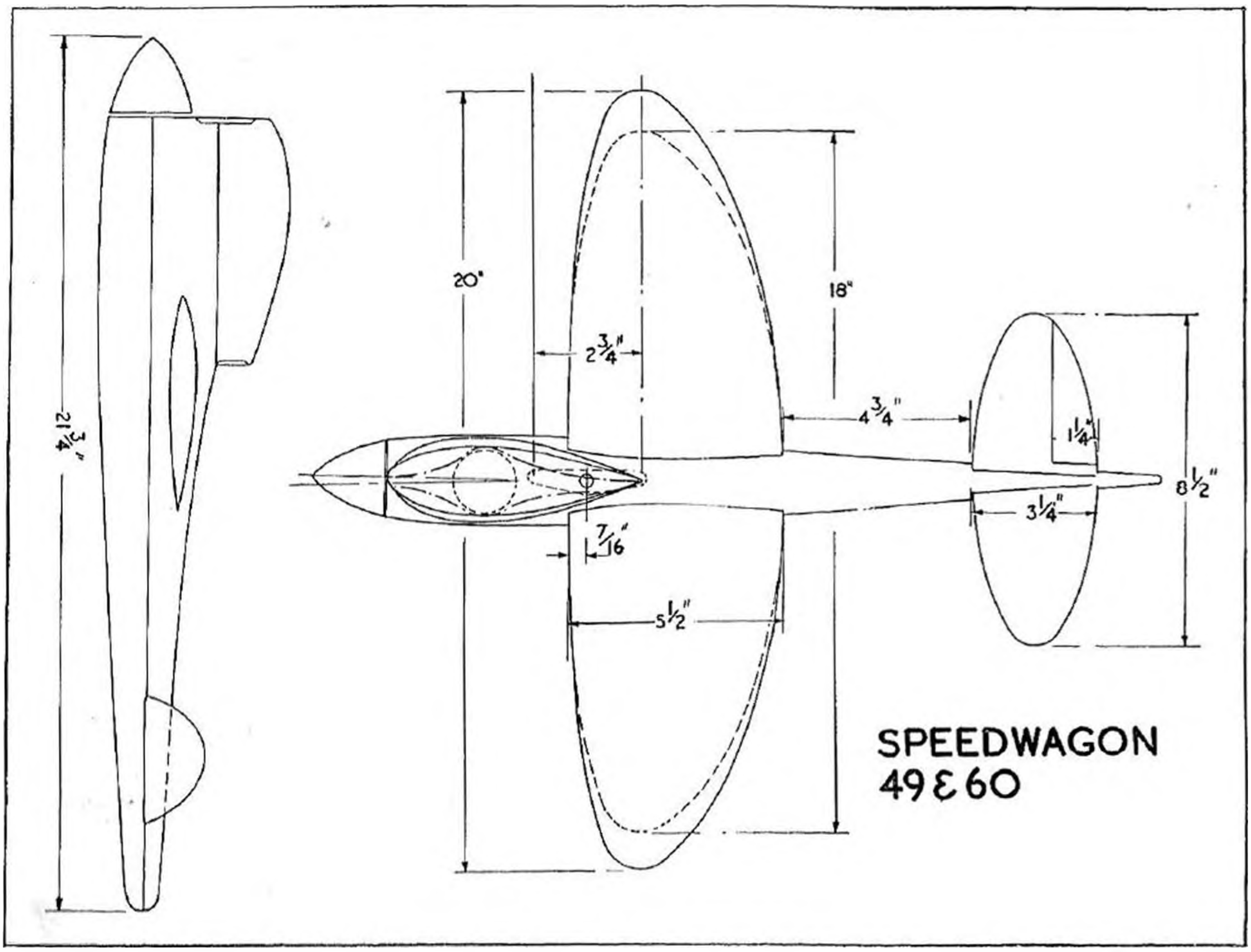
For the very smallest class of model, the simplest construction appears the best. Most of the models detailed in the tables utilise built up sparless or monospar wings with sheet balsa covering although it is doubtful if the saving in weight over solid balsa wings of similar size is appreciable. Wings carved from solid are infinitely simpler to make, but may require strengthening at the centre section to take excessive stresses.

The Little Rocket series uses solid balsa wings throughout with a hardwood centre section insert, which also serves the purpose of forming the control plate pivot anchorage. Particularly with high aspect ratio wings, solid construction offers many advantages.

On opposite page: Family speed models! Five and ten c.c. versions of the Maraget-Labarde French speed partnership that has been so successful wherever they have flown. Note two-wheel plug-in type under carriage with "whisker."



High aspect ratio Little Rocket, successful American speed model that has proved so popular amongst British speed-flyers, particularly in the smaller sizes.



It is interesting to find such a wide divergence in aspect ratio values. Theoretically a high aspect ratio is only advantageous at high angles of attack. Speed models should fly at a relatively low angle of attack and it would seem that the low aspect ratio wing with its greater strength/weight ratio would be preferred. Yet such outstanding models as the Little Rocket, Glo-Debbil, and Sizzler all have aspect ratios in excess of 6 : 1.

With few exceptions wing planform is of the straight taper or parallel chord type. As with aspect ratio, planform is not especially important at high speeds (low angle of attack). The one outstanding exception is the Speedwagon series, which still retains the elliptic shape wings of the original Dmeco series from which the design was developed.

However, the Speedwagon series is radically different in several other features. This model typifies the latest speed model theory in that the model should fly tangential to the flight circle with the minimum amount of line tension. Any pull directed outwards is wasteful of power. Hence the Speedwagon is rigged with thrust line offset *inwards*, and also flown in a clockwise circuit so that torque is always tending to keep the outer wing down to prevent the model rolling up the lines. No fin is used, and to maintain adequate stability the pivot point is located very far forward just behind the leading edge and co-incident with the centre of gravity of the whole model. The front line then comes out well in front of the leading edge of the wing.

The Speedwagon is, undoubtedly, one of the fastest control line models yet produced. The Class C version holds the official (A.M.A.)

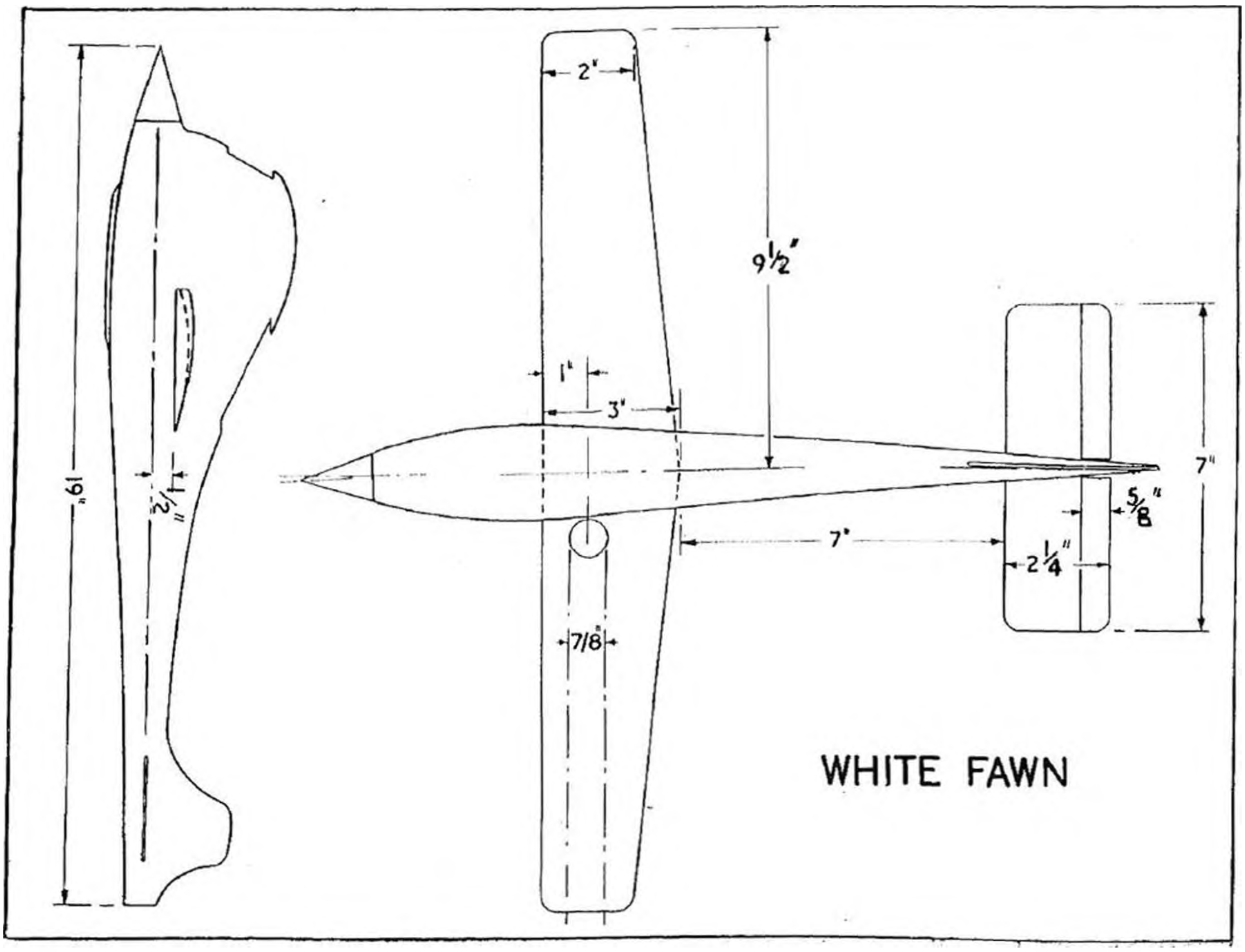
speed record of 163 m.p.h.—which is actually better than the Class D record—and all versions have piled up an impressive list of contest wins in America, particularly the Class A version, Bantam or McCoy 19 powered.

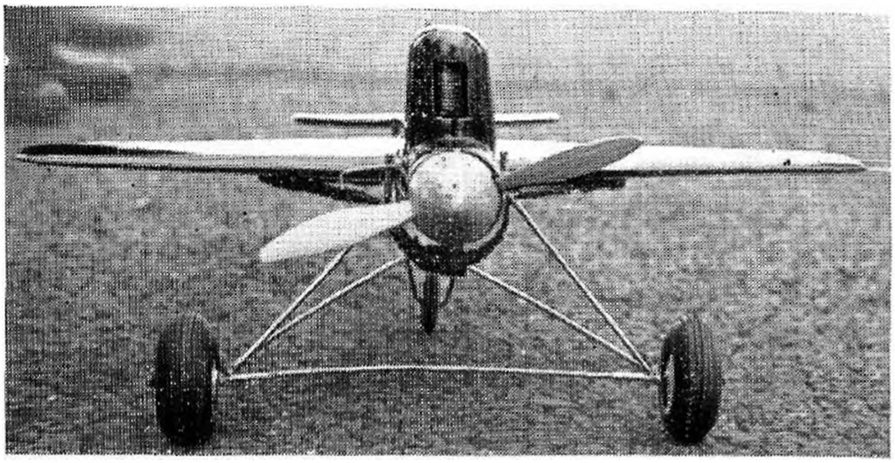
Yet the Speedwagon is not an easy machine to fly. Due to offset thrust and unorthodox rigging there is virtually no line tension to give control under 80-90 m.p.h. and so the model must be held on to the dolly until something like this speed is reached before the pilot dare try to get it airborne. From anything but a really smooth take-off area this can be quite a hazardous business.

Many of the 1949 speed contests in this country suffered in this respect—*i.e.*, poor take-off areas. Too often models jumped their take-off areas. Too often models jumped their take-off dollies before building up sufficient flying speed, or were pulled off too soon by the pilot and simply tried to roll in towards the centre of the circuit.

Dolly design is, of course, a considerable factor here. The Americans still prefer the conventional three- or four-wheel dolly, whereas the drop-out unit appears more popular over here. Either can be quite satisfactory if correctly designed although de Bolt, one of the original exponents of the two-wheel drop-out undercarriage, now uses a three wheel (single wheel forward) drop out unit for better ground stability.

The deciding feature in all speed flying is, of course, the motor and motor-prop combination. We are still lacking sufficient high speed racing motors in this country comparable with the range of American McCoys, Dooling, Hornet and so on and most of the really high speeds are still being put up by these American power plants. We are still some twenty



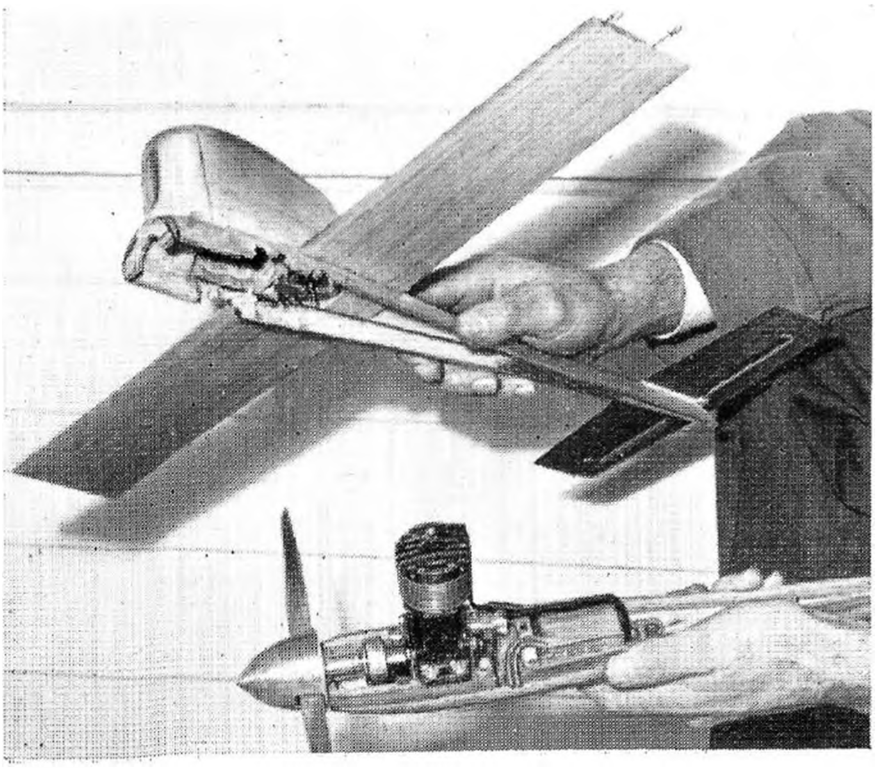


Three wheel cradle type dolly that has vied in popularity with the plug-in drop-off type. Model shown is one of Cyril Shaw's successful designs based on current American practice, modified to suit British conditions.

to thirty m.p.h. behind the best American times in almost all the classes, although here again fuel and atmospheric conditions may have some bearing on results obtained.

This difference is not so marked in the smaller classes. Here the British diesels seem to compare quite favourably with the smallest American glow plug motors used for racing. In our Class I (up to 1.5 c.c.) British motors, of course, are unchallenged.

Design trend seems to have stagnated somewhat around the late 1948 American standard, although further unorthodox shapes do appear from time to time. The Weston series of racers with deep, extended-fin afterbodies differ from contemporary practice, but have not so far excelled on the contest field. Orthodox design with detail refinements, as typified by Cyril Shaw's designs, which, at the time of writing, are credited with the fastest official times yet recorded in this country, appear to produce the most consistent results.



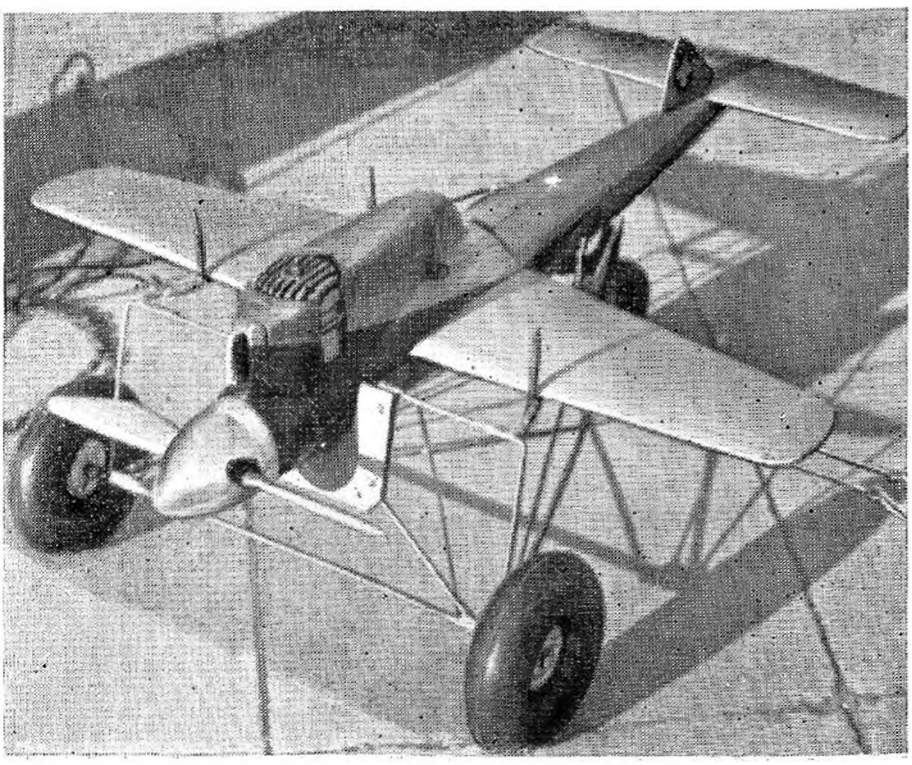
The works revealed ! Most speed models are built so that the upper shell can be moved in one piece for ease of interior access. The example shown — another Little Rocket shot—lifts off with wings, tailplane and controls complete, but all combinations of removable parts may be seen, down to minimum for barest access where perhaps no more than the engine cowling is readily detachable.

With aerodynamic design having somewhat stagnated around this point, further development has been largely concentrated on the power plant. There has been a definite trend to eliminate the ignition circuit and go over to glow plug running and thus decrease the overall weight of the model in almost all classes, although spark-ignition still holds most of the high speed figures in the larger American classes. Glow plug running, with decreased overall weight permitting lighter loadings, or decreased wing area for similar loadings, should result in less drag and more speed. In the smaller classes—5 c.c. and under—no one at the present time appears to even consider anything but glow plug or diesel, and the diesel itself is not particularly favoured in any but the smallest sizes of all. However, exceptional r.p.m. figures are being obtained with new 2.5 c.c. diesels and there may well be a change-over in fashion in this particular class in the near future.

The one big disadvantage of glow plug running is that for peak performance there is only one best fuel mixture, and this mixture may be critical with atmospheric conditions. Given just the right fuel for the conditions, a glow plug motor can run faster than its spark-ignition contemporary. But if just that little "off," it will have an inferior performance.

The year 1950 should be a good year for the speed modeller—particularly if there is a greater variety of contests for him to enter. Lack of competition practice was all too obvious during 1949—models failing to complete the required number of laps or motors running unevenly over a period of six or more laps due to incorrect tank design or location. Speed flying is essentially *practical* in that design layout has been more or less standardised, failing some new, almost revolutionary approach, and the jump from around the 110-115 m.p.h mark to 140 m.p.h. and more will only come by detail development and improved flying technique.

NOTE—The two speed designs by Cyril Shaw detailed in the tables have recently been re-named. The original model with Fox motor is now called the **Needlenose** *(not Foxy). The McCoy-powered Class IV model is now called the* **Hearse** *(instead of Needlenose).*

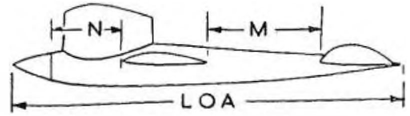


A successful Swiss Speed model designed and developed by Arnold Degen, Swiss Model Club Secretary, and flown at speeds in excess of 110 m.p.h. Wings and body are pine planked and highly polished. Three-wheel take-off dolly presents one unusual feature in the ply cut-out in which the fuselage rests, which while increasing rigidity may increase drag.

C-L SPEED GENERAL

MODEL	DESIGNER	ORIG.	MOTOR	CAPACITY CC	CAPACITY CU.IN	CLASS GB	CLASS US	PROP D	PROP P	GROSS AREA	WT OZ.	LOADING OZ PER... SQ.FT	LOADING OZ PER... 100 S.I.	LOADING OZ PER... C.C.	SPEED	NOTES	MODEL
BULLET	R.PRENTICE	GB	MILLS II	1·3	·08	I	A	7	8	22·5					80-85		BULLET
FLASH	R.H.WARRING	GB	MILLS II	1·3	·08	I	A	6	8	34	5 1/2	23·25	16·0	3·65	80		FLASH
MIDGET	R.HATSCHEK	USA	MITE	1·6	·099	II	A	8	8	30	6	29·0	20·0	3·75		DIESEL	MIDGET
DM.SPEEDWAGON	H.DE BOLT	USA	BANTAM	3·25	·199	III A	A			34	7 1/2	31·8	22·0	2·3	120-125	'20' VERSION	SPEEDWAGON
CLASSY	J.NORRIS	USA	BANTAM	3·25	·199	III A	A			51					90-100		CLASSY
NERO				2·5-3		II-III	A	6 1/2	10	54					100	WT. SPINNER	NERO
INVADER A	E.SHARP	USA	MCCOY 19	3·25	·195	III A	A								125	ALL METAL	INVADER A
QUARTER WHAMMY	J.CLEM	USA	BANTAM	3·25	·199	III A	A	8	8	25	8 1/2	24·5	17·0	2·65	110-120		1/4 WHAMMY
HALF WHAMMY	J.CLEM	USA	MCCOY 29	4·9	·295	III B	B	8	10						120-135		1/2 WHAMMY
LITTLE ROCKET	J.L.SADLER	USA	MCCOY 29	4·9	·295	III B	B	8	8	40·5					120-130	B VERSION	LITTLE ROCKET
INVADER	E.SHARP	USA	MCCOY 29	4·9	·295	III B	B	8	8	46	15	23·5	16·3	3·0	125-135	ALL METAL	INVADER
WHITE FAWN	A.GRISH	USA	MCCOY 29	4·9	·295	III B	B			17					134·98ϕ		WHITE FAWN
GLO DEBBIL	D.NEWBERGER	USA	TORPEDO	4·9	·299	III B	B	11	9	14					130ϕ	GLOW PLUG	GLO DEBBIL
SPEEDWAGON 30	H.DE BOLT	USA	MCCOY 29	4·9	·295	III B	B			55	15	39·2	26·2	3·1	130-140		SPEEDWAGON 30
SIZZLER	W.SEIDLER	USA	MCCOY 49	8·0	·49	IV	C			74					111·5ϕ		SIZZLER
WHITE COMET	D.NEWBERGER	USA	MCCOY 49	8·0	·49	IV	C			90					120		WHITE COMET
LITTLE ROCKET	J.L.SADLER	USA	MCCOY 49	8·0	·49	IV	C	8	10	50					125-135	C VERSION	LITTLE ROCKET
SPEEDWAGON 49	H.DE BOLT	USA	MCCOY 49	8·0	·49	IV	C			76					163ϕ	WORLD REC.	SPEEDWAGON 49
49-ER	R.EALY	USA	MCCOY 49	8·0	·49	IV	C			65					125	1 BLADE PROP	49-ER
WHIRLAWAY C	D.NEWBERGER	USA	TRIUMPH 49	8·0	·49	IV	C	11	8 1/2	19					136·2ϕ		WHIRLAWAY C
NEEDLENOSE	C.SHAW	GB	MCCOY 49	8·0	·49	IV	C	8	12	80					118ϕ	BRIT. RECD.	NEEDLENOSE
FOXY	C.SHAW	GB	FOX 59	9·75	·594	V	D	9	12	90	36	57·5	40·0	3·8	118ϕ	BRIT. RECD.	FOXY
RINGLEADER	B.SCHOENFELD	USA	MCCOY 60	10·0	·607	V	D	10 1/2	10	26					110-115		RINGLEADER
SPEEDWAGON 60	H.DE BOLT	USA	DOOLING	10·0	·604	V	D			30					135-145		SPEEDWAGON 60
DMECO SNR	H.DE BOLT	USA	HORNET	10·0	·604	V	D	10	12	18	48	57·5	40·0	4·8	100-120		DMECO SNR
SNOWFLAKE	W.VIETS	USA	DOOLING	10·0	·604	V	D	10	10	06					143·82ϕ	AMA RECD.	SNOWFLAKE
RACER	J.WOOD	GB	NORDEC	10·0	·607	V	D	9	12	108					105ϕ		RACER
SCREAMER	MCCULLOUGH	USA	HORNET	10·0	·607	V	D			110					100-110		SCREAMER
LITTLE ROCKET D	J.L.SADLER	USA	MCCOY 60	10·0	·607	V	D	10	10	60					130-140		LITTLE ROCKET
RJ 5	J.RINGEVAL	FRNCE	MIKRON	10·0	·604	V	D	10	12	170	36	30·5	21·2	3·6	110		RJ 5
GAY LADY	P.HUBERT	USA	MCCOY 60	10·0	·607	V	D	9	12	72	29	57·5	40·0	2·9	130-135		GAY LADY
MOVO M 31	MOVO	ITALY	MOVO	10·0	·607	V	D	9 3/4	10	120	4·4	53·8	36·6	4·4	110		MOVO M 31

ϕ OFFICIAL TIMES



C-L SPEED DESIGN DATA

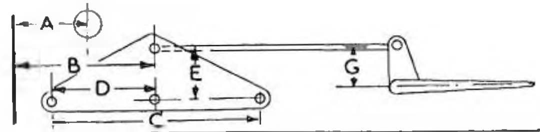
MODEL	CLASS GB	CLASS US	WINGS SPN.	CH.	AREA	A.R.	SECT.	PLANFORM	LOA	N
BULLET	I	A	10 1/2	3	22·5	4·4	SYMM	ST. TAPER	14	2
FLASH	I	A	13 1/2	3 1/4	34	5·4	LIFT.	ST. TAPER	14 7/8	3 3/4
MIDGET	II	A	12	3	30	4·8	LIFT.	ST. TAPER	15 5/8	
SPEEDWAGON 20	III	A	12	3 1/2	34	4·2	SYM.	ELLIPTIC	14 3/4	2 3/8
CLASSY	III	A	17	4	51	5·6	LIFT.	ST. TAPER	18 1/2	
NERO	III	A	15	4 1/4	54	4·2	LIFT.	ELLIPTIC	16	2 3/4
INVADER A	III	A					SYMM.	ST. TAPER		
1/4 WHAMMY	III	A	12	3	25	5·75	LIFT.	ST. TAPER	15 1/2	
1/2 WHAMMY	III	B					LIFT.	ST. TAPER		
LITTLE ROCKET	III	B	20	3	60	6·7	LIFT.	PARALLEL	22 1/4	
INVADER B	III	B	16	4	46	5·5	SYMM.	ST. TAPER	17 1/2	
WHITE FAWN	III	B	19	3	47	7·7	CLARK	ST. TAPER	19	
GLO DEBBIL	III	B	14 3/4	2 3/4	34	6·1	LIFT.	ST. TAPER		
SPEEDWAGON 30	III	B	15	4 1/2	55	4·1	LIFT.	ELLIPTIC	19	4 1/4
SIZZLER	IV	C	22	4 1/4	74	6·5	SYMM.	ST. TAPER	24 1/2	
WHITE COMET	IV	C	21	5 3/4	90	5·1	LIFT.	ST. TAPER	22	
LITTLE ROCKET	IV	C	20	3	60	6·7	LIFT.	PARALLEL	20 3/4	
SPEEDWAGON 49	IV	C	18	5 1/2	76	4·3	LIFT.	ELLIPTIC	21 5/8	4 5/8
49-ER	IV	C	18	4	65	5·0	SYMM.	ST. TAPER	25	4
WHIRLAWAY C	IV	C	16 1/2	4	49	5·5	SYMM.	ST. TAPER	17 5/8	3
NEEDLENOSE	IV	C	20 1/4	4 1/4	80	5·0	LIFT.	ST. TAPER	22 1/2	4 5/8
FOXY	V	D	21	6	90	4·9	LIFT.	ST. TAPER	25	
RINGLEADER	V	D	23	7	126	4·2	LIFT.	ELLIPTIC	26 1/4	3
SPEEDWAGON 60	V	D	20	5 1/2	80	5·0	LIFT.	ELLIPTIC	21 5/8	4 5/8
DMECO SNR	V	D	24	6 1/4	118	4·9	LIFT.	ELLIPTIC	26	3 1/2
SNOWFLAKE	V	D	22	6 1/4	106	4·5	LIFT.	ST. TAPER	24	
RACER	V	D	24	6	108	5·4	LIFT.	ST. TAPER	26	
SCREAMER	V	D	22	6 1/2	110	4·8	LIFT.	ST. TAPER	25 3/4	
LITTLE ROCKET	V	D	20	3	60	6·7	LIFT.	PARALLEL	22 1/4	
RJ 5	V	D	34	6 1/4	170	6·8	SYMM.	ST TAPER	31 1/2	5
GAY LADY	V	D	18	4	72	4·5	LIFT.	PARALLEL	20	4
MOVO M 31	V	D	25 1/4	5·8	120	5·4	LIFT.	ST. TAPER	27	3 1/2

FUSELAGE M	X-SECTION	TYPE	TAIL UNIT TYPE	SP	A	%SW	ELEVATORS AREA	%ST	MODEL
5 1/2	CIRCULAR	HOOD	NO FIN	5	8	35	1·5	19	BULLET
4 3/8	CIRCULAR	HOOD	V TAIL	6·4	10	29·5	2	20	FLASH
6	CIRCULAR	HOOD	CONV.		8	26·7	2	25	MIDGET
[illegible] 1/2	PEARDROP	HOOD	V TAIL	7	12·5	37	1·5	12	SPEEDWAGON 20
6 1/2	CIRCULAR		CONV.		19	37·5	7·6	40	CLASSY
6	CIRCULAR	HOOD	CONV.	6·4	12	22·5	3	25	NERO
	CIRCULAR	HOOD	CONV.						INVADER A
7	CIRCULAR	HOOD	CONV.		8	92	2·5	31	1/4 WHAMMY
	CIRCULAR	HOOD	CONV.						1/2 WHAMMY
9	CIRCULAR	HOOD	NO FIN		22	37·5	7·5	33	LITTLE ROCKET B
5	CIRCULAR	HOOD	CONV.	6 1/2	11·5	25	3	26	INVADER B
7	FLARED COWL		CONV.	7	15	33	3·5	28	WHITE FAWN
4 1/2	POD & BOOM		NO FIN	7	12	36	3·5	28·5	GLO DEBBIL
[illegible] 5/8	PEARDROP	HOOD	V TAIL	7 1/2	16	29	2·4	14	SPEEDWAGON
10 1/2	CIRCULAR	HOOD	CONV.	9 1/2	28	38	6	21	SIZZLER
7	CIRCULAR	HOOD	CONV.	7 1/2	29	32	8	27·5	WHITE COMET
8 1/2	CIRCULAR	HOOD	NO FIN		22	37·5	7·5	33	LITTLE ROCKET
4 3/4	PEARDROP	HOOD	V TAIL	8 1/2	22	29	3	13·6	SPEEDWAGON 49
9	CIRCULAR	HOOD	NO FIN	9	27	40	9	33	49-ER
5 3/4	CIRCULAR	HOOD	NO FIN	8	16	33	5·5	34	WHIRLAWAY C
6 1/2	CIRCULAR	HOOD		9	20		6·6	33	NEEDLENOSE
6 3/4	CIRCULAR	HOOD	V TAIL		16	18	5	31	FOXY
12 3/8	PEARDROP	FLARED COWL		11	34	27	8·5	25	RINGLEADER
4 3/4	PEARDROP	HOOD	V TAIL	8 1/2	22	29	3	13·6	SPEEDWAGON 60
7 1/2	PEARDROP		CONV.		25	21	6	24	DMECO SNR
8	CIRCULAR	HOOD	CONV.		28	26	3	10	SNOWFLAKE
10 1/2	CIRCULAR	HOOD	CONV.		24	22·5	7·4	30	RACER
8 1/2	CIRCULAR	HOOD	CONV.		27	25	10	36	SCREAMER
9	CIRCULAR	HOOD	NO FIN		22	37·5	7·5	33	LITTLE ROCKET
15	CIRCULAR		CONV.	15	50	29	17·5	35	RJ 5
7	CIRCULAR	HOOD	NO FIN	7 1/4	16	22	5	31	GAY LADY
11 3/4	PEARDROP	NO CWL	CONV.	12	40	33	8	20	MOVO M 31

C-L SPEED

MODEL	CLASS GB	CLASS US	WING POSITION	INCIDNC. W	INCIDNC. T	EL. RANGE UP	EL. RANGE DOWN	C.G A	B	C
BULLET	I	A	MID	O	O			7/8	1 3/4	3/4
FLASH	I	A	SHOULDER	O	O	7·5	5	1/2	1 1/2	1 1/2
MIDGET	II	A	SHOULDER	O	O	15	10			
SPEEDWAGON·	III A	A	SHOULDER	O	O			3/8	3/8	1 5/16
NERO	III	A	MID	O	O	15	15		1	1
INVADER "A"	III A	A	MID	O	O					
CLASSY	III A	A	SHOULDER	+1	O	5	5	1/2	1 3/8	1 1/2
1/4 WHAMMY	III A	A	SHOULDER	O	O				1 1/4	1 3/8
1/2 WHAMMY	III B	B	SHOULDER	O	O					
LITTLE ROCKET	III B	B	SHOULDER	O	O					1 1/4
INVADER	III B	B	MID	O	O	10	10	1/2	1 3/4	2 1/8
WHITE FAWN	III B	B	SHOULDER	O	O				1	7/8
GLO DEBBIL	III B	B	SHOULDER	O	O				7/8	1 1/8
SPEEDWAGON	III B	B	SHOULDER	O	O			1/2	1/2	1 7/8
SIZZLER	IV	C	MID	-2	O	5	5		1 3/4	2
WHITE COMET	IV	C	SHOULDER	O	O			O	2 1/2	2 1/2
LITTLE ROCKET	IV	C	SHOULDER	O	O				5/8	1 3/8
SPEEDWAGON	IV	C	SHOULDER	O	O			7/16	7/16	2 7/8
49-ER	IV	C	MID	O	O				1 1/8	1 3/4
WHIRLAWAY C	IV	C	MID	O	O				2	2
NEEDLENOSE	IV	C	SHOULDER	O	O	30	20	O	1 1/2	2
FOXY	V	D	SHOULDER	O	O	20	15	O	2 1/2	2 1/4
RINGLEADER	V	D	MID	+3	+2	10	5		2 3/4	3
SPEEDWAGON	V	D	SHOULDER	O	O			7/16	7/16	2 7/8
DMECO SNR	V	D	SHOULDER	O	+1				3 1/4	2 1/4
SNOWFLAKE	V	D	SHOULDER	O	O				2	3
RACER	V	D	SHOULDER	O	O	15	10		2	1 3/4
SCREAMER	V	D	SHOULDER	O	O					
LITTLE ROCKET	V	D	SHOULDER	O	O				5/8	1 3/8
RJ-5	V	D	MID	O	O	15	5		2 3/16	1 1/2
GAY LADY	V	D	SHOULDER	O	O				1	1 1/2
MOVO M.31	V	D	SHOULDER	2	O					

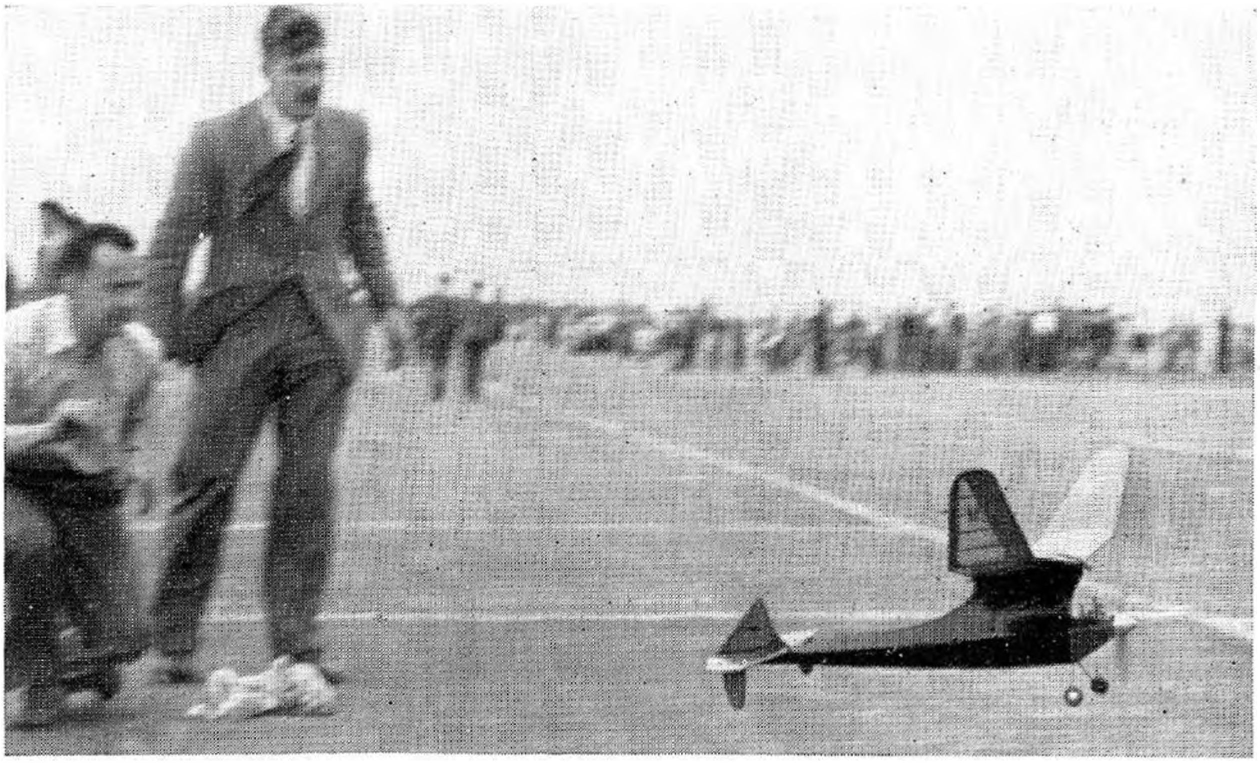
RIGGING



D	E	G	THRUST DN.	THRUST SD.	FIN OFFSET	CIRCUIT	LINES LENGTH	LINES DIA.	MODEL
3/8	9/32	3/16	O	O		ANTI CLOCK			BULLET
3/4			O	1°L		ANTI CLOCK	35	·008	FLASH
			O	O	RIGHT	ANTI CLOCK			MIDGET
5/8			O	2°R		CLOCKWISE			SPEEDWAGON
1/2			O	O		ANTI CLOCK			NERO
						ANTI CLOCK			INVADER A
3/4	5/32	9/32	O	O	RIGHT	ANTI CLOCK			CLASSY
1 1/16	7/32	1/4	O			ANTI CLOCK			1/4 WHAMMY
			O	O		ANTI CLOCK			1/2 WHAMMY
5/8	5/16	5/16	O	O		ANTI CLOCK			LITTLE ROCKET
1 1/16	1/4	3/8	O	O		ANTI CLOCK	52 1/2	·008	INVADER
7/16			O	2°L		ANTI CLOCK			WHITE FAWN
5/8			O	O		CLOCKWISE			GLO DEBBIL
15/16			O	2°R		CLOCKWISE			SPEEDWAGON
1	7/16	7/16	O	O	LEFT	CLOCKWISE			SIZZLER
1 1/4			O	O		ANTI CLOCK			WHITE COMET
1 1/16	3/8	3/8	O	O		ANTI CLOCK			LITTLE ROCKET
1 7/16			O	2°R		CLOCKWISE			SPEEDWAGON
7/8	1/2	3/8	O	O		ANTI CLOCK			49-ER
1	3/8	1/2	O	O		ANTI CLOCK			WHIRLAWAY C
1	5/8	1/2	O	O		ANTI CLOCK	70	·015	NEEDLENOSE
1 1/8	1/2	1/2	O	O		ANTI CLOCK	70	·015	FOXY
1 1/2	3/8	3/16	O	O	RIGHT	ANTI CLOCK	70	·010	RINGLEADER
1 7/16			O	2°R		CLOCKWISE			SPEEDWAGON
1 1/8			O	O		CLOCKWISE	70	·010	DMECO SNR
1 1/2	3/8	3/8	O	O		CLOCKWISE			SNOWFLAKE
7/8	3/8	3/8	O	O	RIGHT	ANTI CLOCK	70	·015	RACER
			O	O	RIGHT	ANTI CLOCK			SCREAMER
1 1/16	3/8	3/8	O	O		ANTI CLOCK	70	·012	LITTLE ROCKET
3/4	1/2	3/8	O	O		ANTI CLOCK			RJ-5
3/4	3/8	3/16	O	O		ANTI CLOCK	70	·010	GAY LADY
			O	O		ANTI CLOCK	54	·015	MOVO M.31

C-L SPEED CONSTRUCTION

MODEL	TYPE	CLASS GB.	CLASS U.S.	WINGS TYPE	WINGS SPAR	WINGS COVERING	FUSELAGE TYPE	FUSELAGE MAIN MEMBER	FUSELAGE UPPER SHELL	FUSELAGE LOWER SHELL	MOTOR MOUNT	SPINNER	TAIL UNIT MATRL.	TAIL UNIT HINGE	U/C
BULLET	INTEGRAL	I	A	MONOSPAR	1/8 PLY	1/16" SHEET	HOLLOW LOG		BALSA	BALSA	5/16X1/4	1 1/4 STND.	1/16 PLY	TAPE	
FLASH	INTEGRAL	I	A	MONOSPAR	1/8" SHEET	1/20" SHEET	SOLID		BALSA	BALSA	DETACH.	LONG	3/64 PLY	TUBE	
MIDGET	INTEGRAL	II	A	SPARLESS		1/20" SHEET	HOLLOW LOG		BALSA	BALSA	MAPLE	1 3/8 STD.	3/32 SHT	TAPE	DOLLY
SPEEDWAGON 20	INTEGRAL	III A	A	SPARLESS		1/16" SHEET	HOLLOW LOG		BALSA	BALSA	ASH	1 1/4 STD.	1/16 PLY	WIRE	DROP
CLASSY	INTEGRAL	III A	A	MONOSPAR	1/4 BALSA	TISSUE	CRUTCH	BASS	BALSA	BALSA	3/8" BASS	1 1/2 FROOM	3/16 SHT	TAPE	FIXED
NERO	TWO SHELL	II-III	A	SOLID		3/8 BALSA	HOLLOW LOG		LIME	LIME			3/16 SHT	MET'L	
INVADER A	TWO SHELL	III A	A	METAL	ASH	·015" ALCLAD	METAL		ALCLAD SHELLS		DURAL	LONG	ALCLAD	WIRE	DOLLY
1/4 WHAMMY	INTEGRAL	III A	A	SOLID		3/8" BALSA	CRUTCH	BALSA	BALSA	BALSA	POPLAR	1 1/2 FROOM	3/64 PLY	WIRE	DOLLY
1/2 WHAMMY	INTEGRAL	III B	B	SOLID		BALSA-PLY	CRUTCH	SYCAM.	PINE	PINE	POPLAR	1 1/2 FROOM	3/64 PLY	WIRE	DOLLY
LITTLE ROCKET B	INTEGRAL	III B	B	SOLID		1/4" BALSA	CRUTCH	SYCAM.	BALSA	BALSA	SYCAM.	1 3/4" STD.	1/16" PLY	TUBE	DROP
INVADER	TWO SHELL	III B	B	METAL	ASH	·015" ALCLAD	METAL		·015 ALCLAD		1/16 DURL.	2" LONG	ALCLAD	WIRE	DOLLY
WHITE FAWN	INTEGRAL	III B	B	SOLID		7/32" BALSA	HOLLOW LOG	PINE	PINE	MAPLE			1/8 HDW.		DOLLY
GLO DEBBIL	INTEGRAL	III B	B	SOLID		1/4" BALSA	POD & BOOM	BALSA	PINE BOOM			STD.	1/8 SHT.		DOLLY
SPEEDWAGON 30	INTEGRAL	III B	B	SPARLESS		1/16" BALSA	HOLLOW LOG		BALSA	BALSA	ASH	1 5/8 STD	1/16 PLY	WIRE	DROP
SIZZLER	INTEGRAL	IV	C	SOLID		3/4" BALSA	HOLLOW LOG		BALSA	BALSA	MAPLE	2 1/2" STD.	3/32 PLY	TAPE	DOLLY
WHITE COMET	TWO SHELL	IV	C	MONOSPAR	HARDWD.	1/16" BALSA	HOLLOW LOG		PINE	PINE	MAPLE	2" FROOM	3/64 PLY	WIRE	DOLLY
LITTLE ROCKET C	TWO SHELL	IV	C	SOLID		5/16" BALSA	CRUTCH	SYCAM.	BALSA	BALSA	SYCAM.	2" FROOM	3/32 PLY	TUBE	DROP
SPEEDWAGON 49	INTEGRAL	IV	C	SPARLESS		3/32" BALSA	HOLLOW LOG		BALSA	BALSA	ASH	2" FROOM	5/64 PLY	WIRE	DROP
49-ER	TWO SHELL	IV	C	SOLID		1/4" PINE	CRUTCH	1/4" MAPLE	BALSA	BALSA	MAPLE	1 3/4" LONG	1/16 PLY	SILK	DOLLY
WHIRLAWAY C	TWO SHELL	IV	C	METAL	OAK	·012" ALUMN.	HOLLOW LOG		PINE	PINE	MAPLE	1 3/4" STD.	PLY	WIRE	DOLLY
NEEDLENOSE	TWO SHELL	IV	C	SPARLESS		1/16" SHEET	HOLLOW LOG		BALSA	BALSA	ASH	2" LONG	1/16" PLY	TAPE	DROP
FOXY	TWO SHELL	V	D	HOLLOW LOG		1" BALSA	HOLLOW LOG		PINE	PINE	1/2" X 3/8"	1 3/4 LONG	PLY	TAPE	DROP
RINGLEADER	TWO SHELL	V	D	MONOSPAR	PINE	1/16" BALSA	KEEL	BALSA	PLANKED		5/8X3/8"	2 1/2" STD.	3/16" SHT	TAPE	DOLLY
SPEEDWAGON 60	INTEGRAL	V	D	SPARLESS		3/32" BALSA	HOLLOW LOG		BALSA	BALSA	ASH	2" STD.	5/64 PLY	WIRE	DROP
DMECO SNR	INTEGRAL	V	D	SPARLESS		3/32" BALSA	CRUTCH	1/2X1/4"	BALSA	PLANK	MAPLE	2 1/2" STD.	1/8" SHT	DWL.	DROP
SNOWFLAKE	TWO SHELL	V	D	MONOSPAR	HARDWD.	1/16" BALSA	HOLLOW LOG		PINE	PINE	DURAL	2" FROOM	3/32 PLY		DOLLY
RACER	TWO SHELL	V	D	MONOSPAR		1/16" BALSA	HOLLOW LOG		PINE	PINE	MAPLE	2 1/8" STD.	3/32" PLY	TAPE	DROP
SCREAMER	TWO SHELL	V	D	MONOSPAR	HARDWD.	1/16" BALSA	HOLLOW LOG		BALSA	BALSA	OAK	2 3/4" STD.	1/16" PLY	TAPE	DOLLY
LITTLE ROCKET D	TWO SHELL	V	D	SOLID		5/16" BALSA	CRUTCH	SYCAM.	BALSA	BALSA	SYCAM.		3/32" PLY	TUBE	DROP
RJ5	INTEGRAL	V	D	SOLID			HOLLOW LOG				HARDWD	2 1/2" STD.			FIXD.
GAY LADY	HALF SHELL	V	D	SPARLESS		1/16" BALSA	CRUTCH	1/8" MG.	PINE	PINE	ALUMN.	2" STD.	1/16" PLY	TAPE	DOLLY
MOVO M 31	INTEGRAL	V	D	SPARLESS		SILK	HOLLOW LOG		POPLAR SHELL			2" STD.	3/16" SHT	TAPE	DROP



FREE FLIGHT POWER

FREE flight power presents an almost bewildering array of designs. Without doubt, pylon models predominate, either in the pure pylon form or developed pylon types where the high wing mounting is faired into the lines of the fuselage afterbody. Almost all contest models, too, are overpowered to the point of being extremely critical and no one particular design can be picked out from the 1949 lists as having been outstanding.

The year 1949 has, in fact, been a rather disappointing year for the true power-duration enthusiast. Competitions have been of a rather scrappy nature with all models grouped in one class and virtually no specification rules whatsoever. The F.A.I. rules applicable to power models permit minimum size fuselage cross section and wing loading similar to that of rubber models and few designers, if any, appear to have worked right down to these possible limits.

Further, since the war, British motor production has been concentrated on the small capacity (under 2 c.c.) diesel motor, so that the majority of 1947-48 power models all fall within Class A—most of them, in fact, being small Class A. The S.M.A.E. has not yet established National competitions in classes for power models and hence a model like the Gossamer (32 in. span and Amco .87 powered) competes in the same class as such large Class C designs as Gismoe or the Cosmic Rave. Both these two latter Brofman designs, incidentally, have proved outstanding and several replicas are flying successfully in this country.

The serious power model competitor views such a state with some concern. Purely " open " competitions are undoubtedly popular as far as numbers go, but, in general, the quality of the flying suffers. We did not, for example, make a very good showing in the International Power Duration event held on the day following the Wakefield. Apart from

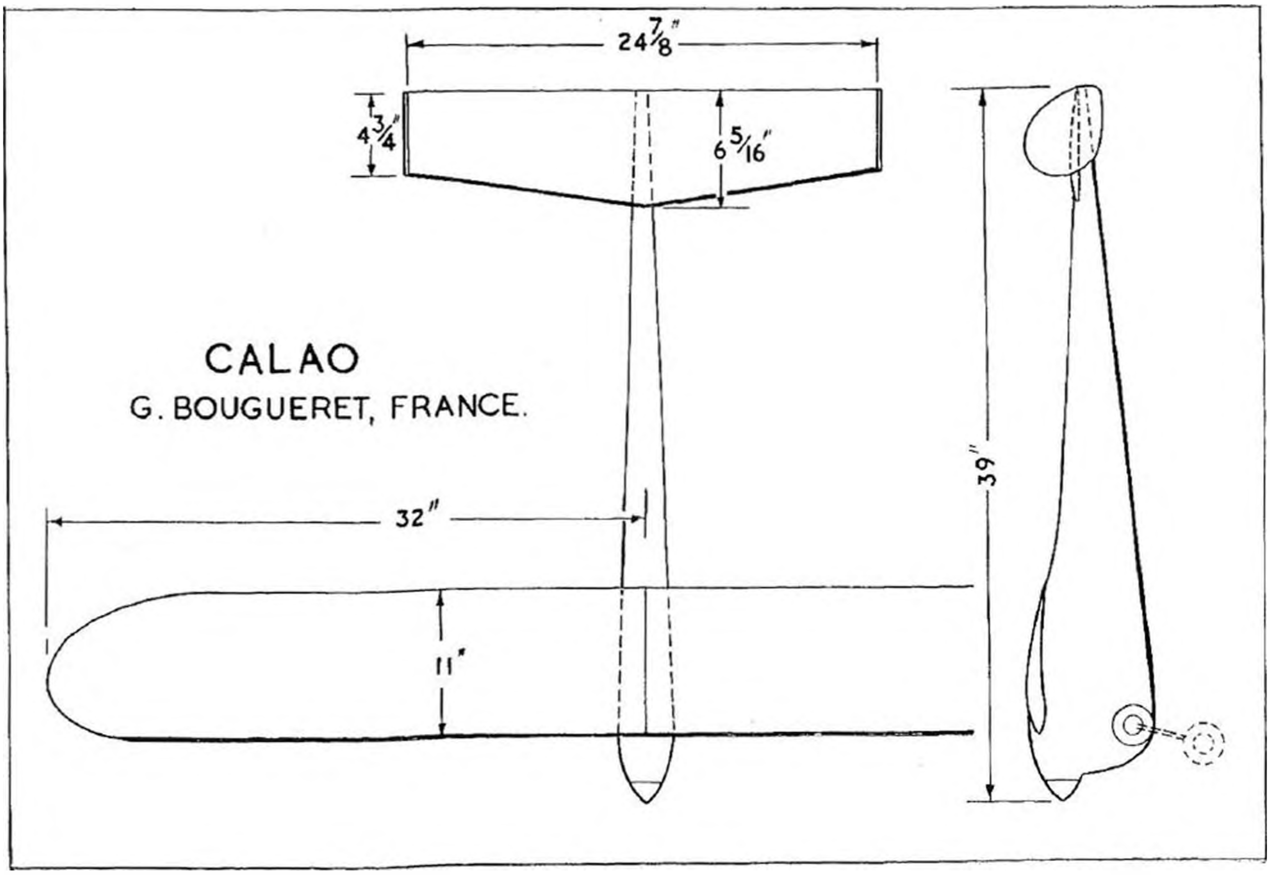
Gunter, who placed second with a scaled up version of the Thorobred (Arden .199 powered—small Class B), no British entrant from the selected six put up more than a moderate showing.

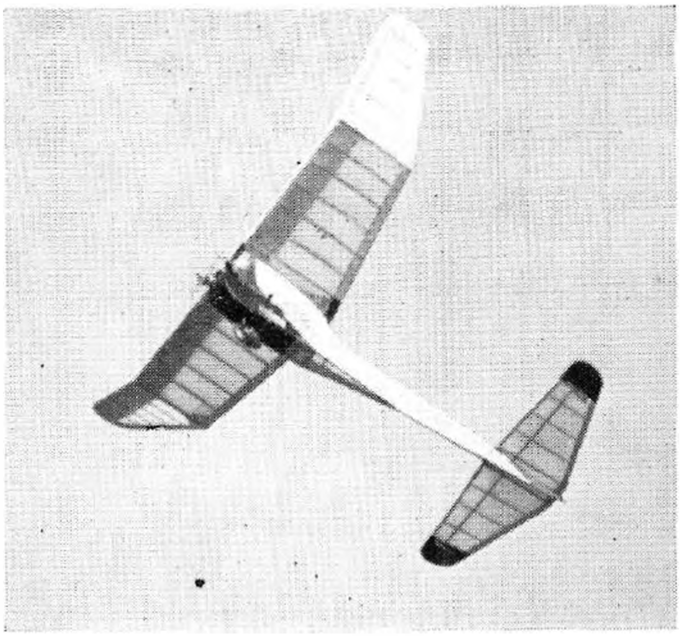
Possibly this state of affairs will improve during 1950. The standard of flying will undoubtedly be improved once " class consciousness" is established in the competition field. At the beginning of 1949 there was a surfeit of small Class A models, but a definite feeling towards the desirability of producing more Class B or even Class C jobs. Motors were, of course, the drawback. The number of good motors in the " over 2.5 c.c." size could be counted on the fingers of one hand.

The year 1949, however, has seen quite a number of new Class B motors brought to production stage, although Class C is still relatively neglected. Here, still, about the only solution is to use an American power plant, unless prepared to produce a really large model to handle one of the two production 10 c.c. British racing motors available commercially.

The models analysed in the tables are mainly of American origin. American influence in the field of free flight power is world-wide and even the leading British designs, such as the Thorobred, Fly's Eye, Slicker, and so on, are essentially " American " in appearance. The majority, too, are characterised by high-powered motors in relatively small sizes.

Some of the Continental models provide an extremely interesting comparison. They, too, have their pylon types—the direct result of American influence—but in some quarters the high and shoulder-wing model is more favoured. These latter types often have a higher-than-average aspect ratio, but, more particularly, a relatively large amount of wing area per c.c. capacity of the motor. " Calao," for example, which is





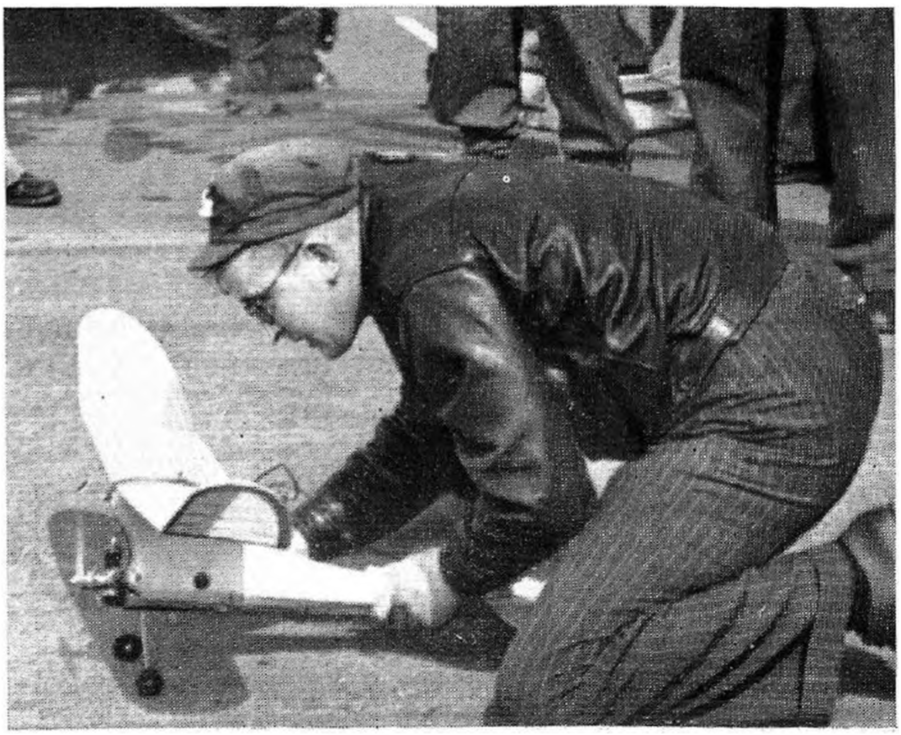
a particularly good shoulder-wing design, has wing area in excess of orthodox Class B practice (5 c.c. motors), for a 2 c.c. diesel.

Continental models of this type aim more for good glide performance rather than rapid rate of climb. The advantage of using relatively low power is that power flight trim is far less critical and there is less risk of the model winding up in a spiral dive. However, such models generally lose out where power run is restricted to 15 seconds or less. Between 20 and 30 seconds motor run is usually necessary for really long flights.

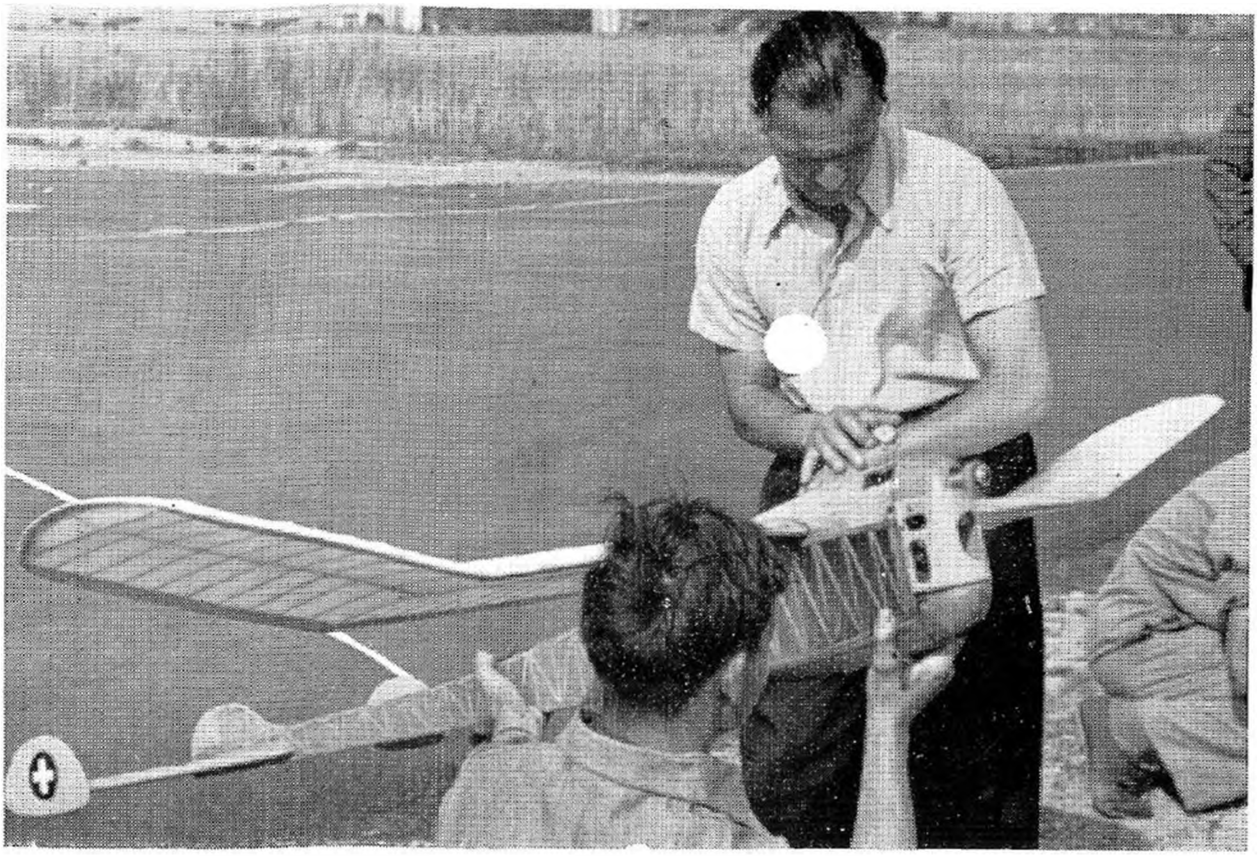
The really high-powered model of small size seldom needs even a full 20 second motor run for out-of-sight flights in thermal weather. Some modellers work on about 14-15 seconds maximum and can obtain some four to five hundred feet of altitude in this time.

We would not say that any satisfactory compromise had yet been worked out for power-duration flying. High performance models are generally trimmed to climb either almost straight, or in a tight spiral. Both types of climb appear to be modified in windy conditions. The straight-up climb is dangerous in that the model may go right over on to its back and complete a large diameter loop. Spiral climbing models often get into trouble should the nose drop in a turn, when the upward spiral becomes a progressively increasing spiral dive. The same consistency of trim as obtained with most Wakefields has not been realised on power models.

Above and opposite page : The Banshee family continue to shine in power contests and have been adapted to all sizes of engine with unabated success.



On the right : Gussie Gunter, British maestro of the power/ratio type of contest who first brought Banshee into the limelight, has deserted this early love though retaining a fondness for the general layout.



Graceful shoulder wing power model rom Switzerland, with deep fuselage protecting airscrew and single recessed wheel undercarriage.

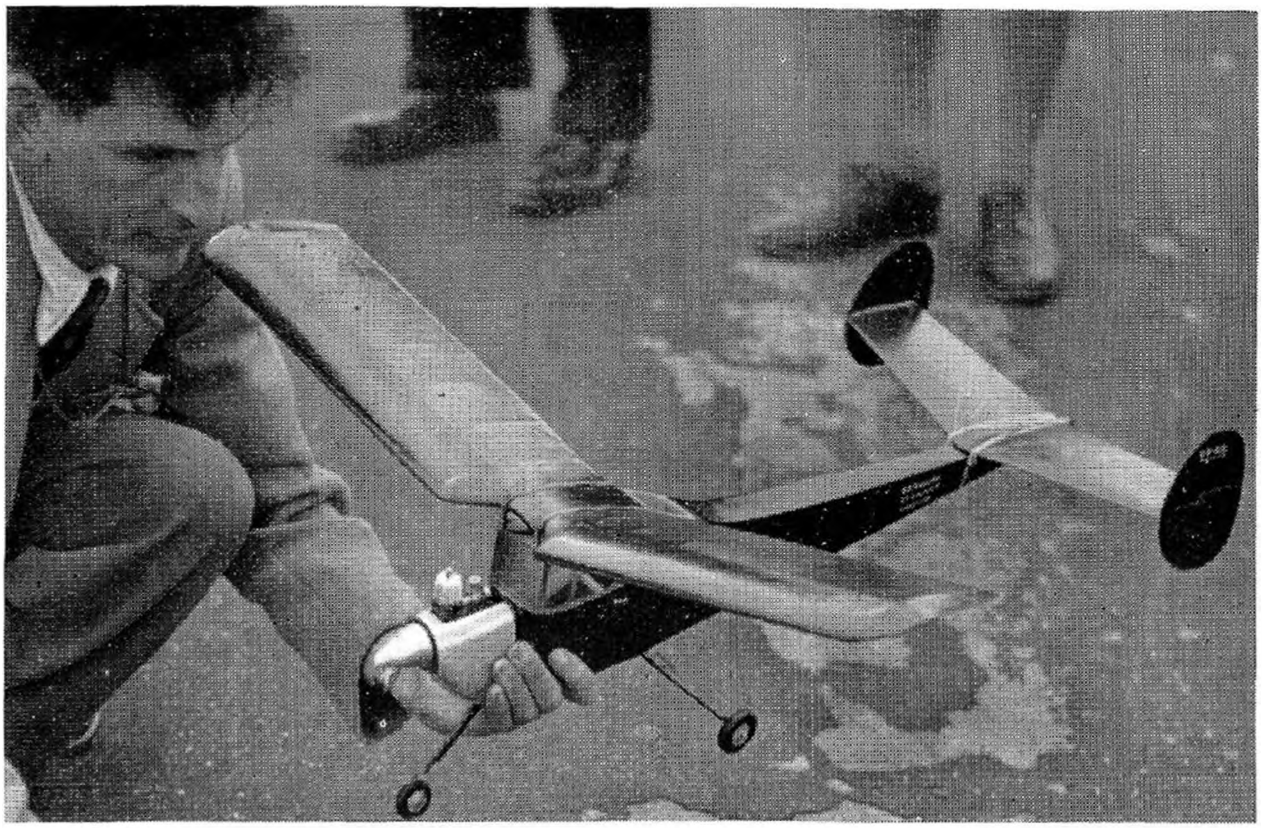
If the model is really high powered, then a fairly wide circling climb is probably the safest, *turning in the direction in which the model is most stable.* This will vary considerably with the design layout. The Jersey Javelin, for example, which is virtually a shoulder-wing design, has a safe turn to the left under power ; most pylon models prefer to turn right under power. This power turn should, if possible, be made *against* rudder offset so that the model turns in the opposite direction on the glide.

Main disadvantage of this scheme is that a stall is almost inevitable when the power cuts, although this can be partially eliminated, or the loss of height minimised, by careful trimming.

However, to make even this type of climb really safe, the design should also be such that the model has a relatively high rate of roll. Thus, if it does get carried over on to its back for any reason it will be highly unstable in that attitude and immediately roll out to level flight once more.

A high rate of roll is generally achieved by using large dihedral angles, coupled with a short wing span (low aspect ratio wing). Often large dihedral is used with small fin area, so that the model is virtually on the point of " Dutch rolling " all the time.

A typical example of this type is the Banshee—still one of the outstanding contest designs in this country. Provided it is not completely overpowered and is reasonably trimmed, the Banshee is a fairly safe model. But no one could class it as the ideal for contest work. It can—and will—spin as readily as any other model and at best is inclined to be more than a trifle inconsistent in the manner in which it climbs. Fin area is extremely small and, following a stall, a Banshee may flick roll or turn



Geoff Dunmore with his 1949 Bowden Trophy winner, a semi-scale model of pleasing lines that should have satisfied the Colonel that it was indeed a precision type model rather than a lucky high climber.

in either direction. Probably under high angle power flight the fin is almost completely ineffective. But further development along similar design lines can produce a good contest model, as witness Gunter's Thorobred.

One of the most popular American sizes for contest work is the 4-500 sq. in. Class B model with a 5 c.c. motor and a number of leading examples are detailed in the tables. In the main they still favour spark ignition, although a number have gone over to glow plug running. In this country, of course, diesels still predominate, although there are quite a number of contest fliers who openly state their preference for a good spark-ignition motor.

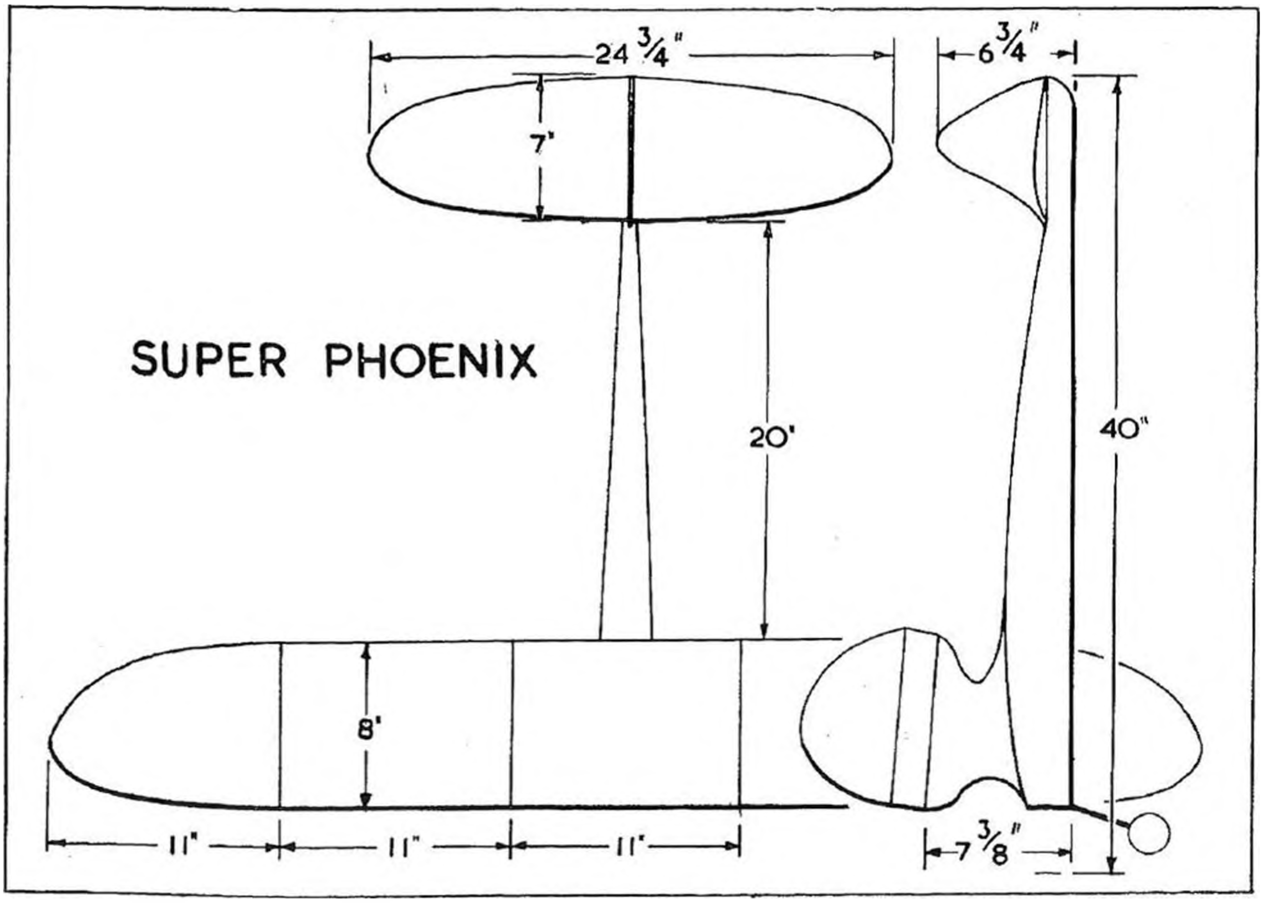
Power unit weight is the criterion here. In Class A—and particularly small Class A—a good diesel or glow plug motor is by far the better proposition as the proportion of dead weight necessary to accommodate an ignition circuit is prohibitive. In Class B the position is about even as far as spark, or glow or diesel is concerned. Class C models are almost exclusively spark ignition, for the added ignition weight is relatively unimportant and even glow plugging a standard spark-ignition motor presents no special advantages.

The main disadvantage of both diesel and glow plug motors is that they are not sufficiently flexible for initial trimming under low power. This is probably more important in the larger sizes, where there is more model at stake ! Where glow plug or diesel motors are used, such devices have been adopted as testing with the propeller the wrong way round (*i.e.*, cambered face to the rear) or with $\frac{1}{8}$ in. sq. strips cemented along the prop. blades to make the prop. inefficient.

Once 10 c.c. motors are readily available in this country there will probably be a tendency to build very much larger models. Large Class C jobs seldom have the spectacular climb of their smaller contemporaries, but on all-round performance generally score in having a very much superior glide.

One thing is most certain, and that is that whatever the size of power model, if trimmed to anything like contest performance, a dethermaliser is absolutely essential. Even a simple power model represents a considerable cash outlay and to risk this unnecessarily is foolish. With the heights that can now be reached in ten seconds or less, a model with even a moderate glide can soon pick up a thermal and soar away out of sight.

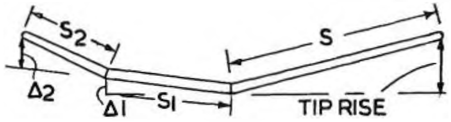
We have noticed that dethermalisers have not been very widely used on power models during 1949—a state of affairs which will surely be remedied next year. Many different types have been tried out and the one outstanding method is the tipping-tailplane. When the dethermaliser timer cuts in the whole tailplane is elevated to a negative angle of some 30 degrees. The model then sinks rapidly *on an even keel* at a rate sufficient to bring it down through most thermals, but not fast enought to damage it on reaching the ground. About the only other acceptable method is the wing-release, where the leading edge of the wing is allowed to pop up to some 30 degrees angle of incidence. This results in a similar descent, but is more difficult to rig correctly. Parachute dethermalisers are " out." Descent with a 'chute is either nose down, fast, or in a series of vicious stalls. Broken props. or other damage are too common with this method.



POWER DURATION GENERAL DATA

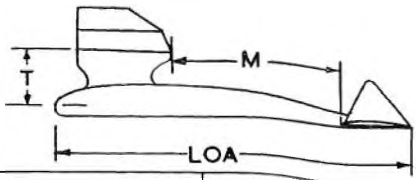
MODEL	DESIGNER	MOTOR	CLASS GB	CLASS US	SPN. INS	WT OZS	WING AREA
GOSSAMER	K.L.STOTHERS	AMCO ·87	A	A	32		158
STREAKER	P.SMITH	AMCO ·87	A	A	37	7	190
THOROBRED	B.GUNTER	ELFIN 1·8	A	A	42	15	214
HERMES	J.MAGSON	E-D BEE	A	A	41½		215
PIZONIA	W.BLANCHARD	ARDEN 099	A	A	42	10	240
STARGAZER	DEL GATTO	BANTAM	B	A·B	43	21	250
SLICKER 44	W.A.DEAN	ELFIN 1·8	A	A	44	14·5	252
FLY'S EYE	J.B.KNIGHT		A	A	39	13	265
EIGHT BALL	R.SCHOFIELD	BANTAM	A	A·B	54	20	306
VM-15	VON FRITZ	EISFELD	A	A	42½		310
SLICKER 50	W.A.DEAN	ARDEN 199	B	A	50	21	314·5
BANSHEE	L.SHULMAN	BANTAM	B	A·B	49½	22	330
JERSEY JAVELIN	W.SCHRODER	BANTAM	B	A·B	46	24	335
BLITZ BUGGY	J.NORRIS	ARDEN 199	B	A·B	56		350
FIRECRACKER	N.MARCUS	OHLSSON 23	B	B	50	17·3	380
MOVO M. 30	MOVO	D 2	A	A	52		390
CLIMAX	C.FOLK	FORSTER 29	B	B	51	35	400
PLANETEER	M.SCHOENBRUN	TORPEDO	B	B	56	26·5	400
SUPER PHOENIX	F.EHLING	ARDEN	B	A	55		400
SUPER ROBOMB	B.LESTER	FORSTER	B	B	63		405
SENATOR	C.WHEELEY	FORSTER	B	B	60		490
SLIM JIM	V.OLDERSHAW	TORPEDO	B	B	66	28	500
POWERHOUSE 56	R. KORDA	DE LONG 30	B	B	57	36	511
CALAO	BOUGUERET	ALLOUCHERY	A	A	67		520
ZOOMER	L.SHULMAN	DELONG	B	B	60	35	522
NU-LOOKER	F.EHLING	TORPEDO	B	B	70	27	600
DOLPHIN	R.COLLINS	FORSTER	B	B	80	42	612
VAGABOND	W. WINTER	OHLSSON 60	C	D	74	35·4	635
CHAMP	SIMMONDS	SUPER-CYKE	C	D	76	55	755
WESTERNER C	D.FOOTE	OHLSSON 60	C	D	86		757
PLAYBOY C	C-D KIT	OHLSSON 60	C	D	80		785
GISMOE	J.BROFMAN	SUPER-CYKE	C	D	72	56	794
COLOSSUS	C.GIESSEN	SUPER-CYKE	C	D	78		825
COSMIC RAVE	J.BROFMAN	SUPER CYKE	C	D	88	94	1027

A.R.	TAILPLANE AREA	TAILPLANE % SW	TOTAL AREA	LOADING VALUES OZ/ SQ.FT.	LOADING VALUES OZ/ 100 S.I.	LOADING VALUES OZ/ TOTAL	LOADING VALUES OZ/ C.C.	MODEL
6·5	53	33	211					GOSSAMER
7·6	55	29	245	5·2	3·7	2·85	8·0	STREAKER
8·25	71	33	285	10·1	7·0	5·3	8·3	THOROBRED
8·0	70	32·5	285					HERMES
7·4	81	33	321	6·05	4·2	3·1	6·2	PIZONIA
7·4	90	36	340	12·1	8·4	6·2	6·5	STARGAZER
7·6	84	33	336	8·2	5·7	4·3	8·0	SLICKER 44
5·7	82	31	347	7·05	4·9	3·75	9·3	FLY'S EYE
9·5	102	33	408	9·45	6·55	49	6·15	EIGHT BALL
5·8	118	38	428					VM-15
7·9	106	34	420·5	9·6	6·65	5·0	6·45	SLICKER 50
7·4	100	30	430	9·65	6·7	5·1	6·8	BANSHEE
6·3	95	28	430	10·3	7·15	5·6	7·4	JERSEY JAVELIN
9·0	120	34	470					BLITZ BUGGY
6·6	122	32	502	6·55	4·55	3·45	4·6	FIRECRACKER
7·0	120	31	510					MOVO M30
6·5	176	44	576	12·6	8·25	6·1	7·0	CLIMAX
7·8	145	36	545	9·5	6·6	4·85	5·3	PLANETEER
7·6	135	34	535					SUPER PHOENIX
9·8	107	26	512					SUPER ROBOMB
7·4	240	49	730					SENATOR
8·4	150	30	650	8·1	5·6	4·3	5·6	SLIM JIM
6·35	153	30	664	10·1	7·0	5·45	7·2	POWERHOUSE 56
8·6	140	27	660					CALAO
6·9	187	36	709	9·65	6·7	4·95	7·0	ZOOMER
8·2	165	27·5	765	6·5	4·5	3·5	5·4	NU-LOOKER
10·5	180	29	792	9·9	6·9	5·3	8·5	DOLPHIN
8·6	225	35	860	8·0	5·6	4·1	3·5	VAGABOND
7·65	195	26	950	10·5	7·25	5·85	5·5	CHAMP
9·8	212	28	969					WESTERNER C
9·0	176	22·5	961					PLAYBOY C
6·5	260	36	1054	10·15	7·05	5·3	5·6	GISMOE
7·3	252	30	1077					COLOSSUS
7·6	400	39	1427	13·2	9·15	6·6	9·4	COSMIC RAVE



POWER DURATION

MODEL	CLASS GB	CLASS US	SP.	S1	S2	ROOT CHD.	WING AREA	PLANFORM	SECTION	Δ1	Δ2
GOSSAMER	A	A	32	10	6	5 1/4	158	PARALLEL		1	
STREAKER	A	A	37	10	9	6	190	ST TAPER	NACA 4409	3/4	
THOROBRED	A	A	42	12 1/2	8 1/2	6 1/2	214	ST TAPER	NACA 6409	1 1/8	
HERMES	A	A	41 1/2	10	10·8	6	215	ST TAPER	CLARK Y		
PIZONIA	A	A	42	12	9	6 1/2	240	PARALLEL	NACA 6409	1	
STARGAZER	B	A-B	43	13	8 1/2	6 1/4	250	PARALLEL	DAVIS	1 1/8	
SLICKER 44	A	A	44	13	8·9	7	252	ELLIPTIC	NACA 6409	1 1/2	1 3/4
FLY'S EYE	A	A	39	12	7·5	7	265	PARALLEL	GOLDBERG	1	3 1/2
EIGHT BALL	B	B	54	11	16	6 1/2	306	PARALLEL	NACA 6412	1	
VM-15	A	A	42·6	21·3		7 1/2	310	PARALLEL	NACA 6409		
SLICKER 50	B	A-B	50	15	10	7 3/4	314·5	ELLIPTIC	NACA 6409	1 3/8	4 7/8
BANSHEE	B	A-B	49 1/2	13·5	11·3	9	330	ST TAPER	NACA 6409	1 1/2	
JERSEY JAVELIN	B	A-B	46	13	10	7 5/8	335	PARALLEL	NACA 6409	1 5/8	2·7
BLITZ BUGGY	B	A-B	56	15	10	6 3/4	350	ST TAPER	NACA 6412	1	
FIRECRACKER	B	B	50	15	10	8	380	ST TAPER		3/4	
MOVO M-30	A	A	52	26		7 5/8	390	PARALLEL	CLARK Y		
CLIMAX	B	B	51	14	11·5	8	400	PARALLEL	NACA 6412		2
PLANETEER	B	B	56	18	10	8	400	PARALLEL	DAVIS 5	2	
SUPER PHOENIX	B	A-B	55	11	11	8	400	PARALLEL	CLARK Y	1 1/4	
SUPER ROBOMB	B	B	63	22	9·4	8	405	ST. TAPER	GRANT	4	
SENATOR	B	B-C	60	17	13	9 1/2	490	PARALLEL	NACA 6412	1 1/2	
SLIM JIM	B	B-C	66	21	10·5	9	500	PARALLEL	DAVIS	2	3 1/2
POWERHOUSE 56	B	B	57	14·8	13·7	9 1/2	511	PARALLEL	NACA 6409	1 3/4	4
CALAO	A	A	67	32		8 1/8	520	PARALLEL	NACA 6409		
ZOOMER	B	B-C	60	18	12	12	522	ST TAPER	NACA 6409	2	5
NU-LOOKER	B	B	70	14	14	9	600	PARALLEL	GRANT G-8	1 1/2	
DOLPHIN	B	B	80	20	16	10	612	ST TAPER	NACA 6409	1 1/2	
VAGABOND	C	D	74	25	12	9	635	PARALLEL	NACA 6409	2·5	3·3
CHAMP	C	D	76	22	16	11	755	PARALLEL	CLARK Y	3	
WESTERNER C	C	D	86	27	16	10 1/2	757	SWEPT L.E.	RAF 32	2·7	
PLAYBOY	C	D	80	20	20	11	785	PARALLEL		2	
GISMOE	C	D	72	22	14	12	794	PARALLEL	NACA 6409	3	
COLOSSUS	C	D	78	22	17	10 3/4	825	PARALLEL		2·4	
COSMIC RAVE	C	D	88	25	19	13·4	1027	PARALLEL	EIFFEL 400	4	



DESIGN DATA

TIP RISE	LOA	M	T	TAILPLANE SPN.	TAILPLANE RT.	TAILPLANE AREA	TAILPLANE A.R.	TAILPLANE SECT.	FIN AREA	FIN % SW	MODEL
3 1/2	21	10 1/2	4 1/4	12 1/2	4 1/4	53	3·0	LIFT	11·8	7·5	GOSSAMER
3 3/4	21	9 1/2	5	16	4	55	4·4	LIFT	17	5·4	STREAKER
3·4	24	12	4 1/4	19	4 3/4	71	5·1	LIFT	18	8·4	THOROBRED
3 1/2	27·5	12 7/8	2 3/8	20	4 1/2	70	5·7	LIFT	11	5·1	HERMES
4	25·5	10 1/2	2 5/8	18	6	81	4·0	LIFT	12	5·0	PIZONIA
4 3/4	36	21	4	18	5	90	3·6	LIFT	20	8·0	STARGAZER
5 3/8	25·6	12 1/2	4 1/4	19	5 1/2	84	4·3	LIFT	15	6·0	SLICKER 44
	27	16	4	20	4 1/2	82	4·9	LIFT	20	7·5	FLY'S EYE
6	28	14	4 1/8	24	5 1/2	102	5·7	LIFT	20	6·5	EIGHT BALL
6 1/4	28	19 1/4	6 3/4	22 1/2	5 1/4	118	4·3	LIFT	36	11·6	VM-15
	30	14 5/8	5 1/2	22	6 1/4	106	4·6	LIFT	24	7·6	SLICKER 50
8 3/4	32	15 1/2	5	21 1/2	6 3/4	100	4·6	SYM	10	3·0	BANSHEE
	32	14 1/4	1 1/8	19 1/2	6 3/8	95	4·0	SYM	26	7·75	JERSEY JAVELIN
4	26	13 1/2	4 1/2	24	6	120	4·8	LIFT	21	6·0	BLITZ BUGGY
7	33	19 1/2	4 1/2	24	5 1/2	122	4·7	LIFT	27	7·1	FIRECRACKER
7 1/2	33	13 1/2	2 1/4	22	6 1/2	120	4·0	SYM	28	7·2	MOVO M-30
4	29	11 1/2	6	22	8	176	2·8	LIFT	16	4·0	CLIMAX
6	41	18 1/2	3 3/4	23	8	145	3·7	LIFT	24	6·0	PLANETEER
4 3/4	40	20	7 3/8	24 3/4	7	135	4·5	LIFT	17	4·2	SUPER PHOENIX
10	35	16 3/16	5	22	6 1/8	107	4·5	LIFT	35	8·6	SUPER ROBOMB
8	36	15	7	32	9 1/2	240	4·2	LIFT	32	7·2	SENATOR
	45	19 1/4	5·4	23	7 3/4	150	3·5	LIFT	57	11·5	SLIM JIM
7 1/4	34	16 1/2	4	26	6 3/4	153	4·4	LIFT	38	7·5	POWERHOUSE 56
5	38	20 1/2	3/4	25	6 1/4	140	4·5	LIFT	26	5·0	CALAO
8 1/2	40	17 1/4	6	30	9	187	4·8	SYM	22·5	4·3	ZOOMER
7	45	19 1/2	5 1/2	30	7	165	5·5	LIFT	27	4·5	NU-LOOKER
8 1/2	49	20	3/4	30	8	180	5·0	LIFT	31	5·0	DOLPHIN
	47	23	3 1/4	30 1/4	9	225	4·2	SYM	45	7·1	VAGABOND
8	45	18	4	27 1/2	9	195	3·9	LIFT	35	4·6	CHAMP
9	45	24	5	29	8 1/4	212	4·0	LIFT	30	4·0	WESTERNER C
8	42	21	6	28	8	176	4·4	LIFT	47	6·0	PLAYBOY
9	54	25	1 5/8	30	11	260	3·5	LIFT	63	7·9	GISMOE
7 5/8	50	26	5 3/4	36	8 3/4	252	5·2	LIFT	31	3·8	COLOSSUS
10	60	21	2	42	12	400	4·4	LIFT	85	8·3	COSMIC RAVE

POWER DURATION

MODEL	WINGS TYPE	LE	SPARS	TE	RIB	COVERING	TYPE
GOSSAMER	2-SPAR	3/16 SQ	7/32 & 1/8 X 1/8	1/2 X 3/32	1/16	SHEET LE	CRUCIFORM
STREAKER	2-SPAR	1/8 SQ	1/16	1/2 X 1/8	3/32	TISSUE	CRUTCH
THOROBRED	MONO	1/4 X 5/16	5/16 X 3/16	5/8 X 5/16	3/32	RAG T.	CRUCIFORM
HERMES	2-SPAR	1/4 X 1/8	1/8 SQ	1/2 X 1/8	1/16	SHEET LE	CRUTCH
PIZONIA	2-SPAR	1/4 X 1/8	1/8 SQ	5/8 X 1/8		SILKSPAN	KEEL
STARGAZER.	MULTI	1/2 X 7/16	3/8 X 1/8	1 X 1/4	3/32	SHEET LE	CRUTCH
SLICKER 44	2-SPAR	1/4 SQ	1/8 & 3/16	5/32 SH	3/32	SHEET LE	CRUTCH
FLY'S EYE	2-SPAR	1/4 X 3/8	3/16 SQ	1 X 3/16	1/16	SHEET LE	KEEL
EIGHT BALL	2-SPAR	1/4 X 3/8	3/8 X 1/8	3/4 X 3/16	3/32	SHEET LE	KEEL
VM-15	MONO	1/4 SQ	1 1/4 X 1/16 FL.	5/8 X 1/8	1/16	PAPER	BOX
SLICKER 50	2-SPAR	2-7/16 x 1/8	1/8 SHT	3/16 SHT	3/32	SHEET LE	CRUTCH
BANSHEE	2-SPAR	3/8 X 1/2	1/4 X 1/8	3/4 X 3/16	3/32	SHEET LE	CRUCIFORM
JERSEY JAVELIN	MONO	3/8 X 3/16	1/2 X 3/16	3/4 X 3/16	1/16	SILKSPAN	CRUTCH
BLITZ BUGGY	2-SPAR	3/8 X 1/4	1/2 & 3/8 X 1/8	3/4 X 3/16	1/16	SILKSPAN	CRUTCH
FIRECRACKER	2-SPAR	3/16 SQ	3/8 & 1/4 X 1/8	5/8 X 1/8	1/16	SHEET LE	CRUTCH
D-30	2-SPAR	1/8 DIA	2 - 1/4 X 3/16	1/2 X 1/8	1/16	PAPER	CRUTCH
CLIMAX	2-SPAR	1/2 X 1/4	1/2 & 3/8 X 3/16	3/4 X 3/16	1/8	SILKSPAN	BOX
PLANETEER	MONO	1/4 SQ	1/2 X 1/8	1 X 7/32	3/32	SHEET LE	CRUTCH
SUPER PHOENIX	2-SPAR	2-5/16 X 1/8	1/2 & 5/16 X 5/16	1 X 3/16	3/32	SILKSPAN	BOX
SUPER ROBOMB	MULTI	1/4 X 3/8	1/8 X 1/16	1/4 SHT	3/32	SHEET LE	CRUTCH
SENATOR	2-SPAR	1/2 X 3/8	5/8 & 1/2 X 3/16	1 X 1/4	1/8	SILKSPAN	CRUTCH
SLIM JIM	2-SPAR	3/4 X 3/8	1 & 3/8 X 1/8	1 X 5/16	1/8	SILKSPAN	STREAMLINE
POWERHOUSE 56	2-SPAR	3-1/8 SH	1/4 SHT	3/4 X 1/4	3/32	SILKSPAN	CRUTCH
CALAO	MONO	3/16 X 1/8	7/16 X 1/8	3/4 X 3/16	1/16	PAPER	BOX
ZOOMER	2-SPAR	3/4 X 1/2	1/2 X 1/4	1 X 1/16-V	1/8	SHEET LE	CRUCIFORM
NU LOOKER	2-SPAR	1/4 SQ	3/4 X 1/4	1 X 3/16	3/32	SILKSPAN	CRUTCH
DOLPHIN	2-SPAR	1/4 SQ	5/16 X 1/8	1/16-V	1/16	SHEET LE	STREAMLINE
VAGABOND	MULTI	1/4 SQ	1/2 & 1/4 X 1/8	1 X 1/4	3/32	SHEET LE	BOX
CHAMP	MONO	5/16 SQ	2 - 1/4 SQ	1 X 1/4	1/8	SILK	BOX
WESTERNER C	2-SPAR	2-1/2 X 3/16	1 & 3/4 X 1/4	3/4 X 1/4	1/8	SILKSPAN	CRUTCH
PLAYBOY	MULTI	5/8 X 3/8	5/8 & 1/2 X 3/16	1 X 1/4	3/32	SILKSPAN	BOX
GISMOE	2-SPAR	1/4 SQ	3/4 X 1/4	3/4 X 1/8	1/8	SHEET LE	BOX
COLOSSUS	MULTI	5/16 SQ	1/4 SHT	1 X 1/4	1/8	SHEET LE	BOX
COSMIC RAVE	2-SPAR	3/8 SQ	1/4 X 3/8	1 X 1/4	1/8	SILKSPAN	CRUTCH

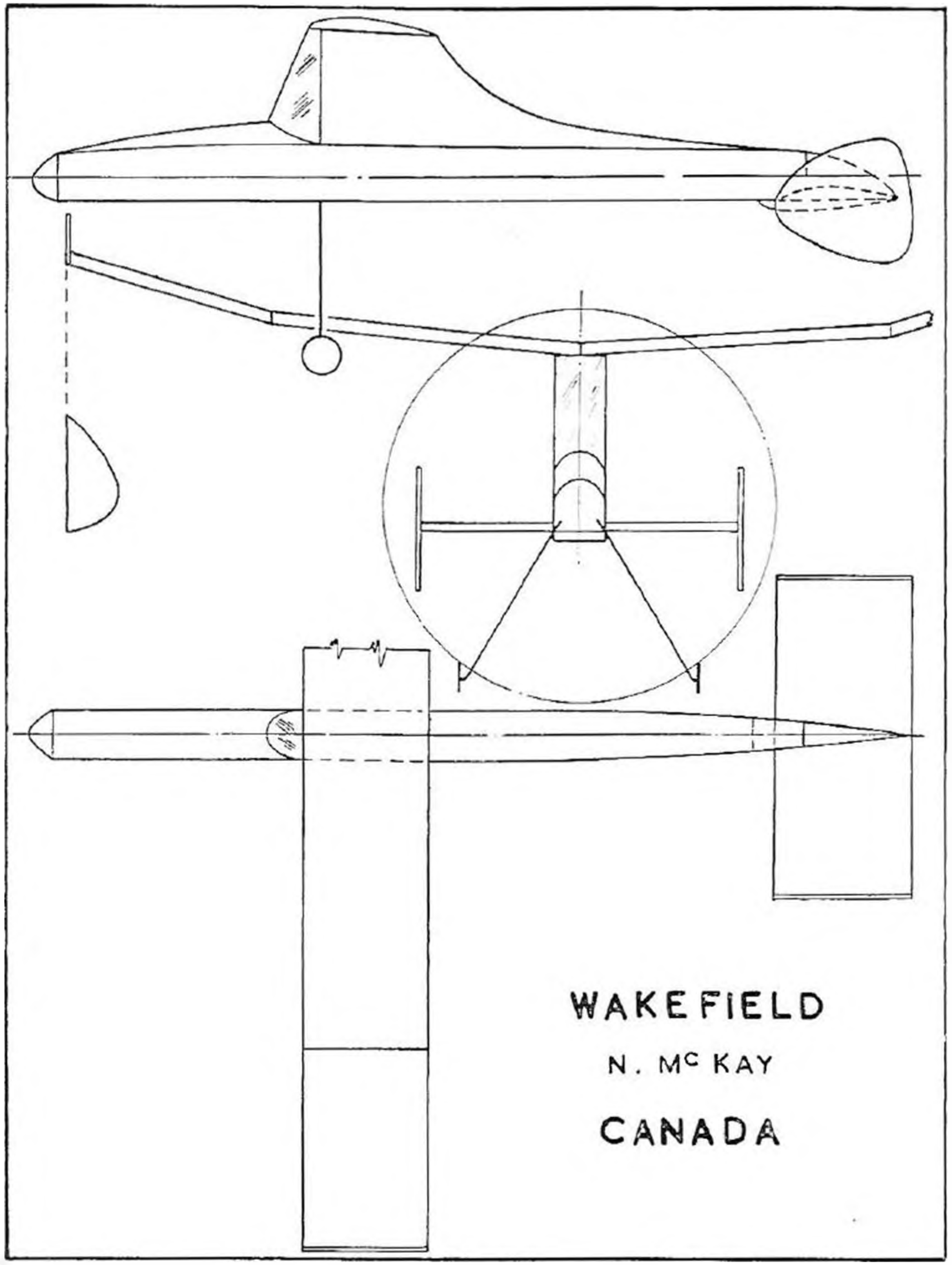
CONSTRUCTION

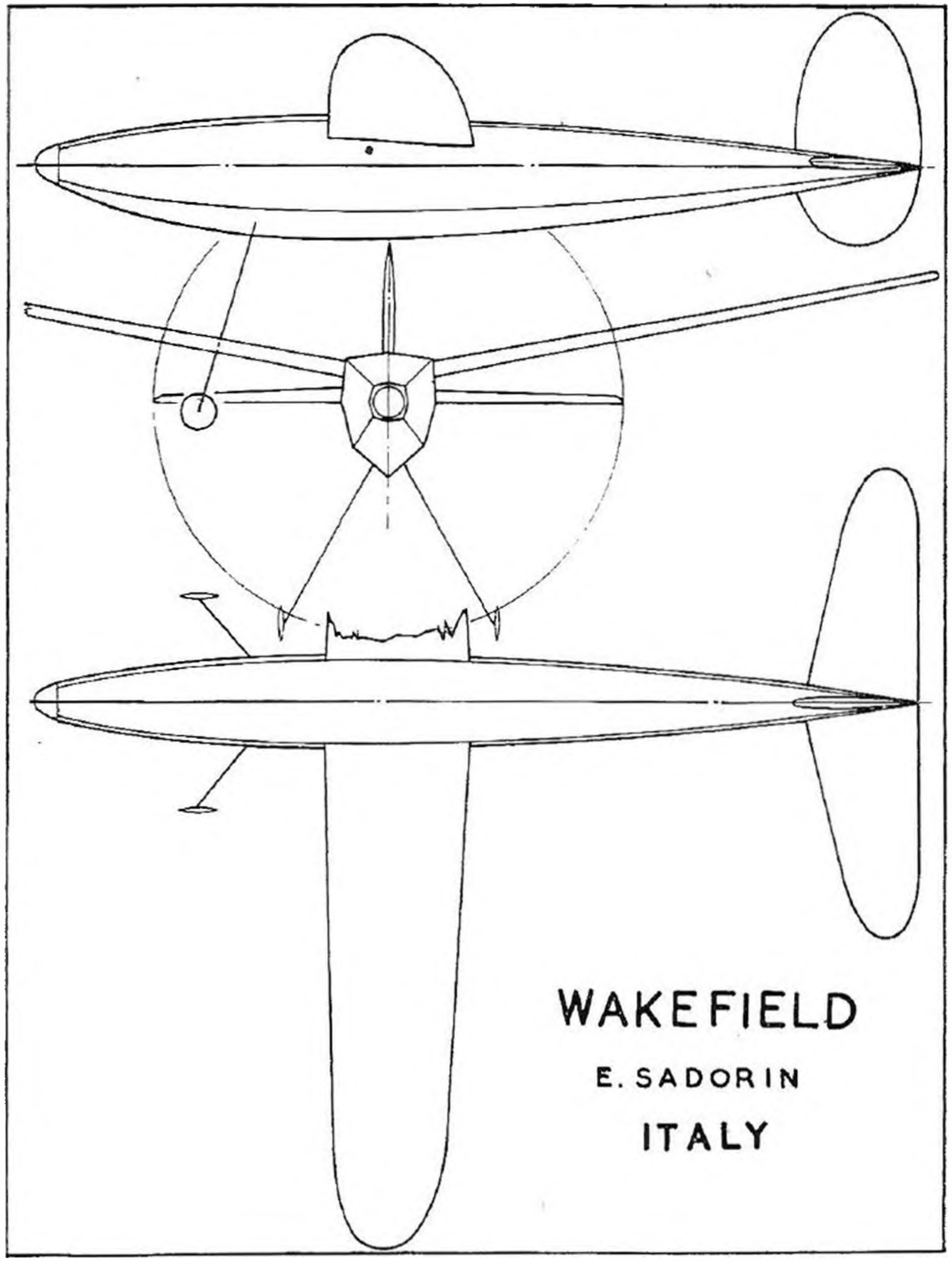
FUSELAGE MATERIAL	STR.	FM.	COVER.	MOTOR MOUNT	TAILPLANE TYPE	SPAR	COVER.	U-C LEG	DIA.	MODEL
1/8 SHEET		1/8	1/32 SHT	1/2 X 1/4	2-SPAR	3/32	TISSUE	1/16	1 1/2	GOSSAMER
3/8 X 1/8	3/32	1/8	TISSUE	BEAM	MONO	1/16	TISSUE	14G	1 1/2	STREAKER
1/8 SHEET		1/8	RAG T.	RADIAL	MONO	1/4	RAG T.	14G	1 1/2	THOROBRED
3/8 X 1/8	1/8	1/16	PLANK.	3/8 SQ	2-SPAR	1/8	TISSUE	14G	1 1/2	HERMES
1/8 SHEET			SILKSPN		MONO		SHTLE	14G	1	PIZONIA
5/8 X 3/16	1/4 x 1/8	1/8	SILKSPN	1/4 PLY	MULTI	1/4	SILKSP	3/32	1 1/4	STARGAZER
1/4 X 3/16	1/8 SQ	3/32	SILKSPN	BEAM	2-SPAR	3/32	SILKSP	12G	2	SLICKER 44
1/8 FRM.			PLANK.	K-O	MONO	1/16	TISSUE	14G	2	FLY'S EYE
3/32 SHT		1/8	PLANK.	BEAM	SPAR		SHTLE	3/32	1 3/4	EIGHT BALL
5/32 SQ				K-O	MONO	1/8	PAPER	BM.	1	VM-15
1/2 X 1/8	1/8 SQ	1/8	SILKSPN	BEAM	MONO	3/32	SILKSP	1/8	2	SLICKER 50
1/8 SHEET	1/8		SILK	1/2 X 1/16	MONO	1/8	SILKSP	3/32	2	BANSHEE
3/16 SQ	1/8 SQ	3/32	SILKSPN	1/4 X 9/16	2-SPAR	1/4	SILKSP	14G	1 1/4	JERSEY JAVELIN
3/8 X 3/16	3/16 SQ	3/32	SILKSPN	RADIAL	MONO	3/16	SILKSP	3/32	1	BLITZ BUGGY
1/8 SQ	1/16		SILK	DURAL	2-SPAR	1/8	TISSUE	1/16	1 3/4	FIRECRACKER
1/2 X 1/4	3/32	PLY	PAPER	5/16 SQ	MONO		TISSUE	1/8	2	D-30
1/4 SQ			SILKSPN	BEAM	2 SPAR	1/8	SILKSP	3/32	1 3/4	CLIMAX
1/2 X 1/4	3/16		SILKSPN	BEAM	MONO	1/8	SHTLE	3/32	2	PLANETEER
1/4 X 1/2			SILKSPN	RADIAL	MONO	1/8	SILKSP	1/8	2	SUPER PHOENIX
3/16 SQ		1/8	SHEET		MULTI		SHTLE	1/8	2 1/2	SUPER ROBOMB
1/2 X 3/16			SILKSPN	BEAM	MONO		SILKSP	3/32	1 3/4	SENATOR
	1/8	1/16	PLANK.	BEAM	MONO	1/8	SILKSP	1/8	2	SLIM JIM
5/8 X 1/4	3/16 SQ	1/8	SILKSPN	BEAM	2-SPAR	3/16	SILKSP	3/32	1 3/4	POWERHOUSE
1/4 SQ			PAPER	BEAM	MONO	1/8	PAPER	3/32	1 5/8	CALAO
SHEET		3/16	SILKSPN	BEAM	MONO	3/16	SILKSP	1/8	2 1/2	ZOOMER
3/8 X 1/4		1/8	PLANK.	BEAM	MONO	1/8	SILKSP	3/32	1 3/4	NU LOOKER
		1/8	PLANK.	1/2 X 3/8	MONO	1/8	SHTLE	1/8	2 1/2	DOLPHIN
1/4 SQ		1/8	SILK	BEAM	MONO	1/4	SILKSP	3/32	3	VAGABOND
3/16 SQ	1/8 SQ		SILK	BEAM	MULTI		SILK	1/8	3 1/2	CHAMP
1/8 SQ	1/8 SQ	1/8	SHEET	BEAM	MONO	T	SILKSP	1/8	3	WESTERNER C
3/16 SQ			SILKSPN	BEAM	MULTI		SILKSP	1/8	2 1/4	PLAYBOY
1/4 SQ			SILKSPN	BEAM	MONO		SILKSP	3/32	2 1/2	GISMOE
5/16 SQ			SILKSPN	BEAM	2-SPAR	1/8	SILKSP	1/8	2	COLOSSUS
1 X 5/16	5/16		SILK SPN	1 X 1/2	MONO		SILKSP	1/8	1 1/2	COSMIC RAVE

POWER DURATION RIGGING DATA

MODEL	TYPE	CLASS GB	CLASS US	MOTOR	PROP DIA.	PROP PT.	INCIDENCE W.	INCIDENCE T.	THRUST DWN	THRUST SIDE	CG POSN FROM L.E.	CG POSN FROM T.E.	TRIM POWER	TRIM GLIDE	NOTES	MODEL
GOSSAMER	PYLON	A	A	AMCO ·87	7	4 5	5	O	5°	2° LEFT	50%		L.CIRCLE	L.CIRCLE		GOSSAMER
STREAKER	PYLON DEVNT.	A	A	AMCO ·87	8	4	5	2 1/2	O	O	50%		R.CIRCLE	R.CIRCLE	VERON KIT	STREAKER
THOROBRED	PYLON	A	A	ELFIN 1·8			9/32	3/16	1 1/2°	3° RIGHT	65%		R.CIRCLE	L.CIRCLE	BANSHEE TYPE	THOROBRED
HERMES	CABIN	A	A	E-D BEE			·4	1	O	O					HALFAX KIT	HERMES
PIZONIA	PYLON DEVNT.	A	A	ARDEN O99					2°	2° LEFT	60%		R.CIRCLE	L.CIRCLE		PIZONIA
STARGAZER	HIGH	B	A·B	BANTAM	10	4	4	O			60%		R.CIRCLE	R.CIRCLE		STARGAZER
SLICKER 44	PYLON DEVNT.	A	A	MILLS 1·3	9	5	4	2		2° RIGHT	50%		STRAIGHT	STRAIGHT		SLICKER 44
FLY'S EYE	PYLON	A	A	DIESEL			2	O			4"		L.CIRCLE	L.CIRCLE	NATIONALS 1ST	FLY'S EYE
EIGHT BALL	PYLON	B	A·B	BANTAM	10	5	3	O	1°	O	75%		R.CIRCLE	L.CIRCLE		EIGHT BALL
VM-15	PYLON	A	A	DV-2	10·6	4	1	O	O	O	60%					VM-15
SLICKER 50	PYLON DEVNT.	B	A·B	ARDEN 199	9	6	4	2 1/2	1/2°		50%		STRAIGHT	STRAIGHT	KEILKRAFT KIT	SLICKER 50
BANSHEE	PYLON DEVNT.	B	A·B	BANTAM	9	6	4	1	7-10°	O	45%		R.CIRCLE	L.CIRCLE		BANSHEE
JERSEY JAVELIN	HIGH	B	A·B	BANTAM	9	6	7	5 1/2	4° UP	3° LEFT	60%		L.CIRCLE	R.CIRCLE		JERSEY JAVELIN
BLITZ BUGGY	PYLON	B	A·B	ARDEN 199	9	8	3	O	5°	[illegible]° RIGHT	50%		R.CIRCLE	L.CIRCLE		BLITZ BUGGY
FIRECRACKER	PYLON DEV.	B	B	OHLSSON 23	10	6	2	O			60%					FIRECRACKER
MOVO D-30	CABIN	A	A	MOVO D	11	V·P	1 1/2	O	1°	O					ITALIAN KIT	MOVO D-30
CLIMAX	PYLON	B·C	B·C	FORSTER	12	8	2	O	O	3° RIGHT	60%		R.CIRCLE	L.CIRCLE		CLIMAX
PLANETEER	PYLON DEV.	B	B	TORPEDO	11	8	1 1/2	O	O	1° LEFT	50%		L.CIRCLE	R.CIRCLE		PLANETEER
SUPER PHOENIX	PYLON	B	A·B	ARDEN 199	10	5	4 1/2	O	O	O	5 1/2"	3 1/2"	R.CIRCLE	L.CIRCLE		SUPER PHOENIX
SUPER ROBOMB	PYLON DEV.	B	B	FORSTER	11	8	2 1 2	O	O	O			L.CIRCLE	L.CIRCLE		SUPER ROBOMB
SENATOR	PYLON	B	B	FORSTER	11	6	3	O			60%		L.CIRCLE	L.CIRCLE		SENATOR
SLIM JIM	PYLON	B	B	TORPEDO	11	6	4	1/2	O	O	5"					SLIM JIM
POWERHOUSE 56	PYLON DEV.	B	B	DE LONG	9	8	5	O	5°	O	60%		STRAIGHT			POWERHOUSE 56
CALAO	HIGH	A	A	ALLOUCHERY	10	4	2	O	O	2° RIGHT	50%		L.CIRCLE	L.CIRCLE		CALAO
ZOOMER	PYLON DEV.	B·C	B·C	DE LONG	12	8	6	5			60%					ZOOMER
NU LOOKER	PYLON															NU LOOKER
DOLPHIN	SHOULDER	B	B	FORSTER	11	6	4	O	1°	2° RIGHT			L.CIRCLE	R.CIRCLE		DOLPHIN
VAGABOND	CABIN	C	D	OHLSSON 60	12	7	O	O	O	O	35%		STRAIGHT	R OR L		VAGABOND
CHAMP	PYLON	C	D	SUPER CYKE									STRAIGHT			CHAMP
WESTERNER C	PYLON DEV.	C	D	OHLSSON 60	12	6	2 1/2	O	O	L OR R	5 1/2"		R OR L	R. OR L		WESTERNER C
PLAYBOY	PYLON	C	D	OHLSSON 60	12	6	2	O	O	O	75%				C-D KIT	PLAYBOY
GISMOE	SHOULDER	C	D	SUPER CYKE	14	7	1	O	8°	2° LEFT	50%		L.CIRCLE	R.CIRCLE		GISMOE
COLOSSUS	HIGH	C	D	SUPER CYKE	14	6	1	-1	2°	O			R.CIRCLE	L.CIRCLE		COLOSSUS
COSMIC RAVE	SHOULDER	C	D	SUPER CYKE	14	6	1	O	O	O	60%		L.CIRCLE	L.CIRCLE		COSMIC RAVE

ALL RIGGING ANGLES POSITIVE UNLESS SHOWN OTHERWISE


WAKEFIELD
N. McKAY
CANADA


WAKEFIELD
E. SADORIN
ITALY

Unintended worship at the Wakefield ! All bow down to the famous formula as productive of the world's most highly developed contest models. Flyer is Jossien of France.

RUBBER MODELS

FROM the competition point of view, rubber models have undoubtedly overshadowed all other types, highlighted by the Wakefield contest, held in this country for the first time for twelve years. Unfortunately the weather at this event was so rough that no accurate conclusions could be drawn as to the respective merits of entries from nineteen different nations, high flight times being more or less a matter of luck as to how long the model remained in sight of the timekeepers rather than a true indication of the model's capabilities.

This in no way reflects any discredit on the winner—Ellila of Finland. But we would argue that it was his individual skill in trimming and making the best of the conditions with three very good flights which won him pride of place, rather than any inherent superiority of the model itself.

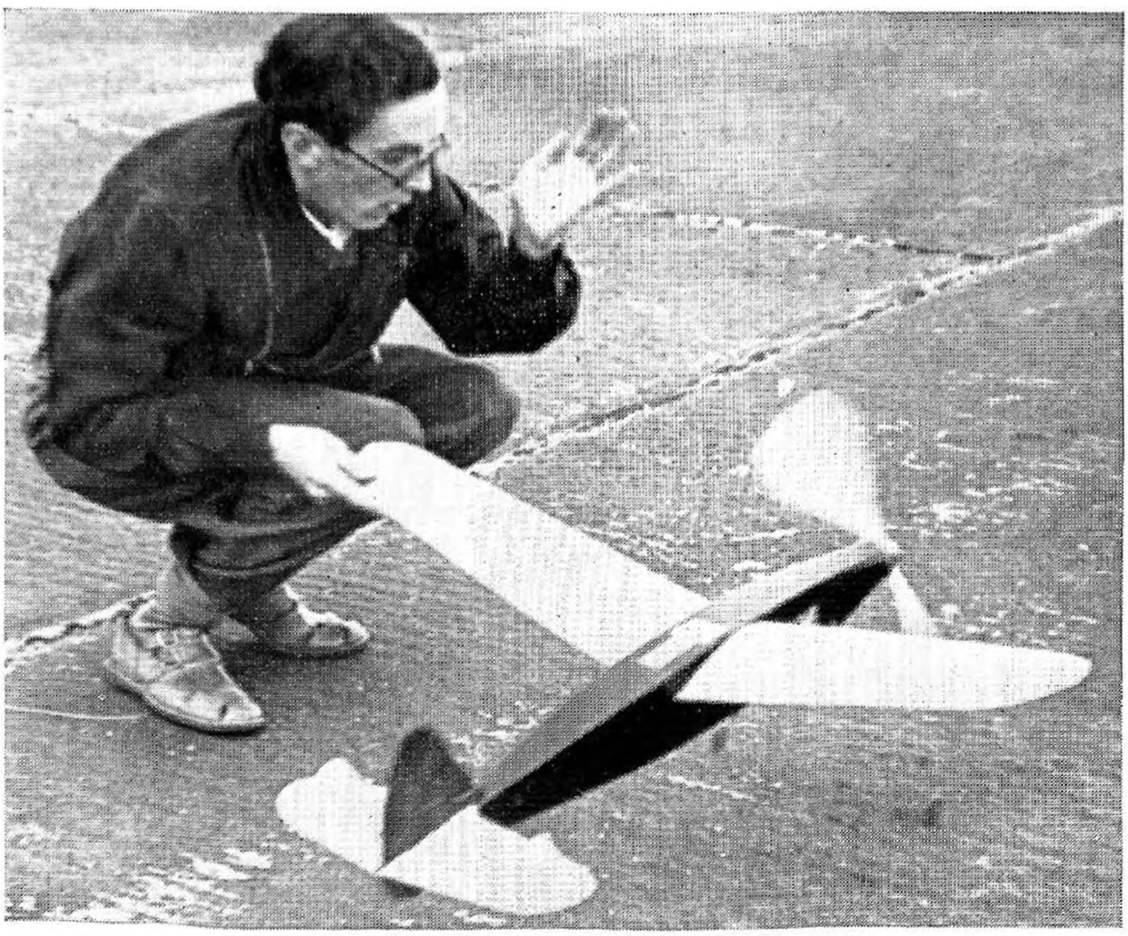
The winning model, was, in fact, definitely out-of-date by what we have come to regard as modern standards. It was a conventional slabsider with high wing, both wing and tailplane being parallel chord. Twin return-gears were used in the fuselage so that the effective motor length was carried down the fuselage and back to the nose again. A small diameter, fine pitch propeller was used.

The actual model was built ten years ago and won two important Wakefield events held in the Scandinavian countries, so that it has considerable claim to consistent performance. Ellila himself is also rated top Wakefield flier in his country.

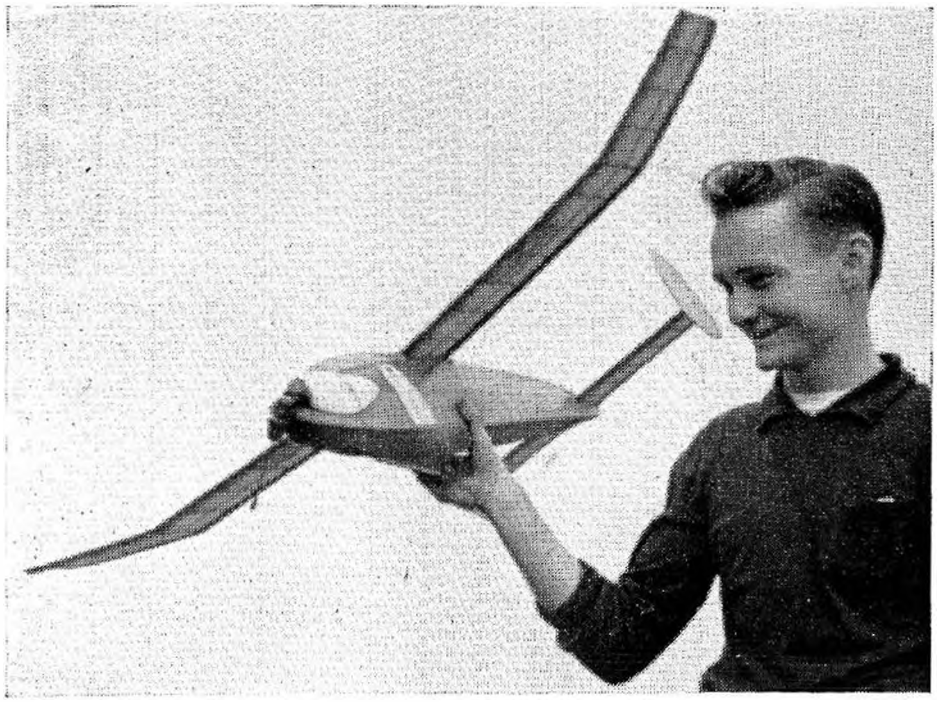
In this country Wakefield interest was apparent right from the beginning of the season. The opening rubber competitions featured more Wakefield models by proportion than in other years, partly because all comps. were being held to F.A.I. formula (to which a Wakefield complies, with ample margin to spare) and partly because most rubber model enthusiasts had decided to concentrate on this type with the Wakefield Trials in view.

The first Trials—the Gutteridge—produced unexpectedly fine weather and some really excellent flying in all areas and the " 100 places " for the final Trials were keenly contested. At this stage it was not really possible to draw any decisive conclusions as to design trends or top performances, but most of the " favourites " won through to the " 100 " with little difficulty, although there were quite a number of well-known names finally missing from the list.

The Wakefield " 100 "—the top six men from which formed the British team—was a most closely fought contest, but disappointing in one respect. Original design was sadly lacking and some two-thirds or more of the " 100 " were either Jaguars, Zombies, or modifications of these two well-known types. The final team, in fact, included two Jaguars and two Zombies. The other two models were both from the Luton club and again essentially similar. They could be classed as



The witch-doctor himself! Ron Warring sends off his Zombie in this year's Wakefield at Cranfield.



Right: Warren Fletcher with his third place Wakefield. Unluckiest loser he led first and second rounds and until twenty minutes from end of contest.

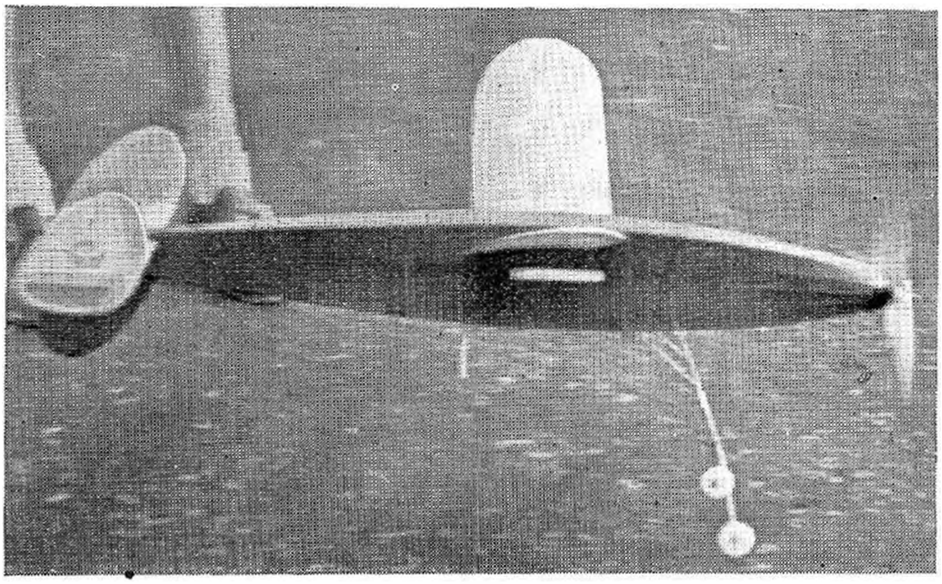
orthodox high-wing slabsiders, very much on 1939 lines with detail refinements. All models in the team, incidentally, employed freewheeling propellers.

To make up for this, the Wakefield proper provided an almost bewildering variety of design. Fully streamlined designs were conspicuous by their absence, the most popular formula being simple slabsider with high or parasol parallel-chord wing and single blade folding propeller. Most models had dethermalisers fitted, the tipping-tail type being by far the most popular.

Jaguar, Zombie and Voo-Doo influence was again noticeable amongst entries from South Africa, New Zealand and Australia, although other models from the two latter countries definitely exhibited American influence.

Overall design proportions have not altered greatly on Wakefields since 1938-39, but there is little doubt that there has been considerable advancement as regards detail design and trimming technique. Within orthodox proportions a variety of wing and fuselage shapes are, of course, possible, but conventional forms still appear to give the best results. Certainly no radical difference has been made by the use of laminar flow sections or similar ideas and probably a good 1939 Wakefield, re-trimmed in the modern style would be capable of placing high quite consistently. Ellila's model, therefore, will still remain a potent threat for the 1950 contest.

Undoubtedly the aim with present-day Wakefield models—or indeed any rubber models—is to get as much height as possible under power. There are two distinct approaches to this requirement. The first—or American—style is by using a fast-revving propeller and getting height rapidly on a relatively short motor run. This method is almost invariably used with a folding propeller (usually single blade), so that the glide can be made as flat as possible and every advantage taken of any



Scandinavian entry, Borgesson's Wakefield that placed sixth—as typical of Nordic design it is a model to contemplate bearing in mind 1950 sees the contest run in Finland.

suspicion of " lift " around. The second method—favoured by the British type of model—is to get height at a slower rate but with a longer power run. Properly trimmed a model will reach a greater final height by this method, with the added advantage of having taken more time (*i.e.*, put up a longer duration) in so doing. This trim, however, is far more critical as regards power output from the rubber motor and a poor motor can result in a very poor flight.

Since the emphasis is on power run rather than glide, long-climbing models generally use freewheeling propellers, although the possibility of using a twin-blade folder to improve that glide just a little more is still an open question. There is still the fact to be recognised that with a slower rate of climb the model may be losing height under power towards the end of the power run with a twin blade folder since it is now distinctly under-elevated and will remain so until the blades fold.

Far from stagnating, indeed, there still appears to be great possibilities of increasing Wakefield performance still further—with the American type model by getting still greater height under power ; and with the British type in getting the glide equivalent of the model with the folding prop.

The five-minute Wakefield definitely appeared during 1949. Both the Zombie type and, to a lesser extent, the Jaguar showed that they could be capable of five minute plus flights, but just lacking that consistency to do it every time. First essential in each case is an efficient, stable model which, with a fairly moderate degree of trimming should be capable of around the three minute mark on 90 per cent. turns. From then on that extra two minutes *consistently* is a matter of most careful propeller-motor selection, very fine trimming and the ability of the model to hold that fine trim under all conditions.

The other major rubber contest to attract considerable interest was the Queen's Cup, which was won with, to all intents and purposes, a modified Wakefield. Now this specification is a comparatively new one to British modellers, permitting a wing area of between 200 and 300 sq. in. with a minimum total weight of 12 ounces.

On the experiences of the two Queen's Cup events so far run, loading up a standard Wakefield to the twelve ounce mark just will not give the results, so that something of larger size is called for.

Outstanding performances have been achieved in the United States with 300 and 400 sq. in. rubber models weighing between 12 and 20 ounces and the American Wakefield team, tackled on the subject, were unanimous in their opinion that models of this size had a better performance than even the best Wakefield. So there is the possibility, it seems, of a new type of contest model being developed to Queen's Cup specification which can be superior, as a rubber-duration machine, to anything we have yet achieved.

Of course, this is one opinion. The view commonly expounded in this country is that the present Wakefield represents about the optimum size for contest work—small enough to be economic and easy to handle (particularly to wind up), and yet large enough (aerodynamically) to be capable of efficient performance.

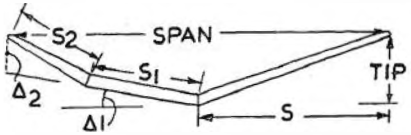
For anyone of the opinion, therefore, that the present Wakefield specification is largely played out—here is the ideal opportunity to develop a superior type to Q-Cup specification—if it can be done ! If nothing else, the subject is highly controversial—and the only way in which the answer can be determined is on the flying field !

In view of the pre-dominant Wakefield interest during 1949, other types have been relatively few in numbers. However, the simple ultra-lightweight still retains a considerable popular following, although few new examples appeared during the year. One, slightly different from the conventional "featherweight" in having a high wing (instead of parasol mounting), is listed in the tables, and retains all the proportions typical of this type.

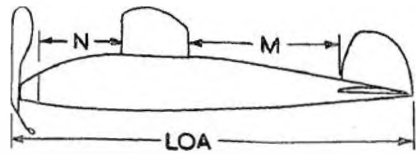
Some of the best FAI models produced for the 1949 rubber model contests have also retained "ultra-lightweight" lines. The ultra-lightweight can, it seems, make an FAI contest model with increased loading, and, carried still further, similar design features can be embodied in a Wakefield as Marcus virtually did in his machine which placed seventh in the Trials.

Needless to say, streamlining in the sense that it includes ovoid or circular section multi-stringer fuselages, is completely absent below Wakefield sizes and, even here (as mentioned previously) very few full streamliners reached the top of the lists. Copland, still probably the leading streamliner exponent, placed well out of the running in the Trials and, towards the end of the season, went over to the streamlined-slabsider for the Irish Nationals event.

Where some relatively good degree of streamlining is desired, then the streamlined slabsider with shoulder wing mounting appears to be far and away the best model for contest work. Otherwise, for short, rapid climb, thermal-hunting flying, just a simple slabsider with parasol wing positioning.



RUBBER MODELS DESIGN DATA



TYPE	DESIGNER	MODEL	ORG.	SPN.	S	S_1	S_2	CHORD ROOT	CHORD TIP	DIHEDRAL Δ_1	DIHEDRAL Δ_2	DIHEDRAL TIP	AEROFOIL	AREA	A.R.	T	LOA	N	M	X-SECTION	TAILPLANE ARA.	TAILPLANE SECT.	FIN %SW	WING POSITION
OPEN	L.BARR	PINNOCHIO	GB	28	14	8	6	5	ROUND	1/2		3	MARQUARDT	130	6·0	2	28 1/4	6	11/2	21/2X17/8	49	FLAT	9·2	PARASOL
OPEN	N.MARCUS	SUPA DUPA	GB	28		8	6	43/4	4 3/4		2·5	2·5	MARQUARDT	130	6·0	21/4	22	5·5	13/4	3 X 11/2	42	FLAT	12	HIGH
OPEN	J.MORISSET		FR	31 1/2		9	63/4	5	ROUND	1		4·3	MARQUARDT	155	6·4	21/2	27 1/2	6	11/2	21/2X 2	54	FLAT	15	PARASOL
FAI	J.MORISSET	COUP DHIVER	FR	32	16			41/4	ROUND			4·8		132	7·7	11/4	27	10	17/8	2 X11/2	50	LIFT	12·5	HIGH
FAI	MOVO	M-8	ITY.	32	16			5	ROUND			2·5	CLARK Y	155	6·6	1	25	6·3	7	3 X 2	50	FLAT	15	HIGH
FAI	GUYOT		FR.	42 1/2		13 1/4	8	51/2	ROUND	11/4		6		225	8·0	31/4	35 1/2	9	17	31/4 X 2 1/2	72	LIFT	15	PARASOL
FAI	W. NESTOJ	WN 107	POL.	44		12	10	6·3	ELLIPSE	1·1		4·8		230	8·4	15/8	40 1/2	6·4	15	31/2X 2	74	LIFT	13	HIGH
FAI	BENEDEK	BM-1	HGY.	41	21 1/2			5·1	ROUND			3	B-3309	200	8·4	15/8	31	7·5	12 1/2	5 SIDE	55	FLAT	12	HIGH
Q-CUP	R.WARRING	MOD.ZOMBIE	GB	51	24			73/8	ELLIPSE			5	JOUKOWSKI	252	10·3	11/4	37	6·5	17	4 1/2 X 3	80	LIFT	12	SHOULDER
Q-CUP	P. SMITH	HI-CLIMBER	GB	52	26			6	ELLIPSE	1		4·5	NACA 6412	292	9·3	5	40	9	17	16·93 SQ"	94	LIFT	14	PYLON
WAKEF'LD	W.WINTER	EUREKA	USA	44	21			5	5			4·5	NACA 4612	210	9·2	2	35	12	14 1/2	43/4X 27/8	70	LIFT	15	HIGH
„	R.EVERETT	CATAMOUNT	USA	43		10	10	4·8	4·8	2·2		6·2	NACA 6409	210	8·8	11/2	35 1/2	91/2	15	OVOID	68	LIFT	16	MID
„	E.STOFFEL	FLIGHT CUP	GB	46	21·4			6	3 7/8			4	RAF 32	208	10·1	3	36	8	14	BOX	68	LIFT	14	SHOULDER
„	R.COPLAND		GB	47	22			6	ELLIPSE			5	RAF 32	207	10·7	11/4	36	8·5	14	OVOID	68	LIFT	14	SHOULDER
„	R.WARRING	VOO DOO	GB	45 1/2	21 1/4			6·2	ELLIPSE			4	JOUKOWSKI	208	10·0	11/2	35 1/4	9	12	BOX	65	LIFT	14	SHOULDER
„	R.WARRING	ZOMBIE	GB	43 1/2	20·3			61/4	ELLIPSE			4	JOUKOWSKI	202	9·4	11/4	34 1/2	9	12	BOX	64	LIFT	14	SHOULDER
„	E.W.EVANS	JAGUAR	GB	44 1/2	21			53/4	3			4	RAF 32	205	9·7		37	9	14	DIAMOND	68	LIFT	18	MID
„	HINKS PMAL		GB	40 1/4		83/4	10	55/8	ROUND	13/8		4·2	DAVIS	202	8·0	1·5	35 1/4	10	13	BOX	67	LIFT	15	SHOULDER
„	REVELL	DOPEY	GB	43	21 1/2			5	ROUND			11°	RAF 32	208	8·9	2·2	36	9	14 1/2	BOX	67	LIFT	13·5	HIGH
„	W.A.DEAN	CONTESTOR	GB	45 1/2		11 1/2	10	5	ELLIPSE	13/8	2·3		GRANT X 8	208	10·0	3	36	9	14 1/2	BOX	6 8	LIFT	13	HIGH
„	W.A.DEAN	GIPSY	GB	40	20			6	4			3·6	10% CLARK Y	200	8·0	1·6	34	9	12	43/4X 25/8	65·5	LIFT	17	HIGH
„	S.LUSTRATI	PASSE-ROTTO	ITY.	48 1/4	24			6	3 1/4			3·5	DAVIS	205	11·4	2	33	9	13	4 X 3	68	LIFT	10·5	HIGH
„		PV 130	ITY.	43	21 1/2			5	ROUND	11/2		4		208	8·9	3·5	43 1/2	15	17 1/2	4 SQ	77	LIFT	10	PARASOL
„	J. SMOLA	DI O	CZH.	42		11	10	43/4	ROUND	·8		3·5	NACA 6409	210	8·4	1·6	36	11·5	14 1/4	4 X 3 1/4	64	LIFT	15	HIGH
„		LOKVOGEL	CZH.	42	21			5·1	5·1			4	GOLDBERG G5	210	8·4	3·8	37 1/2	10	18 1/2	31/4 SQ	70	LIFT	15	PARASOL
FAI		MR-15	USSR	52	26			6·6	ROUND	10°			NACA 6412	325	8·4	1·5	37 1/2	11	12	41/2X23/8	108	LIFT	15	PARASOL
WAKEF'LD	LIM JOON		AST.	44		12	10	43/4	ROUND		2	5·5	NACA 6409	206	9·4		38 1/4	11	15	4·8 X 2·9	67	LIFT	14	HIGH
„	A.ELLILA		FINL.	46 3/8	23·2			45/8	ROUND			2·2	RAF 32	210	10·2	2·4	39	12	16 1/4	5 X 3	70	LIFT	25	HIGH
„	W.FLETCHER	SURPRISE	USA	43		14	71/2	5	5	11/2		4	EIFFEL 400	204	9·0	1·6	36	11·5	14 1/2	5 X 2 1/2	65	LIFT	15	SHOULDER
„	E.SADORIN	MERLU	ITLY.	40	18 1/2			51/2	4 1/4			4	LDC 2	206	7·8	·9	34 1/2	10	12 1/2	43/4 X 3	67·5	LIFT	15	SHOULDER
„	F. LOATES		CAN.	42	19·4			51/2	ROUND			4	RAF 32	210	8·4	1·8	36	9	14	51/4 X 31/4	68	LIFT	16·5	SHOULDER
„	R.CLEMENTS	ARIES V	GB	43·4		12	9·7	4·95	ELLIPSE	11/4		4·5	GRANT X8	200	9·4	2·1	32	9·5	11 1/2	41/4 X 31/4	66·6	LIFT	14	HIGH
„	E.NAUDZIUS	PIPSQUEAK	USA	44·2		13 1/2	7	5 1/8	ROUND	11/2		5	EIFFEL 400	209	9·3	1·1	37	11·5	16	5 X 3	68	LIFT	16	SHOULDER
„	FULLARTON		AST.	46		12	11	43/4	ROUND	11/2		5·5		202	10·5	3	38	12	16	51/4 X 3	66	LIFT	16	HIGH

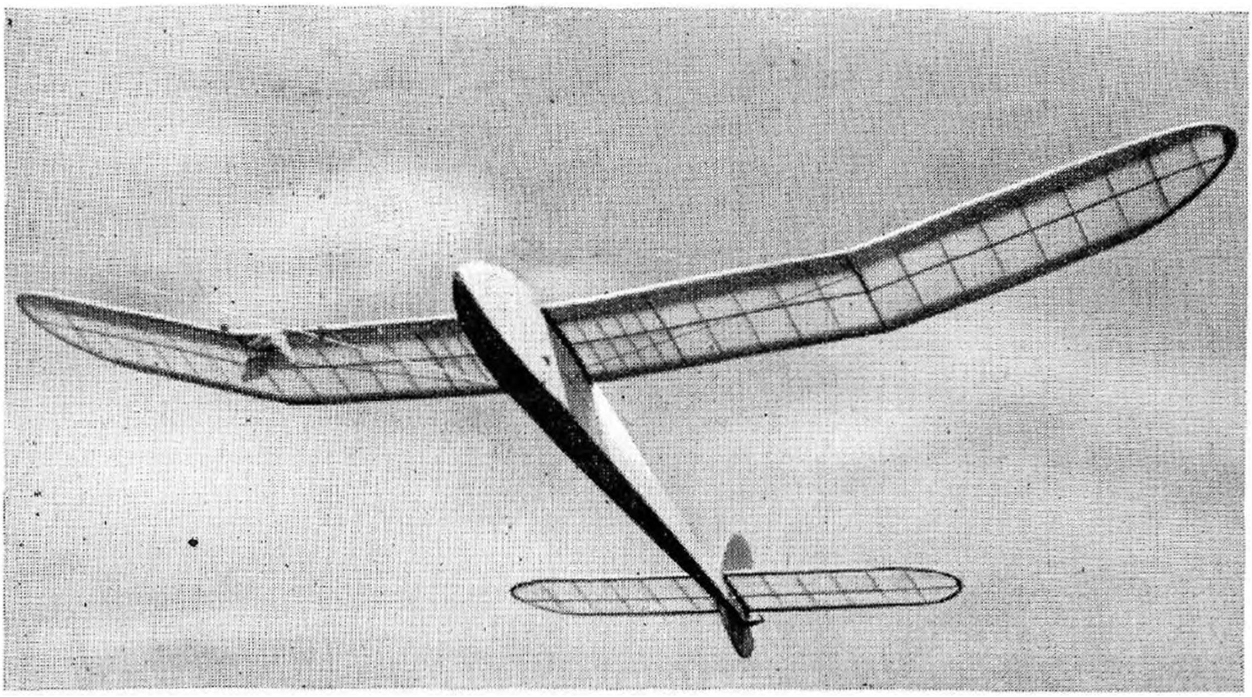
RUBBER MODELS RIGGING DATA

MODEL	DESIGNER	INCIDENCE W	INCIDENCE T	CG POSN. FR.L.E.	CG POSN. VERT.	PROPELLER DIA	PROPELLER TYPE	POWER	THRUST DOWN	THRUST SIDE	RUDDER TRIM	TRIM POWER	TRIM GLIDE	WEIGHT OZ.	LOADING OZ.100SI	STILL AIR DURATION TIME	TURN	TIME	TURN
PINNOCHIO	BARR	3	O	3 1/2"		14	SINGLE FOLD	8-1/4X1/30	3	2		R.SPIRAL	WIDE R.						
SUPA DUPA	MARCUS	5/16"	O	70%		13	SINGLE FOLD	6-1/4X1/24	1/16"	1°	TAB R	R.SPIRAL	R.CIRCLE	1 3/4	1·35				
OPEN	MORISSET	2	O	3 1/2"	1 1/4"	14	SINGLE FOLD	1 1/2OZ	2					3 1/4	2·1				
FAI	MORISSET	3	1	70%	1"	14	FREEWHEEL	14-1/4X1/30	1	O									
M 8	MOVO	1	O			10	FREEWHEEL	6-1/4X1/24	2	O				5 1/4	3·4				
	GUYOT	3	O	90%		14	SINGLE FOLD	14-1/4X1/30	1	O		R.CIRCLE	STRAIGHT						
WN 107	NESTOJ	2 1/2	-1/2	40%		19	D-B FOLDER	20-3/16X1/30						8 7/8	3·85	750	180		
BM 1	BENEDEK	4	O	50%	1/4"		FREEWHEEL		3		TAB R	R.CIRCLE							
MR 15		6	-1/2			19 3/4	D-B FOLDER							11 1/2	3·5	800	140		
Q-CUP	WARRING	3 1/2	-1/2	45%	3/4"	18	FREEWHEEL	16-1/4X1/24	6	1	TAB R	R.CIRCLE	R.CIRCLE	12 1/4	4·9	700	120	800	140
Q-CUP	SMITH	7	5	2"	4"	16	FREEWHEEL	26-3/16X1/30	1	3				12	4·1	600	130		
EUREKA	WINTER	2 1/2	O	3 1/2"	1 1/8"	18	SINGLE FOLD	26-3/16X1/30	1	3		R.SPIRAL	R.CIRCLE	8	3·8	600	180		
CATAMOUNT	EVERETT	2 1/2	O			18	SINGLE FOLD	20-1/4X1/30		2			STRAIGHT	8 1/2	4·05				
FLIGHT CUP	STOFFEL	3	O	2 1/2"	3/4"	18	FREEWHEEL	14-1/4X1/24	3	2	TAB R	R.CIRCLE	R.CIRCLE	8 1/2	4·1				
WAKEFIELD	COPLAND	3	-1/2	45%		18	FREEWHEEL	20-1/4X1/30	1	2	TAB R	R.CIRCLE	WIDE R.	9 1/4	4·45				
VOO DOO	WARRING	3	O	40%	15/16"	18	FREEWHEEL	14-1/4X1/24	3	1 1/2	TAB R	R.CIRCLE	R.CIRCLE	8 1/4	4·0	800	180		
ZOMBIE	WARRING	4	1/2	30%	3/4"	18	FREEWHEEL	15-1/4X1/24	5	1	TAB R	R.CIRCLE	WIDE R.	8 1	4·0	800	225	1000	280
JAGUAR	EVANS	5/16"	O	50%	3/4"	20	FREEWHEEL	16-1/4X1/24		1		R.CIRCLE	WIDE R.	8 1/4	4·0	800	185	900	235
WAKEFIELD	HINKS	4	O	2 3/8"	1/2"	18	FREEWHEEL	14-1/4X1/24			TAB R	R.SPIRAL	R.CIRCLE	8·45	4·2				
DOPEY	REVELL	4	1	30%		17	FREEWHEEL	14-1/4X1/24	3	1	TAB R	WIDE R.	WIDE R.	9	4·3				
CONTESTOR	DEAN	4	1	40%		17	FREEWHEEL	14-1/4X1/24	3			STRAIGHT	W.RIGHT	8	3·85				
GIPSY	DEAN	4	O	40%		17	FREEWHEEL	14-1/4 1/24	3	1		STRAIGHT	WIDE R.	8	4·0				
WAKEFIELD	LUSTRATI	4	O			20	D-B FOLDER	24-1/4X1/30						8 3/8	4·1				
PV 130	ITALY	3	O	75%		17	D-B FOLDER	20-1/4X1/30				STRAIGHT		8 5/16	4·1				
D 130	SMOLA	2	O	50%		16 1/2	D-B FOLDER	20-1/4X1/30				STRAIGHT		8 1/2	4·05				
LOKVOGEL	CZECH	2 1/2	1 1/2	84%		18	D-B FOLDER	24-3/16X1/30						8 3/4	4·17				
WAKEFIELD	LIM JOON	2	O	65%		19 1/2	SINGLE FOLD	20-1/4X1/30	3	2		R.SPIRAL	L.CIRCLE	8·0	3·9	500	120		
"	ELLILA	1 3/16	2			15 3/4	FREEWHEEL	TWIN	O	3	1/8" R	R.CIRCLE	R.CIRCLE	10 1/4	5·0				
"	FLETCHER	2	O			18	SINGLE FOLD	16-1/4X1/24	4 1/2	4 1/2		STRAIGHT	WIDE L.	8 1/2	4·7				
"	SADORIN	6	O	40%		18·4	D-B FOLDER	28-1/8X1/24				R.CIRCLE	R.CIRCLE						
"	LOATES	3	1	50%		18	D-B FOLDER	16-1/4X1/24	3	1		R.CIRCLE		9 1/2	4·5				
"	CLEMENTS	3 1/2	-1/2	40%	1/4"	17	FREEWHEEL	14-1/4X1/24				R.CIRCLE	R.CIRCLE	8 5/8	4·3				
"	NAUDZIUS	3	O	60%		18 1/2	SINGLE FOLD	22-3/16X1/30	1	1		R.CIRCLE	L.CIRCLE	8 7	4·2				
"	FULLARTON	2	O	65%		18 1/2	D-B FOLDER	16-1/4X1/24				R.CIRCLE	L.CIRCLE	8 3/4	4·3				

RUBBER MODELS CONSTRUCTION

MODEL	DESIGNER	WINGS TYPE	L.E.	SPARS	T.E.	RIB	COVER.	FIX.
PINNOCHIO	BARR	SPARLESS	1/4 SQ		1/2X3/32	1/16	TISSUE	BANDS
SUPA DUPA	MARCUS	SPARLESS	1/8 SQ		1/2 X 1/8	1/16	TISSUE	BANDS
OPEN	MORISSET	SPARLESS					TISSUE	BANDS
FAI	MORISSET	MONO	1/4 X 1/16	1/4 X 3/32	3/8 X 3/32	1/16	TISSUE	BANDS
FAI	GUYOT	MONO	3/16X1/16	1/4 X 3/32	3/8 X 1/16	1/16	TISSUE	BANDS
WN 107	NESTOJ	MONO					TISSUE	BANDS
BM I	BENEDEK	MONO	1/4X 1/8	3/16X3/32	1/4X1/16	1/16	TISSUE	BANDS
MR 15		MONO	1/8 SQ	2 - 1/8 SQ	5/16X3/32	1/16	TISSUE	BANDS
Q CUP	WARRING	MONO	1/2 SQ	1/8 SHT	1/8 SHT.	1/32	TISSUE	TONGUE
Q CUP	SMITH	MONO	1/8 SQ	1/2X 1/8	1/2 X 1/8	1/16	TISSUE	BANDS
EUREKA	WINTER	MONO	1/32 SHT.	1/32 SHT.	1/4 X 1/16	1/20	SHT. L.E	TONGUE
CATAMOUNT	EVERETT	MULTI	1/8 SQ	1/8 X 1/16	5/8 X 1/8	1/16	TISSUE	BANDS
FLIGHT CUP	STOFFEL	MONO	1/4 SQ	1/2 X 1/8	3/4 X 1/8	1/32	TISSUE	BANDS
WAKEFIELD	COPLAND	MONO	1/8X 1/16	1/32 SHT.	1/32 SHT.	1/32	SHT. L.E	PLUG
VOO DOO	WARRING	MONO	3/8X5/16	1/16 SHT.	1/8 SHT.	1/32	TISSUE	TONGUE
ZOMBIE	WARRING	MONO	3/8X5/16	1/16 SHT.	3/32 SHT.	1/32	TISSUE	TONGUE
JAGUAR	EVANS	MONO	3/16X1/8	1/8 X 1/16	1/4 X 1/16	1/32	SHT. L.E	PLUG
WAKEFIELD	HINKS	MONO	1/4X3/16	2-1/8 SQ	7/16X1/8	1/16	TISSUE	TONGUE
DOPEY	REVELL	MONO	1/8X1/16	2-1/8X1/16		1/16	SHT. L.E	BANDS
CONTESTOR	DEAN	MONO	3/16 SQ	5/16X1/8	1/2 X 1/8	1/20	TISSUE	BANDS
GIPSY	DEAN	2 SPAR	1/4X3/16	3/16X1/8	9/16X1/8	1/20	TISSUE	BANDS
WAKEFIELD	LUSTRATI	MONO	3/8X1/4	3/8 X 1/16	1/2 X 1/8	1/16	TISSUE	BANDS
PV 130	ITALY	MONO	3/16 SQ		1/2 X 1/8	1/16	TISSUE	BANDS
D 130	SMOLA	MONO	5/32 SQ	1/4 X 5/64	1/2 X 1/8	1/16	TISSUE	BANDS
LOKVOGEL	CZECH	MONO	1/8 SQ	3/8 X 1/8	3/8 X 1/8	1/16	TISSUE	BANDS
WAKEFIELD	LIM JOON	MULTI	1/8 SQ	1/8 X 1/16	3/8 X 1/8	1/32	TISSUE	BANDS
"	ELLILA	MONO	3/32 SQ	3/8 X 3/32	3/8 X 1/8	1/20	SHT. L.E	BANDS
"	FLETCHER	MONO	1/8 SQ			1/16	SHT. L.E	BANDS
"	SADORIN					1/16	TISSUE	
"	LOATES	MONO	3/16 SQ		1/2 X 1/8	1/32	TISSUE	
"	CLEMENTS	MONO	3/16 SQ		1/2 X 1/8	1/16	TISSUE	BANDS
"	NAUDZIUS	MONO	3/16 SQ		1/2 X 1/8	1/16	TISSUE	TONGUE
"	FULLARTON	MONO	1/8 SQ		1/2 X 1/8	1/32	SHT. L.E	
M 8	MOVO	MONO	1/8 DIA	2- 1/8 DI.	1/4 X 1/16	1 MM	TISSUE	BANDS

FUSELAGE TYPE	BASIC	STRNG.	COVER.	TAILPLANE TYPE	COVER.	UNDERCART. TYPE	LEG	DIA.	PROP BLCK.
BOX	3/32 SQ	1/16 SPCR.	TISSUE	SPRLS.	TISSUE	WHISK.	20G		6 1/4 X 2X1 1/2
BOX	3 32 SQ		TISSUE	SPRLS.	TISSUE	WHISK.	24G		6 X 2 X 1
BOX			TISSUE	SPRLS.	TISSUE	WHISK.	20G		
BOX	1/8 SQ		TISSUE	MONO	TISSUE	CANT.	1/16	1 1/2	
BOX	5/32 SQ		TISSUE	MONO	TISSUE	WIRE	18G	5/8	
BOX	1/8 SQ	BELLY	TISSUE	MONO	TISSUE	RETR.		1	
BOX	1/8 SQ	Δ TOP	TISSUE	SPRLS.	TISSUE	2-W	18 G	1 3/4	
BOX	1/8 SQ		TISSUE	MONO	TISSUE	2-W RETR		1 3/4	19 3/4X2X1 5/8
BOX	1/8 SQ	STR. NOSE	TISSUE	MONO	TISSUE	2 - W	BAM.	1 5/8	18 X 2 X 1 3/4
BOX	1/8 SQ	1/8 X 1/16	TISSUE	MONO	TISSUE	2-W	14 G	2	16 X 2 X 1 5/8
BOX	1/20 SIDE		1/20 SH.	MONO	SHT. L.E	WIRE	1/16	1 3/4	10 X 2 X 2
HATCHET	1/8 SQ	1/8 SQ	TISSUE	MULTI	TISSUE	WIRE	1/16	1 3/4	16 X 2 1/8 X 1 3/4
BOX	1/8 SQ	STR. NOSE	TISSUE	MONO	SHT. L.E	2-W	BAM.	1 3/4	18 X 2 X 1 1/2
STREAM	LAM FR	24-1/16 SQ	TISSUE	SPRLS.	TISSUE	2 -W	BAM.	2	18 X 2 X 1 3/4
BOX	1/8 SQ	STR. NOSE	TISSUE	MONO	TISSUE	MONO	BAM.	1 5/8	18 X 2 2 X 1 7
BOX	1/8 SQ	STR. NOSE	TISSUE	MONO	TISSUE	2-W	BAM.	1 5/8	18 X 2 X 1 3/4
D-BOX	1/8 SQ	1/8 BELLY	TISSUE	MONO	TISSUE	2-W	16G	2	20
BOX	1/8 SQ	STR. NOSE	TISSUE	MONO	TISSUE	MONO	BAM.	1	18 X 1 3/4 X 1 1/2
BOX	1/8 SQ		TISSUE	MONO	TISSUE	2-W	16	2	17 X 2 X 1 5/8
BOX	1/8 SQ	CABIN	SILKSP.	MONO	TISSUE	2-W	14G	2	17 SAWCUT
BOX	1/8 SQ	CABIN	SILKSP.	2 SPAR	TISSUE	2-W	16 G	2	17 X 2 X 1 3/4
BOX	1/8 SQ		TISSUE	SPRLS.	TISSUE	2-W	16G	1	9 1/2 X 1 3/4 X 1 1/4
BOX	5/32 SQ		TISSUE	MONO	TISSUE	WIRE	16G	1	
BOX	1/8 SQ		TISSUE	MONO	TISSUE	2-W	16 G	1 1/2	16 1/2 X 2 X 1 1/2
BOX	1/8 SQ		TISSUE	MONO	TISSUE	MONO	BAM.	1 5/8	18 X 2 X 1 9/16
BOX	1/8 SQ		TISSUE	MONO	TISSUE	MONO	RETR.	1 3/8	8 1/2 X 2 X 1 1/2
BOX	5/32 SQ		TISSUE	MONO	TISSUE	2-W	18 G	1 7/8	15 3/4 X 1 3/4 X 1 1/2
BOX	1/8 SQ	BELLY	SILKSP.	MONO	TISSUE	MONO	RETR.	1 1/4	9
BOX	1/8 SQ	1/8 SQ	TISSUE	MONO	TISSUE	2-W	16G	1 1/2	18 1/2 X 2 X 1 5/8
BOX	1/8 SQ		TISSUE	MONO	TISSUE	2-W	16G	1 1/4	18 X 2 X 1 3/4
BOX	1/8 SQ	STR. NOSE	TISSUE	MONO	TISSUE	2-W		2	17 X 2 X 1 1/2
BOX	1/8 SQ		TISSUE	MONO	TISSUE	MONO	RETR.	1 1/4	18 1/2
BOX	3/16 SQ	1/8 SPCRS.	TISSUE	MONO	TISSUE	MONO	RETR.	1 1/4	18 1/2
BOX	3/32 SQ		TISSUE	MONO	TISSUE	2-W	16G	1 1/4	



Beauty on a line ! Popular " big-stuff " sailplane taking off in the Nationals—first entry in a normal open contest where radio control was installed as an aid to thermal hunting.

GLIDERS

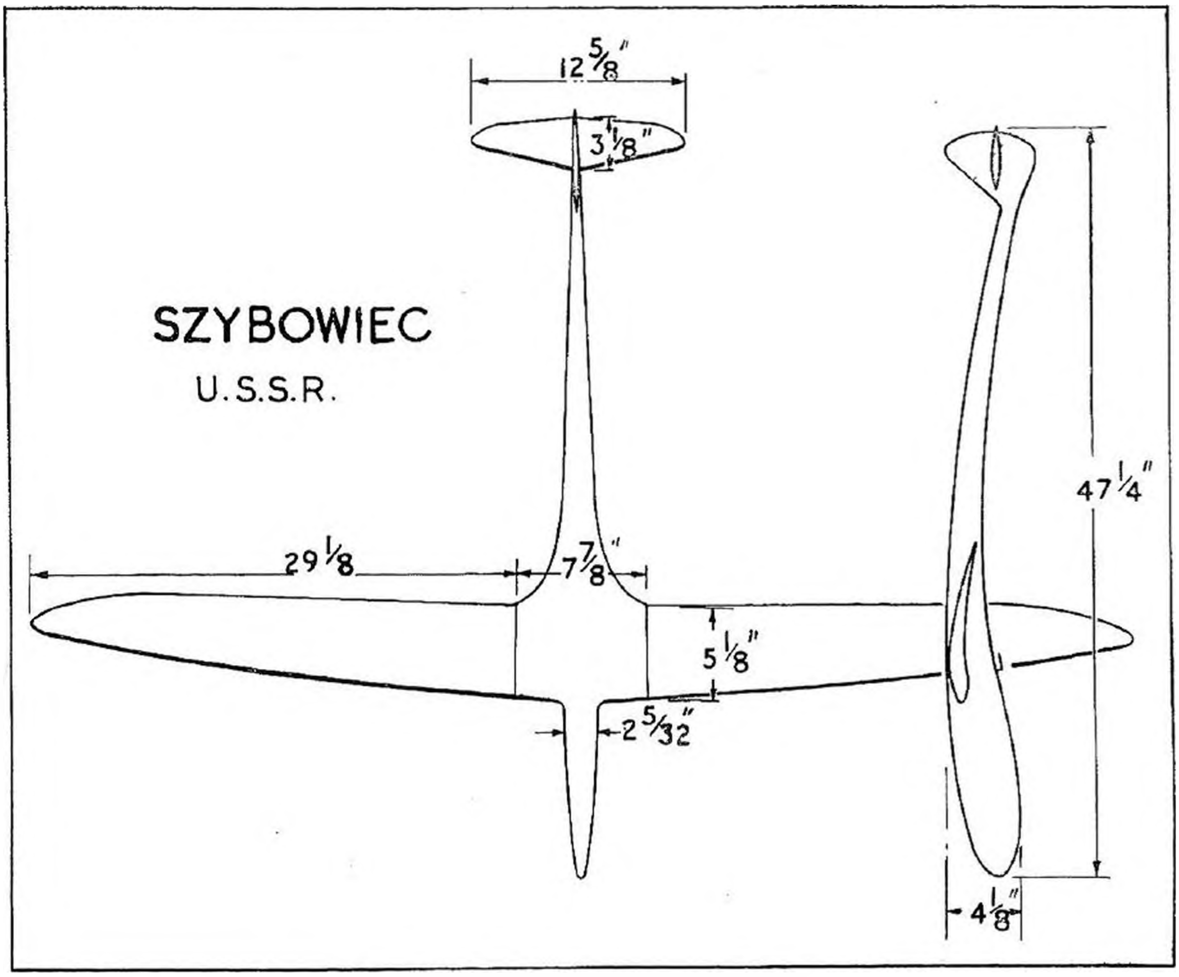
THE day of the small or even medium-size glider appears to be pasted, for contest work at least. The ten-feet " giants " first gave some real indication of their possibilities in the 1946 season, when Yeabsley obtained third place in the Pilcher and a second place in the Thurston with his original " Sunbug " design, since developed into the " Super Sunbug," but still essentially the same basic model.

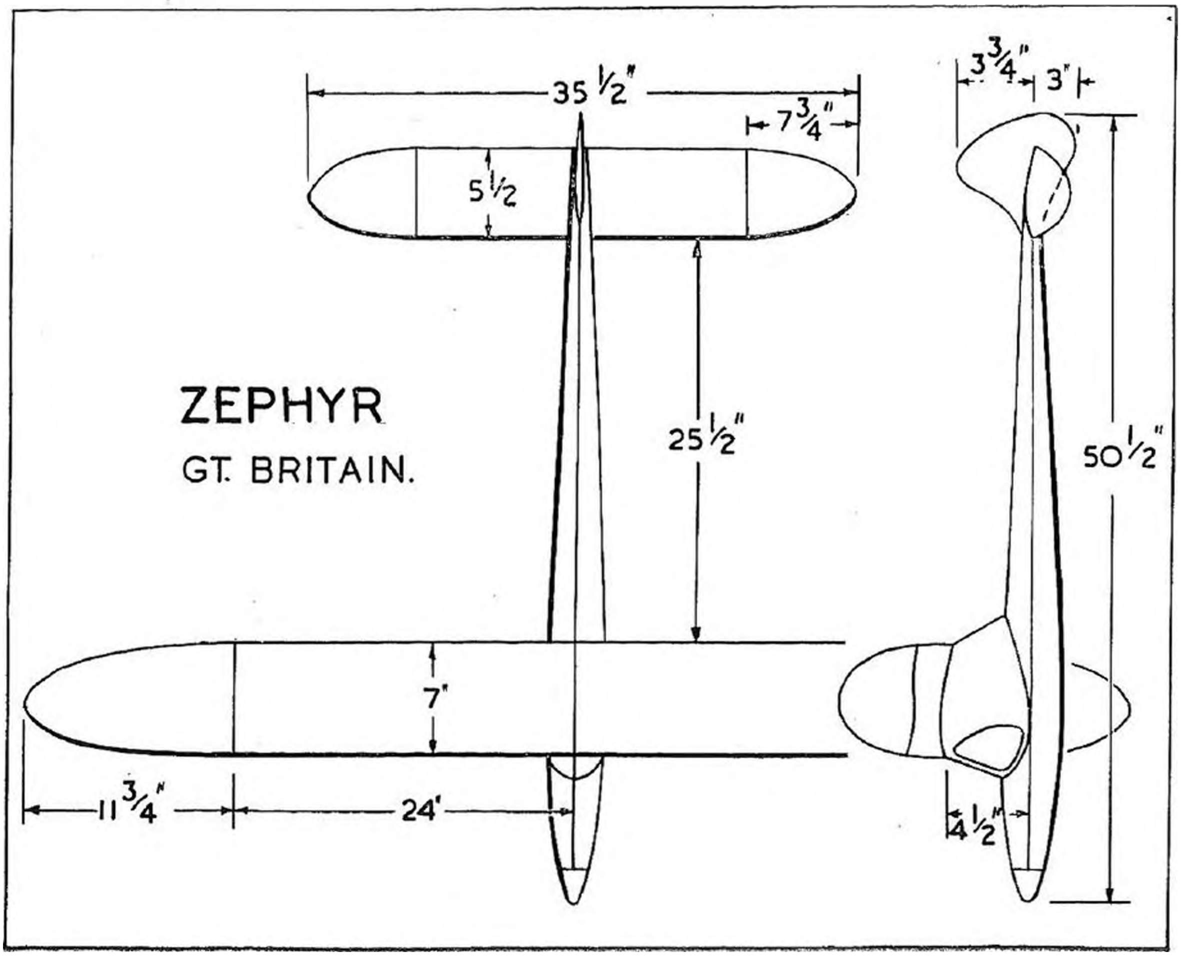
The standardisation of F.A.I. rules for *all* S.M.A.E. glider contests during the 1949 season appears to have put the smaller 200 sq. in. jobs out of the running, and 350 to 400 sq. in. wing area now appears to be about the minimum required for consistently high results. There is no doubt that, for a given loading (*e.g.*, the minimum allowed under F.A.I. rules), performance does go up as wing area increases, all other conditions being similar.

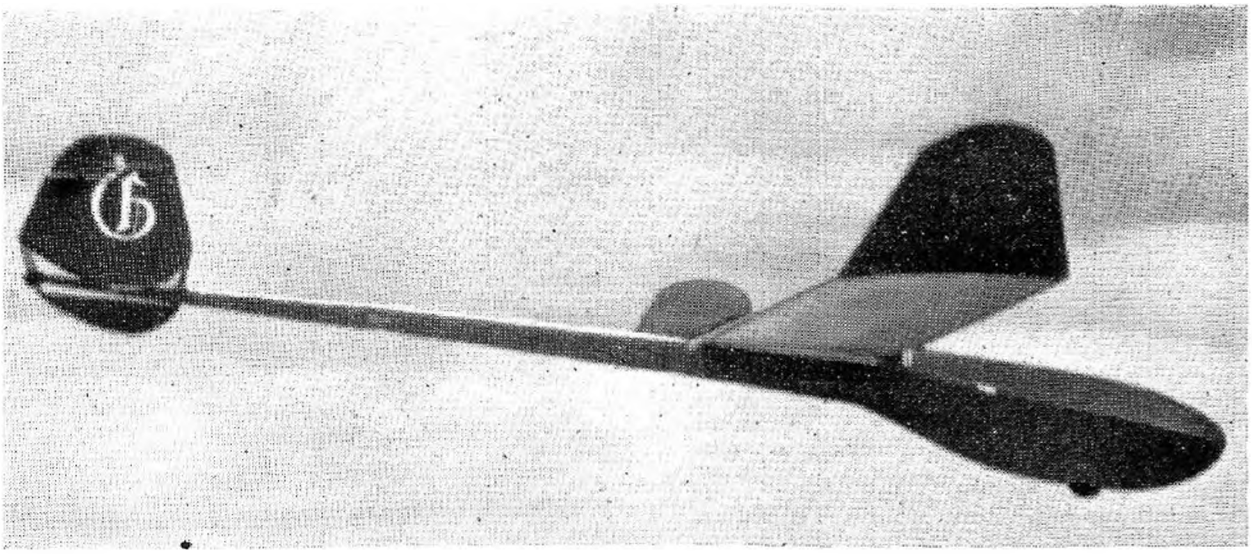
Of course, Continental aero-modellers have always tended towards the large or medium-size model, having flown under F.A.I. rules exclusively for the past ten years or so. These we used to regard as " large," but their most typical models still fall far short in size of three outstanding British giants, such as the designs of Yeabsley, Minney and Gilbert. The latter model, flown by Barr, won the Thurston Cup in the 1949 Nationals.

One significant factor about all of these three models is that they are slabsiders. In other words, they are essentially *simple* models. Many of the large Continental models, by contrast, are fully streamlined with peardrop or elliptic section planked fuselages, tapered wings and large root fillets.

The chief drawback to the really large contest glider is cost—both in time and material—and the added difficulty of transport. These factors alone have done much to limit their popularity.


SZYBOWIEC
U.S.S.R.
12 5/8"
3 1/8"
47 1/4"
29 1/8
7 7/8"
5 1/8"
2 5/32"
4 1/8"


ZEPHYR
GT. BRITAIN.
35 1/2"
7 3/4"
3 3/4"
3"
5 1/2
25 1/2"
50 1/2"
7"
11 3/4"
24'
4 1/2"



Double-size Sunnanvind, typical of the current trend towards bigger and theoretically better gliders. The pod and boom Sunnanvind style imported from Sweden has gathered quite a successful following.

Design problems are chiefly structural, particularly making the wing strong enough to withstand tow launching without it becoming unduly heavy. A heavy wing is not desirable on any model, especially on towline gliders. A very good solution here is to use spruce or similar hardwood spars. A spruce spar of the right proportions can be extremely strong, without necessarily being much heavier than a balsa spar of generous proportions.

The greatest stresses will, of course, be localised at the wing roots and here it is rather surprising to find that two of the models listed employ a shoulder wing fixing with an almost rigid joint. Gilbert's tongue and box fitting with a $\frac{3}{8}$ ply tongue is rigid to all intents and purposes. Minney's dural tube fixing cannot be considered flexible, either, for tubes will buckle under bending loads after flexing only a small amount.

A rigid fixing of this nature throws more stress on the wing structure itself so that it should be possible, with another form of wing attachment, to reduce wing weight somewhat and at the same time make the overall strength greater. Where a tongue and box fixing is used a sheet dural tongue would appear to be about the best solution which would allow a certain amount of flex without permanent distortion and relieve the wings of considerable load during towing.

Possibly the next heaviest load on such models—or all gliders, for that matter—is a *downward* load on the wing roots during landing, particularly a heavy landing. Here again a flexible mounting is the more obvious solution. A fast, nose-down landing following a stall near the ground has been known to break wings clean in half.

However, so much for the leading questions associated with these ultra-large models. They have pretty well proved themselves outstanding contest contenders during the past season and the serious glider flier is advised to give them some considerable study. All three examples, it will be noted, have a wing area considerably in excess of 1,000 sq. in., with wing spans of 10 ft. up, and general proportions very much similar to that of other models in the smaller range.

Possibly the best all-round model for contest work is to be found in the medium-size range, from which we will quote one British example as being particularly interesting on several points. This is the Zephyr, by Eddie Catten. With a span of 6 ft., wing area is just over 3 sq. ft. (466 sq. in.). The design layout is of the type first made popular by Butler with his Fugitive—a slim diamond fuselage with pylon-mounted wing. This has the twofold effect of reducing the wetted area of the fuselage for a given cross sectional area and locating the wing in the parasol position, which still appears to be one of the best for trimming out to a really fine glide.

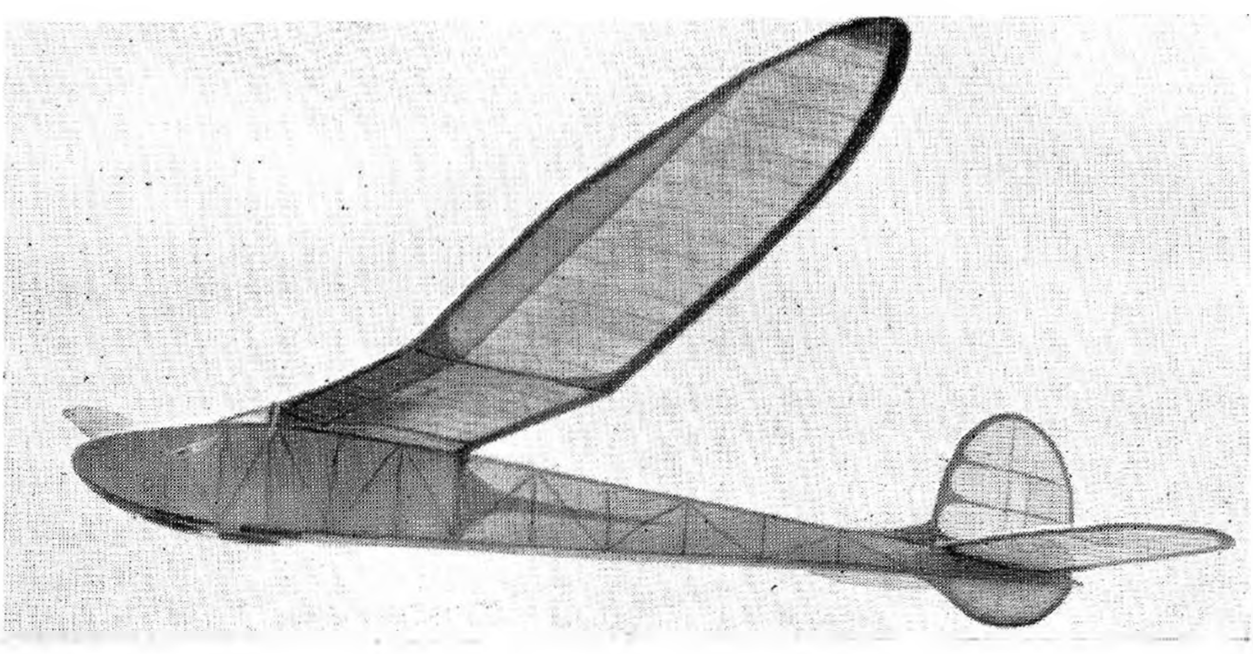
In actual fact, almost without exception, modern contest gliders are built with the fuselage cross sectional area very much more than it need be under F.A.I. rules. The required area is so low that it amounts almost to a pencil-bomber type fuselage, and few British designers, at least, appear to have worked down to this.

On some Continental models, the story is different. Fuselages are often very slim, often with a curved datum line—as witness the Russian "Wentana." But most designers have found that a fair proportion of side area is often most helpful in obtaining towline stability.

Carrying this latter theory a bit further, we can instance the hatchet-type—also known as the "flying suitcase"—which is virtually a pod and boom development with exaggerated fuselage forebody terminating in a vertical line. There is, actually, a difference between these two types. The "hatchet" fuselage has a low-mounted boom with the wings mounted on top of the pod; the flying suitcase has the reverse layout—low slung pod with high-mounted wing. Both can show remarkable towline stability.

One of the best-known "hatchet" designs is that by Guilmant—the Gili-Hatchet—detailed in the tables. This actually is a small machine,

Another example of successful "big-stuff" practice is Roy Yeabsley's "Sunspot," a big, light, all-balsa model with innumerable victories chalked up.



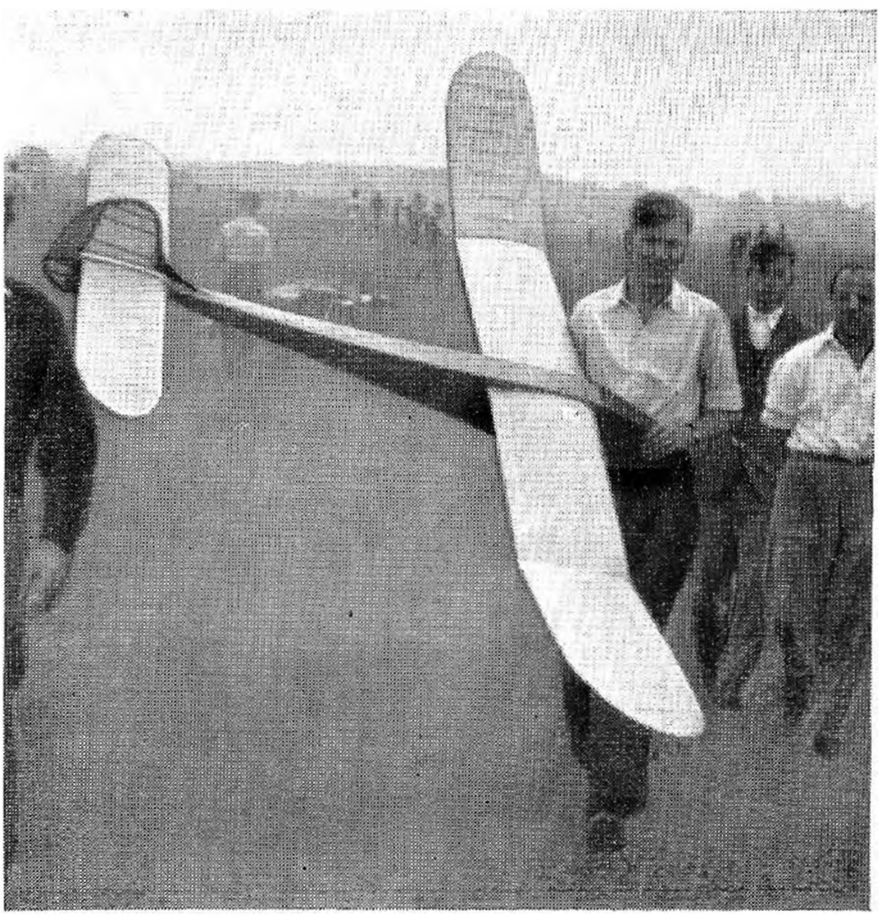
but larger versions have been built and flown successfully and may, it seems, become a prominent contest type.

Apropos of towline stability, it is appropriate to comment here on some experiments in this direction carried out by the writer during the 1949 season. As "guinea-pigs" there were two medium-size models, one a streamlined shoulder-wing model and the other an orthodox parallel-chord slabsider. The streamliner had proved one of the most stable models encountered on tow, but after a re-work, including the fitting of a dihedralled tailplane and re-trimming, its stable towing characteristics disappeared. The slabsider was from the first a model which was most unstable on the line.

It was found with the streamliner that moving the centre of gravity forward resulted in a return to perfect line stability. The C.G. had been moved back during the re-trimming. Once returned to the original position (35 per cent root chord), everything was all right again, although naturally the glide had again to be re-trimmed with tailplane incidence at this new C.G. position.

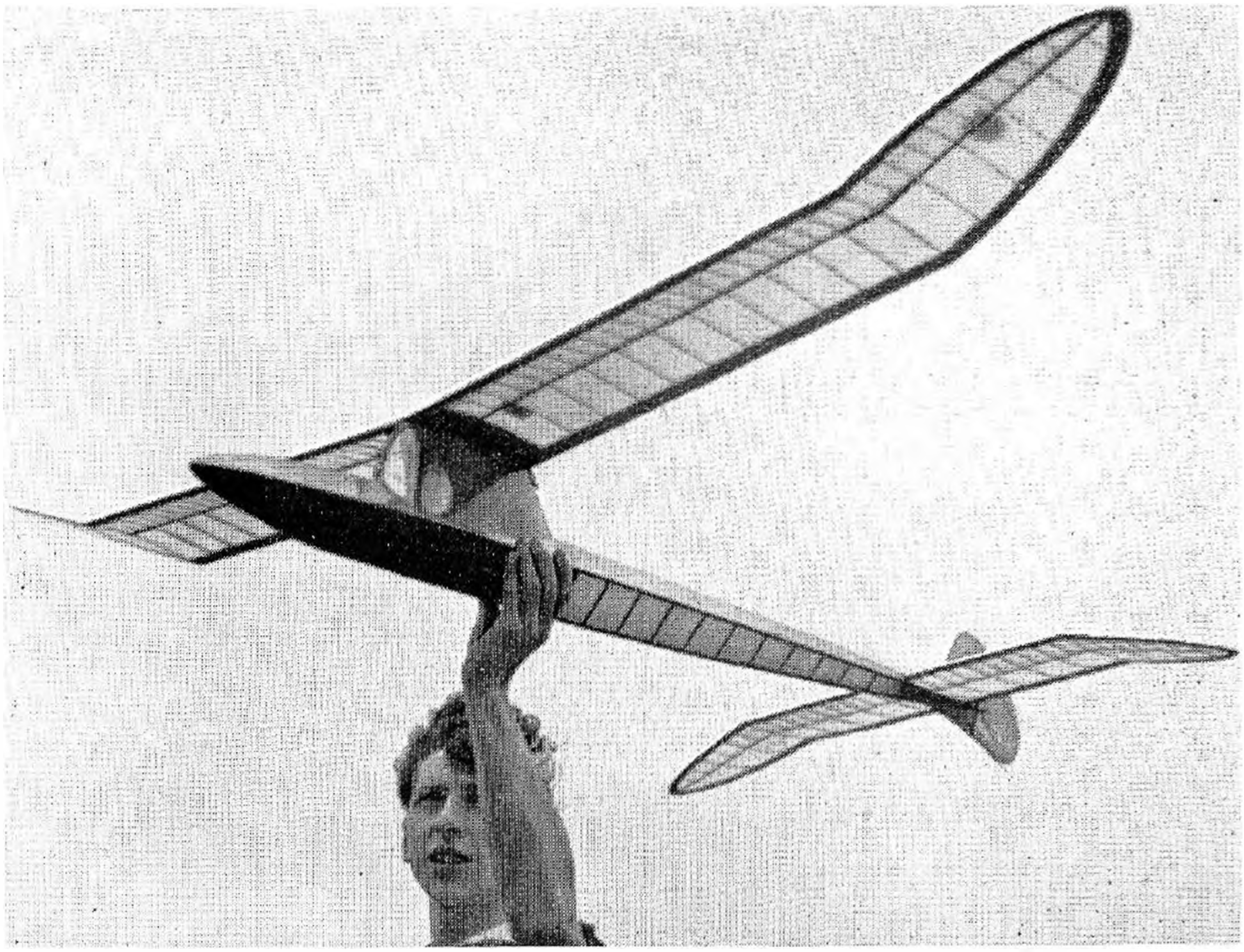
The slabsider was first tested with increased fin area, both above and below the fuselage, with no beneficial effect. It was also tried with decreased fin area and the whole disposition of the fin altered, again with inconclusive results. But re-rigging with a more forward C.G. position brought about an immediate improvement in towline stability again.

Similar treatment, it may be found, can be usefully applied to other designs, for although glider design has advanced considerably as regards free flight performance, no complete solution of towline stability has yet



On opposite page : Zephyr, a successful glider with anhedralled tail-plane tips that makes a model of simple graceful lines, typical of present moderate trends.

Left : Another of the Sunspot school—typical model at any rally that needs space to handle and room to launch, but once up is a potential winner in any company.

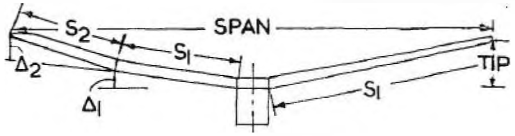


been found. Of all the models listed, some are not particularly stable under tow, particularly under windy conditions.

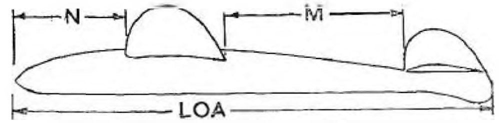
With the fully streamlined fuselage models, the hump-backed fuselage remains extremely popular, again often with plenty of side area, both fore and aft of the wings. In other words, such fuselages are generally fairly deep, but relatively slim. Some have considerable forward side area in the form of a long nose.

Yet, as a direct comparison, one of the most successful models of this type has a very short nose—Jinx, by Marcus. This model does, in fact, retain several features originally popularised by G. W. W. Harris with his " Igo " series—hump-back fuselage and parasol wing mount. Again, too, it will be noticed that this model comes in the medium-size range, with very useful proportions for all-round contest work.

Summarising then, it may be said that a model of at least 450-500 sq. in. wing area is now essential for F.A.I. contest work, with the interesting possibility of producing something really outstanding in the 1,000 plus sq. in. size. The modeller who is prepared to devote all his time exclusively to gliders could well concentrate on this larger size. The flier who is interested in other types as well would do best to stick to the lower limit, if only on account of the time saving. And as far as outline shape and other design features go, the field is still very open. No one particular form, or wing section, shows any marked advantage over any other. General proportions average out very much the same as will be seen from a study of the tables.



GLIDERS - - DESIGN



MODEL	TYPE	DESIGNER	ORIGIN	SPAN	S1	S2	CHORD ROOT	CHORD TIP	DIHEDRAL Δ1	DIHEDRAL Δ2	DIHEDRAL TIP	AEROFOIL
WOS I	PROFILE	S.WOSIK	POLAND	35 1/2	17 3/4		4 3/8	3 1/2			2	
CUMULUS	POD-BM	MISCHLER	G'RM'NY	39 3/8	19 3/4		4	ELL			1 3/8	LAMINAR
G-HATCHET	HATCHET	GUILMONT	GB	41 3/4	13	7 7/8	5 1/2	5 1/2	3/4		4	
KILROY	SWAYBACK	BEDISH	USA	44	12	10	4	ELL	1 1/2		3 1/2	EIFF 400
COBRA	STREAM	TWOMEY	GB	48	22 1/2		6 1/2	3	ELLIPTIC			RAF 32
FUGITIVE	PYLON	BUTLER	GB	50	15	10	6 1/2	ELL	3/4		5	
CONTEST	SLAB	WARRING	GB	52	26		5	5			5	RAF 32
GS-5	L.WING	GRZYWA	POLAND	54 1/2	26		6	ELL		10°		EIFF 400
PITCHOUNET	FLAT	CASTREX	FRANCE	55	26		6 1/4	6 1/4			4 3/4	
BUFFEL	STREAM	KIRCHM'N	POLAND	59	8	21	6 3/4	4 3/4		10°		
URUBUS	POD-BM	RICHTER	GRMNY	62	17	14	6	3 1/2	3/8		3 3/4	EIFF 400
NIBBIO	STREAM	VALENTI	ITALY	62 1/2	29		6	RD			4	N.2312
	SWAYBACK	WENTANA	USSR	64	29		5 1/8	ELL		7°		JOUKOW.
STRATOS	V-TAIL	CLASEN	GRMNY	65			5 7/8	GULL			5 1/8	RAF 32
SEMBE	V-TAIL	NAGELE	GRMNY	67 1/2	18 3/4	15	7 7/8	ELL	O	5 3/4	5 3/4	EIFF 400
JAMBOREE	DIAMOND	LECLERC	FRANCE	70	20	15	8	4			4	EIFF 431
	STREAM	TANGNEY	USA	70	17 1/2	17 1/2	6 1/2	ELL	1 1/2		5	N.6409
ZILVERM'W.	SLAB	BOEKER	POLAND	71	17	17	6 7/8	ELL	10°			
B-12	CABIN		POLAND	71	34		6 1/4	ELL	ELLIPTIC			RAF 32
SL-6	STREAM	SMIEJA	POLAND	71 1/4	35 5/8		6 3/4	RD	ELLIPTIC			GOT 594
STARTUS	POD-BM	POLAND	POLAND	72	36		6 3/8	ELL	ELLIPTIC			LDC.2
ZEPHYR	PYLON	CATTEN	GB	72	24	11 3/4	7	ELL	1 3/4		6	MQ.TYPE
DOVORIAN		KETTLE	GB	72	36		6 3/4	6 3/4			9	RAF 32
JINX	PARASOL	MARCUS	GB	72	21	15	7 1/2	ELL	3 1/2°		10°	MQ.TYPE
S-W	STREAM	WOPINSKI	POLAND	81 3/4	40		7 7/8		10°			
MOBEY-D	HUMP.	SMITH	GB	82 1/2	39		9	6			9	LAMINAR
CLOPINETTE	HATCHET	LERAT	FRANCE	88	27 1/2	16 1/4	10	ELL			20°	
DG-47	STREAM	DIANO	ITALY	88	20	20	8	5	2		8	EIFF 400
SL-4	STREAM	SMIEJA	POLAND	91	42		9 1/2	ELL	ELLIPTIC			GOT 594
ASTRALE	STREAM	EIKMANN	ITALY	107 1/2	33	20	7 1/2	ELL	1 1/2		6 1/4	
OLYMPIA	STREAM	ROTERT	GRMNY	116	32	12	10 1/2	ELL	4		5 3/8	
SUNBUG	SLAB	YEABSLEY	GB	120	22	38	12	ELL	O	10°		GOT 532
THUNDER KING	SLAB	GILBERT	GB	132	33	33	12	RD				DAVIS
THERMALIST	SLAB	MINNEY	GB	136 1/2	30	36	12	RD	O	8	8	

DIMENSIONS IN INCH UNITS

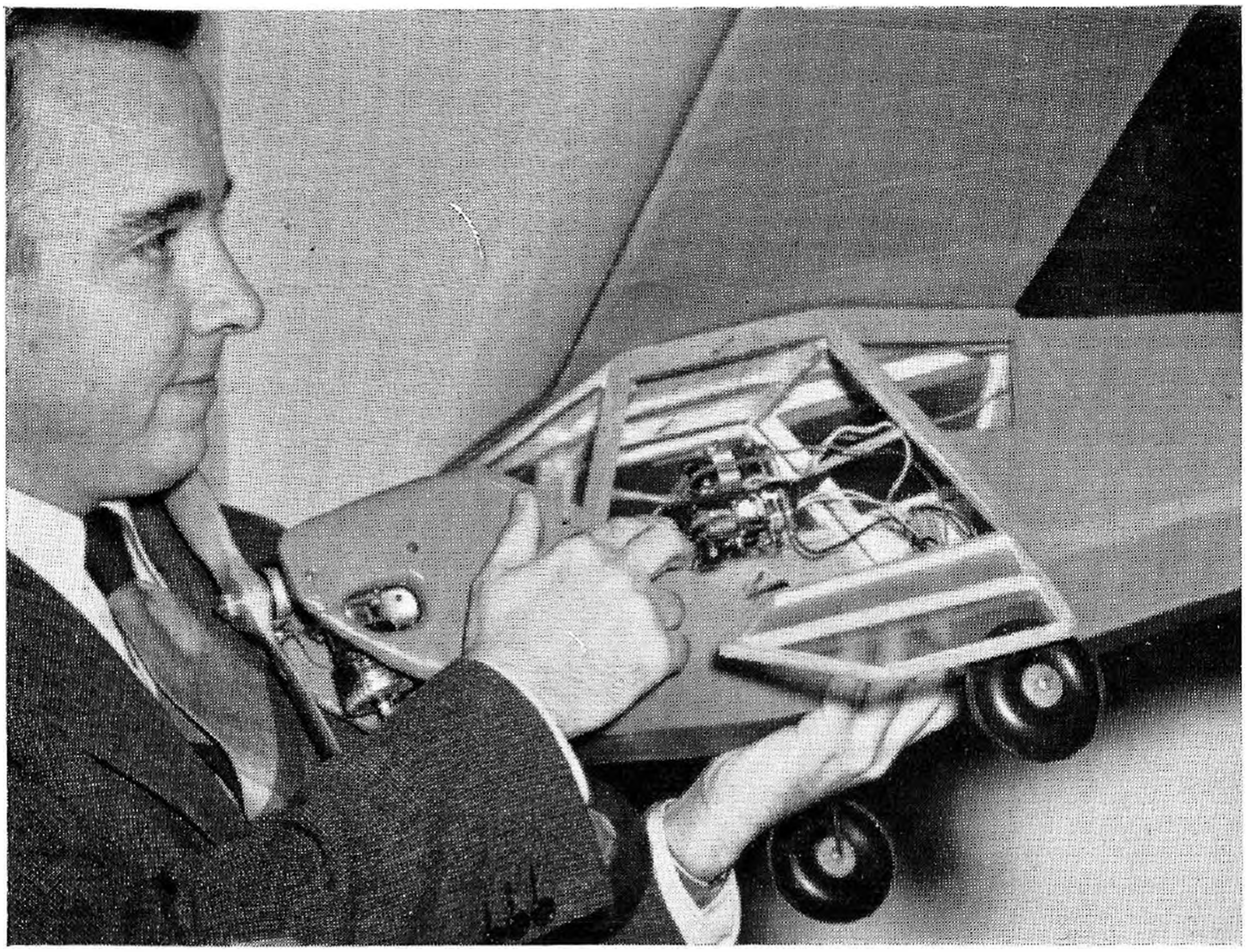
AREA SW	A.R.	FUSELAGE LOA	FUSELAGE N	FUSELAGE M	X-SECTION	TAILPLANE AREA	TAILPLANE %SW	TAILPLANE SECT	FIN AR	FIN %SW	WEIGHT	MODEL
144	8·7	24 1/4		12	POD & BOOM	25	17·5	FLAT	9	6		WOS I
148	10·5	28	6	14	PROFILE	60	40	LIFT	10	6·8		CUMULUS
230	7·5		7 3/4		BOX	71	31	LIFT	12	5		GILI-HATCHET
165	11·8	27	4 1/4	12	OVOID	70	42·5	LIFT	8	5		KILROY
200	10·2	32	6 1/4	14	CIRCULAR	64	32	LIFT	16	8	7 3/4	COBRA
300	8·3	37	7 1/2	16	DIAMOND	105	28·5	LIFT	23	7·5		FUGITIVE
257	10·5	37	11 1/2	15	BOX	80	32	LIFT	26	10	9 5/8	CONTEST
310	9·6	32	6	14	OVOID	70	22·5	SYM	22	7		GS-5
342	8·8	35	10	15	FLAT	72	21	LIFT	24	7		PITCHOUNET
400	8·7	32 1/2			HEXAGON	120	30	LIFT	16	4		BUFFEL
335	11·5	30	7 3/8	11	OVOID	90	27	SYM	33	10		URUBUS
365	10·7	34	7 3/4	14	PEARDROP	125	34	LIFT	18·5	5		NIBBIO
290	14·2	47 1/4	12	24	PEARDROP	60	20	SYM	8·5	3		
360	11·7	42	10	18	DIAMOND	130	26	LIFT				STRATOS
515	8·8	45	12	20	OVOID	135	26	LIFT				SEMBE
500	9·8	39	7 1/2	18	DIAMOND	133	26·5	LIFT	32	6·5		JAMBOREE
400	12·2	37	6 1/4	18	OVOID	140	35	LIFT	28	7		
470	10·7	44	9	22	BOX	140	30	LIFT	28	6		ZILVERMEEUW
425	11·9	32 3/8			FAIRED BOX	106	25	SYM	42	10		B-12
475	10·7	39 5/8	9 5/8	17 1/2	OVOID	97	20	SYM	28	6		SL-6
445	11·7	43 1/2	19	19	POD & BOOM	115	26	LIFT				STARTUS
466	11·1	50 1/2	10	25	DIAMOND	177	38	SYM	28	6		ZEPHYR
480	10·7	42 1/4	10 5/8	18	RHOMBOID	140	29	SYM	34	7		DOVORIAN
520	10	45	6	24 1/2	OVOID	155	30	LIFT	28	5	16 3/4	JINX
600	11·2	40			FAIRED BOX	175	29	SYM	36	6		S-W
590	11	49	11	20	PEARDROP	135	23	LIFT	44	7·5	24	MOBEY DICK
800	9·7	53	10	24	TRIANGULAR	195	24·5	LIFT	50	6		CLOPINETTE
644	12	47 1/4	11 1/2	18 1/2	PEARDROP	220	34	LIFT	45	7		DG-47
780	10·6	48 1/4	12 5/8	19	OVOID	152	19·5	SYM				SL-4
750	15·4	53	14	28	OVOID	200	27	SYM	45	6		ASTRALE
1000	13·5	86	28	30	OVOID	220	22	LIFT	65	7		OLYMPIA
1228	11·8	78	15	32	BOX	450	37	SYM	60	5		SUNBUG
1520	11·5	72	14	33	BOX	420	28	LIFT	70	5		THUNDER KING
1560	12	73	11 3/4	35	BOX	420	27	LIFT	115	7·5	64	THERMALIST

WEIGHT IN OUNCES

GLIDERS CONSTRUCTION

MODEL	DESIGNER	CL.	WINGS								FUSELAGE				TAIL		INCIDN.		CG	HOOKS	MODEL
			TYPE	LE	SPARS	TE	RIBS	COVER.	POSN	FIXING	TYPE	MAIN.	STR.	CVRNG	TYPE	SP.	W	T	FR.LE	FR.LE	
WOS-1	WOSIK	FAI	SPRLESS					TISSUE	HIGH	BANDS	PROFILE	SHEET			SPRLS		4	0		LE	WOS-1
CUMULUS II	MISCHLER	FAI	MONO					TISSUE	PARA	BANDS	PROFILE	HARDWOOD			MONO		4	0			CUMULUS II
GILI-HATCHET	GUILMONT	FAI	2-SPAR	3/8 SQ	1/4 & 1/8 X 1/8	1/2 X 1/8	1/16	TISSUE	HIGH	BANDS	POD & BOOM	3/32 FRAME		TISSUE	MONO	1/8	2	0		0 & 2	GILI-HATCHET
KILROY	BEDISH	AMA	SPRLESS	1/8 SQ		1/2 X 1/8	1/16	SHT. LE	HIGH	BANDS	CRUCIFORM	3/32 SHEET		SILKSP.	SPRLS		5	3	50%		KILROY
COBRA	TWOMEY	FAI	2-SPAR	1/8 SQ	1/8 OBECHI	1/2 X 1/8	1/16	TISSUE	SHLD	TONGUE	SHT. CRUTCH	1/16 FRMRS	1/16 SQ	TISSUE	MONO	1/8	3 1/2	0	50%	25%	COBRA
FUGITIVE	BUTLER		2-SPAR	3/8 SQ	5/16 & 1/8 X 1/8	1 X 3/16	3/32	TISSUE	PARA	BANDS	BOX	3/32 SQ		1/32 SHT	MONO	1/8	2	0	60%	50%	FUGITIVE
CONTEST	WARRING	FAI	MONO	5/16 SQ	2 - 1/8 SQ	1/2 X 1/8	1/16	SHT LE	HIGH	BANDS	BOX	1/8 SQ		TISSUE	MONO	1/8	3	0	2	ADJ.	CONTEST
GS-5	GRZYWA	FAI	MONO					PAPER	LOW	PLUG	STREAMLINE				MONO	1/8	1/2	0	60%		GS-5
PITCHOUNET	CASTEX	FAI	2-SPAR	1/4 X 1/16	1/2 X 1/16	1/2 X 1/16	1/16	TISSUE	SHLD	TONGUE	BOX	1/2 X 1/16		TISSUE	MONO	1/16	2	0	4 1/16	1/2	PITCHOUNET
BUFFEL	KIRCHMN.	FAI	2-SPAR					PAPER	SHLD	PLUG	BOX			PAPER	MONO		3	0	60%	30/45/60	BUFFEL
URUBUS	RICHTER	FAI	MONO	3/16 X 3/32	3/16 X 3/32	1/4 X 3/32	1/16	TISSUE	HIGH	TONGUE	STREAMLINE		3/16 X 3/32	TISSUE	MONO	3/32	2 1/2	0			URUBUS
NIBBIO	VALENTI	FAI	MONO	5/8 X 3/16	BOX	1/2 X 1/8	3/32	TISSUE	SHLD	TONGUE	STREAMLINE	3/16 SQ	3/16 SQ	TISSUE	MONO		3	0			NIBBIO
	WENTANA	FAI	2-SPAR	3/8 X 3/16	1/4 X 1/8	3/8 X 3/32		TISSUE	SHLD	PLUG-	HOLLOW LOG				MONO		4	0	40%	10%	
STRATOS	CLASEN	FAI	MONO	1/8 SQ	2 - 1/8 SQ	3/8 X 1/16	1/16	PAPER	MID	TONGUE	BOX	1/4 SQ		PAPER	MONO		0	0		2	STRATOS
SEMBE	NAGELE	FAI	2-SPAR					TISSUE	HIGH	BANDS	STREAMLINE			TISSUE	MONO		0	0			SEMBE
JAMBOREE	LECLERC	FAI	2-SPAR				3/32	TISSUE	HIGH	BANDS	BOX	SHEET		SHEET	MULTI		5	2		1/2 1/2/4	JAMBOREE
	TANGNEY	AMA	MULTI	1/4 SQ	1/8 & 1/16	3/4 X 3/16	1/8	TISSUE	HIGH	BANDS	STREAMLINE	1/8 FORMER	1/8 SQ	TISSUE	MONO	1/8	2	0		2 3/4	
ZILVERMEEUW	BOEKER	FAI	2-SPAR					PAPER	SHLD	PLUG	BOX				MONO		2	0	60%	20 40%	ZILVERMEEUW
B-12		FAI	MONO					PAPER	MID	PLUG	FAIRED BOX	SHT SIDES		PAPER	MONO		2	0	60%	+1 & -1	B-12
SL-6	SMIEJA	FAI	MONO					PAPER	SHLD	TONGUE	STREAMLINE			PAPER	MONO		1	0	60%	1 1/4	SL-6
STARTUS		FAI						PAPER	MID		PROFILE	SHEET					0	0	60%	10-60%	STARTUS
ZEPHYR	CATTEN	FAI	MONO	1/2 X 3/8	5/32 SQ	1/16-V	1/16	TISSUE	HIGH	BANDS	D. BOX	3/16 SQ		ST. NOSE	MONO	1/8	2 1/2	0	40%	3 & ±3/4	ZEPHYR
DOVORIAN	KETTLE	FAI	MONO	1/2 X 1/4	2 - 1/8 SQ	1/2 X 3/16	1/8	TISSUE	HIGH	BANDS	KEEL	1/8 SHEET	1/8 SQ	TISSUE	MONO	1/8	3	0	33%	1 FWD	DOVORIAN
JINX	MARCUS	FAI	2-SPAR	1/4 SQ	1/8 & 1/4 SQ	5/8 X 1/8	1/16	SHT LE	PARA	BANDS	STREAMLINE	4-1/8 SQ	3/32	SH. NOSE	MONO	3/16	3 1/2	0	60%	0/2 1/2	JINX
S-W	WOPINSKI	FAI	MONO					PAPER	SHLD	BANDS	BOX				MONO		1	0		1/2	S-W
MOBEY DICK	SMITH	FAI	MULTI	3/32 SQ	1/8 SQ	SHT V	1/16	SHT LE	SHLD	TONGUE	SHEET KEEL	1/4 X 1/16	1/16	RAG T.	MULTI	1/16	4	0	60%	+3 -3	MOBEY DICK
CLOPINETTE	LERAT	FAI	MONO	3/16 SQ	3/16 SQ	7/8 X 1/4	1/16	SHT LE	HIGH	BANDS	TRIANGULAR	1/8 SHEET		SHEET	MONO	1/8	3	0		1 1/4	CLOPINETTE
DG-47	DIANO	FAI	2-SPAR						SHLD	PLUG	STREAMLINE	FORMERS	5/32	TISSUE	MONO	1/16	1	-1/2		4/3/2	DG-47
SL-4	SMIEJA	FAI	MONO					PAPER	HIGH	BANDS	STREAMLINE			PAPER	MONO		1 1/2	0		1 1/4	SL-4
ASTRALE	EIKERMNN	FAI	MONO	3/8 X 1/16	3/16 X 1/8	1/2 X 1/8	1/16	SHT LE	SHLD	PLUG	STREAMLINE	5/32 X 3/16		TISSUE	MONO	1/16	1	-1/2		4/3/2	ASTRALE
OLYMPIA	ROTERT	FAI	2-SPAR						SHLD	TONGUE	STREAMLINE			FABRIC	TWO		2 1/2	0			OLYMPIA
SUNBUG	YEABSLEY	FAI	2-SPAR	3/8 SQ	1/2 & 3/16 X 1/8	1 X 1/4	1/16	SHT LE	HIGH	BANDS	BOX	1/4 SQ		TISSUE	TWO	1/8	1 1/2	0		+1 - -2	SUNBUG
THUNDER KING	GILBERT	FAI	2-SPAR	1/2 SQ	SPRUCE T	1 X 1/4	1/8	RAG T	SHLD	TONGUE	BOX	1/4 SQ		RAG T.	TWO	1/8	3 1/2	0		+2 1/2 -2 1/2	THUNDER KING
THERMALIST	MINNEY	FAI	2-SPAR	3/4 SQ	T SECTION	3/4 X 1/4	3/32	SHT LE	SHLD	TUBES	BOX	1/4 SQ		SHEET	TWO	3/16	4	0	50%	10 & 40%	THERMALIST

ALL DIMENSIONS IN INCHES



U.S. Navy Official Photograph.
Dr. Walter Good, prominent U.S. radio control designer demonstrates the " works " of his successful Rudderbug, American Nationals winner and regular star at meetings through the country.

RADIO CONTROL

THE year 1949 has produced the first really concrete results in the British radio control field, and there are now, probably, at least as many modellers actively interested in R/C work in this country as in America. Not that results are yet directly comparable, for the 1949 Nationals saw the *first* British radio control event, whereas similar contests have been held in America since 1937.

Radio control is the one field in which American equipment has not been greatly favoured. The basic difference, of course, is that we and the United States operate on different legal frequencies for transmission. Actually we are better off than they, as far as official regulations go. We definitely have a licence-free waveband allotted for model use. United States laws still require all R/C operators to hold an " amateur " licence, although it is obvious that this regulation must be largely ignored. But with the American circuits all designed for their own frequency (55 megacycles/sec), their equipment is not suited to our own legal frequency (27 megacycles/sec), nor is it readily converted without changing the majority of the component values.

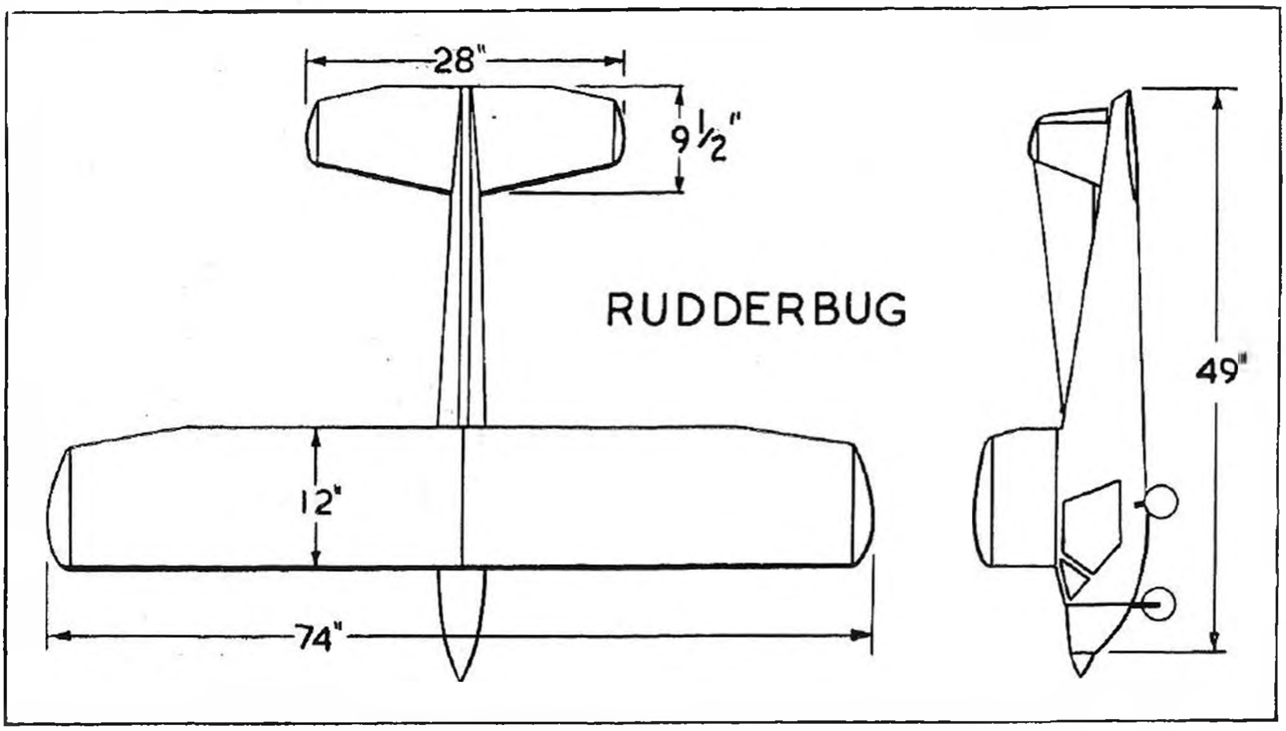
Most of the American sets, too, are of the ultra-lightweight type, designed around the RK-61 thyratron valve. These valves, or their equivalent, are not available in this country. But at the same time their possible advantages are debatable. Whilst having an excellent response in a simple circuit, they are costly and have an extremely short life under normal conditions.

The British radio control modeller is actually very well supplied by our own trade. Three different commercial transmitter-receiver sets are available—E-D, Mercury-Cossor, and E.C.C.—with the possibility of more to follow. There are also quite a number of individually-built sets in use.

It would appear that the British commercial sets are very much on a par with contemporary American equipment as regards range and reliability. Both features are capable of improvement, but all give good enough results if carefully handled and frequently checked. Mercury-Cossor equipment, for example, won the 1949 Nationals event, with E-D equipment third, fourth and fifth.

Actually, one of the most reliable and trouble-free sets appears to be that designed and built by the Hook brothers. It is particularly robust, positive in adjustment and has an exceptional range. One extremely interesting feature is that the transmitter power is supplied by a rotary generator working off a 12-volt car battery. This set, however, is not a commercial model.

Radio control models present two distinct problems. Radio equipment and servicing demands expert technical knowledge for optimum results. The model side demands experience and knowledge of design, trimming and operation of free flight power designs. It is common to find complete unbalance—the radio enthusiast who comes unstuck with the model; or the model enthusiast who is all too vague on the operation of the radio side. The ideal solution is, of course, a partnership involving a radio expert and an experienced modeller. A single enthusiast with an expert knowledge of both sides is rare.



As regards the models themselves, there is, at present, a marked lack of original design. A very high proportion of radio control projects in this country are basically converted kit models, most popular types being the Keilkraft Junior " 60," Veron " Stentorian " and Frog " Centurion." Junior " 60's," modified in various ways, appear the most numerous, with the "Stentorian" a close second. Usually the modification takes the form of increased wing span and area and overall increase in strength.

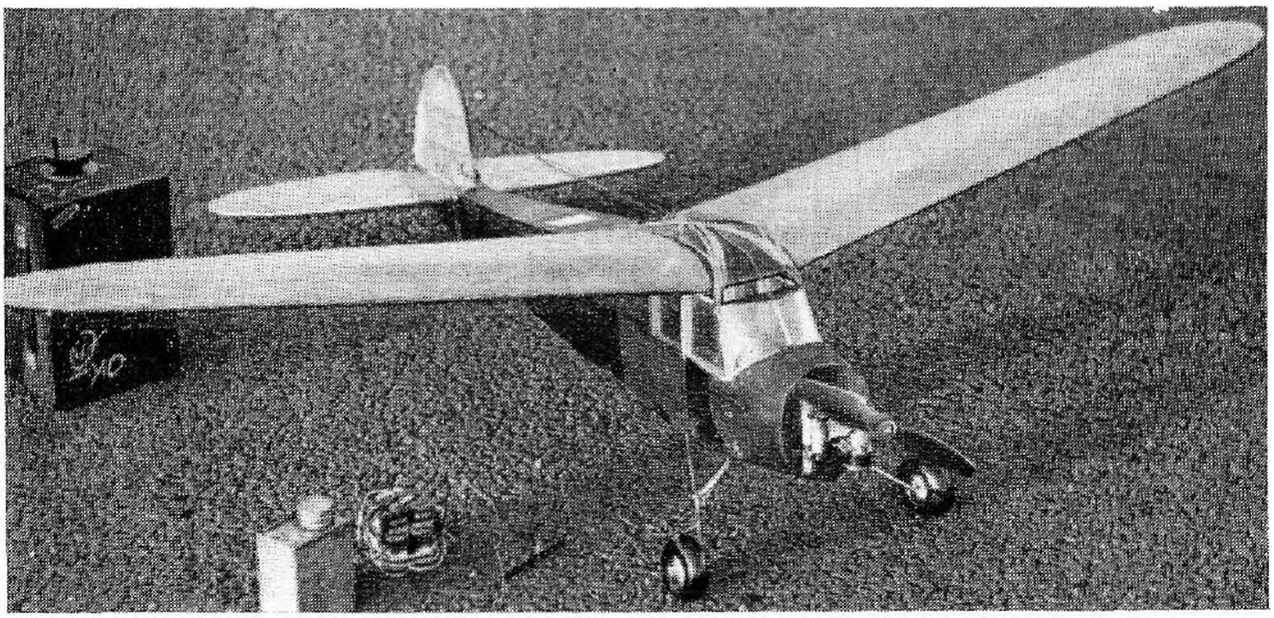
Of the purely original British designs developed to date, the " Southern Maid " is one of the leading examples. This is typical of the present method of approach where a relatively large model is used to reduce wing loading, but fitted with a comparatively small motor. Quite a number of examples at the 1949 Nationals were distinctly underpowered.

This trend is questionable. The slow-flying model may appear the best solution from the point of view of safe flying and better over-all stability, but suffers from the major disadvantage that in conditions of only moderate drift it cannot make headway into wind on account of its low flying speed and thus drifts away and *out of range of the transmitter.* This was brought out time and time again at the Nationals when the majority of models that remained airborne for any length of time drifted downwind, rapidly got out of range and joined the ranks of free flight models.

To combat average or high drift conditions a fairly fast flying model would appear desirable. This need not necessarily mean a heavily loaded model. The heavier the loading the more severe the landing shocks and possibility of damage in a rough landing. A model with a moderate loading, but a thin wing section may prove to be the best compromise.

As regards control response, simplicity pays in the present state of development. The elaborate control systems with rudder and elevator movement and complex equipment have not, so far, proved their worth, in this country, at least. Most reliable results have been achieved with either simple rudder control only or with that ingenious American invention —the rudevator.

First British Radio-Control contest winner—Chuck Doughty's veteran Stentorian, fitted with an adaptation of the American rudevator and Chuck's own ideas on radio control equipment helped out with commercial accessories.



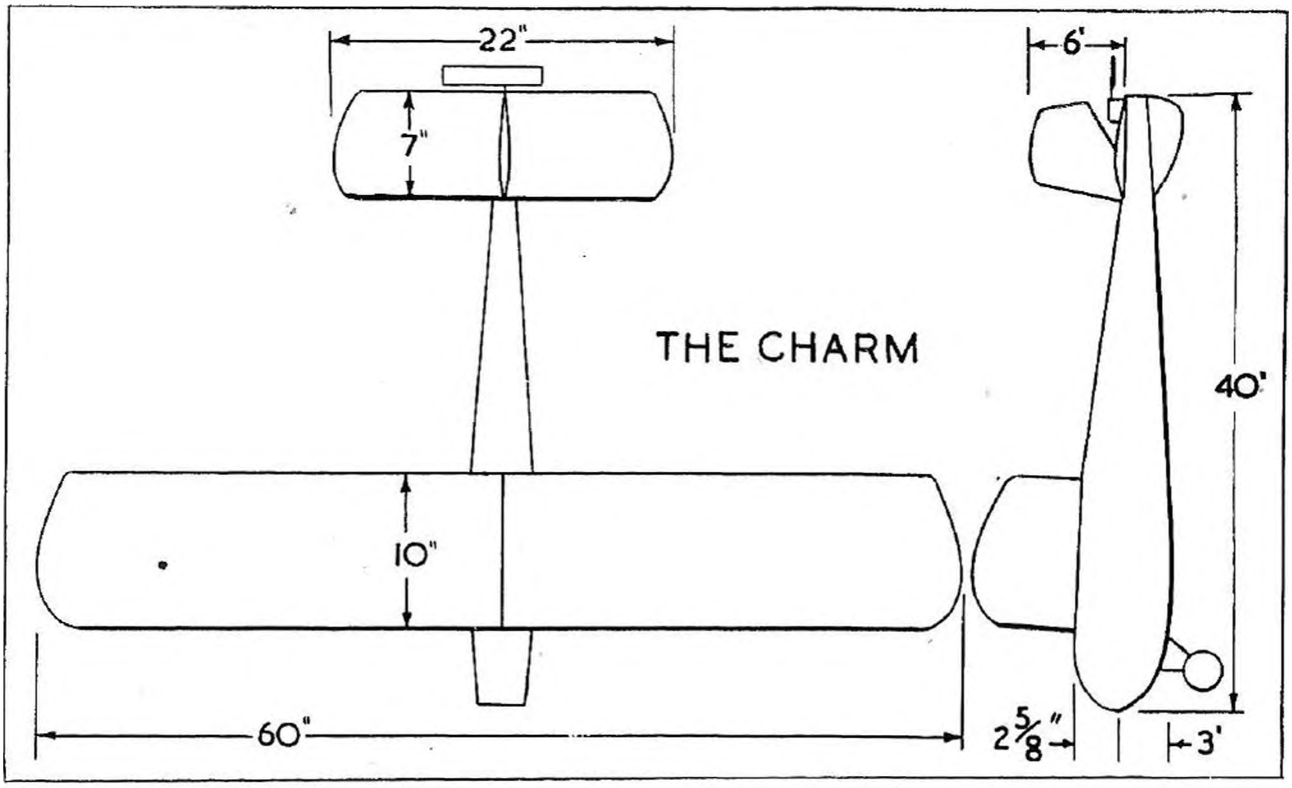
George Honnest-Redlich with his Electron V, based on Junior 60 wings and general layout. This model placed second in French Minwatt R-C contest and also took special French Post Office award of merit.

Rudder control alone has proved surprisingly effective. The sequence is simply rudder right or rudder left, returning to neutral with "no signal." Thus the model can be made to describe both right and left hand turns at will, or fly straight with no signal. However, with just this control response, aerobatics up to and including a loop can be performed.

Application of rudder over a 180 degree turn will generally give a complete 360 degree circle. Holding rudder on for a complete turn or more will produce a spin since, in turning, banked flight, the model is now under-elevated if originally trimmed for normal straight flight. Speed is built up in such a spin and so, if after two or three turns of a spin the controls are neutralised, the model should recover straight at high speed. This excess speed will carry the model up into a climb, ending in a loop if enough speed has been built up.

The Good brothers of America are exponents of simple rudder control only and they have recorded more wins in National radio control events than any others, being successful again in 1949. For the past three years, at least, they have been competing against *experts* flying models with a large number of controls, such as proportional rudder and elevators, aileron control, two-speed motor, and so on. The over-riding simplicity and reliability of just rudder control alone has proved a great advantage. The one major requirement is a model which has a good reserve of inherent stability and which will recover rapidly from a spin once rudder is removed.

The simplest way of getting both rudder and elevator control is by means of a spinning control surface (rudevator) which can be stopped, in sequence, in positions corresponding to right rudder, down elevator, left rudder, up elevator, *et seq.* These " stopping positions " are controlled



by a suitable arrangement of striker arms on the rudevator spindle engaging with similar arms on a control shaft, the whole operated by a simple relay, which, in turn, works off the receiver relay operated by the transmitter signal.

One of the greatest advantages of the rudevator system is that it allows complete adjustment of control. The control vane can be stopped in a position to give elevator *and* rudder effect, to prevent under-elevation in a turn. Also it is possible to incorporate two-speed motor control with the various control responses by means of an additional electrical circuit controlled by two wipers contacting a star wheel on the control shaft. Two-speed motor hook-up was originally devised for spark-ignition motors with two speed timers, but has since been applied to glow plug and diesel power units, actuating a mechanical throttle control.

The simplest approach to radio control work is, of course, an orthodox tow-launched glider with rudder control only. This is typical of French practice, where gliders predominate. The winner of the French " International " is detailed in the tables.

An American model on similar lines by Chester Lanzo has been flown in towline glider contests with some success, although the U.S. now run a separate R/C glider event. Both typify desirable proportions for models of this type.

A slightly more advanced form of R/C glider was seen at the British Nationals, being essentially a standard glider fitted with a small (Mills 1.3 c.c.) motor developing enough thrust to maintain approximately level flight. Models of this type minimise stability problems—which always become more exaggerated with increased power and flying speed—and thus allow most time to be concentrated on the problem of control and control response.

Whatever type of model is chosen for R/C work, the present attitude in this country is to accept a minimum " payload " in the form of radio, batteries, etc., of about 16-19 ounces and proportion the model accordingly. Ultra lightweight sets with very small batteries have not reached sufficient degree of reliability to make them worth while as yet, and so 5-6 ft. span is about the minimum size for present R/C models.

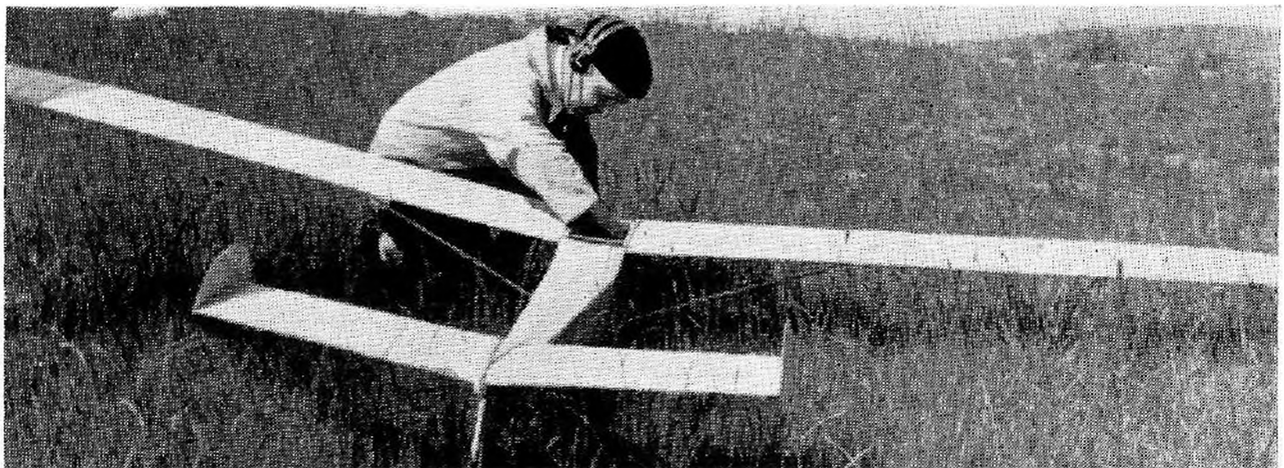
The first British R/C models to appear early in 1949 all tended to be of " giant " proportions. Spans of eight, nine or ten feet were common, and again it would appear that this was neither necessary nor desirable. At the present stage of development, crack-ups are only to be expected and so the medium-size model is probably the best solution where cost and servicing time can be reduced to a minimum.

On the radio side, main source of trouble at the moment is lack of reliability. Very few enthusiasts have reached the point where they can claim absolute 100 per cent. reliability from their sets, so that more often than not they have to fly with limited motor runs. The Hook brothers are one of the outstanding exceptions here for they can, and do, fly regularly with a fifteen minute motor run with no motor cut out, relying purely on maintaining control to keep the model within bounds.

Stability problems associated with the model itself are not so great as with free flight power-duration designs as R/C models are, by comparison, relatively underpowered. Any good stable free flight design of the correct size, then, should make a good R/C model—and there is a definite preference shown for " realism " in the selection of cabin types. The only notable differences in proportions are that it is usual on R/C models to reduce the tailplane area to some 25 per cent of the wing area and also to increase the wing area somewhat over " duration " standards.

Undercarriages present one of the major structural problems. Simple wire leg cantilever types just are not strong enough to take landing shocks with loadings of 16 ounces per sq. ft. and up and V-braced types with a spreader bar are a necessity. Tricycle or nosewheel undercarriages are also coming into favour—as on Den Allen's " Jumbo " and the Good brothers' " Rudder Bug." Properly designed, such units give good, trouble-free results, but particular care must be given to the location and fixing of the nosewheel.

French radio-control ace Pepin testing out one of his typical machines at the Miniwatt contest held near Montlhery in France, where R/C gliders have achieved a larger following than powered aircraft.



RADIO CONTROL DESIGN DATA

MODEL	DESIGNER	MOTOR	CC	SPN	CHD.	AREA	A.R.
RUDDER BUG	W.GOOD	DELONG 30	5	74	12	850	6·45
RADART	F.MCELWEE	DRONE	5	58	10	576	6·45
THERMAL SNIFTER	C.LANZO			79	81/2	630	9·9
KEILKRAFT FALCON	E.KEIL ϕ	SPITFIRE	10	96	123/4	1210	7·6
K.K.JUNIOR 60	E.KEIL ϕ	OK '29'	5	58	10	572	5·9
HBRC-1 ORIG.	A.HOOK	VULTURE	5	78	11	850	7·2
	ECC	WILDCAT	5	72	11 AV	728	7·1
SOUTHERN MAID	J.TAPLIN	E-D COMP	2	90	12	1000	8·1
VERON STENTORIAN	C.DOUGHTY ϕ	FORSTER	5	72	11 AV	728	7·1
WP 58	R.WERLER			121	133/4	1530	9·6
ETHY II	R.SCHUMACHER	SUPER CYKE	10	84	12	980	7·2
THE CHARM	SCHUMACHER	OHLSSON	3·75	60	10	584	6·2
HBRC-2	E.HOOK	WILDCAT	5	60	101/2	628	5·7
FROG CENTURION	G.COURT ϕ	OHLSSON	3·75	70	9	630	8·2
	R.WARRING	OHLSSON '23'	3·75	60	10	585	6·2

ϕ MODIFIED DESIGN

DIHEDRL.	LOA	MNT. ARM	TAILPLANE SPN.	TAILPLANE AREA	TAILPLANE SECT.	%SW	FIN AREA	FIN %SW	TTL WT.	WT. RC	L S[illegible]	[illegible]	ORIGIN
9°-7"	49	20	28	210	SYMM.	24	42	5	74	16	12·3	8·55	USA
5	39	15	22	130	SYMM.	22·5	36	6·3	72	15	18·0	12·5	USA
8 5/8	51	22	371/2	222	LIFT.	35·5	54	8·6		16			USA
8	56	18	35	300	SYMM.	25	100	8·3	128	20	15·3	10·6	GB
6	401/2	19	241/2	140	FLAT.	24·5	70	12·2	86	16	21·3	15·0	GB
7	401/2	19	241/2	140	FLAT	16·5	70	8·2	88	19	14·9	10·4	GB
10°	53	201/2	30	210	SYMM.	29	60	8·2	78	16	15·5	10·7	GB
16°	52	25	24	156	LIFT.	15·6	77	7·7	64	16	9·2	6·4	GB
10°	54	201/2	30	210	SYMM.	29	60	8·2	80	16	15·8	11·0	GB
11	76	34	39	390	LIFT.	25·5			100		9·4	6·5	FRANCE
7	54	25	30	185	SYMM.	18·3	86	8·8	108	16	15·8	11·0	USA
5	40	18	22	145	LIFT.	25	42	7·2	54	16	13·3	9·25	USA
6	42	19	241/2	140	FLAT	22	70	11	76	19	17·5	12·1	GB
4 1/2	41	15	22	130	SYMM.	24	36	5·8	68	18	15·6	10·8	GB
6	401/2	18	24	162	LIFT.	27·5	36	6·2	60	19	14·8	10·25	GB

CONSTRUCTION DATA

MODEL	TYPE	WINGS TYPE	WINGS L E	WINGS SPARS	WINGS T E	WINGS COVERING
RUDDER BUG	CABIN	2 SPAR	3/8 SQ	3/4 & 1/2 X 1/4	11/2 X 1/4	NYLON
RADART	CABIN	MONO	5/8 X 3/8	3/4 X 1/4	11/4 X 3/8	SHT. L E
THERMAL SNIFT.	H-WING	2 SPAR	3/8 SQ	3/4 & 1/2 X 1/4	7/8 X 5/16	SILKSPAN
K.K.FALCON	CABIN	2 SPAR	1/4 SQ	2 BOX	1 X 1/16 BOX	SILK
JUNIOR 60	CABIN	2 SPAR	3/16 SQ	3/4 & 1/4 X 1/4	11/2 X 1/16 V	SHT. L E
HOOK BROS	CABIN	2 SPAR	3/16 SQ	3/4 X 1/4 & 3/16	11/2 X 1/16-V	SHEET L E
ECC	CABIN	2 SPAR	1/4 SQ	1 X 1/8	1 X 1/8-V	RAG T.
SOUTHERN MAID	CABIN	MONO		BOX	1 X 1/4	RAG T.
STENTORIAN	CABIN	2 SPAR	1/4 SQ	1 X 1/8	1 X 1/8-V	RAG T.
WP 58	SHOULDER	STRUTTED				
ETHY II	H-WING	MONO	3/8 SQ	BOX	3/4 X 1/4	NYLON
CHARM	H-WING	2 SPAR	3/8 SQ	1/4 & 3/8 X 1/8	3/4 X 1/4	SILKSPAN
HOOK	CABIN	2 SPAR	3/16 SQ	3/4 X 1/4	11/2 X 1/16 V	SHEET L E
COURT	CABIN	MONO	5/8 SQ	2-5/32 SQ	11/4 X 1/4	RAG T.
WARRING	H-WING	2 SPAR	1/2 X 3/8	1/2 X 1/4	1 X 1/4	SILK

FUSELAGE TYPE	FUSELAGE MATRL.	FUSELAGE STR.	FUSELAGE COVER.	TAILPLANE TYPE	TAILPLANE SPAR	TAILPLANE COVER.	UNDERCART TYPE	UNDERCART LEG	UNDERCART WHEEL
CRUTCH	1/2 X 1/4	1/4 SQ	NYLON	MONO	3/4 X 1/4	NYLON	TRICYCLE	1/8	3
CRUTCH	1/2 X 1/4	1/4 SQ	NYLON	MONO	1/2 X 3/16	SILKSP.	CANT.	2 1/8	3
BOX	1/4 SQ		1/16 SHT.	2 SPAR	1/4 X 3/8	SILKSP.			
BOX	5/16 SQ	1/4 X 3/16	SILK	MONO	BOX	SILK	V-BRACE	5/32	6
BOX	1/4 SQ		RAG T.	MONO	1/4 SQ	RAG T.	V-BRACE	1/8	4
BOX	1/4 SQ		PLY & SH.	MONO	1/4 SQ	RAG T.	V-BRACE	1/8	31/2
BOX	1/4 SQ		RAG T.	MONO	1/8 SH.	RAG T.	V-BRACE	1/8	3
BOX	1/4 SQ		RAG T.	MONO	5/8 X 1/4	RAG T.	V-BRACE	1/8	41/4
BOX	1/4 SQ		SILKSP.	MONO	1/8 SH.	SILKSP.	V-BRACE	1/8	3
BOX									
BOX	1/4 SQ		SHEET	MONO	1/4 X 1/8	NYLON	V-BRACE	1/8	4 41/2
BOX	1/4 SQ		1/16 SHT.	MONO	1/4 SH.	SILKSP.	V-BRACE	3/32	3
BOX	1/4 SQ		RAG T.	MONO	1/4 SQ	RAG T.	V-BRACE	1/8	3
BOX	1/8 SHT	1/4 X 3/16	SHEET	MONO	5/32 SQ	RAG T.	V-BRACE	3/32	3
BOX	1/4 SQ		SILK	MONO	3/4 X 1/8	SILKSP.	V-BRACE	3/32	21/2

RADIO CONTROL EQUIPMENT

MODEL	XTR.	RCR.	ARL.	BATTERIES HT	LT	SERV.	WT. BATT.	CONTROL	MOVEMENT *	PROPORTION	TYPE
RUDDER BUG	BEACON	BEACON	18"	45V	1·5V	3V	9·8	ESCAPEMENT	RUDDER L&R	5·6 SQ IN RUDDER	SEQUENCE
RADART	AEROTROL	AEROTROL		45V	1·5V	3V	10 1/4	ESCAPEMENT	RUDDER R&L	5% RUDDER	SEQUENCE
THERMAL SNF.	BEACON	BEACON		45V	1·5V	3V	10	ESCAPEMENT	RUDDER R&L	25% RUDDER	SEQUENCE
K.K. FALCON	ECC	ECC	36"	3 B.122	D-18	4·5V	10	ESCAPEMENT	RUDDER R&L	15% RUDDER	SEQUENCE
JUNIOR 60	ECC	ECC	36"	3 B122	U11	4·5V	9	ESCAPEMENT	RUDDER R&L	10% RUDDER	SEQUENCE
HOOK	7193 HARTLEY MG 5/2 1/2	3S4	28"	2-119	3V	4·5V	9	MOTOR DRIVEN SERVO	RUDDER R&L	5 SQ IN	SEQUENCE
ECC	ECC	ECC	36"	3 B122	D18	4·5V	10	SELF CENTRING ESCAPEMENT	RUDDER R&L	5 SQ IN	SEQUENCE
SOUTH MAID	E-D	E-D	36"	TWO 522	1·5	CLOCK		E-D SERVO	RUDDER R&L	12 SQ IN	SEQUENCE
STENTORIAN	COSSOR	COSSOR	42"	B101	U2	4·5V	11	RUDEVATOR	RUDDER & EL.	11 SQ IN	SEQUENCE
WP-58	PEPIN	4 VALVE						3 POSN. ESCP.	RUDDER R&L	40% RUDDER	SEQUENCE
ETHY II	BEACON	BEACON		45V	1·5V	3V	10	RUDEVATOR	RUDDER & EL.	16 SQ IN	SEQUENCE
CHARM	AEROTROL	AEROTROL		45V	1·5V	3V	9	RUDEVATOR	RUDDER & EL.	12 SQ IN	SEQUENCE
HOOK	7193 HARTLEY	3S4	28	TWO B119	3V	4·5V	9	MOTOR DRIVEN SERVO	RUDDER R&L	15% RUDDER	SEQUENCE
COURT	COSSOR	COSSOR	48	B101	U2	3V	10	RUDEVATOR	RUDDER & EL.	10 SQ IN	SEQUENCE
WARRING	7193 HARTLEY	3S4	28	TWO B119	3V	4·5V	9	RUDEVATOR	RUDDER & EL.	12 SQ IN	SEQUENCE

RADIO CONTROL RIGGING

MODEL	INCIDENCE WING	TAIL	THRUST DN.	SIDE	CG	MOTOR	PROP D.	P.	MOTOR CONTROL	NORMAL TRIM	MANOEUVRABILITY
RUDDER BUG	0	2 1/2	0	0	4·4"=37%	DE LONG 30	12	4	TIMER	STRAIGHT	FULLY AEROBATIC
RADART	5	3 1/2	3	0	33%	DRONE	10	6		STRAIGHT	TURNS & SINGLE LOOP
THERMAL SNF.	2 1/2	0			50%					STRAIGHT	R & L TURNS
K.K. FALCON	1	0				SPITFIRE	14	6	TIMER		R & L TURNS
JUNIOR 60	2	0	3	0		OK '29'	12	5	TIMER		R & L TURNS
HOOK	2	0	3	5°R	40%	VULTURE	11	6		STRAIGHT	FULLY AEROBATIC
ECC	1	0	2	0	4" FROM LE	WILDCAT	14	6			R & L TURNS
SOUTH MAID	3	-2			4" FROM LE	E-D COMP	11	5		STRAIGHT	R & L TURNS
STENTORIAN	1	0	2	0	4" FROM LE	FORSTER '29'				STRAIGHT	FULLY AEROBATIC
WP 58	2	0			35%					STRAIGHT	R & L TURNS
ETHY II	2	0	3	0	33%	SUPER CYKE	14	6	TWO SPEED	STRAIGHT	FULLY AEROBATIC
CHARM	3	0	3	0	33%	OHLSSON '23'	12	4	TWO SPEED	STRAIGHT	FULLY AEROBATIC
COURT	3	0	2	0	30%	OHLSSON '23'	11	5	TWO SPEED		RUDDER/ELEV/MOTOR
WARRING	3	0	3	0	30%	OHLSSON '23'	11	4	TWO SPEED	STRAIGHT	RUDDER/ELEV/MOTOR
HOOK	2	0	3	5R	35%	WILDCAT	13	6			RUDDER

AEROFOIL SECTIONS

It is always a pleasant surprise to find some new and hitherto aeromodelling unknown achieving distinction—and none would begrudge Hungary their recent F.A.I. International records in both rubber and tailless classes. What is of particular interest to all modellers is their fine new series of aerofoil sections, developed by Dr. Georges Benedek over the past six years. Of a range of nearly thirty, we have selected some seven. A cursory glance at their general lines reveals that they have been developed on parallel lines to the Sigurd Isaacson sections featured in our first *Annual*, but are if anything even thinner and certainly more cambered, giving them a flavour of the Marquardt sections. Dr. Benedek started on the assumption that lift drag had little importance at models speeds, that is to say, the model that flew more slowly was better regarded than the faster one, as at slower speeds the turning circle could be tightened. Equally, flying in a straight line models were slower to leave thermal areas.

All B-series sections enjoy high lift coefficients coupled with very slow forward speed. For the average Wakefield model or F.A.I. rubber duration, this amounts to between 1.6-1.7, against typical model sections giving from 1-1.4. It is claimed that they are definitely better than such popular sections as RAF 32 or NACA 6412, or the normal Gottingen series. The series are now in use almost exclusively in Hungary, and, if world records mean anything, have proved their value several fold. Incidentally, the Hungarians themselves consider that they have several models much better than their present recordholders, but until they have proved it we are content to include the actual holders.

Main objection to the B-series must be on constructional grounds. They *are* awkward to use, and the only practical method is to employ hardwood or ply ribs and hardwood main spars with halving joints : except in the very lightest models we doubt if they would be strong enough in balsa.

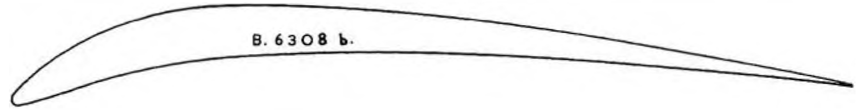
We have always been interested in model research carried out at fullsize aeronautical research stations—hence the inclusion of the long neglected MVA sections from the Modellversuchsanstalt at Gottingen. MVA 123 is probably the best of the bunch for its lift characteristics, but again suffers from the constructional problems of all thin cambered sections. MVA 227 is thick enough to please and particularly recommended for the larger sailplanes. This was a favourite of Alexander Lippisch, ace German model and fullsize designer, who favoured its use with slots, the slot angle being inclined at 120°. As a good allrounder, MVA 301 fills the bill, either for sailplanes or rubber jobs, and bears a certain family resemblance to some of the Grant sections. Those who want a " fast " section will find MVA 344 most useful for heavier power models ; it has a very limited centre of lift movement.

The NACA series can always be relied upon for something good, and their new H series for flying wing aircraft will be of interest to all tailless experimenters, who have not been very well served with specially developed sections in the past. Object has been to reduce the pitching moment by suitable design, and high claims are made on this score. Those who find some of them too thick for model use can reduce per-

Continued on page 143

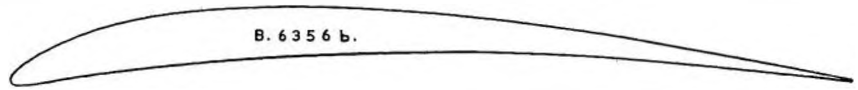
B3309b Nose Radius .4%

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	100
Upper	0.40	1.97	3.00	4.73	6.17	7.33	9.12	10.09	10.47	10.63	10.33	9.47	8.20	7.60	4.67	2.50	0.10
Lower	0.40	0.38	0.96	2.20	3.40	4.48	6.17	7.10	7.50	7.67	7.60	7.09	6.13	4.89	3.40	1.78	0.00



B6308b Nose Radius .7%

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	100
Upper ...	0.70	2.42	3.62	5.38	6.85	8.12	9.83	10.80	11.22	11.25	10.73	9.63	8.14	6.38	4.44	2.39	0.28
Lower	0.70	0.06	0.32	0.97	1.70	2.43	3.73	4.68	5.19	5.35	5.42	5.12	4.50	3.70	2.62	1.23	0.00

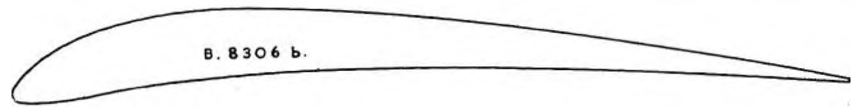


B6356b Nose Radius .7%

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	100
Upper	0.70	2.18	3.14	4.55	5.65	6.53	7.78	8.55	9.00	9.15	8.96	8.23	7.10	5.75	4.08	2.23	0.22
Lower	0.70	0.03	0.15	0.42	0.78	1.12	1.85	2.45	2.92	3.25	3.57	3.65	3.50	3.00	2.22	1.19	0.00

B8258b Nose Radius .9%

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	100
Upper ...	0.90	3.50	5.03	7.12	8.72	9.93	11.35	12.12	12.28	12.15	11.29	9.87	8.22	6.40	4.45	2.48	0.25
Lower ...	0.90	0.00	0.25	0.77	1.39	2.06	3.34	4.03	4.40	4.52	4.37	4.03	3.48	2.72	1.88	1.00	0.00

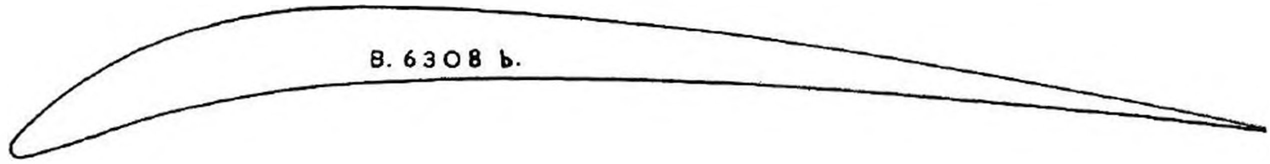


B8306b Nose Radius .9%

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	100
Upper	1.18	3.02	4.11	5.83	7.13	8.18	9.50	10.22	10.51	10.50	9.90	8.83	7.47	5.85	4.15	2.33	0.35
Lower	1.18	0.17	0.00	0.07	0.28	0.65	1.47	2.13	2.56	2.83	3.00	2.90	2.62	2.17	1.53	0.83	0.00

B3309b Nose Radius .4%

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	100
Upper	0.40	1.97	3.00	4.73	6.17	7.33	9.12	10.09	10.47	10.63	10.33	9.47	8.20	7.60	4.67	2.50	0.10
Lower	0.40	0.38	0.96	2.20	3.40	4.48	6.17	7.10	7.50	7.67	7.60	7.09	6.13	4.89	3.40	1.78	0.00



B6308b Nose Radius .7%

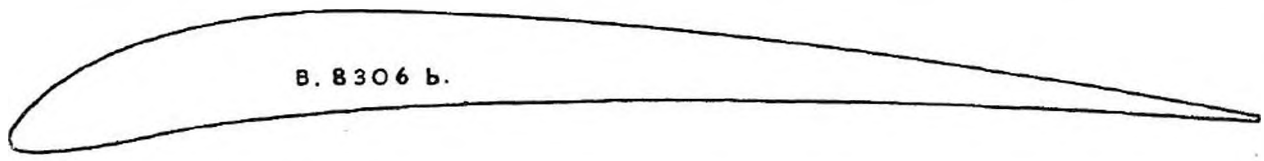
Station	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	100
Upper ...	0.70	2.42	3.62	5.38	6.85	8.12	9.83	10.80	11.22	11.25	10.73	9.63	8.14	6.38	4.44	2.39	0.28
Lower	0.70	0.06	0.32	0.97	1.70	2.43	3.73	4.68	5.19	5.35	5.42	5.12	4.50	3.70	2.62	1.23	0.00

B6356b Nose Radius .7%

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	100
Upper	0.70	2.18	3.14	4.55	5.65	6.53	7.78	8.55	9.00	9.15	8.96	8.23	7.10	5.75	4.08	2.23	0.22
Lower	0.70	0.03	0.15	0.42	0.78	1.12	1.85	2.45	2.92	3.25	3.57	3.65	3.50	3.00	2.22	1.19	0.00

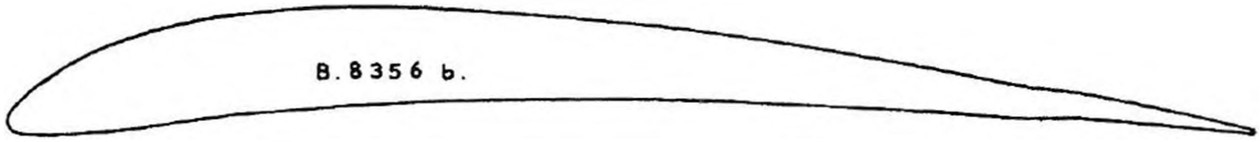
B8258b Nose Radius .9%

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	100
Upper ...	0.90	3.50	5.03	7.12	8.72	9.93	11.35	12.12	12.28	12.15	11.29	9.87	8.22	6.40	4.45	2.43	0.25
Lower ...	0.90	0.00	0.25	0.77	1.39	2.06	3.34	4.03	4.40	4.52	4.37	4.03	3.48	2.72	1.88	1.00	0.00



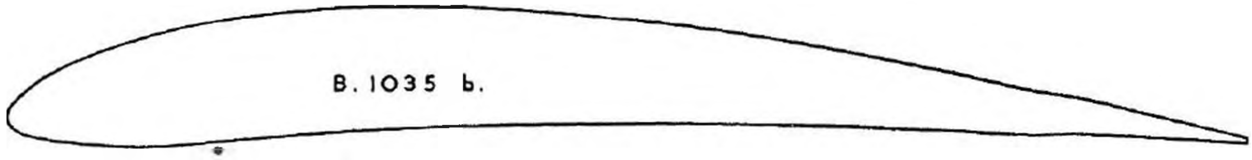
B8306b Nose Radius .9%

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	100
Upper	1.18	3.02	4.11	5.83	7.13	8.18	9.50	10.22	10.51	10.50	9.90	8.83	7.47	5.85	4.15	2.33	0.35
Lower	1.18	0.17	0.00	0.07	0.28	0.65	1.47	2.13	2.56	2.83	3.00	2.90	2.62	2.17	1.53	0.83	0.00



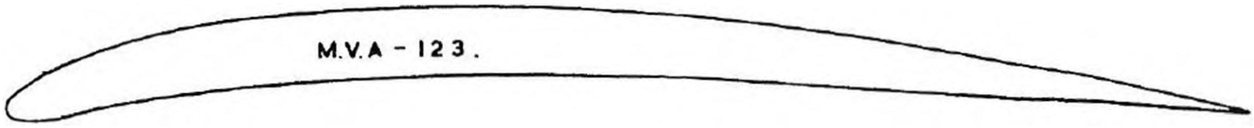
B8356b Nose Radius .9%

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	100
Upper	1.11	3.00	4.15	5.83	7.08	8.00	9.15	9.97	10.28	10.37	9.91	8.88	7.50	5.90	4.20	2.32	0.33
Lower	1.11	0.17	0.03	0.05	0.25	0.50	1.19	1.87	2.35	2.70	3.05	2.98	2.67	2.22	1.62	0.89	0.00



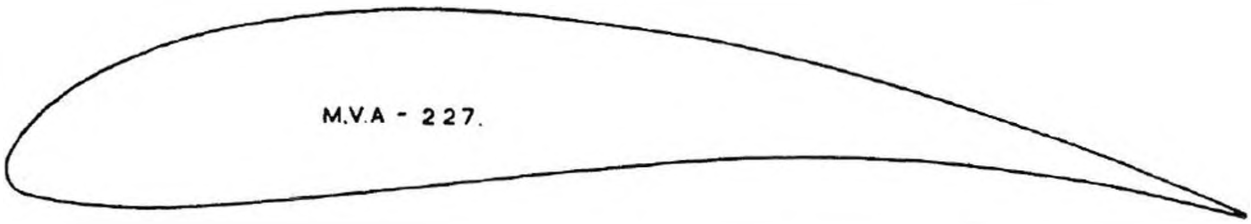
B1035b Nose Radius 1%

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	100
Upper ...	2.32	4.05	5.00	6.42	7.53	8.42	9.76	10.67	11.18	11.38	11.00	10.00	8.67	6.95	4.93	2.79	0.25
Lower ...	2.32	1.08	0.72	0.28	0.06	0.00	0.27	0.73	1.17	1.50	1.75	1.72	1.53	1.22	0.92	0.50	0.00



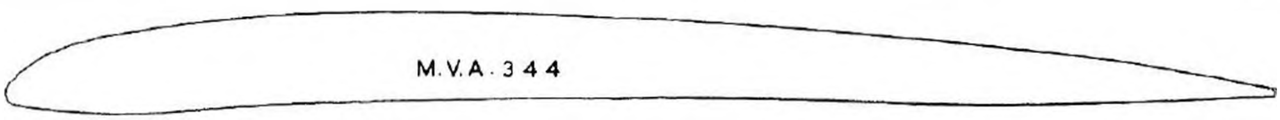
MVA 123 Nose Radius 0.8%

Station	0	2.5	5	10	15	20	25	30	40	50	60	70	80	90	100
Upper ...	4.5	7.1	8.4	10.1	11.2	11.9	12.3	12.5	12.5	12.0	11.1	9.7	7.9	5.8	3.7
Lower ...	4.5	3.7	4.1	5.1	5.9	6.3	6.7	7.1	7.1	6.7	6.1	5.5	4.8	4.2	3.5



MVA 227 Nose Radius 1.5%

Station	0	2.5	5	10	15	20	25	30	40	50	60	70	80	90	100
Upper ...	3.0	7.3	9.3	12.0	13.8	15.0	15.7	16.2	16.2	15.2	13.3	10.8	7.8	4.3	0.6
Lower ...	3.0	1.0	0.5	0.2	0.3	0.6	1.0	1.6	2.8	3.9	4.5	4.7	4.0	2.5	0.2

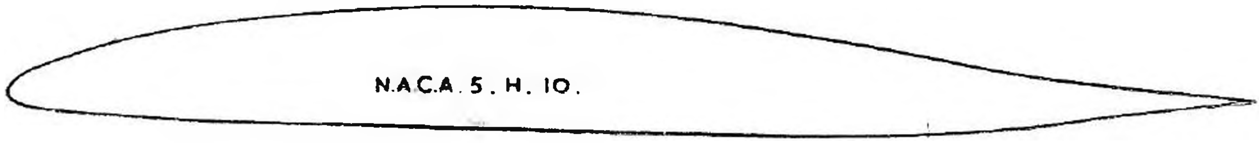


MVA 344 Nose Radius 0.8%

Station	0	2.5	5	10	15	20	25	30	40	50	60	70	80	90	100
Upper	5.1	8.0	9.0	10.0	10.6	11.1	11.3	11.3	11.0	10.5	9.8	9.0	8.0	6.7	4.7
Lower	5.1	3.9	3.6	3.5	3.8	4.0	4.3	4.4	4.5	4.4	4.1	3.9	3.6	3.8	4.3

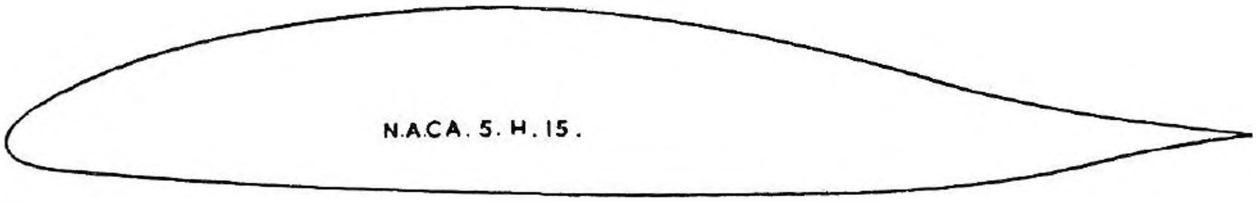
MVA 301 Nose Radius 1.2%

Station	0	2.5	5	10	15	20	25	30	40	50	60	70	80	90	100
Upper ...	4.3	8.3	9.9	12.0	13.4	14.2	14.7	14.9	14.7	13.9	12.5	10.8	8.6	6.2	3.5
Lower ...	4.3	3.1	3.3	3.7	4.2	4.6	4.9	5.2	5.4	5.3	5.2	4.9	4.3	3.8	3.2



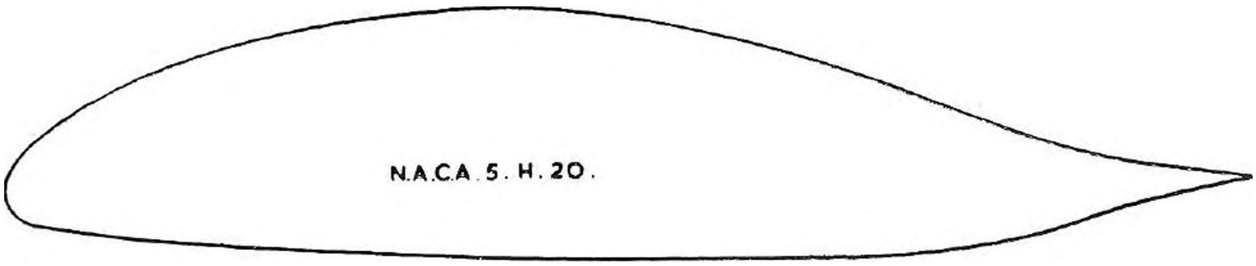
NACA 5 H 10

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	35	40	50	60	70	80	90	95	100
Upper ...	0	1.5	2.1	3.1	3.8	4.3	5.3	6.1	6.5	6.9	7.1	7.2	6.7	5.5	3.9	2.0	.67	.27	0
Lower ...	0	–.93	–1.2	–1.5	–1.6	–1.8	–2.1	–2.3	–2.4	–2.5	–2.6	–2.7	–2.8	–2.9	–2.9	–2.4	–1.1	–.47	0



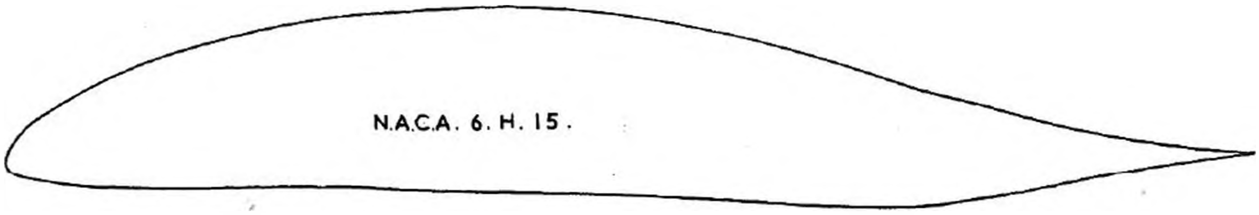
NACA 5 H 15

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	35	40	50	60	70	80	90	95	100
Upper ...	0	2.3	3.2	4.6	5.7	6.5	8.0	9.1	9.8	10.3	10.6	10.8	10.1	8.3	5.9	3.1	1.0	0.4	0
Lower ...	0	–1.4	–1.8	–2.2	–2.4	–2.7	–3.1	–3.4	–3.6	–3.8	–4.0	–4.1	–4.3	–4.4	–4.4	–3.6	–1.6	–.70	0



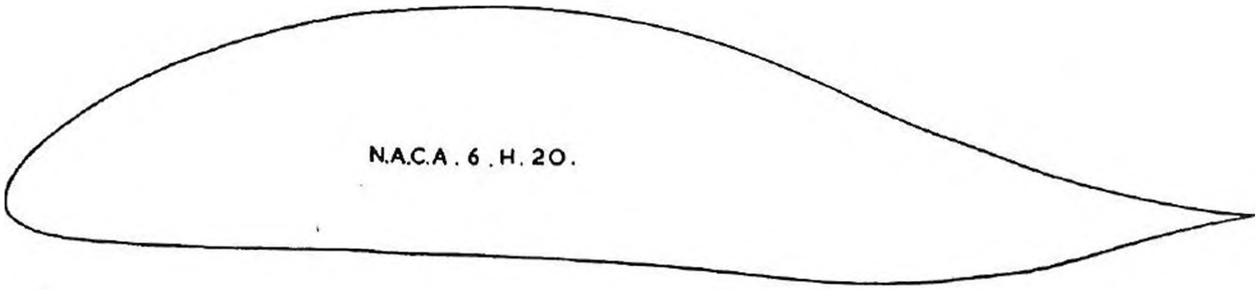
NACA 5 H 20

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	35	40	50	60	70	80	90	95	100
Upper ...	0	3.1	4.3	6.1	7.6	8.7	0.7	12.1	13.1	13.7	14.1	14.4	13.5	11.1	7.9	4.1	1.3	.53	0
Lower ...	0	–1.9	–2.4	–2.9	–3.2	–3.6	–4.1	–4.5	–4.8	–5.0	–5.3	–5.5	–5.7	–5.9	–5.9	–4.8	–2.1	–.93	0



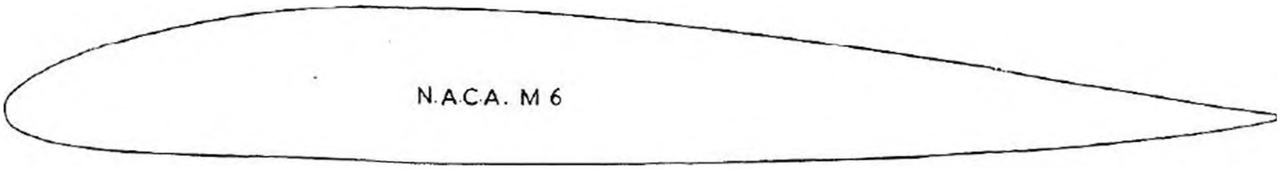
NACA 6 H 15

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	35	40	50	60	70	80	90	95	100
Upper ...	0	2.5	3.5	5.0	6.2	7.2	9.0	10.1	11.0	11.6	11.9	12.1	11.3	9.1	6.0	3.1	.90	.40	0
Lower ...	0	–1.1	–1.4	–1.7	–1.9	–2.1	–2.3	–2.4	–2.5	–2.7	–2.8	–2.9	-3.2	–3.8	–4.3	–3.8	–1.7	–.80	0



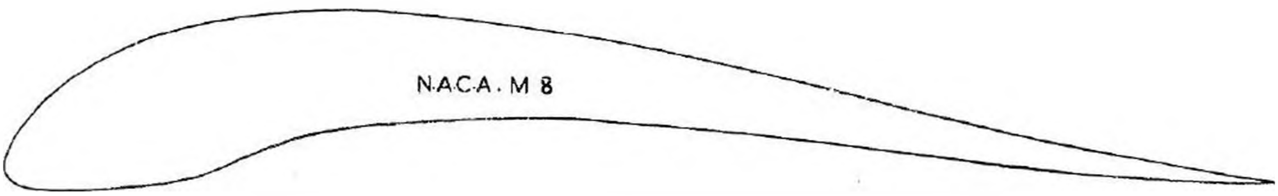
NACA 6 H 20

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	35	40	50	60	70	80	90	95	100
Upper ...	0	3.3	4.7	6.7	8.3	9.6	12.0	13.5	14.7	15.5	15.9	16.1	15.1	12.1	8.0	4.1	1.2	.53	0
Lower ...	0	–1.5	–1.9	–2.3	–2.5	–2.8	–3.1	–3.2	–3.3	–3.6	–3.7	–3.9	–4.3	–5.1	–5.7	–5.1	–2.3	–1.1	0



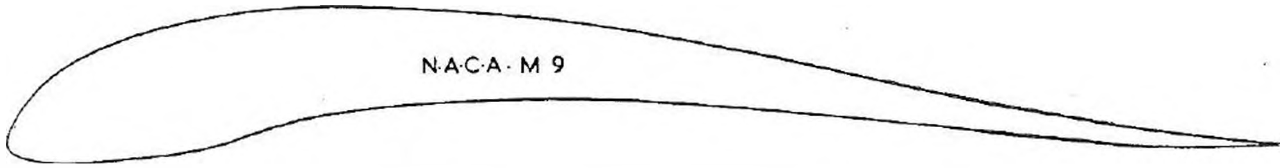
NACA M.6

Station	0	1.25	2.5	5	7.5	10	15	20	30	40	50	60	70	80	90	95	100
Upper ...	0.00	1.97	2.81	4.03	4.94	5.74	6.82	7.55	8.22	8.05	7.26	6.03	4.65	3.06	1.55	0.88	0.26
Lower ...	0.0	–1.76	–2.20	–2.73	–3.03	–3.24	–3.47	–3.62	–3.79	–3.90	–3.94	–3.82	–3.48	–2.83	–1.77	–1.08	–0.26



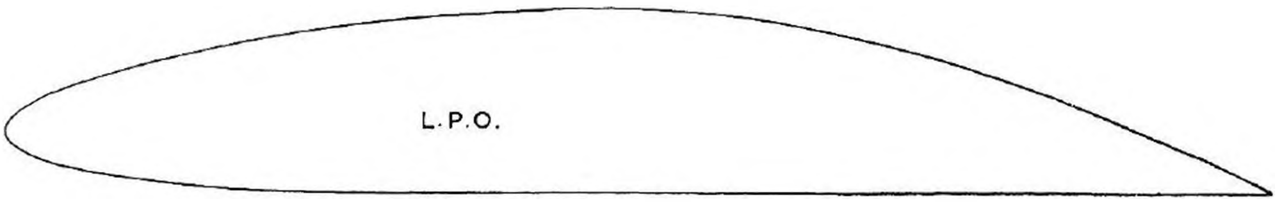
NACA M.8

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	35	40	50	60	70	80	90	100
Upper ...	0.00	3.50	5.06	7.18	8.75	9.95	11.39	12.12	12.50	12.41	12.11	11.57	9.89	7.82	5.44	3.31	1.33	0.00
Lower ...	0.00	–1.00	1.29	–1.38	–1.20	–0.89	–0.33	1.74	2.98	3.68	4.20	4.43	3.88	3.11	1.94	0.83	0.00	0.00



NACA M.9

Station	0	1.25	2.5	5	7.5	10	15	20	25	30	35	40	50	60	70	80	90	100
Upper ...	0.00	3.12	4.59	6.39	7.79	8.85	10.11	10.79	11.11	11.10	10.77	10.29	8.78	6.95	4.84	2.94	1.22	0.00
Lower ...	0.00	-0.89	-1.14	-1.22	-1.07	-0.79	-0.29	1.53	2.62	3.26	3.74	3.91	3.46	2.78	1.72	0.73	0.00	0.00



LPO

Station	0	2.5	5	10	15	20	30	40	50	60	70	80	85	90	95	100
Upper	4.65	7.09	8.12	9.65	10.88	11.87	13.14	13.97	14.25	13.32	11.33	8.49	6.75	4.82	2.62	0.00
Lower	4.65	2.44	1.74	0.75	0.23	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Continued from page 138

centages, and with a series of associated sections might well conduct profitable experiments.

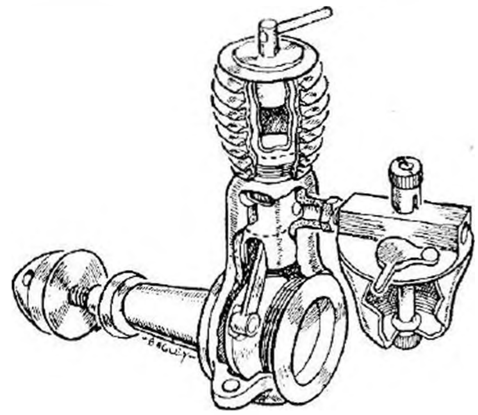
The NACA-M series, is another fullsize research answer to model problems. In pre-war days, M 6 was a popular section, but seems to have drifted out of present day knowledge. M 8 and M 9 are virtually bird sections, and as such might be usefully tried on lightweight gliders, having considerable camber, but rather deeper sections to help in building.

Our last section is really something in the nature of a curiosity. This is a laminar flow section developed in Germany by Oswald Mischler, as early as 1943, presumably from that universally useful book, Schmidt's Aerodynamik des Flugmodelle. This was equally the starting point for both the SI and B series and has been the standby of post-war technical writers for many a long article.

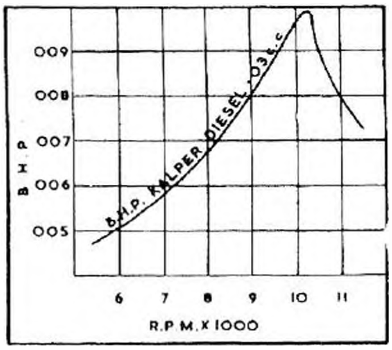
As many of our readers are aware *Aeromodeller* Plans Service already issues a series of thirty-six of the most popular wing-sections in graduated sheets for tapered wing building and other uses. We are now engaged in the selection of a further ten or a dozen additional sections to make this service even more useful. Amongst those already selected will be such growing favourites as the L.D.C. sections, copyright in which we are acquiring, further NACA sections, probably selected SI sections and maybe one or two from the B-series. These additions will not be ready for a month or two yet, so that enthusiasts are urged to curb their impatience. Meanwhile, it will help our task considerably if interested parties would indicate their preferences for the " next dozen."

ENGINE ANALYSIS

" KALPER " .3 c.c.

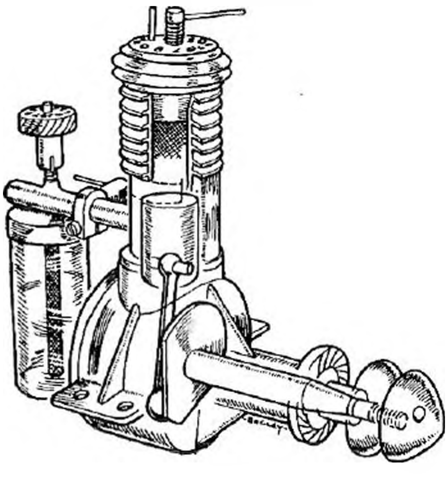


Manufacturers. Seymour Hylda and Co.
Sole Distributors. Arthur Mullett, 16, Meetinghouse Lane, Brighton.
Retail Price. 52s. 6d.
Delivery. Ex stock.
Spares. Ex stock.
Type. Compression Ignition.
Specified Fuel. Ether 6 parts, petrol 5 parts, Castrol 4 parts, or Mills and Ether equal parts.
Capacity. 0.32 cubic cms. .0196 cubic in.
Weight. 410 grains.
Compression Ratio. Not disclosed.
Power/Weight Ratio. .169 b.h.p./lb.
Mounting. Beam upright and inverted.
Recommended Airscrew. 6in. dia., 4in. pitch.
Recommended Flywheel. $1\frac{1}{4}$in. × $\frac{3}{8}$in.
Tank. Celluloid pressing.



Bore. .2510in.
Stroke. .402in.
No. of Ports. 1 inlet, 1 transfer, two exhaust.
Cylinder Head. Diecast, screwed to liner.
Contra Piston. Special alloy, friction adjustment.
Crankcase. Diecast.
Piston. Cast steel, hardened, ground and lapped, flat top.
Connecting Rod. High tensile steel machined from bar.
Crankpin Bearing. Cast steel, hardened, ground and lapped.
Crankshaft. " Nicrome."
Main Bearing. Bushed, cast steel, hardened, ground and lapped.
Little End Bearing. Plain.
Cylinder Liner. " C " Ubas, hardened, ground and lapped.

Aeromodeller Analysis, November, 1948.



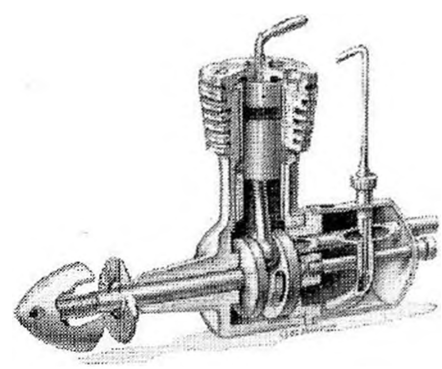
"AMCO .87 " cc. DIESEL MARK I.

Manufacturer's Name and Address. Anchor Motor Co., Ltd., The Newgate, Chester.
Retail Price. (Now superseded.) 72s. 6d.
Delivery. Ex stock from stockist.
Spares. 100 per cent. at works, 1 to 7 days, according to extent of repairs.
Type. Compression ignition two stroke.
Specified Fuel. 50 per cent. " Amco." 50 per cent. Ether Meth. 40 per cent. Redex. 60 per cent. Ether Meth., or any recognised fuel.
Capacity. .87 cubic cms. .05 cubic ins.
Weight. Bare 1 oz. 15 drms.
Compression Ratio. 16-1, 20-1.
Power/Weight Ratio. .376 b.h.p./lb.
Mounting. Beam, upright or inverted.
Recommended Airscrews. Free flight 9 by 4. Control line 6 by 8.
Recommended Flywheel. $4\frac{1}{2}$ ozs., $1\frac{3}{4}$ins. dia.
Tank. Injection moulding. Capacity 3 c.cms. .199 cubic in. Running time $1\frac{1}{2}$ mins.
Bore. .375in.
Stroke. .412in.
Cylinder. Screwed to crankcase. Of S.14 material, hardened ground and honed, round and parallel to .00005. No. of Ports: 1 inlet, 1 transfer, 2 exhaust.
Cylinder Head. Dural bar. Screwed to cylinder. 3 fins.
Contra Piston. S.14. Hardened and ground.
Crankcase. Die cast. Screw in crankcase cover. Pressure die casting LAC.112 12 per cent. Si 9 per cent. Copper.
Piston. Flat top. S.14. Hardened ground and honed. Reamed and parallel to .00005. Cylinder clearance .0001 to .00015.

Connecting Rod. S.11. Hardened, tempered, spherical ended. Bearings, reamed and lapped.
Crankpin Bearing. Plain S.11. Hardened, tempered and ground.
Main Bearing. Plain, reamed and honed. 12 per cent. Si casting ±.00015. Equivalent Phos. Bronze self lubricating.
Little End Bearing. Plain.
Special Features. All main parts are mated. No nuts and bolts, no excess metal giving ultra lightweight. Highly developed port timing giving peak of power curve at highest possible r.p.m. with standard prop. Angular Transfer port. Snap action, patent plunger cut-out requiring minimum effort for operation and immediate effect. Runs in either direction with efficiency. Strong carburettor clamp. No thread. Will run upright or inverted. Extension needle available 2s. 6d. high angle tank. Climb vertically. Comp. and Mixt. controls numbered for easy reference. Easily dismantled with combination tool provided with engine.

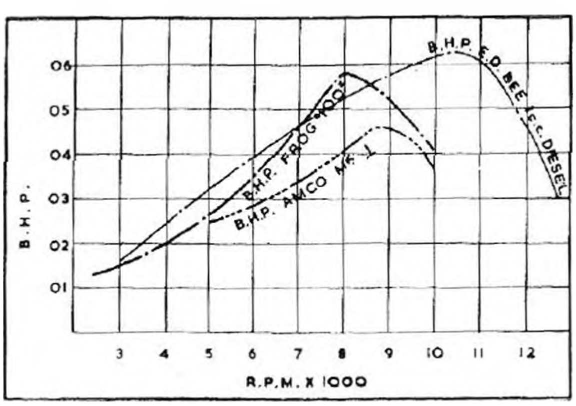
Aeromodeller Analysis, August, 1948.

E.D. MARK I "BEE" DIESEL.



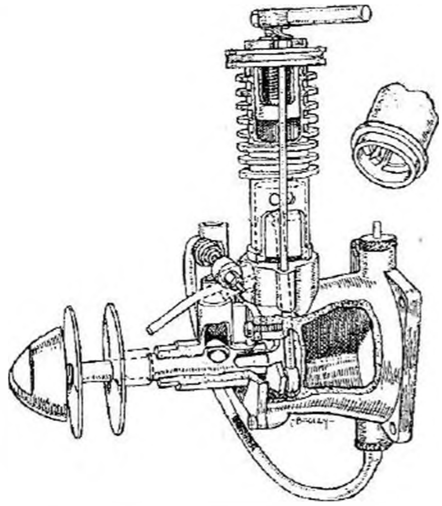
Manufacturers. Electronic Developments (Surrey), Ltd. Villiers Road, Kingston-on-Thames, Surrey.
Retail Price. £2 5s. 0d.
Delivery. Stock.
Spares. Complete service.
Type. Diesel.
Fuel Specified. E.D. Standard fuel.
Capacity. .9 cubic cms.
Weight. Bare 2¾ ozs.
Compression Ratio. 16 : 1 approx.
Power/Weight Ratio. .368 b.h.p./lb.
Mounting. Beam upright.
Recommended Airscrew. 8ins. dia., 4ins. pitch for free flight, 7 × 6ins. control line.
Recommended Flywheel. As supplied complete with coupling.
Tank. Metal, affixed to crankcase, detachable for C/L.
Bore. .437.
Stroke. .4in.
Cylinder. Aluminium alloy casting. One piece with crankcase with integral fins, two exhaust ports and transfer duct.
Cylinder Head. Plain, 3 retaining screws.
Contra Piston. Case hardened steel.
Crankcase. Aluminium alloy (see cylinder).
Piston. Flat top, cast iron, ground and lapped.
Connecting Rod type. Case-hardened steel.
Crankpin Bearing. Plain.
Crankshaft. Case-hardened steel, ground and honed.
Main Bearing. Plain.
Little End Bearing. Plain, hardened steel, honed.
Crankshaft Valve. Rotary disc.
Max. Revs. Claimed, Airscrew. 9.000 r. .m.
Cylinder Liner. Case-hardened steel.
Special Features. For inverted flying or for use in a control-line model where a larger tank may be necessary, the fitted tank can be easily removed by taking out the needle and unscrewing the retaining screw under the air inlet tube. The needle is then replaced and fuel lead attached to new tank.

Aeromodeller Analysis, October, 1949.



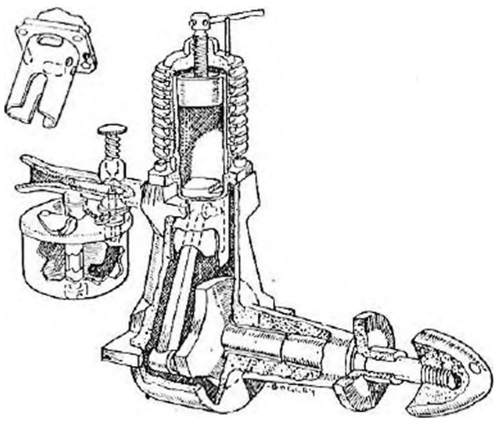
FROG "100."
Manufacturers' Name and Address. International Model Aircraft, Morden Road, Merton, S.W.19. 'Phone : Liberty 1041.
Retail Price. 48s.
Delivery. Ex stock.
Spares Service. Comprehensive (manufacturers and agents).
Type. Compression ignition "diesel" 2 cycle, rotary valve induction.
Specified Fuel. Equal parts by volume of ether meth. diesel fuel oil and lubricating oil (X.L.), etc.

Capacity. 1 cubic centimetre. .061 cubic inches.
Weight. Bare 3.125 ozs.
Compression Ratio. 12 : 1 to 20 : 1.
Mounting. Radial, upright or inverted.
Recommended Airscrew. Free flight 9ins. dia., 5ins. pitch. Control-line, 8ins. dia., 8in. pitch.
Recommended Flywheel. $1\frac{1}{2}$in. dia., weight $2\frac{3}{4}$ ozs.
Tank. Integral with crankcase, capacity 9 cubic cms.
Bore. .375in.
Stroke. .55in.
Cylinder. Meehanite, honed. Ports, two sets of exhaust and transfer ducts. Method of attachment, spigotted to crankcase with two holding down bolts through head.
Cylinder Head. Aluminium die-casting. Finned with two holding down bolts.
Contra Piston. Meehanite, centreless ground, adjusting screw and lever.
Crankcase. Aluminium die-casting.
Piston. Meehanite, centreless ground, flat-top.
Connecting Rod. Forged hyduminium.
Crankpin Bearing. Plain.
Crankshaft. Machined from solid.



Main Bearing. Meehanite, plain, drilled for valve.
Little End Bearing. Plain (silver steel gudgeon pin).
Crankshaft Valve. Rotary shaft (case hardened mild steel).
Special Features. Fully controllable from tick-over to maximum revs. High power to weight ratio. Special two-way adjustment is incorporated for needle valve. A cut-out is available as an extra.

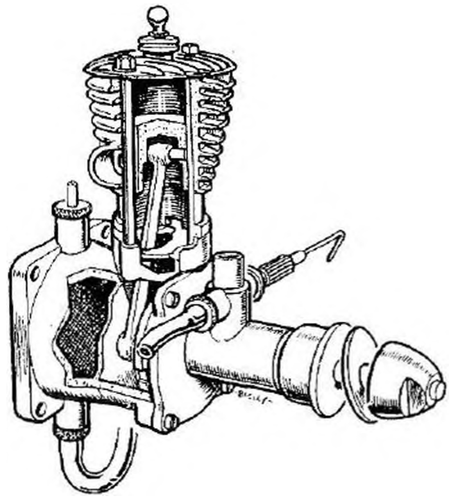
Aeromodeller Analysis, June, 1948.

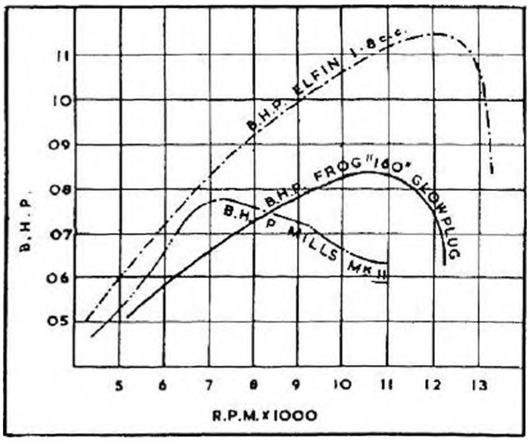


MILLS DIESEL (MARK II).
Manufacturer's Name and Address. Mills Bros. (Model Engineers), 2, Victoria Colonnade, Southampton Row, W.C.1. Tel. : Holborn 9630.
Retail Price. (Now superseded.) £3 10s.
Delivery. Immediate.
Spares. 24 hours service.
Type. Compression ignition " diesel."
Specified Fuel. Mills Diesel Fuel, or X.L. lubricating oil 1/3, paraffin 1/3, ether 1/3.
Capacity. 1.3 cubic cms. .08 cubic in.
Weight. Bare $3\frac{1}{2}$ ozs.
Compression Ratio. 14 : 1 to 17 : 1 according to speed.
Power/Weight Ratio. .3566 b.h.p./lb.
Mounting. Beam, upright and inverted.
Recommended Airscrews. Ultra steep climb 9 by 4ins. Natural climb 9 by 6ins. Control line 8 by 8ins. to 8 by 10ins.
Recommended Flywheel. $1\frac{3}{4}$in. dia. by $\frac{1}{2}$in. (approximately 5 ozs.).
Tank. Capacity 3 to 4 minutes.
Bore. 13/32in.
Stroke. $\frac{5}{8}$in.
Cylinder. Nitrous steel, two transfer and two exhaust ports.
Cylinder Head. Dural (screwed to cylinder).
Contra Piston. Carbon steel, ground and honed.
Crankcase. Magnesium, gravity cast, machined and polished, with final black chromated finish.
Piston. Tool steel defector top.
Connecting Rod. Forged high duty light alloy.
Crankpin Bearing. Plain.
Main Bearing. 2 part Plain Bearing.
Little End Bearing. Plain. Silver steel gudgeon pin.
Special Features. Engine speed is variable by adjustment of compression. Flexible jet tubes ensure steady fuel feed during steep climb. Built in cut-out. Compression lever screws into an adjusting screw which is tapped crossways to facilitate resetting to any condition which may otherwise be outside the range of the usual full turn of the lever. Extended needle valves are available and the fuel needle is also drilled to take a 1 mm. wire for the convenience of those who wish to add an extension of non-standard length.

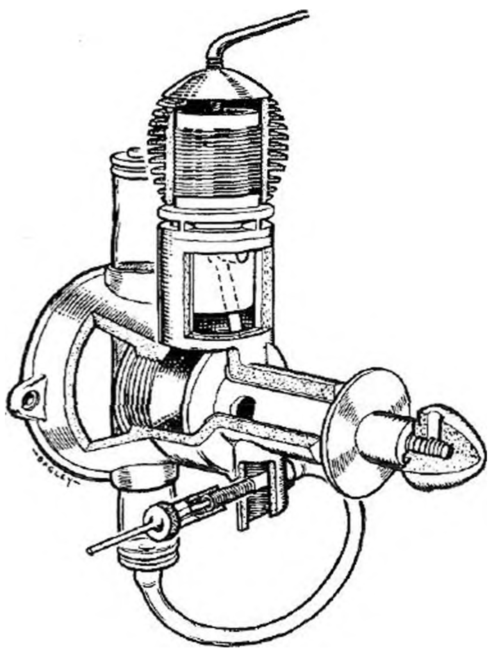
Aeromodeller Analysis, July, 1948.

" FROG 160 ".
Manufacturers. International Model Aircraft, Ltd., Morden Road, Merton.
Retail Price. 48s.
Delivery. Ex stock.
Spares. Ex stock.
Type. Glowplug.
Specified Fuel. Frog " Red Glow."
Capacity. 1.66 cubic cms.
Weight. 3.25 ozs.
Compression Ratio. 10 : 1.
Power/Weight Ratio. .379 b.h.p./lb.
Mounting. Radial, upright or inverted.
Recommended Airscrew. 8ins. dia. × 5ins. pitch.
Recommended Flywheel. 1½ins. dia. Weight, 3 ozs.
Tank. Integral with crankcase.
Bore. .485in.
Stroke. .55in.





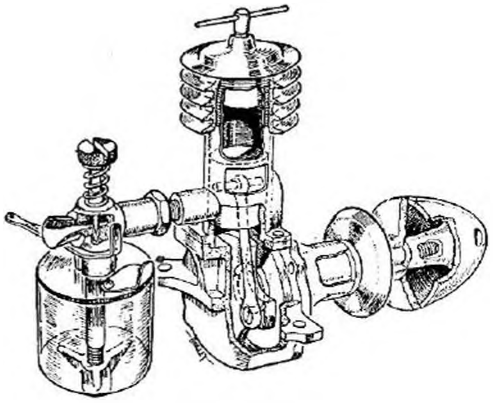
Cylinder. Hardened steel, 4 exhaust ports and 4 transfer ports. Attached by spigot and two holding down bolts.
Cylinder Head. 2 holding down bolts, Simmonds' lock nuts.
Contra Piston. Cast iron.
Crankcase. Aluminium die cast.
Piston. Cast iron flat top.
Connecting Rod. Hiduminium R.R.56.
Crankpin Bearing. Plain.
Crankshaft. Steel, heat treated.
Crankshaft Valve. Rotary.
Plug. ¼ in. K.L.G. " Miniglow " plug.
Main bearing. Plain (Meehanite).
Little End Bearing. Plain.
Special Features. Transfer ports are internal with bevelled tops to give direction to the mixture. The combined crankcase and fuel tank facilitate mounting as a " sidewinder " for control line flying.
Aeromodeller Analysis, August, 1949.



ELFIN 1.8.
Manufacturers. Aerol Engineering Co., Henry Street, Liverpool, 13.
Retail Price. £3 19s. 6d.
Delivery. Ex stock.
Spares. Ex stock.
Type. Compression ignition (Diesel).
Specified Fuel. Mercury No. 3.
Capacity. 1.8 cubic cms. .11 cubic in.
Weight. 2¼ ozs. bare.
Compression Ratio. Variable—16 : 1, 20 : 1.
Power/Weight Ratio. .472 b.h.p./lb.
Mounting. Radial, upright, side or inverted.
Recommended Airscrew. Control line 8 × 6ins. free flight 9 × 4ins.
Tank. Tubular, plastic.
Bore. .505in.
Stroke. 5.626in.
Cylinder. Tool steel hardened. 360° porting. Attached to crankcase by screw thread.
Cylinder Head. Duralumin, screwed to cylinder.

Contra Piston. Cast iron, screw adjustment.
Crankcase. High duty die cast aluminium alloy.
Piston. Cast iron, domed top.
Connecting Rod. Duralumin.
Crankpin Bearing. Plain.
Crankshaft. Steel.
Main Bearing. Cast iron, plain.
Little End Bearing. Plain.
Special Features. No screws are used in the manufacture of this engine, thus ensuring easy fitting of replacement parts. A heavy section crankshaft is used and the cylinder liner is subject to special treatment on running in.

Aeromodeller Analysis, July, 1949.



E.D. COMPETITION SPECIAL.

Manufacturers' Name and Address. Electronic Developments (Surrey), Ltd., 18, Villiers Road, Kingston-on-Thames, Surrey. Tel: Kingston 1223.

Retail Price. £3 17s. 6d.

Delivery. 7 days.

Spares Service. Complete spares service direct from factory with 14 days delivery.

Type. Compression Ignition "Diesel."

Specified Fuel. 1 part Ether Meth,. 1 part Castor Oil, 1 part Paraffin Oil (Burning).

Capacity. 2 cubic centimetres: .122 cubic inches.

Weight. Bare 6 ozs. With 11in. prop. 6½ ozs.

Compression Ratio. 16 : 1.

Mounting. Beam. Upright, or inverted.

Recommended Airscrew. Free flight 11ins. dia., 5ins. pitch. Control line 9ins. dia., 11ins. pitch.

Recommended Flywheel. 2in. dia., weight 4¼ozs. Obtainable from manufacturers price 10s. 6d. with washer and Simmonds nut.

Tank. Plastic, capacity, 4 to 4½ minutes running time.

Stroke. ⅝in. **Bore.** ½in.

Cylinder. Hardened steel, ground and honed to accuracy of 0.0001in. Ports: 2 exhausts, 1 induction, 2 transfer. The induction and transfer ports are soft soldered to the cylinder.

Cylinder Head. Duralumin with 5 cooling fins. Screwed on to cylinder with clearance for contra piston.

Contra Piston. Hardened steel, ground and honed to 0.0001in. limits, adjusted by means of a Vernier Compression Screw.

Crankcase. L.33 alloy. Pressure die-cast and webbed to give maximum strength.

Piston. Cast iron, ground and honed to 0.0001in. accuracy. Deflector milled to coincide with transfer port. No rings.

Connecting Rod. Hardened steel, bored and ground to 0.0001in. limits.

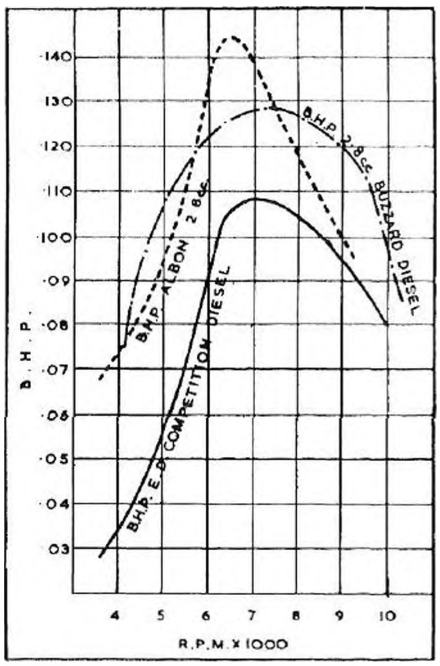
Crankpin Bearing. Plain bearing machined from solid integral with crankshaft.

Crankshaft. Machined from S.14 hardened and ground to 0.0001in. limits.

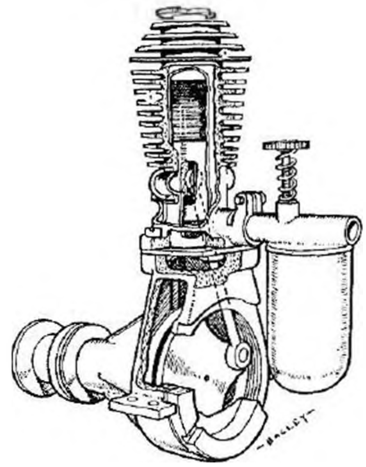
Main Bearing. Bearing housing made from L.33 material, pressure diecast, and bushed at each end with cast iron bushes, leaving 1/32in. clearance between bushes. The bushes are ground to 0.0002in. limits.

Special Features. Built in cut-out; Vernier compression adjustment: Specialised timing giving maximum possible power: Easily converted for inverted running by slackening carburettor locknut and reversing complete carburettor unit: Runs in either direction without affecting efficiency.

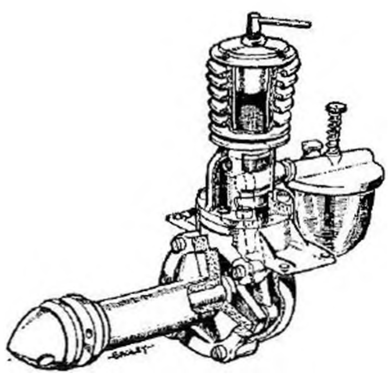
Aeromodeller Analysis, May, 1948



MASCO "BUZZARD."
Distributors. Model Accessories Supply Co., Stanbridge.
Retail Price. 4 high-pressure die castings only 21s. 4 high-pressure die castings and 17 finished or part finished components, 42s.
Spares. Ex stock.
Type. Compression Ignition, 2-stroke.
Specified Fuel. Mill's Blue Label.
Capacity. 2.8 cubic cms.
Weight. 6.7 ozs.
Compression Ratio. 16 : 1 adjustable.
Power/Weight Ratio. .264 b.h.p./lb.
Mounting. Beam. Upright or inverted.
Recommended Airscrew. 13in. dia. × 6in. pitch.
Tank. Capacity 3 minutes.
Bore. 13mm.
Stroke. 20mm.
Cylinder. 3% nickel chrome steel, hardened, ground twin exhaust ports.
Cylinder Head. Aluminium pressure die-casting.
Contra Piston. Cast iron ; ground.



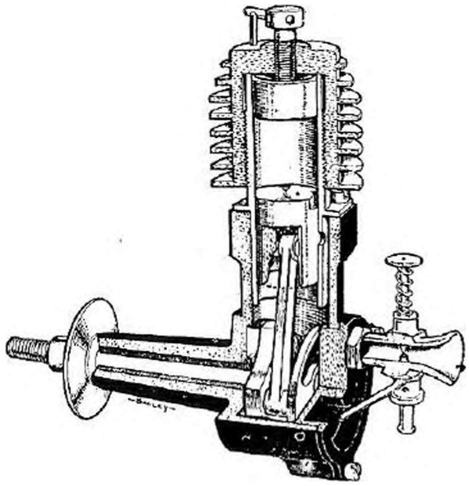
Crankcase. Aluminium pressure die-casting.
Piston. Cast iron, ground and lapped. Flat top.
Connecting Rod. Phosphor bronze machined from solid.
Crankshaft. 3% nickel steel. Hardened.
Main Bearing. Phosphor bronze.
Little End Bearing. Plain silver steel.
Aeromodeller Analysis, February, 1949.



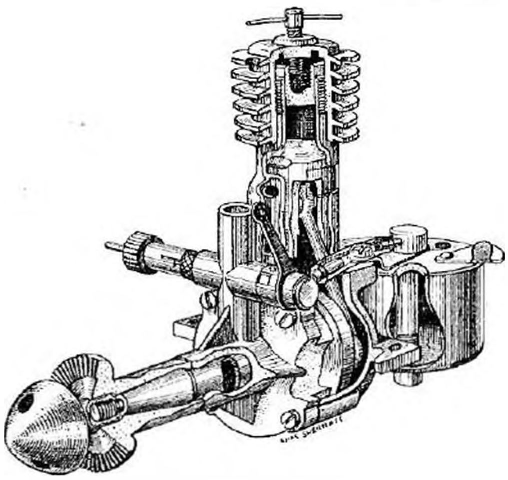
ALLBON 2.8.
Manufacturers. Allbon Eng. Co. (Sunbury), Ltd., Thames Street, Sunbury-on-Thames, Middlesex.
Retail Price. £4 16s. 0d.
Delivery. Ex stock.
Spares. All spares available. Repair service also available.
Type. Compression Ignition. Two stroke.
Specified Fuel. Mercury No. 3 or No. 6.
Capacity. 2.8 cubic cms. .17 cubic in.
Weight. Bare 6 ozs.
Compression Ratio. Adjustable.
Power/Weight Ratio. .384 b.h.p./lb.
Mounting. Beam, upright or inverted.
Recommended Airscrew. Free flight 11 × 6ins. Control line 10 × 8ins. or 9 × 8ins.
Recommended Flywheel. 2¼ × ½in. Weight 6 ozs. Standard flywheel can be supplied.
Tank. Transparent plastic moulding. Last drop design.
Bore. 9/16in.
Stroke. 11/16in.
Cylinder. Meehanite, machined all over and secured to crankcase by 4 screws.
Cylinder Head. Dural, screwed to cylinder.
Contra Piston. Meehanite. Compression adjusting screw in cylinder head.
Crankcase. Diecast aluminium with detachable front cover secured by 4 screws.
Piston. Meehanite, flat topped. Gudgeon pin carrier of dural secured by screw through piston crown.
Connecting Rod. Forged Hyduminium.
Crankpin Bearing. Plain.
Crankshaft. Heat treated steel. Machined from one piece with crankpin and drilled for oil feed to bearings. Bearing surfaces ground and polished.
Main Bearing. Two heavy duty white metal bushes pressed into end cover.
Little End Bearing. Plain. Hollow silver steel Gudgeon pin.
Special Features. Piston lapped after assembly with Gudgeon pin carrier and connecting rod.
Aeromodeller Analysis, December, 1948.

MILLS DIESEL 2.4 c.c.
Manufacturers. Mills Bros. (Model Engineers) Ltd., 143, Goldsworth Road, Woking, Surrey.
Retail Price. £5 10s. 0d.
Delivery. Immediate.
Spares. Immediate.
Type. Compression ignition engine.
Specified Fuel. Mills.

Capacity. 2.4. cubic cms. .147. cubic in.
Weight. 6 ozs.
Compression Ratio. Variable 8 : 1 to 24 : 1.
Power/Weight Ratio. .486 b.h.p./lb.
Mounting. Beam, upright, and inverted.
Recommended Airscrew. 10ins. × 5ins.
Recommended Flywheel. 2ins. O.D. × 7/16in. thick. 5½ ozs.
Tank. Separate stunt tank supplied as standard equipment.
Bore. .500in.
Stroke. .75in.
Cylinder. Chromium/Molybdenum steel 2 ports. Cylinder bolts.
Cylinder Head. Dural screwed.
Contra Piston. Ground and lapped central screw.
Crankcase. Magnesium pressure die casting.
Piston. Deflector head. No rings.
Connecting Rod. R.R.56.

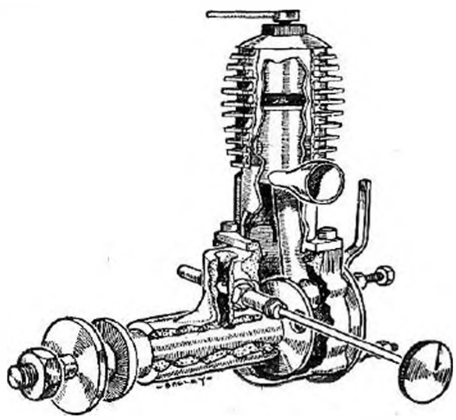


Main Bearing. Phosphor bronze.
Little End Bearing. Plain.
Crankshaft Valve. Rotary disc.
Aeromodeller Analysis, May, 1949.

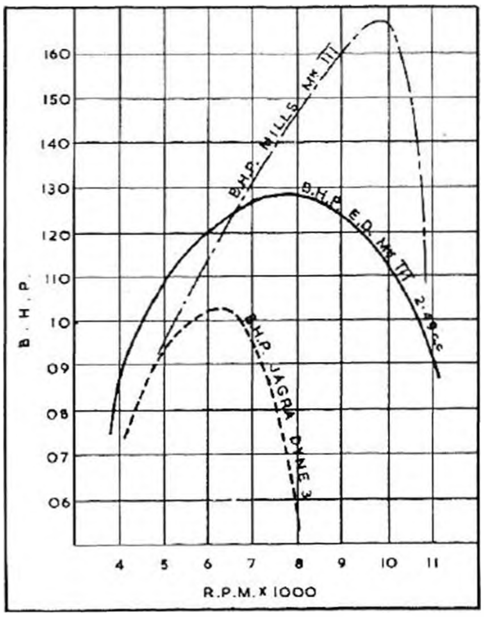


E.D. MARK III.
Manufacturer. Electronic Developments, Ltd., 18, Villiers Road, Kingston-on-Thames
Retail Price. £4 5s. 0d.
Delivery. Ex stock.
Spares. 48 hours.
Type. Compression ignition (Diesel).
Specified Fuel. Equal parts Castor oil, Paraffin, Ether plus 2% Amyl Nitrate. Mercury No. 3, or No. 6 or mix 20% Mercury No. 6 with equal parts of first mixture.
Capacity. 2.49 cubic cms. .151 cubic in.
Weight. Bare 7 ozts.
Compression Ratio. Variable.
Power/Weight Ratio. .293 b.h.p./lb.
Mounting. Beam, upright and inverted.
Recommended Airscrew. Free flight, 10 × 5ins. Control-line 9 × 9ins.
Recommended Flywheel. 5 ozs.
Tank. Unit with engine.
Bore. .550in.
Stroke. .625in.
Cylinder. Hardened steel, 2 ports.
Cylinder Head, Screwed to cylinder.
Contra Piston. Centre adjusting screw.
Crankcase. Pressure die cast.
Piston. Cast iron, lap fit no rings.
Connecting Rod. Hardened steel.
Main Bearing. Roller bearing.
Little End Bearing. Plain.
Crankshaft Valve. Shaft type.
Plug. ¼in. × 32 T.P.I. when used Glo-plug.
Aeromodeller Analysis, April, 1949.

JAGRA DYNE "3."
Distributors. Watkins Stores, Cardiff.
Retail Price. £5 10s. 0d.
Delivery. Ex stock.
Spares. Ex stock.
Type Compression Ignition. *Two stroke.*
Specified Fuel. Mills Blue Label.
Capacity. 3 cubic cms. .183 cubic in.
Weight. Bare 6.9 ozs.
Power/Weight Ratio. .239 b.h.p./lb.
Compression Ratio. 16 : 1 adjustable.
Mounting. Radial. Designed for inverted position but will run in any position



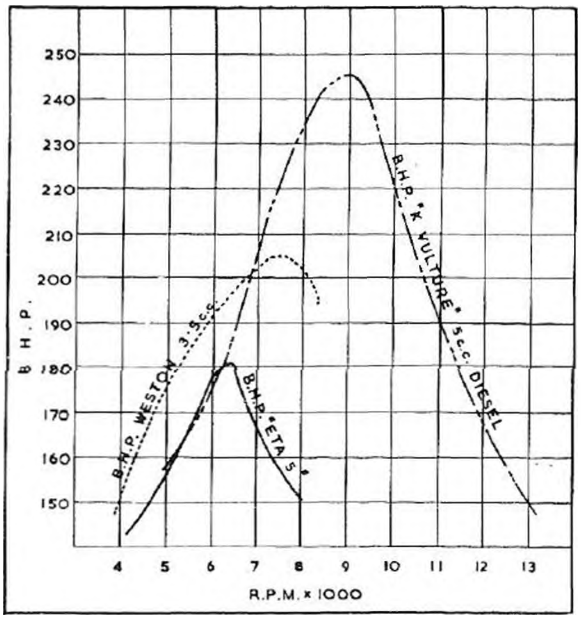
Recommended Airscrew. 12ins. dia., 6ins. pitch. Free flight.
Tank. No tank provided.
Bore. $\frac{5}{8}$in.

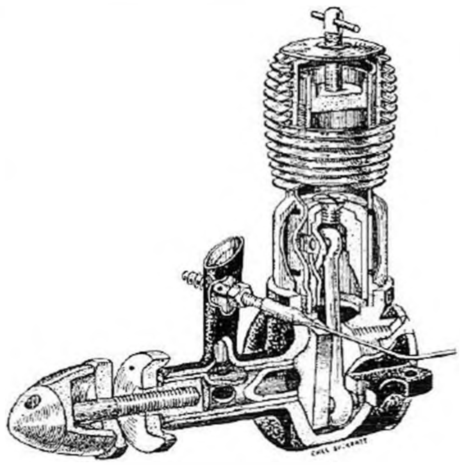


Stroke. $\frac{5}{8}$in.
Cylinder. Hardened steel, honed and ground to 0.0001in.
No. of Ports. 1 inlet, 1 transfer, 1 exhaust.
Cylinder Head. Cast dural screwed to cylinder 11 fins.
Contra Piston. Cast iron, ground and honed.
Crankcase. Single diecast in dural.
Piston. Cast iron, ground and honed. Flat top.
Connecting Rod. Phosphor bronze, machined from solid bar.
Crankpin Bearing. Plan, integral with connecting rod.
Main Bearing. Housing integral with crankcase, bushed with cast iron.
Little End Bearing. Plain.
Crankshaft Valve. Rotary valve in crankshaft.
Special Features. Jagra speed control valve which permits full engine control for control-line flying. The engine is also made with a fixed tank including cut-out.

Aeromodeller Analysis, October, 1948.

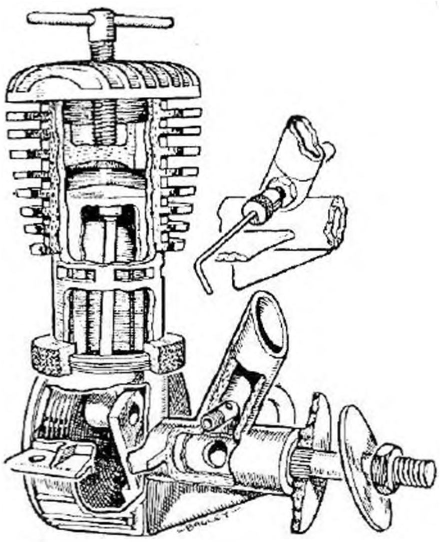
WESTON 3.5 c.c. STUNT SPECIAL.
Manufacturer. Messrs. Weston Model Aero Supplies, 1, Oxford Street, Weston-super-Mare.
Retail Price. £4 10s. 0d inclusive of purchase tax.
Delivery. Ex stock.
Spares. Ex stock Engine must be returned for servicing.
Type. Compression ignition (Diesel).
Specified Fuel. Mercury No. 3.
Capacity. 3.5 cubic cms., .215 cubic in.
Weight. Bare $4\frac{1}{4}$ ozs.
Compression Ratio. Variable.
Power/Weight Ratio. .740 b.h.p./lb.
Mounting. Beam, upright and inverted.





Recommended Airscrew. 9 × 6 Tru-flo Stunt. 8 × 8 Tornado Toothpick Speed. Use standard flywheel spinner.
Tank. Not supplied.
Bore. .625in., 15.375mm.
Stroke. .687in., 16.450mm.
Cylinder. Heat-treated Vigilant steel.
Cylinder Head. High grade Duralumin.
Contra Piston. 5% nickel chrome steel.
Crankcase. Die cast aluminium.
Piston. Meehanite.
Connecting Rod. Hyduminium alloy.
Main Bearing. Plain.
Little End Bearing. Plain.
Valve. Rotary crankshaft.
Special Features. Light alloy bolt type crankshaft extension incorporating spinner to reduce broken crankshaft. Replacement bolts 2s. each. Special Flywheel Spinner available for speed flying.

Aeromodeller Analysis, June, 1949.



"K" VULTURE 5 c.c.

Manufacturers. The "K" Model Engineering Co., Ltd., Gravesend.

Retail Price. £4 9s. 6d. Complete with glo-plug head.

Delivery. 7 days.

Spares. 7 days.

Type Compression Ignition. Diesel with glo-plug conversion.

Specified Fuel.

Diesel:	Lubricating oil	20%
	Paraffin oil	35%
	Ether	35%
	Castor oil	10%
Glo-Plug:	Methanol	66⅔%
	Castor oil	33⅓%

Capacity. 5 cubic cms. .32 cubic in.

Weight. Bare 7½ ozs.

Compression Ratio. Variable.

Power/Weight Ratio. .5248 b.h.p./lb.

Mounting. Beam. Both upright *and* inverted.

Recommended Airscrew. Free flight 13ins. dia. and 6ins. pitch. Control line, 10ins. dia. and 8ins. pitch.

Recommended Flywheel. 8 ozs.

Bore. ¾in.

Stroke. 11/16in.

Cylinder. Hardened steel, attached by retaining nut. 4 ports.

Cylinder Head. Aluminium alloy screwed to cylinder.

Contra Piston. Hardened steel, ground and lapped adjusted by compression screw.

Crankcase. Die cast aluminium alloy L.33.

Piston. Steel, hardened and ground with domed top and no rings.

Connecting Rod. High Tensile hardened steel.

Crankpin Bearing. Hardened steel, plain.

Crankshaft. Nickel steel hardened and ground.

Main Bearing. Plain type lapped hardened steel.

Little End Bearing. Ball and socket joint.

Crankshaft Valve. Shaft.

Glo-Plug. Mini-glow manufactured by Smith's Motor Accessories, Ltd.

Cylinder Liner. Hardened steel.

Special Features. Light weight with easy glo-plug conversion and no screws.

Aeromodeller Analysis, January, 1949.

E.T.A. 5

Manufacturer's Name and Address. Eta Instruments, Ltd., Otterspool Way, Watford By-Pass, Watford, Herts. Tel: Watford 3440/2725.

Retail Price. £4 12s. 6d.

Delivery. Ex stock from stockists.

Spares. All available ex works; special repair and overhaul schemes available.

Type. Compression Ignition "Diesel."

Specified Fuel. 3 parts Ether, 2 parts Gas Oil, 1 part Castrol XL (2½% Amyl Nitrate may be added).

Capacity. 4.99 c.cms. .305 cubic in.

Weight. 9½ ozs.

Compression Ratio. Variable 12 : 1 to infinity.

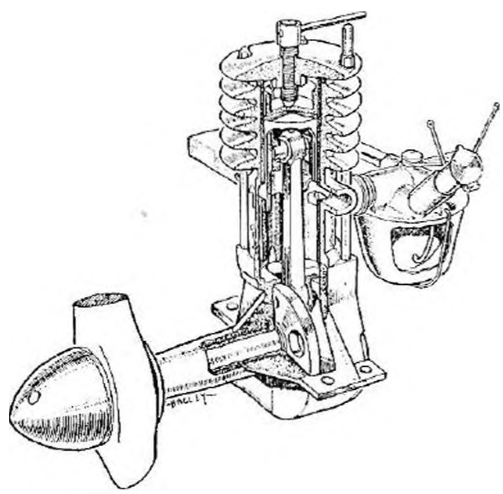
Power/Weight Ratio. .304 b.h.p./lb.

Mounting. *Beam, upright or inverted.*

Recommended Airscrews. Control line 1i2n. dia., 10in. pitch; 11in. dia., 10in. pitch; 10in. dia., 12in. pitch. Free flight 14in. dia. 7in. pitch; 13in. dia., 8in. pitch.

Recommended Flywheel. 2in. dia. × ⅝in. (1 9/16in. min.).

Tank. Capacity 2-4 min.



Bore. .6718in.

Stroke. .8593in.

Cylinder. Liner ground externally, oil *shrunk into casing, bore ground honed and* polished.

Cylinder Head. Fins tapered for maximum heat dissipation.

Contra Piston. Ground and lapped. Adjusted by fine pitch hardened screw, with setting stop.

Crankcase. Fully machined for maximum compression. Main bearing sleeve ground externally, oil shrunk into housing, bore honed. No gaskets, all joints metal-to-metal.

Piston. Special design—no gudgeon pin holes pass through piston. Ground and lapped individually to cylinder sizes.

Connecting Rod. High duty alloy. Machined from solid. Eyes burnished to size and fitted with lubrication ducts.

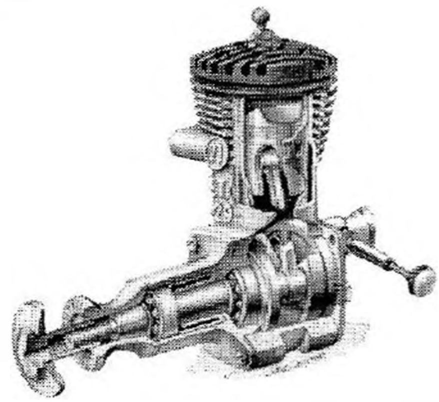
Crankpin Bearing.

Main Bearing. Heat treated meehanite.

Special Features. Built-in cut-out operating on fuel cut-off system not air bleed. Each unit independently tested by *two* inspectors.

Aeromodeller Analysis, September, 1948.

" ETA 29," G.P. UNIT MODEL " A."



Manufacturers. Eta Instruments, Ltd. (Miniature Engine Division), Bypass, Watford, Herts.

Retail Price. £5 19s. 6d.

Delivery. Ex stock.

Spares. Complete service.

Type. Glowplug ignition high performance racing engine.

Specified Fuel. 70% Methyl Alcohol, 30% Castrol R.

Capacity. 4.85 cubic cms., .296 cubic in.

Weight. 6.5 ozs.

Compression Ratio. 9 : 1 approx.

Power/Weight Ratio. .815 b.h.p./lb.

Mounting. Beam, upright or inverted.

Recommended Airscrews. Free flight 10 × 5ins., stunt 9 × 6ins., speed 8 × 9ins.

Recommended Flywheel. Two types supplied by manufacturers.

Tank. None supplied. Instal for suction feed—not gravity.

Bore. .750in.

Stroke. .672in.

Cylinder. One piece with crankcase. Pressure die-casting with integral fins and exhaust duct. Large volume transfer duct. Two port design.

Cylinder Liner. Meehanite, shrunk in; ground externally and internally, bored and honed. 9 rectangular ports.

Cylinder Head. Pressure die casting, multi-finned. Special combustion chamber design for high speed efficiency. Treated black. Lapped joint face, 6 studs.

Front Housing. Pressure diecasting, lightweight design, fully enclosed ballraces. Retained by 4 studs.

Crankcase. See cylinder.

Piston. Pressure diecasting, ultra lightweight deflector pattern. Twin lapped extra low pressure rings.

Connecting Rod. Light alloy bronze bushes both ends.

Rear Cover. Pressure diecasting. Friction free design for rotary valve seal, retained by 4 studs.

Crankshaft. Heat-treated nickel chrome alloy steel, ground on all working diameters.

Main Bearing. One ¼in. and one ⅜in. selected grade high speed ballraces fully enclosed.

Gudgeon Pin. Tubular high strength alloy. Ground and fitted end pads.

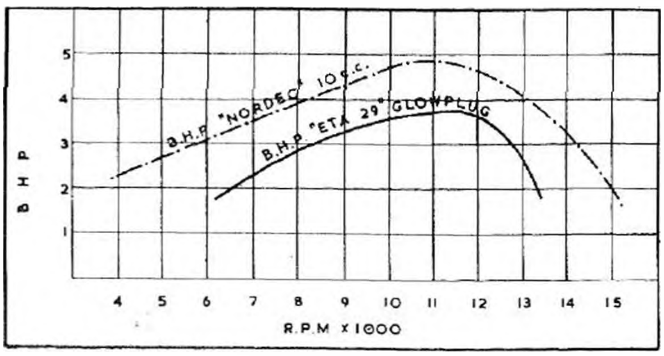
Valve. Disc type. Lightweight pressure casting, bronze bushed. Large bore venturi and discharge port.

Ignition. Glowplug.

Plug. K.L.G. " Miniglow," ¼ × 1/32in.

Special Features. Extreme compactness for reduced frontal area. All light alloy parts of specially selected Hiduminium alloys. All locating and seal faces fully machined. Non-slip collet drive hub nut and washer anti-rust coated. Hub nut tapped 6 B.A. for spinner fittings. ETAmatt standard finish, with bright dural and brass fittings.

Aeromodeller Analysis, September, 1949.



NORDEC R.G. 10.

Manufacturer. North Downs Engineering Co., *Godstone Road, Whyteleafe, Surrey.*

Retail Price. £12 0s. 0d.

Delivery. Ex stock.

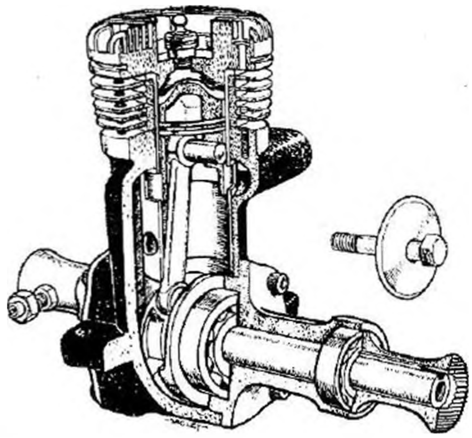
Spares. Ex stock all parts.

Type. Glo-plug.

Specified Fuel. 3 parts Methanol, 1 part Castor oil.

Capacity. 0.60 cubic in. 9.98 cubic cms.

Weight. Bare 16 ozs.



Compression Ratio. 10 : 1.
Power/Weight Ratio. .480 b.h.p./lb.
Mounting. Beam, upright and inverted.
Recommended Airscrew. Running in 12 × 12ins. Sport 10 × 10ins. Speed 9 × 10ins.
Recommended Flywheel. 6 to 7 ozs.
Tank. No tank supplied.
Bore. 0.940 in.
Stroke. 0.875in.
Cylinder. Meehanite, 2 ports attached by six 4 B.A. cap head Allen screws 1in. long.
Cylinder Head. D.T.D. 255 attached by six 4 B.A. cap head Allen screws 1in. long.
Cylinder Liner. Meehanite.
Crankcase. D.T.D. 424 sand casting.
Piston. D.T.D. 287 die casting with deflection top and two rings.
Connecting Rod. 2-L.40 drop forged.
Crankpin Bearing. Bushed phosphor bronze.
Crankshaft. 3% nickel steel, case hardened and ground.
Main Bearing. 2 cage type ballraces.
Little End Bearing. Plain 2-L.40.
Crankshaft Valve. Disc type D.T.D.424.
Plug. ¼in. × 40 T.P.I., K.L.G.

Aeromodeller Analysis, March, 1949.

INTERNATIONAL CONTEST SERVICE

It has been the heart cry at most international meetings this year : Where are the British entries? In nearly every case, invitations *had* been sent out—what became of them, where they were bottle necked or why no opportunity was offered for British enthusiasts who could, on the winners' showing, have done quite a lot for British aeromodelling prestige abroad, we hesitate to say. Formal announcements of every noteworthy foreign meeting were, in fact, received at the *Aeromodeller* office, usually too late for publication in our columns that would give would-be entrants time to make the necessary arrangements, but in perfectly good time for us to go along and report them ourselves.

With a few solitary exceptions, Honnest-Redlich at the French Radio Control Contest, the Weston Control liners at the Paris Control Line Contest, a party which attended a training camp in Switzerland, and an odd representative at a Dutch meeting, there were no British teams entered at advertised international meeting. We exclude Flers, as a social rather than a contest occasion !

On the other hand, when reports have been published of good times had by all—except the British !—enthusiasts have been quick to write in " if only I'd known ! " To avoid this too little too late contest advice the *Aeromodeller* invite all who have a potential interest in overseas contests to forward their names and addresses, when we will send them personal notices of worth while events, and give any information on routes, continental travel and so on, that we may have gained in our by no means unextensive travels.

The general continental procedure is first to invite an *official* British team through the usual channels, but equally to invite all interested unofficial modellers, who, in the absence of a British team may class themselves as such. In all cases, very special terms to cover the cost of their stay are made—about half normal tourist costs—and in very many instances lodging and meals are paid by the organisers, so that competitors have only their fares to pay ! Prizes are on the generous side, including engines, many American, trophies and other worthwhile awards. Commemorative medals are also usually distributed to all competitors. Control line stunt standard is well below British, speed at least as good, while to win in rubber, power or sailplane events, would be a grand achievement, not beyond our better flyers.

Send names and addresses then to the *Aeromodeller*, with a note of particular interests and we will do the rest to ensure that British aeromodellers get some foreign flying next season !

NATIONAL MODEL AIRCRAFT GOVERNING BODIES

In most instances the full-size national aero club is directly responsible for the conduct of model aeronautics, but in some cases, as for example the S.M.A.E., a specialist group has been delegated to handle affairs on behalf of the parent body. To avoid delays in correspondence any letters dealing with model aeronautics should always be very clearly marked as such.

GREAT BRITAIN	The Society of Model Aeronautical Engineers, Londonderry House, Park Lane, London, W.1.
ARGENTINE	Aero Club Argentino (Seccion Aeromodelismo), Rodriguez Piera 240, Buenos Aires.
BELGIUM	Federation de la Petite Aviation Belge, 1, Rue Montoyer, Brussels.
BRAZIL	Aero-Clube de Brasil, 31, Rua Alvaro Alvim, Rio de Janiero.
CANADA	Model Aeronautics Association of Canada, 1555, Church Street, Windsor, Ontario.
CHILE	Club Aereo de Chile, Santa Lucia 256, Santiago.
CUBA	Club de Aviacion de Cuba, Edificio Larrea, Havana.
CZECHOSLOVAKIA	Aeroklub Republiky Ceskoslovensko, Smecky 22, Prague II.
DENMARK	Det Kongelige Aeronautiske Selskab, Norre Farrimagsgade 3 K, Copenhagen.
EGYPT	Royal Aero-Club d'Egypte, 26 Rue Sherif Pacha, Cairo.
FINLAND	Suomen Ilmailuliitto, Mannerheimintie 16, Helsinki.
FRANCE	Fédération Nationale Aeronautique (Modèles Reduits), 7, Avenue Raymond Poincare, Paris XVI. Aero-Club de France (Modèles Reduits), 6, Rue Galilee, Paris. *(Communications should always be addressed in duplicate to both these bodies as they jointly share responsibility for certain aspects of aeromodelling.)*
HOLLAND	Koninklijke Nederlandsche Vereeniging voor Luchvaart, Anna Paulownaplein 3, The Hague.
HUNGARY	Magyar Repulo Szovetseg, V. Sztalin-ter 14, Budapest.
ICELAND	Flugmalafelag Islands, P.O. Box 234, Reykjavik.
INDIA	All India Aeromodellers' Association, 8, Lee Road, Calcutta, 20.
IRELAND	Model Aeronautics Council of Ireland, Abbey Buildings, Middle Abbey Street, Dublin.
ITALY	Federazione Aeromodellistica Nationale Italiana (F.A.N.I.), Via Cesare Beccaria 35, Rome.
JUGOSLAVIA	Aero-Club Jugoslavije, Uzun, Mirkova IV/I, Belgrade.
LUXEMBOURG	Aero-Club du Grande-Duche de Luxembourg, 5, Avenue Monteray, Luxembourg.
MONACO	Monaco Air-Club, 8, Rue Grimaldi, Monaco.
NEW ZEALAND	New Zealand Model Aeronautical Association, c/o Mr. L. R. Mayn, 120, Campbell Road, Onehunga, Auckland.
NORWAY	Norske Aero Club, Ovre Vollgae 7, Oslo.
PERU	Aero Club del Peru, Lima.
POLAND	Aeroklub Rzeczypospolitej Polskiej, Ul. Hoza 39, Warsaw.
PORTUGAL	Aero Club de Portugal, Avenida da Liberdade 226, Lisbon.
RUMANIA	Aeroclubul Republico al Romaniei, Lascar Catargi 54, Bucharest.
SOUTH AFRICA	South African Model Aeronautic Association, 302, Grand National Buildings, Rissik Street, Johannesburg.
SPAIN	Real Aero-Club de España (Subeseccion de Aeromodismo), Carrera de Jan Jeronimo 19, Madrid.
SWEDEN	Kungl. Svenska Aeroklubben, Malmskillnadsgatan 27, Stockholm.
SWITZERLAND	Aero Club de Suisse (Modèles Reduits), Hirschengraben 22, Zurich.
SYRIA AND LEBANON	Aero Club de Syrie et du Libon, Beyrouth.
TURKEY	Turk Hava Kurumu (T.H.K.), Enstitu Caddesi, 1. Ankara.
TRINIDAD	
UNITED STATES OF AMERICA	Academy of Model Aeronautics, 1025, Connecticut Avenue, Washington 6, D.C.
U.S.S.R.	Aero Club Central de l'U.S.S.R., V. P. Tchkalov, Moscou-Touchino.
URUGUAY	Aero-Club del Uruguay, Paysandu 896, Montevideo.

1949 Wakefield Leaders : *Left to right :* Dallaway (proxy for Woodley, N.Z.); Taylor (proxy for March, N Z.); Boyle, U.S.A.; Sadorin, Italy; Blomgren, Sweden; Borgesson, Sweden; Ellila, Finland; Loates, Canada; Fletcher, U.S.A.; Warring, G.B.; Naudzius, U.S.A.; Petiot, France.

1949 INTERNATIONAL WAKEFIELD TROPHY CONTEST

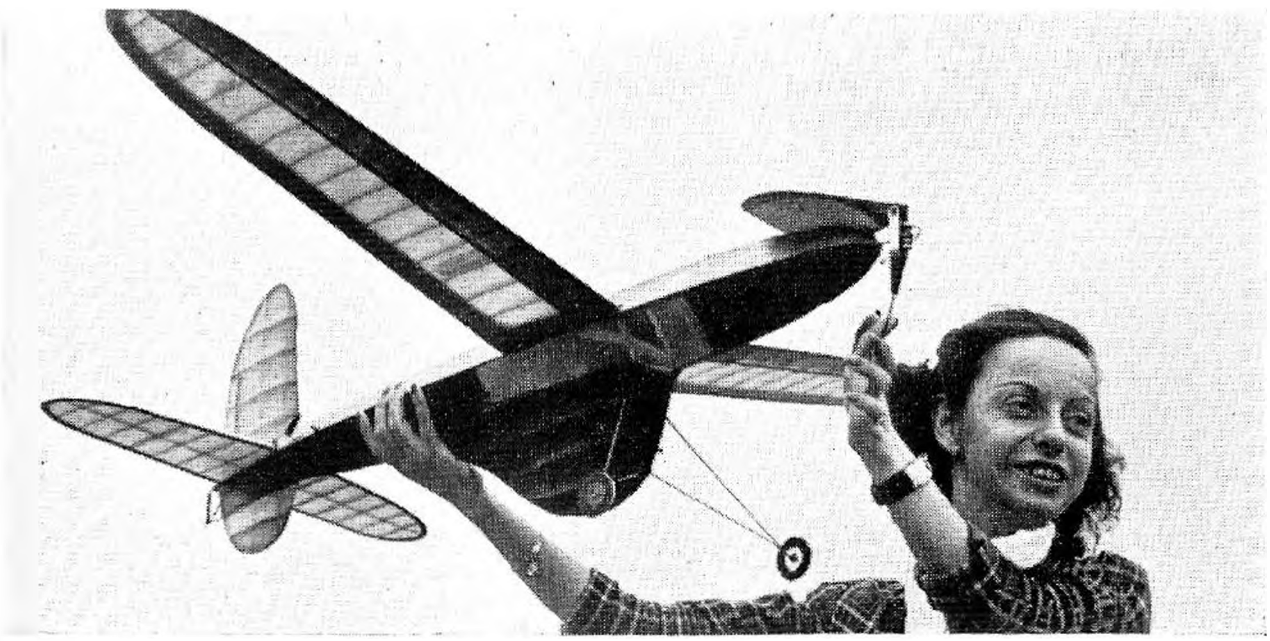
Placing	Contestant	Country	First Flight	Second Flight	Third Flight	Total	Average
1 (22)(4)	Ellila, A. S.	Finland ...	122	235	192.9	549.9	183.3
2 (5)(6)	Sadorin, E.	Italy	192.2	128.7	218.8	539.7	179.9
3 (1)(1)	Fletcher, W	U S.A. ...	295.8	127	116.6	539.4	179.8
4 (12)(5)	Naudzius	U.S.A. ...	155.6	183.8	192.9	532.3	177.43
5 (10)(14)	Loates, F.	Canada ...	167	118.6	186.3	471.9	157.3
6 (16)(11)	Borgesson, B.... ...	Sweden ...	149.4	151.9	168.8	470.1	156.7
7 (2)(9)	March, B. B. (Taylor)	New Zealand ...	290.4	12.5	166.2	469.1	156.37
8 (58)(8)	Blomgren, A.... ...	Sweden ...	39.4	266.3	138.3	444	148
9 (9)(15)	Smith, E.	Great Britain...	168.5	113.7	151.5	433.7	144.57
10 (8)(13)	Warring, R. H. ...	Great Britain...	182.4	104.6	137.9	424.9	141.63
11 (32)(51)	Woodley, J. St. (Dallaway)	New Zealand ...	103	6	308	409	136.33
12 (31)(17)	McKay, W. M. ...	Canada ...	103.8	173.2	128.3	405.3	135.1
13 (11)(10)	Petiot, J.	France... ...	158.9	143.9	97.1	399.9	133.3
14 (24)(2)	Boyle, J.	U.S.A.... ...	115.4	269.3	...	384.7	128.23
15 (13)(12)	Lim Joon, A. K. (Tangney)	Australia ...	154	147	68.8	369.8	123.27
16 (15)(3)	Holland, F.	Great Britain...	150	211	...	361	120.33
17 ...	Kennedy, D. R. (Salt)	New Zealand ...	96.9	101.5	147.4	345.8	115.27
18 ...	Osbourne, N.... ...	Ireland ...	130.7	87.4	117.2	335.3	111.77
19 ...	Ferber, M.	Belgium ...	135	180.5	15.5	331	110.33
20 ...	Lidgard, E.	U.S.A.... ...	72	77.1	159.2	308.3	102.77

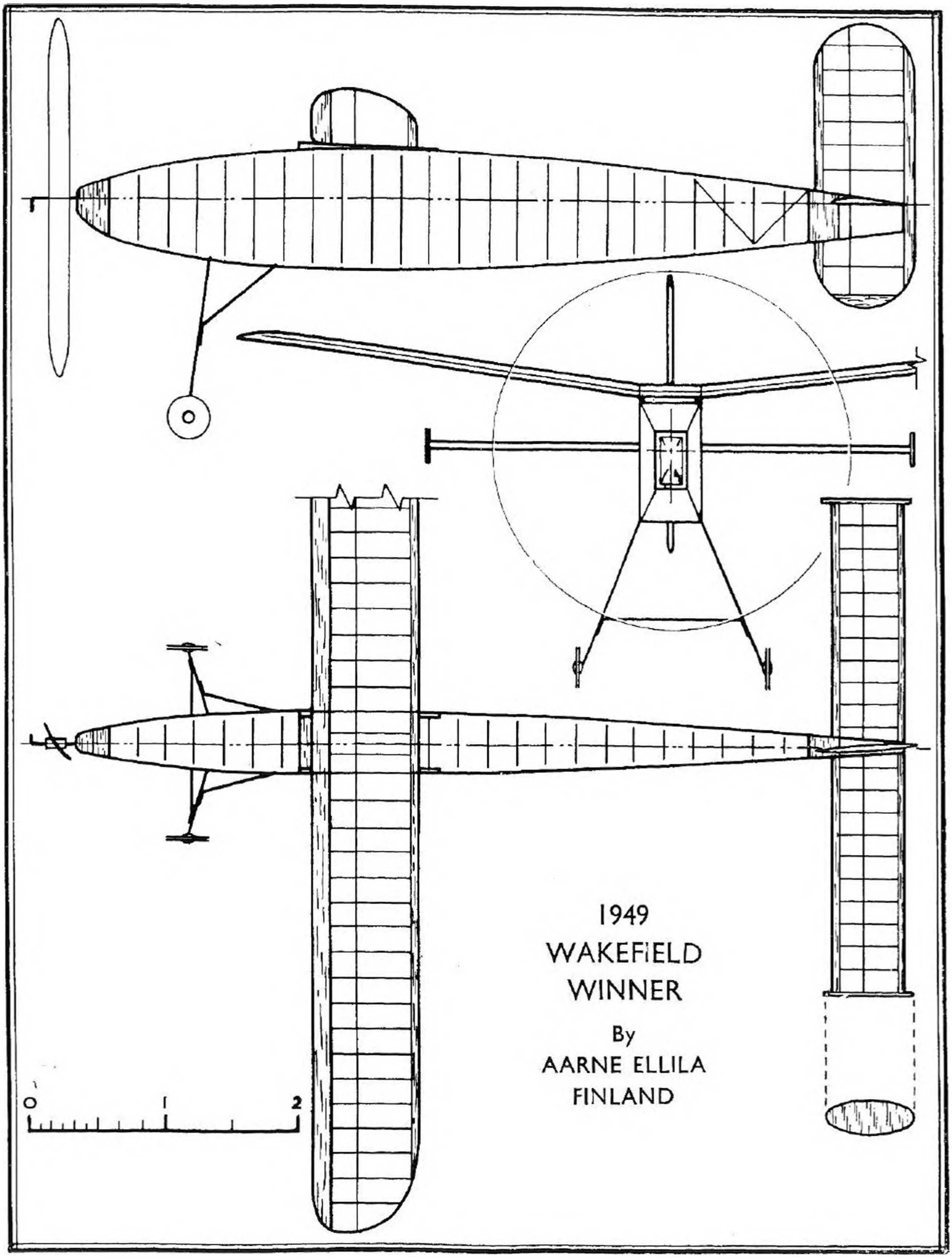
Placing	Contestant	Country	First Flight	Second Flight	Third Flight	Total	Average
21 (6) ...	Joostens, Y.	Belgium ...	190	12.5	105	307.5	102.5
22 ...	Bland, B. A. (Pitcher)	Trinidad ...	146.7	85.2	73.3	305.2	101.73
23 ...	Ford, A.	Canada ...	11.6	9.9	281.2	302.7	100.9
24 ...	Peterson, A.	U.S.A.... ...	64	106.8	127.6	298.4	99.47
25 ...	Fullarton, J.M. (North)	Australia ...	5.8	80.2	209.9	295.9	98.63
26 ...	Bethwaite, F.... ...	New Zealand ...	114.8	78.3	87	280.1	93.37
27 (3) ...	Pregaldien, H. (Joostens, G.)	Belgium ...	278	...	...	278	92.67
28 ...	Fitzpatrick, G. ...	Ireland ...	90.4	101.5	80	271.9	90.63
29 ...	Chesterton, R. ...	Great Britain...	151.2	109.8	9	270	90
30 ...	Heiret, J.	Norway ...	109	83.1	73.8	265.9	88.63
31 ...	Von Ahlenfeldt, C. (Hinks, W.)	South Africa ...	11.1	134.3	120	265.4	88.47
32 (4) ...	Galenne	France... ...	252.7	...	...	252.7	84.23
33 ...	Cassola, F.	Italy	110.8	134.6	4.2	249.6	83.2
34 ...	Janni, G.	Italy	81.2	165.6	...	246.8	82.27
35 ...	Drew, G.	Ireland ...	123.2	119.5	...	242.7	80.9
36 ...	Hanford, R.	U.S.A.... ...	...	151.4	86.3	237.7	79.23
37 ...	Segerfelt, L.	Sweden ...	16.6	74.5	135.5	226.6	75.53
38 ...	Jossien, R.	France... ...	103.9	9.6	109.7	223.2	74.4
39 ...	Hoff, Per	Norway ...	119.5	92.7	4	216.2	72.07
40 ...	Sala, J. (Hardman) ...	South Africa ...	100	64.5	51.4	215.9	71.97
41 ...	Serres	France... ...	7.3	103.7	96	207	69
42 ...	Millar, G. B.	Ireland ...	115.4	83.2	8.1	206.7	68.9
43 ...	Walter, L. (Wood) ...	Canada ...	77.1	103.3	23.2	203.6	67.87
44 ...	Lutjens, H. (v.d.Caay)	Holland ...	108.2	78.4	7.2	193.8	64.6
45 ...	Bachli, B.	Switzerland ...	101.5	89.2	...	190.7	63.57
46 ...	Lippens, G.	Belgium ...	9.8	67.3	110	187.1	62.37
47 ...	Gregory, E. O. (Bolton)	Australia ...	185.4	...	...	185.4	61.8
48 ...	Copet	France... ...	10	92.8	77.4	180.2	60.07
49 ...	Molbach, T.	Norway ...	87.5	90.1	...	177.6	59.2
50 ...	Hewitson, R. N. (Copland)	New Zealand ...	57.7	43.2	71.6	172.5	57.5
51 ...	Lansky, P. (Moon) ...	Czechoslovakia	10.1	64	95	169.1	56.37
52 ...	Browne, D.	Ireland ...	44.3	10.7	108.1	163.1	54.37
53 ...	Macdonald, A. (Eales)	New Zealand ...	23.5	46	93	162.5	54.17
	Stark, S.	Sweden ...	36.6	125.9	...	162.5	54.17
54 ...	De Kat, H. L. ...	Holland ...	141.7	...	...	141.7	47.23
55 ...	De Jong, J.	Holland ...	50	90.9	...	140.9	46.97
56 ...	Baumann	Switzerland ...	59.5	78.3	...	137.8	45.93
57 ...	Munnik, R. (Dubery)	South Africa ...	101	32.5	...	133.5	44.5
58 ...	Wirth, K.	Switzerland ...	6.5	49.6	76.6	132.7	44.23
59 ...	*Haslach, T.*	*Switzerland* ...	57.2	74.7	...	131.9	43.97
60 ...	Felstead, B. N. (Brockman)	Australia ...	10.9	56.6	58	125.5	41.83
61 ...	Gaillard	Holland ...	5.5	108	...	113.5	37.83
62 ...	Larsson, A.	Sweden ...	27.9	71.8	5.4	105.1	35.03
63 ...	Lustrati, S.	Italy	99.9	5	...	104.9	34.97
64 ...	Grund (Woolls) ...	Czechoslovakia	22	41.6	34.5	98.1	32.7
65 ...	Siqueria, T. M. (Foden)	Trinidad ...	72.8	24.8	...	97.6	32.53

Placing	Contestant	Country	First Flight	Second Flight	Third Flight	Total	Average
66 ...	Orvin, H.	Norway ...	94.8	...	...	94.8	31.6
67 ...	Speidel, O.	Switzerland ...	91	...	...	91	30.33
	Bernard, A.	France... ...	91	...	...	91	30.33
68 ...	Morison, L. (Jessop)...	South Africa ...	15.8	5	68	88.8	29.6
69 ...	Petersen, C.	Denmark ...	6.9	49.2	30.5	86.6	28.87
70 ...	Leibenberg, C. (Parham)	South Africa ...	72	2.5	10.4	84.9	28.3
71 ...	Rowe, R. S. (Lees) ...	Australia ...	81	...	...	81	27
72 ...	Hinks, R.	Great Britain...	66.2	7.6	...	73.8	24.6
73 ...	Aubertin, R.	Monaco ...	54.5	7.9	...	62.4	20.8
74 ...	Webb, B.	Canada ...	62.2	...	...	62.2	20.73
75 ...	Pena, H. (Marcus) ...	Trinidad ...	33	19.8	...	52.8	17.6
76 ...	Deurell, A.	Sweden ...	7.4	20	...	27.4	9.13
77 ...	Brasier, W.	Ireland ...	...	20	7.2	27.2	9.07
78 ...	Lequyer, R.	Canada ...	5.8	15.8	...	21.6	7.42
79 ...	Leardi, A.	Italy	7.5	11.4	...	18.9	6.3
80 ...	Beaujean, M.	Belgium ...	12.3	4	...	16.3	5.43
81 ...	Deschepper, P. ...	Belgium ...	13.1	...	...	13.1	4.3
82 ...	Christiansen, P. ...	Denmark ...	12.6	...	...	12.6	4.2
83 ...	Partridge, B. (Muxlow)	South Africa ...	7.5	2.3	...	9.8	3.2
84 ...	Meader, A. (Monks) ...	Australia ...	8.8	...	...	8.8	2.93
85 ...	Cellini, G.	Italy	7.8	...	...	7.8	2.6
86 ...	Grell, R. (Luck) ...	Trinidad ...	5.1	...	...	5.1	1.7
87 ...	Van der Weord, H. ...	Holland ...	4.5	...	...	4.5	1.5
88 ...	Kuniss, P. E. ...	Denmark ...	...	...	...	...	...
	Mlle Pin	Monaco ...	...	...	...	...	...
	Clements, R. ...	Great Britain...	...	...	...	...	...
	Suls, L. K.	Holland ...	...	...	...	...	...

Position of the leaders at ends of First and Second Flights indicated in parentheses after final placing figure. Proxy flyers shown in parentheses after name of contestant

Wakefield history in the making ! Mlle. Odette Pin, of Monaco, first woman ever to fly in a national Wakefield team. We welcome this invasion of what has formerly been an exclusively male battlefield and look forward to future years with a more nearly equal distribution of the sexes.





The Man: Aarne Ellila, 27-year-old B.Sc.(Econ.), graduate of Helsingfors University, home town Helsinki. Ex-Finnish Air Force, since teens keen aeromodeller well known in Nordic model flying circles. The Model: Ten-year-old model of pre-war vintage. Straightforward slabsider, parallel chord wings, large centre fin and small endplates to tailplane. Wire strutted under-carriage. Only unorthordoxy—twin gear train, with rear located gears. Secret of success: knew model inside out—he ought to after ten years !—and could trim for *any* sort of weather.

Mr. Houlberg, Chairman of the S.M.A.E., introduces the Mayor of Ilford to contestants and spectators at this year's British Nationals at Fairlop. Apart from welcoming visitors and making the formal opening announcement His Worship has long been interested in the welfare of the local club and is a worthy example of intelligent, civic interest that might well be copied more extensively.

1949 CONTEST RESULTS

Results of S.M.A.E. Contests are published on the following pages together with details of principal Area and Club Events.

April 3rd.—GAMAGE CUP (86 entries from 29 Clubs).

Open Rubber. Decentralised.

1	Bainbridge, R. M.	Seaham	396.7
2	Revell, H. W.	Northampton	380.2
3	Joyce, P. L.	L'boro. College	305.5
4	Parham, R. T.	Worcester	300.6
5	Viles, A. H.	,,	262.1
6	Munden, A. B.	Blackpool	261.95
7	Berryman, T.	Thames Valley	254.7
8	Tubbs, H.	Leeds	245.5
9	Dubery, V.	,,	245.4
10	Haisman, B. V.	Liverpool	215.7
11	Cameron, C.	Leeds	209.2
12	Owen, J.	Blackpool	201.5

April 17th—FLIGHT CUP (265 entries).

F.A.I. Rubber. Area Semi-centralised

1	Stoffell, E.	Ilford	804
2	Revell, H. W.	Northampton	766.8
3	Luck, R.	,,	663.4
4	Monks, R.	Birmingham	662.4
5	Bolton, A. E.	,,	617.5
6	Truffler, J.	Blackheath	617.2
7	Muxlow, E	Sheffield	613.8
8	Meffon, B. A.	York	597.8
9	Haddock, C.	Reading	596.9
10	Marcus, N.	Croydon	596
11	Standing, N.	,,	587
12	Marshall, F.	Boston	586

April 17th—MODEL ENGINEER CUP (97 Clubs).

F.A.I. Glider (Team). Area Semi-centralised.

1	P.M.A.L.	2432.8
2	Croydon	2167.9
3	Wayfarers	2153.7
4	Belfairs	2111.7
5	Icarians	2063
6	Pharos	2063.1
7	Hayes	1952.5
8	North Kent	1916.8
9	Southern Cross	1874
10	Wolves	1862.8
11	Northern Heights	1820.7
12	Northampton	1774.9

April 18th—SOUTH EASTERN AREA CONTROL LINE CHAMPIONSHIPS

Held on Kent C.C.C. Ground at Dover

	Class			M.p.h.
	I	Butler, D. C.	Surbiton	58.5
	II	Musket, K.	W. Essex	68.17
	IIIA	Buxton, E. J.	St. Albans	71
Speed	IIIB	Monkhouse, I.	Brighton	97.84
	IV	Paffre, J.	Weston C.I.	96.79
	V	Indge, G.	W. Kent	90.91
	VI	Foskett, D.	Guildford	115.4
				Points
Open	1	Taylor, W. H. C.	W. Essex	265
Stunt	2	Prentice, R.	Chingford	250
	3	Marsh, K. F.	W. Essex	234
Scale	1	Butcher, N. J.	Hastings	165
Stunt	2	Bonsey, R.	W. M'sex.	111
	3	Bowles, D.	Hastings	90

May 1st—ASTRAL TROPHY (143 entries).
Power (Ratio/Duration). Decentralised.

1	Goodman, R.	Bushy Park	19	ratio
2	Monks, R.	Birmingham	41.76	,,
3	Knight, J. B.	North Kent	15.88	,,
4	Goodrich, G.	Manor House	14.66	,,
5	Concannon, M. J.	R.A.S.P'mouth	13.43	,,
6	Ashcombe, J.	North Kent	13.14	,,
7	Askew, R.	Cheadle	12.65	,,
8	Warring, R. H.	Zombies	12.42	,,
9	Colbourne, P. J.	Chichester	11.88	,,
10	Russell, A.	North Kent	11.29	,,
11	Coker, N.	Swindon	11	,,
12	Hicks, J.	Bushy Park	10	,,
	Dallaway, W.	Birmingham	10	,,
	Wilmott, D.	Belfairs	10	,,

May 1st—HALIFAX TROPHY (120 entries).
Power Duration. Decentralised.

1	Dunmore, G. E.	Leicester	734.4
2	Askew, R.	Cheadle	642
3	Ashcombe, J.	North Kent	588
4	Oldroyd, H.	West Yorks	542.4
5	Ashurst, A.	Wigan	535
6	Chester, H.	West Essex	512.2
7	Tubbs, H.	Leeds	491.4
8	Dean, W.	Zombies	470.8
9	Dubery, V.	Leeds	450.7
10	Stothers, K. L.	Leicester	440.5
11	Williams, R.	Swansea	435.9
12	Albericci, P.	Leeds	411.2

May 15th—NORTH-EAST AREA RALLY.

Open Glider—		
Shawcross, D.	N. Shields	7 : 47.5
Elsdon, R.	,,	5 : 13
Junior Rubber—		
Lillburn, —.	N. Shields	3 : 25
Harris, —.	Blaydon	1 : 51
Flying Scale—		
Teasdale, J.	Blaydon	
Sherratt, —.	Newcastle	
C/L Stunt—		
Stevens, C.	N. Shields	82 pts.
Ford, W. J.	Teeside	47 pts.

May 15th—MIDLAND AREA RALLY.

Gutteridge—			
Salt, G. E.	Loughborough College	738.2	agg.
Revell, H. W.	Northampton	649.4	,,
Cotton, R. C.	,,	617	,,
Power/Ratio—			
Threlfall, C. A.	Stourbridge	75.52	ratio
Monks, R. C.	Birmingham	17.85	,,
Hill, J.	Wolves	11.46	,,
C/L Stunt—			
Long, N. A.	Sth. B'gham.	255	pts.
Hewitt, B. G.	,,	255	,,
Yule, I. M.	,,	252	,,

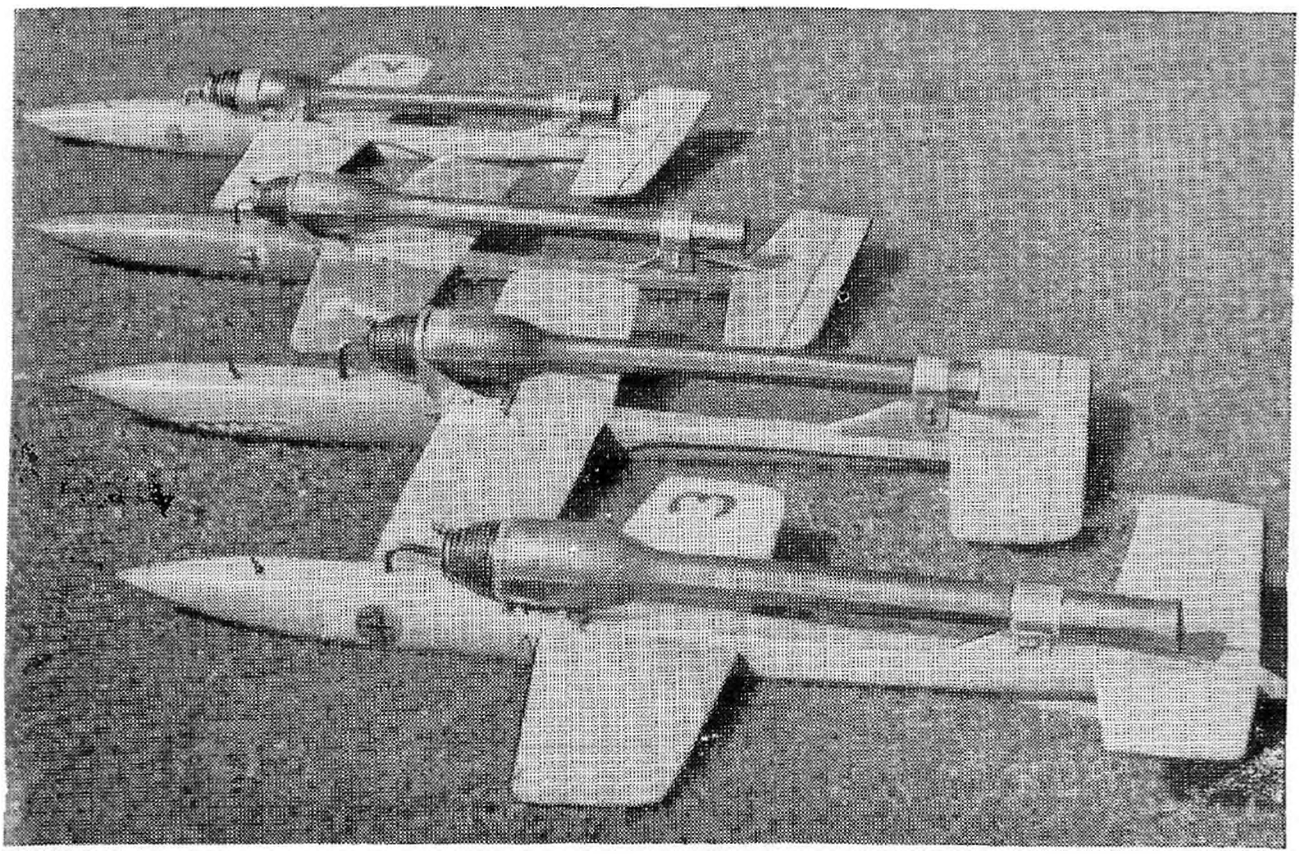
May 15th—SOUTH MIDLAND AREA RALLY.

Open Glider—			
Reeve, N.	High Wycombe	1291	secs.
Sandy, R.	Henley	1056	,,
Junior Rubber—			
Carter, R.	High Wycombe	301.2	,,
Dillamore, J.	Icarians	168.2	,,
Power Ratio—			
Gunter, G.	Bushy Park	10.275	ratio
Wells, H.	Winchester	7.7	,,

May 15th—GUTTERIDGE TROPHY (394 entries).
Wakefield Trials Eliminator Area.

1	McKenna, J. F.	Park M.A.L.	900
2	Brockman, D.	Zombies	808.5
3	Pitcher, J. L.	Croydon	802.2
4	North, R. J.	,,	771.1
5	Marcus, N. G.	,,	763.4
6	Warring, R. H.	Zombies	762.8
7	Salt, G. E.	Loughboro' College	738.2
8	Hinks, W.	Park M.A.L.	704.5
9	Geesing, T. A.	Croydon	701.7
10	Revell, H. W.	Northampton	649.4
11	Woolls, G.	Bristol & West	647.4
12	Witts, D.	Peterborough	637

Jet squadron from the Guildford Club seen at the South Eastern Area Control Line Championships at Dover. High speeds achieved at this meeting earned no official records, but delighted spectators. D. Foskett, of Guildford, has since repeated his speed of 120 m.p.h. on more than one occasion with better official success.



Aeromodeller P.A. Van, a new *Aeromodeller* service that made a welcome debut at the Nationals, and has since been in constant demand at Club and area rallies. *Left to right* are Editor C. S. Rushbrooke, Assistant Editor Hundleby, and P.R.O. "Dicky" Dickson.

June 5th and 6th—THE NATIONALS.
Held at Fairlop Aerodrome, Essex.
Senior Champion Barr, L. Pharos
Junior Champion Hill, D. Wolves

THURSTON CUP (298 entries)
F.A.I. Glider.

1	Barr, L.	Pharos	569.4
2	Howard, J.	North Kent	560.8
3	Boxall, F.	Brighton	446.2
4	Dean, M.	Croydon	443.3
5	Wilson, A.	Hayes	430.5
6	Gates, G.	Southern Cross	418.4
7	Hill, J.	Wolves	415.9
8	Pepperell, D.	Kingsbury	404.5
9	Yeabsley, R.	Croydon	393
10	Philliskirk, J.	Wayfarers	388.9
11	Simpson, J.	P.M.A.L.	387.8
12	Smith, M.	Bushy Park	386.7

MODEL AIRCRAFT TROPHY (212 entries)
F.A.I. Rubber.

1	Cotton, R.	Northampton	472.6
2	Bolton, A.	Birmingham	471.7
3	Revell, H.	Northampton	458.3
4	Clements, R.	Luton	453.6
5	Gamblin, R.	Northern Heights	418.3
6	Lindsay, P.	Wolves	405
7	Geesing, T.	Croydon	384.1
8	Dallaway, W.	Birmingham	375.7
9	Cox, J.	Northern Heights	356.4
10	Macpherson, R.	,, ,,	354.4
11	Brockman, D.	Zombies	353.2
12	Horry, K.	Peterborough	345.7

SIR JOHN SHELLEY CUP (401 entries)
Power Duration.

1	Knight, H.	North Kent	398.1
2	Aggleton, W.	Uplands	262.2
3	Green, M.	Maidstone	238.6
4	Balaam, D.	Harrow	216.9
5	Gunter, G.	Bushy Park	202.5
6	Ward, S.	Wolves	176.4
7	Stothers, K.	Leicester	164.9
8	Amor, R.	Ilford	161
9	Jones, R.	Wayfarers	158.2
10	London, T.	Bradford	150.8
11	Monks, R.	Birmingham	143.5
12	Bailey, A.	Cheadle	138.7

" GOLD " TROPHY (111 entries)
Acrobatic Control Line

1	Hewitt, B	Sth. Birmingham	295 pts.
2	Smith, P.	Chingford	277 ,,
3	Prentice, R.	,,	275 ,,
4	Steward, L.	West Essex	272 ,,
5	Taylor, W.	,,	268 ,,
6	Yule, I.	Sth. Birmingham	267 ,,
7	Muscutt, K.	West Essex	250 ,,
8	Glover, L.	R.A.E.S. P'mth.	249 ,,
9	Piacentini	Salisbury	243 ,,
10	Betts, A.	W. Middlesex	241 ,,
11	Scott, R.	St. Helens	229 ,,
12	Bowles, D.	Hastings	228 ,,

S.M.A.E. RADIO CONTROL TROPHY (42 entries)

1	Doughty, C.	Birmingham	150
2	Harlow, W.	Peterborough	60
3	Taplin, J.	Thanet	50
4	Cock, P.	Southampton	44
5	Taplin, Col.	Thanet	42
6	Allen, D.	West Essex	20
7	Wallace, —.	Barnes	20
8	St. Valentine	Ilford	15
9	Booth, M.	Blackpool	10

June 12th—NORTHERN CHAMPIONSHIPS

Rubber Contest—

1	Haisman, B.	Liverpool	513	secs.
2	Pickin, B.	Wigan	492	,,
3	Woodhouse, R.	Whitefield	354.5	,,

Glider Contest—

1	Bennett, D.	Whitefield	800	,,
2	O'Donnell, J.	,,	726	,,
3	Calkin, C.	Wallasey	631	,,

Power Contest—

1	Davies, F.	Macclesfield	493.3	,,
2	Faulker, B.	Cheadle	435.1	,,
3	Salloway, D.	Ashton	404.2	,,

C/L Stunt—

1	Eiflaender, J.	Macclesfield	291	pts.
2	Booth, M.	Blackpool	285	,,
3	Ridgeway, P.	Macclesfield	282	,,

C/L Speed—

Eiflaender, J. Macclesfield 73.4 m.p.h. (Class II)
Gaska, C. Burtonwood and Chester 116 m.p.h. (Class VI)

Northern Champion D. Bennett Whitefield.

June 19th—S.M.A.E. CUP (125 entries)

F.A.I. Rubber. Decentralised.

1	Royle, P. J.	Littleover	900
2	Evans, E. W.	Northampton	824.6
3	Haisman, B. V.	Liverpool	727
4	Turner, L. W. V.	Rugby	710.5
5	Bishop, W. J.	Blackheath	699.4
6	White, H.	Icarians	693.2
7	Russell, E. J.	North Kent	679.7
8	Ryde, L.	Northern Heights	647.7
9	Woolls, G.	Bristol & West	616.9
10	Hewitt, P.	Halstead	612.6
11	Latham, H.	Park, M.A.L.	611
12	Grimbley, R.	York	600

June 19th—PILCHER CUP (196 entries)

F.A.I. Glider. Decentralised.

1	Kennedy, J.	Upton	900
2	Farrow, W. G.	Wayfarers	883
3	Gardner, B.	Fulham	865.6
4	Dabbs, R.	Park M.A.L.	814.1
5	Power, M.	Belfairs	811.2
6	Gabriells, L.	Oldham	803
7	Monks, R.	Birmingham	789.2
8	Bishop, W. J.	Blackheath	776.4
9	Skelton, W.	Darlington	770
10	Bennison, H.	Ipswich	768.3
11	Mead, R.	Northern Heights	755
12	Woollams, B.	Wayfarers	753

June 19th—WEST ESSEX GALA

Power/Ratio

Smith, J.	Manor House	37.32	ratio
Goorwitch, G.	,, ,,	34.52	,,
Hinds, L.	West Essex	28.35	,,

C/L Stunt—

Morley, W.	West Essex	293.5	pts.
Long, N. A.	Sth. B'ham.	281.5	,,
Steward, L.	West Essex	277	,,

Speed Handicap—

Shaw, C.	Zombies	118.3	84.6 (McCoy 49)
Shaw & Dean	,,	119	79.3 (Fox 59)
Tree	Surbiton	75	78.9 (Elfin 1.8)

Rubber Duration—

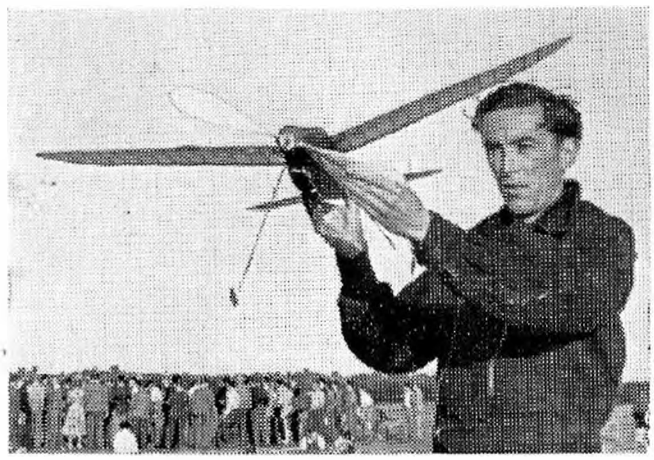
Barr, L.	Pharos	9 : 29
Dean, W.	Zombies	9 : 28.5
Hinks, L.	Park M.A.L.	8 : 59.5

Jetex—

Dean, W.	Zombies	3 : 51
Stewart, —.	Alton	2 : 49.3
Warring, Jnr.	Zombies	2 : 16.8

Judged and judge! B. Hewitt, of South Birmingham, this year's Gold Trophy winner with a "maximum," advances on Judge Ron Moulton to give thanks and accept congratulations on a notable performance.

Eric Smith, Wakefield No. 1 of the British team.



Ron Warring, close No. 2 of the British entry.

July 2nd—WAKEFIELD TRIALS—PREMIER SHIELD

Wakefield Team Selection from best 100.

1	Chesterton, R. B.	Northampton	900
2	Holland, F.	Swansea	803.5
3	Smith, E.	Icarians	801
4	Warring, R. H.	Zombies	732.75
5	Hinks, R.	Luton	728.8
6	Clements, R.	Luton	719
7	Marcus, N. G.	Croydon	711.25
8	Field, P. E.	Belfairs	709.75
9	Parham, R. T.	Worcester	653.65
10	Dubery, R. V.	Leeds	652.5
11	Hinks, W.	Park M.A.L.	643.25
12	Moon, K. W.	Bristol & West	622.3
13	Luck, R. A.	Northampton	603.75
14	Lees, N.	Bradford	594.65
15	Bolton, A. E.	Birmingham	593.5
16	Copland, R	Northern Heights	585.6
17	Pitcher, J. L.	Croydon	582.1
18	Woolls, G. A. T.	Bristol & West	565.4
19	Hardman, M.	Rhyll	558.3
20	Eales, W. F.	Rugby	533.8
21	North, R. J.	Croydon	530.7
22	Muxlow, E. C.	Sheffield	524.9
23	Monks, R. C.	Birmingham	517.4
24	Taylor, P. T.	Thames Valley	509.3
25	Dallaway, W.	Birmingham	505.55
26	Salt, G. E.	Loughboro' Coll.	495.3
27	Brockman, D.	Zombies	494.8
28	Jessop, P. R.	Surbiton	478.45
29	Witt, D.	Peterborough	474.4
30	Foden, G.	Chelmsford	474

June 26th—NORTHERN HEIGHTS GALA

QUEENS CUP RESULTS

1	Warring, R.	Zombies	631.5 secs.
2	Jessop, R.	Zephyrs	475.4 ,,
3	Watts, E.	Yeovil	475.2 ,,

HELICOPTER

1	Tangney, Z.	Croydon	208 pts.
2	King, V.	Brentford	157 ,,
3	Warring, R.	Zombies	115.5 ,,

GLIDER "FLIGHT CUP"

1	Balaam, D.	Kingston	2382 secs.
2	Yeabsley, R.	Croydon	2131.2 ,,
3	Eltridge, D.	Addlestone	2089.5 ,,

RUBBER "FAIREY CUP"

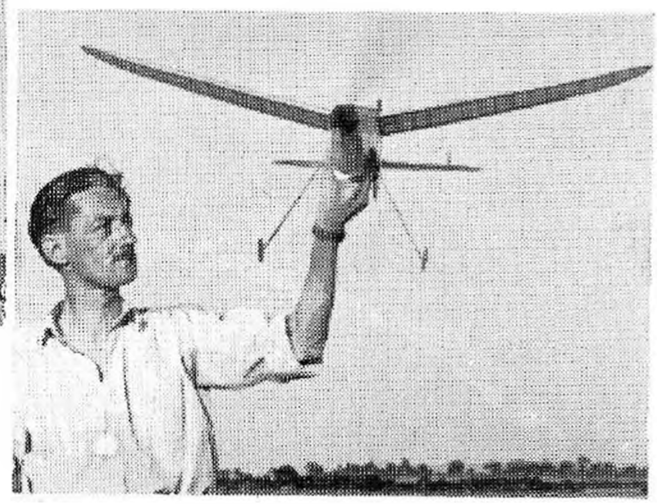
1	Gordon, E.	S'hampton	1040.2 ,,
2	Powten, M.	Nunhead	839 ,,
3	Johnson, V.	S'hampton	755 ,,

POWER "CORONATION CUP"

1	Allan, C.	Newbury	90 pts.
2	Russell, A.	N. Kent	88 ,,
3	Wilmot, C.	Totton	88 ,,
4	Gardner, B.	Fulham	85.6 ,,

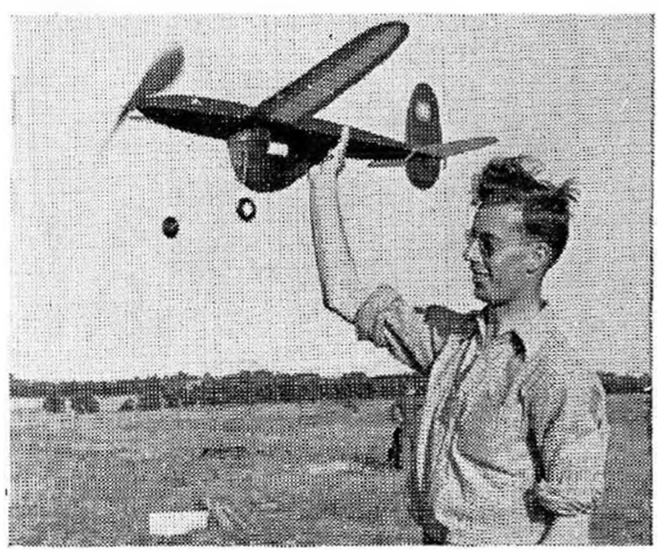
CONTROL LINE "M.E. CUP"

1	Long, M.	S. B'mingham	262 ,,
2	Taylor, W.	W. Essex	261 ,,
3	Smith, P.	Chingford	233 ,,



F. Holland, unluckiest British team-man who was defeated by contest time limit.

Roy Chesterton, 1948 winner, who, after leading the trials, pranged famous Jaguar on third flight.



Most enterprising unorthodoxy of the season—a twin-Jetex powered helicopter seen at the Northern Heights Rally. Theoretically should be perfect answer to helicopter and jet problems, but still requires a few more "bugs" to be ironed out.

July 17th—SOUTHERN AREA RALLY

Glider

Johnson, V.	Southampton	6 : 10
Day, R.	Portsmouth	5 : 0

Rubber

Elliott, —.	Portsmouth	3 : 21
Harmer, J.	Eastleigh	3 : 06

Power

Mountain, J. A.	Southampton	6 : 49
Willmott, C. M.		6 : 16

July 17th—WOMEN'S CHALLENGE CUP (6 entries)*

Open Rubber or Glider. Decentralised

1	Eves, M.	Upton	854
2	Knight, D.	North Kent	456.1
3	Dillon, E	Liverpool	333.4
4	Doughty, J.	Birmingham	266.4
5	Rymills, M.	Cheam	209.8
6	Bell, S.	Huddersfield	131.1

July 17th—FROG JUNIOR CUP (17 entries)

Open Rubber. Decentralised

1	Lindsay, P.	Wolves	540.4
2	Carpenter, P.	Upton	517.0
3	Richmond, J.	Wolves	471.5
4	Kreeger, R.	Pharos	456.0
5	Willmott, D.	Belfairs	447.7
6	Sewell, A.	Surbiton	360.2
7	Bichell, J.	Five Towns	299.2
8	Hafford, H.	Ravensbourne	298.2
9	Jessop, N.	Zephyrs	281.9
10	Longstaffe, A.	Belfairs	255.7
11	Warren, M.	Reading	194.0
12	Sharland C.	Vikings	178.0

July 24th—SOUTH WESTERN AREA RALLY

Power/Ratio

Gardiner, B.	Fulham	8.1
Godwin, E.	Torquay	6.6

Glider

Densham, R.	Exeter	9 : 53.8
Higgins, J.	Torquay	7 : 37.1

Rubber

Woodfine, G.	Plymouth	9 : 08.2
Richards, M. D.	,,	8 : 50.1

August 1st—BOWDEN INTERNATIONAL TROPHY (21 entries from 6 countries)

Precision Power. Centralised. Held at Cranfield

1	Dunmore, G. E.	Leicester
2	Poile, W.	Folkestone
3	Bateman, D.	Dunstable
4	Osbourne, N.	Belfast
5	Chatwin, F.	Birmingham
6	Minney, R.	Luton

August 1st—INTERNATIONAL POWER CONTEST (41 entries from 11 countries)

Power/Ratio. Centralised. Held at Cranfield

1	Thiebaut, P.	France	11.23
2	Gunter, B. C.	Gt. Britain	9.14
3	Kannenworff, L.	Italy	7.56
4	Drew, G. W.	Ireland	6.47
5	Osbourne, N.	,,	6.34
6	Boyle, J. R.	U.S.A.	5.59
7	Deschepper, P.	Belgium	5.27
8	Pannier, G.	France	5.09
9	Woods, D.	Ireland	4.74
10	Pabois, D.	France	3.94
11	Stothers, K.	Gt. Britain	3.58
	Moss, G.	,,	3.58
12	Petersen, C. J.	Denmark	2.76

August 21st—KITE & MODEL AEROPLANE ASSN. CUP (279 entries)

F.A.I. Glider. Area Semi-Centralised

1	King, M.	Belfairs	885.1
2	Geesing, T. A.	Croydon	785.5
3	Kennedy, A. R.	Upton	770.5
4	Russell, A. G.	North Kent	750.6
5	Gorham, J.	Ipswich	748
6	Gabriells, L.		747.4
7	Holden, A.	Boston	716
8	Gates, G.	Southern Cross	684.3
9	Romley, J. H.	North Kent	683
10	Lefevre, G. J.	West Essex	677.2
11	Bishop, W. J.	Blackheath	670.3
12	Dabbs, R.	P.M.A.L.	667

* *Note General Competition Rules* (12)

August 21st—FARROW SHIELD (57 Clubs)

F.A.I. Rubber—Team. Area Semi-Centralised

1	Luton	2446
2	N'hampton	2205.6
3	Littlecover	2130.3
4	West Essex	2116.9
5	Croydon	2070
6	North Kent	1982.8
7	Bristol & West	1981.5
8	Birmingham	1959.8
9	Swansea	1884.9
10	Thames Valley	1826.8
11	Hayes	1551
12	Whitefield	1547.2

August 21st—MIDLAND AREA RALLY (2)

Rubber

Wade, S. A.	L'boro College	12 : 20
Evans, E. W.	Northampton	11 : 51.7

Glider

Monks, R. C.	Birmingham	10 : 24.2
Richmond, J. S.	Wolves	9 : 04.5

Precision Power

Chatwin, F. A.	Birmingham
Monks, R. C.	,,

August 21st—NORTH WESTERN AREA RALLY

Glider

Christianson, C.	Sale	9 : 42
Ashton, P. J.	Rochdale	9 : 37.6

Rubber

Woodhouse, R.	Whitefield	9 : 07
Parson, J. R.	Sheffield	8 : 49

Power/Ratio

Eifflander, J.	Macclesfield
Roberts, R.	Five Towns

C/L Stunt

Eifflander, J.	Macclesfield	267 pts.
Ridgeway, P.	,,	266 pts.

Radio Control

Allen, S.	West Essex
Hounest-Redlich G.	Surrey

August 28th—ALL HERTS RALLY (457 entrants—75 clubs)

Held at Radlett Aerodrome

Open Rubber Duration

1	Buxton, E. J.	St. Albans	2 5-min. plus flights
2	Dudley, D. J.	Blackheath	ditto
3	McLachan, D.	Wayfarers	

Open Glider

1	Grasmeder, R.	W. Essex	410 (in fly-off)
2	Yeabsley, R.	Croydon	195
3	Dutson, A.	W. Middlesex	140.6

Open Power Ratio Duration
(agg. ratio of 2 flights)

1	Knight, H. J.	N. Kent	37.75
2	Marcus, N. G.	Croydon	31.3
3	Jessop, R.	Surbiton	27.4

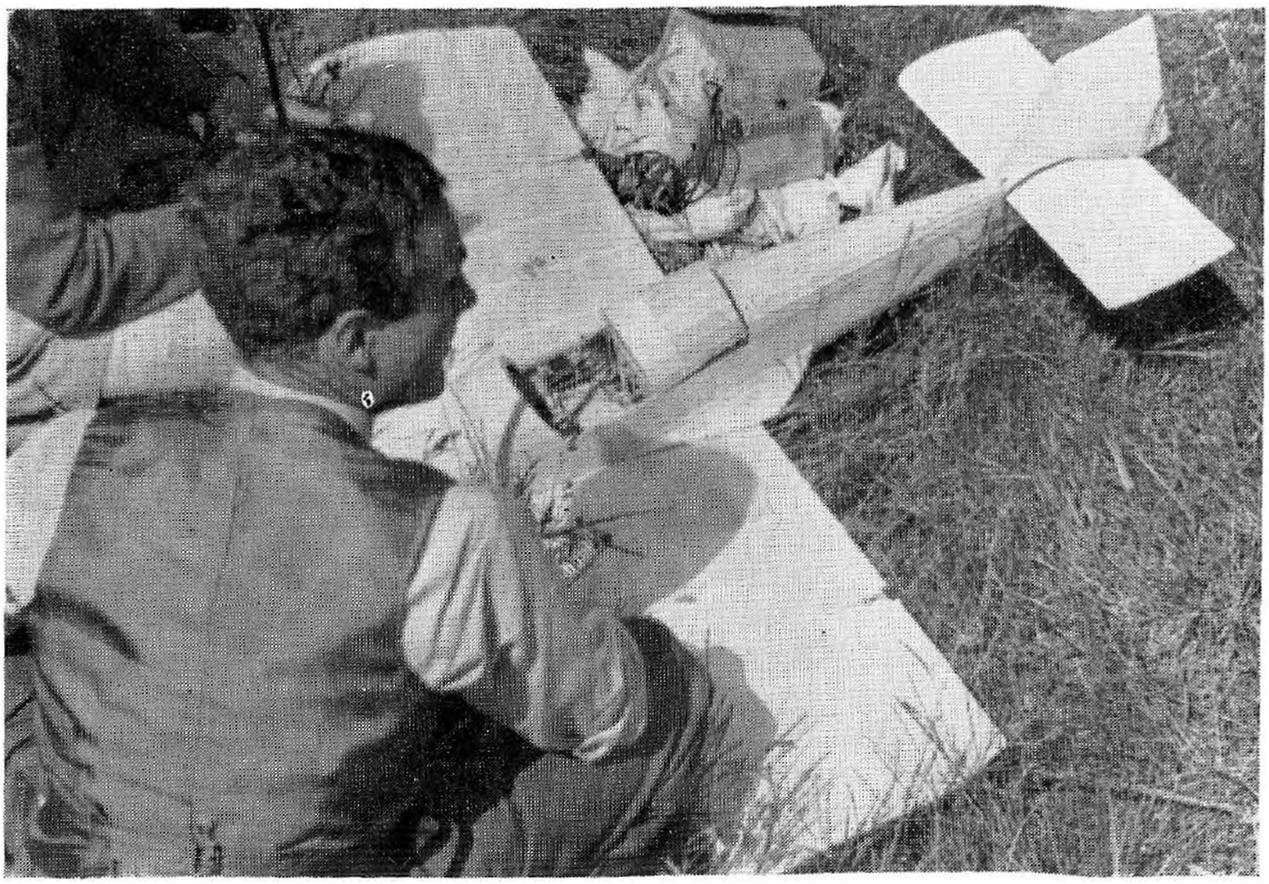
Control Line Stunt

1	Mayes, C. E.	W. Essex	294 points
2	Morley, W.	W. Essex	291
3	Taylor, W. H. C.	W. Essex	290

Control Line Speed

0-2 c.c.			
1	Tree, W. G.	Surbiton	86 m.p.h.
2	Tucker, E. G.		68.2 m.p.h.
2-5 c.c.			
1	Powell, D.		100 m.p.h.
2	Sparks, L.		94 m.p.h.
5-11 c.c.			
1	Shaw, C.	Zombies	114.9 m.p.h.
2	Guest, F.	Bushey Park	106.7 m.p.h.
Jets			
1	Gregory, P.	Alton	121.6 m.p.h.
2	Foskett, D.	Guildford	121.4 m.p.h.

Howard Boys' one-fifth scale radio controlled Tipsy of nearly five feet span. This employs aileron control only, with rubber driven actuator built into wing. A modified Mercury-Cossor receiver is used, while transmitter is of Howard Boys' own design.



Fourteen-year-old F. Ashdown, of Southend Senior Club, winner of 1949 Taplin Trophy for Radio Controlled Model Aircraft. Machine is a Keilkraft Falcon powered by an Anderson Spitfire engine. Receiver fitted is Mercury-Cossor, and transmitter E.C.C.

September 11th—THE LADY SHELLEY CUP (12 entries)
Tailless—Decentralised

1	Hughes, D. R.	Merseyside	341
2	Bennett, B.	Regents Park	238
3	Collins, E.	Port Talbot	226
4	Twomey, B.	Cardiff	202.5
5	Yeabsley, R.	Croydon	190.2
6	Templehagen, B.	Plymouth	188

September 11th—WESTON CUP (77 entries)
Rubber Duration—" Wakefield Class "—Decentralised

1	Royle, P. J.	Littleover	789.2
2	Haisman, B. V.	Liverpool	755
3	Revell, H. W.	Northampton	745
4	Smith, E.	Icarians	691
5	Monks, R.	Birmingham	653.5
6	Alexander, R. A.	Merseyside	586

September 25th—THE KEIL TROPHY (142 entries—79N : 63S)
Power Ratio/Duration. North-South Centralised

1	Howard, J. A.	North Kent	15.48
2	Knight, H. J.	North Kent	14.73
3	Eifflander, J. G.	Macclesfield	13.9
4	Bateman, D.	Luton	12.26
5	Gorham, J.	Ipswich	12.2
6	Brain, J.	P.M.A.L.	12.13

September 25th—THE HAMLEY TROPHY (45 entries—28N : 17S)
Precision Power—North-South Centralised

1	Bailey, A. S.	Cheadle	336 Error
2	Treadaway, P.	Belfairs	490
3	Bateman, D.	Luton	540
4	Newman, T. W.	Wallasey	560
5	Bush, Miss J.	Liverpool	580
6	Faulkner, F.	Thames Valley	640

September 25th—THE TAPLIN TROPHY (21 entries—3N : 18S)
Radio Control—North-South centralised

1	Ashdown, F. H.	Southend Senior	72
2	Marshall, L. J.	West Midland	63
3	Hook, E. J.	Zombies	39
4	Honnest-Redlich, G.	Isle of Thanet	38
5	Ingham, A. S.	Blackburn	30
6	Wallis, E.	Surbiton	10
	Morelli, T.	Isle of Thanet	10

September 25th—CONTROL LINE SPEED CONTEST (48 entries—12N : 36S)
North-South centralised

Class 1			
1	Scott, R.	St. Helens	70.92m.p.h.
2	Ashford, J. C.	Ilford	46.5
Class 2			
1	Beverley, A. T.	Wallasey	80.36
2	Tewkesbury, R.	Malden	77.57
Class 3			
1	Evans, D. W.	Weston	58.07
2	Ruston, E.	Rotherham	50
Class 3a			
1	Chester, J.	Zombies	99.5
2	Carter, J. G.	Croydon	89.12
Class 4			
1	Shaw, C. A.	Zombies	110.4
Class 5			
1	Keyte, J.	Zombies	118.4
2	Kemp, D.	Guildford	100.6
3	Bosley, S. S.	St. Georges	85.71
Class 6			
1	Stovold, R.	Guildford	133.5
2	Foskett, D.	Guildford	120

F. Stovold, of the Guildford Club, foremost jet-group starting up his model for a timed flight of over 130 m.p.h., for which a record claim is at present lodged, and is awaiting confirmation.

PLUGGE CUP

Club Championship awarded on M.E. Cup, Flight Cup, Farrow Shield, and K. & M.A.A. Cup

North Kent 1192.3776

CATON TROPHY

Awarded on Flight Cup, Wakefield Eliminator (Gutteridge), and Farrow Shield—Individual Rubber

Revell, H. W. Northampton 2061.3

September 12th-14th-16th—ISLE OF MAN RALLY

Governor's Cup

1	Wilson, A. H.	Hayes	360 points
2	Dowsett, I. V.	Brentford	326 points
3	Marshall, J. D.	Hayes	218 points

Team Prize

Hayes and District M.A.C.

Rubber Duration

1	Dowsett, I. V.	Brentford	6 : 34
2	Marshall, J. D.	Hayes	6 : 18
3	Wilson, A. H.	Hayes	5 : 59

Gliders Duration

1	Wilson, A. H.	Hayes	5 : 18
2	Dowsett, I. V.	Brentford	5 : 16
3	Marshall, J. D.	Hayes	4 : 05

Tailless Duration

1	Wilson, A. H.	Hayes	4 : 54
2	Hedgman, P. J.	Hayes	4 : 02
3	Poile, W.	Country Member	3 : 30.5

Jetex Duration

1	Poad, R. C.	Darlington	3 : 51
2	Comber, T.	Liverpool	2 : 48.9
3	Dowsett, I. V.	Brentford	2 : 29

Power Duration

1	Comber, T.	Liverpool	7 : 48.5
2	Wilson, A. H.	Hayes	4 : 30
3	Young, S. G.	Belfast	3 : 12.75

C/L Stunt

1	Ellis, F. N.	East Liverpool	264 points
2	Ford, W. J.	Liverpool	174 points
3	Sinclair, A.	Manx	132 points

C/L Speed

1	Ellis, F. N.	E. Liverpool	66.5 m.p.h.*
2	Teare, D.	Manx	43.3 m.p.h.*
3	Ford, W. J.	Liverpool	42.8 m.p.h.*

* Handicap speeds.

Club and Area Secretaries are reminded that results of their club galas and area rallies will be reported in future *Aeromodeller* Annuals, provided they attract sufficient support and are of general interest. No special report, other than that normally sent in to Clubman is required.

In the same way the *Aeromodeller* Public Address Van is available for their use, and priority will normally be given to first request received—bearing in mind that unlimited petrol is *not* available, and it may be necessary on occasion to refuse more distant requests—*unless the fuel situation improves in the next twelvemonth.* This service is available without charge, and comprises dual directional speakers, range 1—2 miles, dual switch-over transmitters, and small "contest office" on the vehicle.

BRITISH NATIONAL MODEL AIRCRAFT RECORDS
as at 16th October, 1949

OUTDOOR

Rubber Driven

*Monoplane	Boxall, F. H.	35 : 00
Biplane	Young, J. O.	31 : 05.125
*Wakefield	Boxall, F. H.	35 : 00
Canard	Paveley, D.	1 : 3.71
Scale	Marcus, N. G.	5 : 21.75
Tailless	Boys, H.	1 : 24.5
*Helicopter	Richmond, J. S.	1 : 58.4
Rotorplane	Crow, S. R.	: 39.5
Floatplane	Parham, R. T.	8 : 55.4
Flying Boat	Rainer, M.	1 : 09

Sailplane

Tow Launch	Best, F.	63 : 46
Hand Launch	Peckett, G. D.	6 : 57.5
*Tailless (H.L.)	Wilde, H. F.	3 : 17
Tailless (T.L.)	Harris, L. C.	10 : 30

Power

*Class A	Springham, H. E.	25 : 01
*Class B	Dallaway, W. E.	20 : 28
Class C	Chatwin, F. A.	3 : 12.5
*Tailless	Marshall, J.	1 : 50.8
Scale	Petch, P. L.	: 36
*Floatplane	Stainer, J. R.	2 : 59.4
Flying Boat	Gregory, N.	2 : 08.5

* *Records established during the year 1st October, 1948, to 30th September, 1949.*

Control Line

Class I	Scott, R.	70.866 m.p.h.
‡Class II	Free, D. W.	80.357 m.p.h.
Class IIB		
Class III	Carter, J. G.	89.108 m.p.h.
‡Class IV	Shaw, C. A.	118.421 m.p.h.
Class V		
Class VI	Stovold, R. V.	133.3 m.p.h.

INDOOR

Free Flight

Stick (H.L.)	Copland, R.	18 : 52
Stick (R.O.G.)	Mackenzie, R.	8 : 42
Fuselage (H.L.)	Gilbert, D.	6 : 44.4
Fuselage (ROG)	Gilbert, D.	4 : 33
Tailless (H.L.)	Booth, R.	: 53.3
Tailless (ROG)		
Helicopter	Mackenzie, R.	1 : 33
Rotorplane	Mawby, L.	: 32.2

R.T.P.

*Class A	Muxlow, E. C.	6 : 05
Class B	Parham, R. T.	4 : 26
Speed	Heaton, F. F.	34.04 m.p.h.

‡ *Made under new rules with anti-whip pylon yoke over ½-mile course.*

INTERNATIONAL MODEL AIRCRAFT RECORDS
Issued by the F.A.I. 1st July, 1949

Rubber Driven

Duration	Meszetler, G. (Hungary 31.8.48)	1 : 1 : 22
Distance	Benedek, G. (Hungary 20.8.47)	50.26 km.
Height	Poich, R. (Hungary 31.8.48)	1,442 m.
Speed	Davidov, V. (Russia 11.7.40)	107.08 km/h

Sailplane

Duration	Haslach, T. (Switzerland 4.6.44)	2 : 21 : 6
Distance	Varache, H. (France 21.7.46)	98.72 km.
Height	Benedek, G. (Hungary 23.5.48)	2,364 m.

Power Driven

Duration	Lioubouchkine, G. (Russia 12.7.47)	3 : 48 : 45
Distance	Malik, S. (Russia 19.9.47)	210.62 km.
Height	Lioubouchkine, G. (Russia 13.8.47)	4,152 m.
Speed (straight course)	Martynov, B. (Russia 16.8.48)	66.87 km/h.

Hydroplanes

Rubber Driven

Duration	Vassiliev, A. I. (Russia 19.8.48)	41 : 00
Distance	Benedek, G. (Hungary 6.5.48)	10.45 km.
Height	Winkler, L. (Hungary 17.8.48)	136 m.
Speed (straight course)	Abramov, B. (Russia 6.8.40)	76.896 km/h.

Power Driven

Duration	Tchelnintsev, L. (Russia 16.9.47)	1 : 4 : 42
Distance	Vassiltchenko, M. (Russia 3.8.48)	58.843 km.
Height	Kavsadze, I. (Russia 8.8.40)	4,110 m.
Speed (straight course)	Khaborov, R. (Russia 18.8.48)	50.05 km/h.

Tailless

Rubber Driven

Duration	Gall, T. (Hungary 24.4.49)	1 : 59.2
Distance	Gall, T. (Hungary 17.4.49)	0.72 km.

Power Driven

Duration	Marshall, D. (Gt. Britain 13.2.49)	1 : 50

Special Aircraft (Rubber Driven)

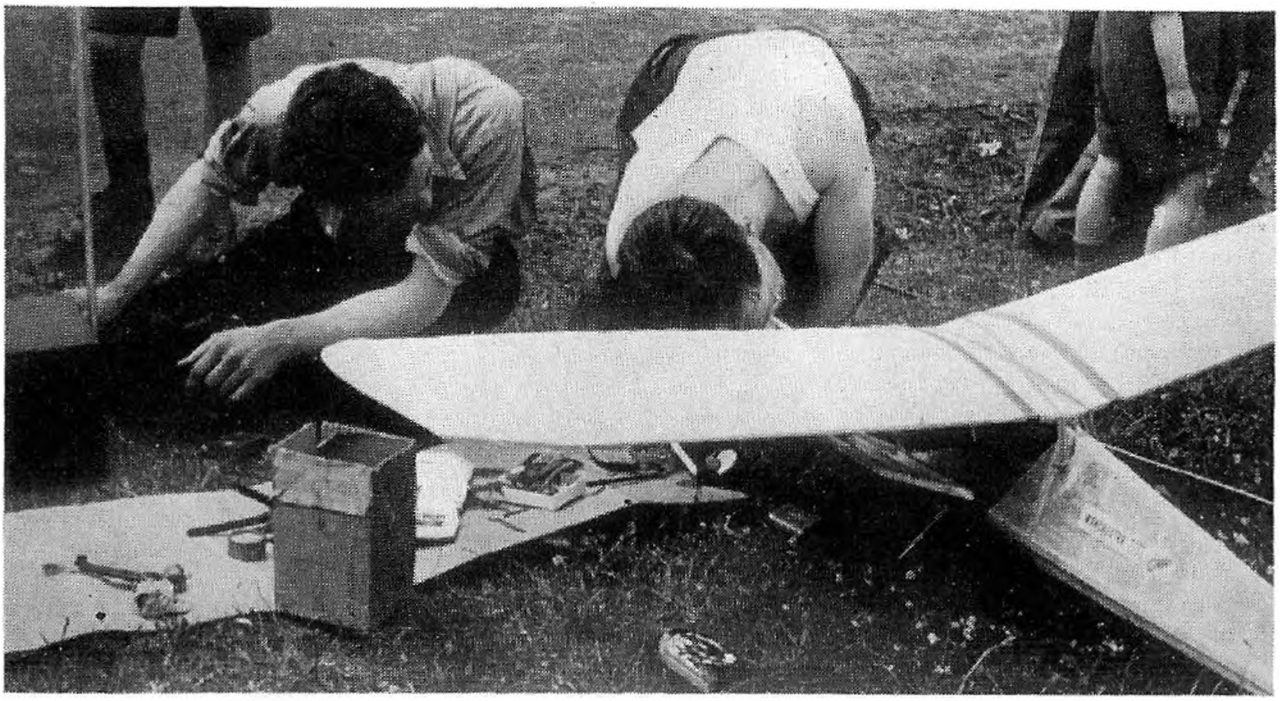
Twin Rotor Helicopter

Duration	Musgrove, R. (Gt. Britain 28.11.48)	1 : 6.8

Absolute World Records

Duration	Lioubouchkine, G. (Russia 12.7.47)	3 : 48 : 45
Distance	Malik, S. (Russia 19.9.47)	210.62 km.
Height	Lioubouchkine, G. (Russia 13.8.47)	4,152 m.
Speed (straight course)	Davidov, V. (Russia 11.7.40)	107.08 km/h.

(**Note.**—*These are homologated records, but we learn that further Russian claims may be expected following the 18th Russian Nationals held near Moscow, including new Rubber Duration claim of* 1 : 16 : 0 *by Nassenov and a Power Driven (straight course) speed claim of 72 km/h.)*



A shot of Rudderbug, showing triangular fuselage and low aspect ratio parallel chord wings Model was entered by the Manchester M.A.C. for the 1949 Taplin Trophy.

SIMPLE RADIO CONTROL MODIFICATIONS

To start off this article, which I hope may be of interest to Radio Control enthusiasts, a short summary of qualities desirable in a R/C outfit and model will classify things.

The Radio if possible should give Interdependent proportional or semi-proportional control of :—

(1) The Rudder ;
(2) The Throttle ;
(3) The Elevators ;
(4) Engine " off."

The model should be able to :—

(1) Carry the necessary weight ;
(2) Should be a good " free flight " model in case of radio failure ;
(3) As the " modified " weight is fairly large, an area of 9 sq. ft. is desirable.

Having now decided what we want let us see how we can obtain it without too many complications and also without altering the radio. THIS SYSTEM INVOLVES ONLY ACTUATING MODIFICATIONS. These alterations can be carried out on either the " Mercury Cossor " or the " E.D." control units. On my own outfit, which is a M.C., to obtain the desired controls, I decided as far as possible to operate everything electrically. After these more or less introductory notes, let us see step by step how to obtain from modified standard equipment what we want.

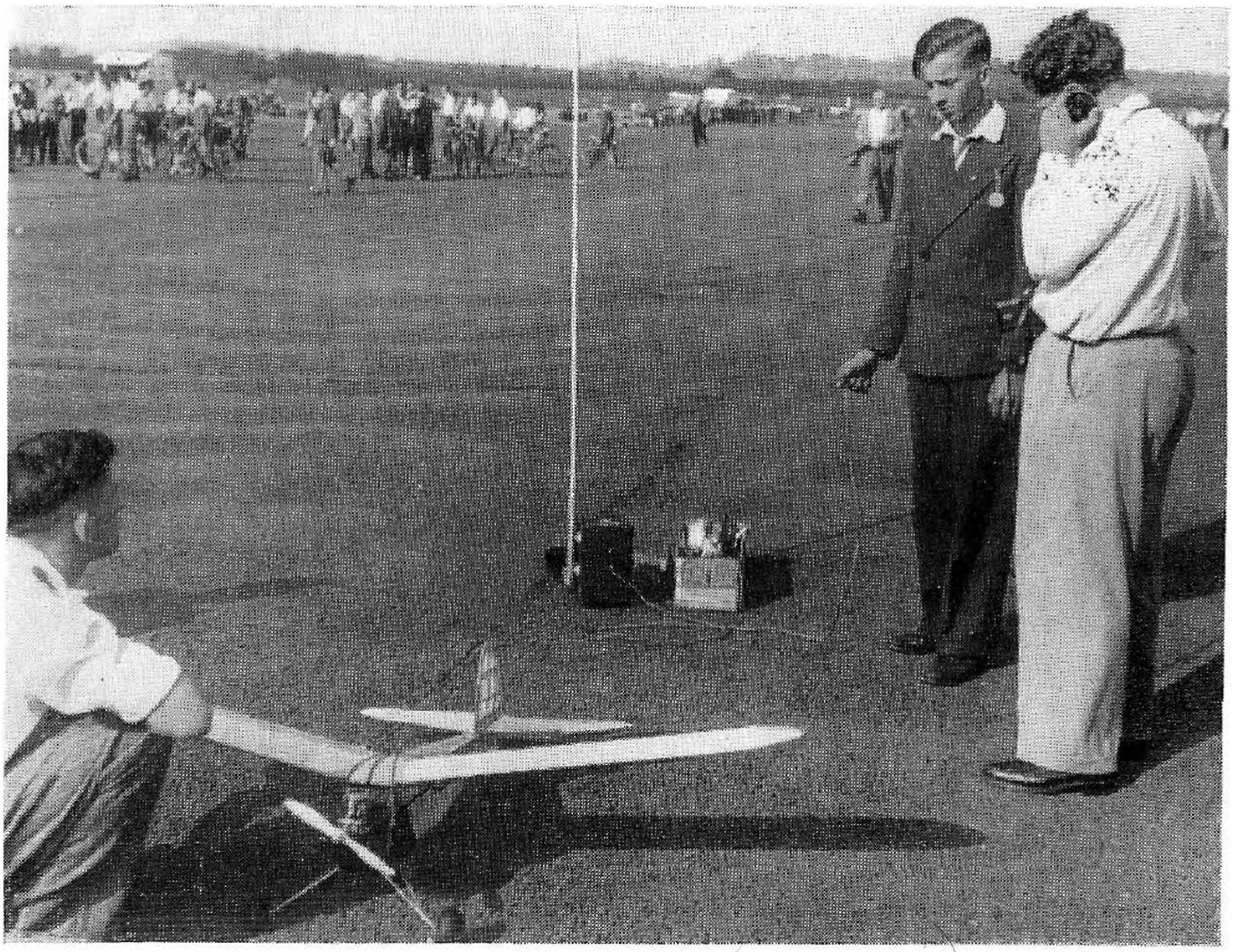
First we want a method of selecting the control required ; this is done by fitting to the " Transmitter " an ordinary telephone dial, but since a telephone dial INTERRUPTS current, it is essential to have the contact on the dial breaking the current to a solenoid which when " released " will make contacts to transmit the signal. On the " Mercury

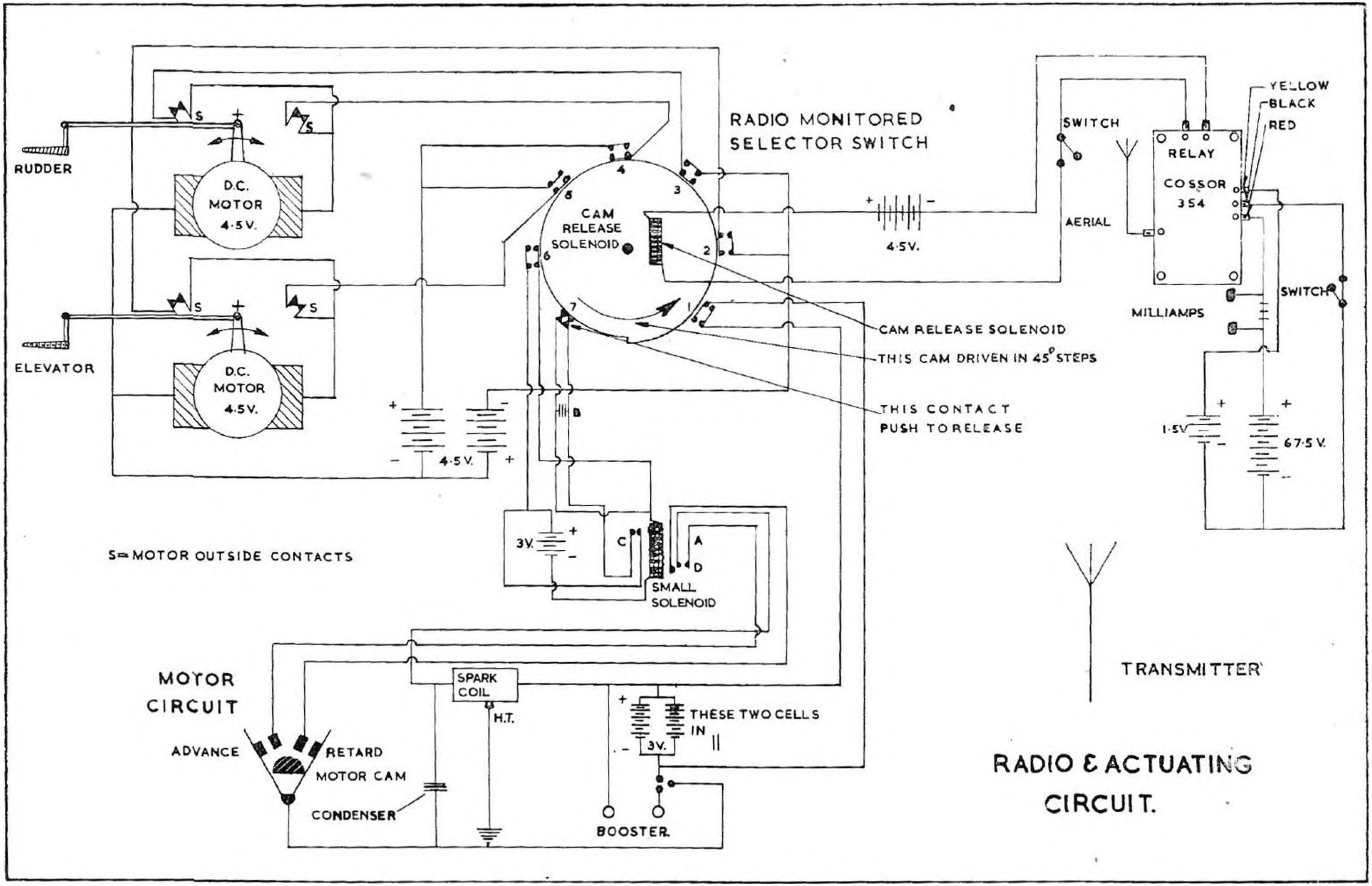
Cossor," this is done by removing the control knob and micro switch and connecting the leads to the solenoid contacts, a switch is also required to switch off the solenoid battery when not in use. The solenoid I used in my Transmitter, was a standard 6v. G.P.O. Relay, which works quite well on a 4.5v. flat battery. These complete the modifications to the Transmitter. The dial and relay can readily be obtained from one of the many ex-W.D. dealers. We can now send out up to ten signal impulses on our Transmitter. However, since the telephone dial will send out the signals too quickly for the " receiver " to respond, it is necessary to slow the dial down : this is done by slightly bending the leaf springs on the centrifugal clutch outwards with a screwdriver.

Having got this far, our Receiver will operate its relay according to the number we dial. NO MODIFICATIONS ARE NECESSARY ON THE RECEIVER.

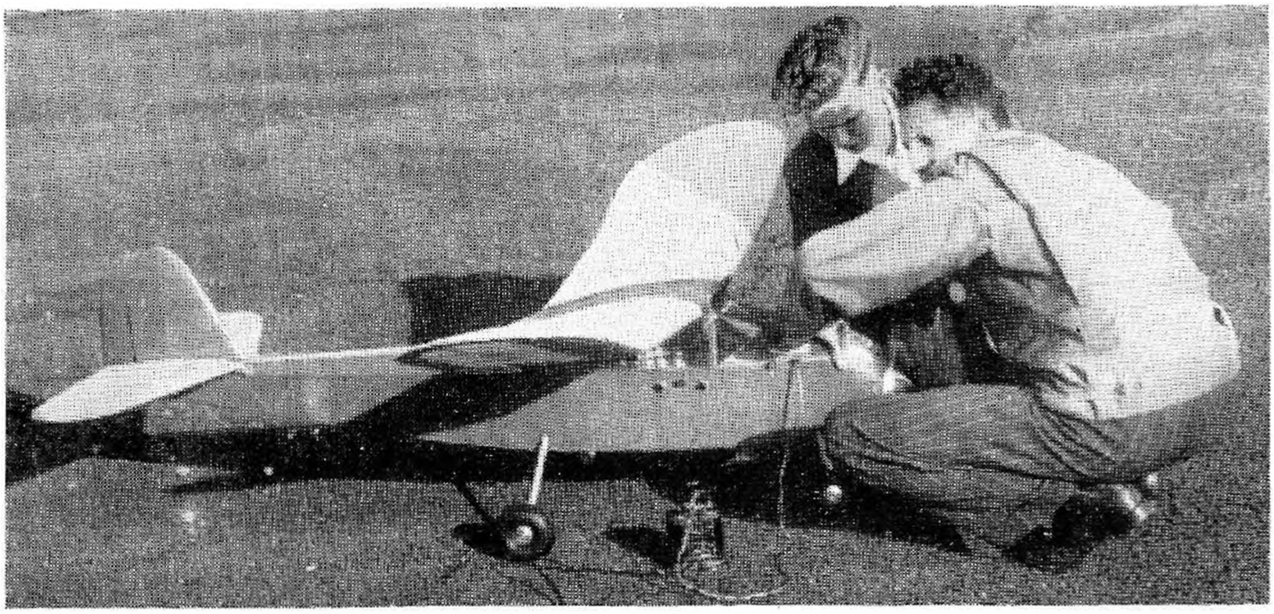
The next thing to make is a distributor to operate in line with the number dialled. To do this I used a standard " Mercury Cossor " actuator, which I strongly recommend for the purpose, from which everything except the frame, the eight toothed wheel and the solenoid release had been removed. On one end of the shaft of the eight toothed wheel, a circular cam with one high joint was fitted (see drawing of Electrical Circuit) and on the other end a hook was fitted to take the rubber motor

Innovation at the Taplin Trophy was " pirate " operator detection by Max Coote, shown here on right listening for unauthorised transmitting, which in fact grounded at least one hyper-sensitive model. This useful service is a regular feature of French contests where the Post Office take charge.





RADIO & ACTUATING CIRCUIT.



Reminiscent of a somewhat smaller edition of Allen's "Dumbo," this R.C. model was built by D. H. Elmes, of Ilford M.A.C. Elmes will be remembered for his beautifully finished exhibition flying scale Ryan.

used to drive it. A small circular block of wood was then made of the same diameter as the cam and on this, seven pairs of contacts were mounted, 45° apart, which left one blank space. THIS IS THE COMMON NEUTRAL.

The contacts should be about 2½in. long as they will then be easily flexed by the high joint on the cam which will *make* each of the contacts as it rotates. The block of wood carrying the pairs of contacts, which were insulated from one another by small strips of fascoli and fixed by ½ in. wood screws was then mounted on an aluminium bracket and adjusted so that the cam made each pair of contacts as it revolves.

Let us now connect the distributor to the receiver and see what happens when we dial the transmitter. Assuming that the high point of the cam is at the common neutral, if we dial eight (98° are not used on

Little but good—Kandy II built by G. Fairbrass, of the Hackney Club, is powered with a mere 2.4 c.c. Mills engine, but finds it sufficient to get aloft complete with necessary receiver. This is the smallest powered R.C. model yet noted, excluding, of course, powered gliders which require to be towed up.

the dial), the transmitter will send out eight signals; the receiver on picking these up will operate the receiver relay eight times, and this will operate the solenoid release on the distributor eight times, allowing the rubber motor to drive the cam through eight steps, or one rotation; making each of the seven contacts in turn and so back to the common neutral; in the same way, if we dial six, the cam will move until the sixth contact is made it will then stop there. To switch the contact "off" it is necessary to dial two. IF A NUMBER IS DIALLED THE NEXT NUMBER MUST WITH THE FIRST ADD UP TO EIGHT to prevent desynchronization.

From our radio unit as modified, we can now make or break seven switches. To operate my controls I used two small DC motors; designed to run in either direction, they were geared down so that the output pinion would rotate once in about 4/5 seconds,—this is important, if semi-proportional control is desired—the motors were wired up as per drawing and push pull rods were fitted from the periphery of the output pinion to the control surfaces. Thus when the appropriate contact on the distributor is made, the motor will start clock or anti-clock wise and will *slowly* move the controls, the movement can be stopped in any position by dialling again, contacts were fitted to the motors so that, when the controls had moved to either end of the range, the motor stopped, plain stops could be fitted.

It should be noted that when a contact is passed over by the cam but not stopped on a circuit is not made for long enough for the control to operate.

The next thing required is a throttle control, this is achieved by means of a two-speed contact breaker, and the circuit shown in drawing. When contact No. 6 is made, current passes through relay "A" which makes relay contacts "C", these contacts complete the relay's own circuit, thus holding the relay even after contact No. 6 is broken, at the same time, the relay operates contact "D," which retards the engine's ignition. When contact No. 7 is BROKEN (it is constructed so that it is usually made) the relay circuit is broken and the motor advances. However, if the motor is retarded and the distributor cam passes over, but does not stop on contact No. 7, the discharge of a condenser "B" holds the relay for the split second of passing. The size of this condenser must be found by experiment to suit the relay, but a fairly large one is needed.

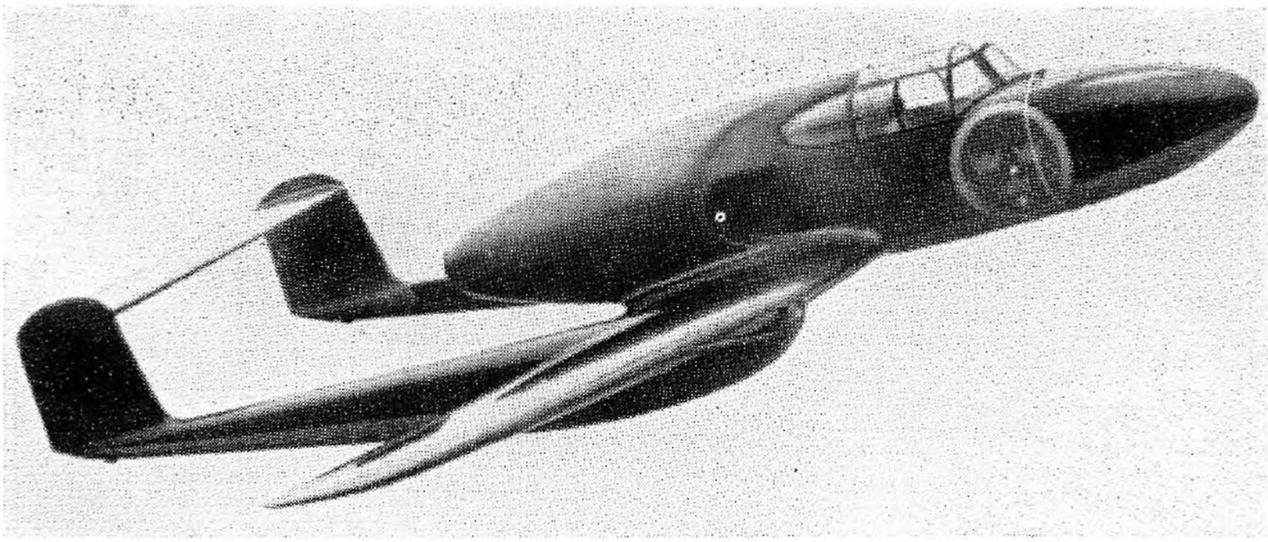
Finally, contact No. 1 shorts the engine ignition battery to stop motor as per drawing. While this system looks complicated, I can assure readers that it does function; I made mine in three evenings' work.

If anyone has difficulty in obtaining motors, I can tell them where to get them complete with gearing, and I should be glad to answer any correspondence sent, care of the *Aeromodeller*. GEOFFREY WAY.

TIMBER! When the first model aeroplane that he had ever built was caught in a tree, retired 64-years-old H...E...H... felled the 62 ft. beech.

"The model was such a prize to me that I did not want to lose it. I had no alternative but to cut down the tree," he told the Court. He was fined £3 for doing malicious damage and his son £2 for assisting.

(Extract from "Sussex Daily News.")



Shown "in flight," this 1/24th scale model of the SAAB J21R, bearing the insignia of the Swedish Air Force, is the work of M. Brett. The thread holding the model for this "flying shot" has been deliberately left untouched—to convince the sceptical that it really *is* a model.

THE LATEST ON SOLID MODELS

SINCE "Solid Scale Model Aircraft" was first published the writer has continued to build solid scale models for the Aircraft Industry. Every model built adds to the builders' store of knowledge, and, although most of the technique and constructional methods remain almost identical to those used ten years ago, there have been new developments in material used, design, finishing, and new tools to aid the building of better models.

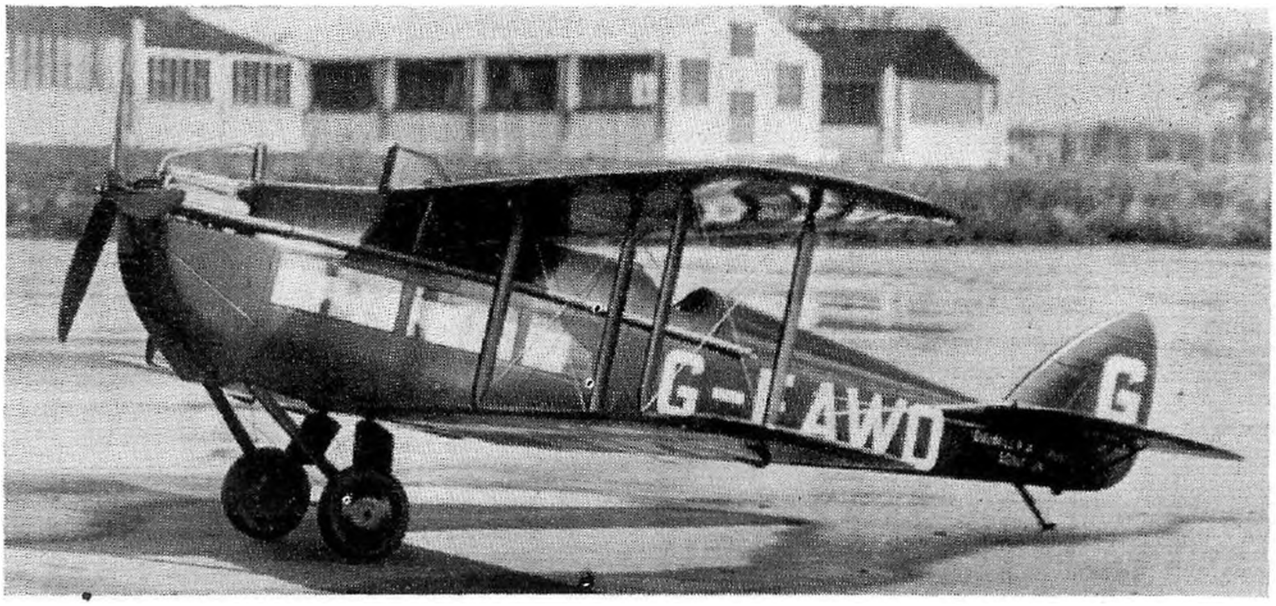
It is now definitely established by experience that the finest wood obtainable in this country for solid scale work is dry English Limewood. Straight-grained and naturally seasoned wood is best, of course. There are other woods which may be found nearly as good, depending on quality, such as Yellow Pine and close grained Mahogany. Lime is very strong and enables the builder to thin his mainplanes and tail surfaces down to an absolute knife edge without fear of the edges being cracked or crushed. Lime also enables a better and more lasting finish to be obtained without resorting to so many coats of surfacing.

For all turned parts, extra hard Limewood or even Boxwood may be used, and a good tip here is to do as much surfacing and doping as possible before removing the wheel or cowling from the lathe.

Fibre was formerly used for small accessories ; here the newer idea seems to be to use brass sheet, rod and strip instead. The advantages are obvious : fewer coats of dope, and greater strength.

Several of the smaller biplane models illustrating this article were rigged with wooden struts French-polished, as were the struts on the real aeroplanes, but the better method for larger models is to employ brass interplane struts let into tiny brass plates which are buried in the surfaces of the mainplanes. Nearly all the undercarriages of the models shown here are constructed of brass or steel-strip tube and rod soldered together.

Cellastoid transparent sheet moulding material has many uses, and can be obtained in large sheets of varying thicknesses. It may be used to mould many small articles, especially where more than one of these



One of the early De Havilland passenger machines, this 1/24th scale D.H.18 is finished in the authentic livery of the pioneer Daimler Air Service Company.

articles is required, as only one mould need, of course, be made. Cowlings, blisters, cupolas and many other additions will be found only to need one, or, at the most, two coats of dope before finally attaching to the finished model.

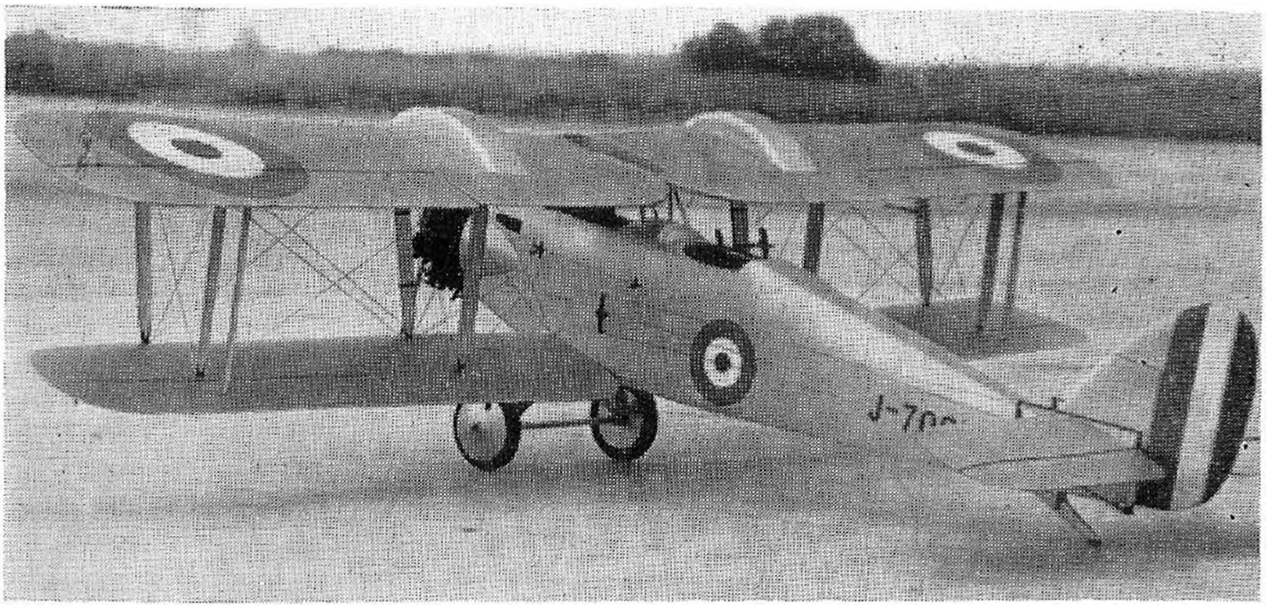
Plastic wood is useful for small cracks, but its general use for fillets and fairings is not to be recommended, as in a few months the plastic will shrink and cause unsightly cracks to appear on what were perfectly finished surfaces. White cellulose stopper is used almost universally. This dries very quickly and is easily sanded down. If unobtainable, an excellent substitute is quickly made from talcum powder mixed to a thick smooth paste with dope. An advantage of this home-made filler is that you can use dope of the coloured surface you wish to fill, thus reducing the number of coats of colour to blot out the filler.

Skim brass purchased in sheets in various wire gauge thicknesses is another most useful material. Thin tin can be obtained by cutting up old cocoa tins.

In many models basket work seats are imitated by using the criss-cross backing off Elastoplast finger bandages stuck to brass wire framework.

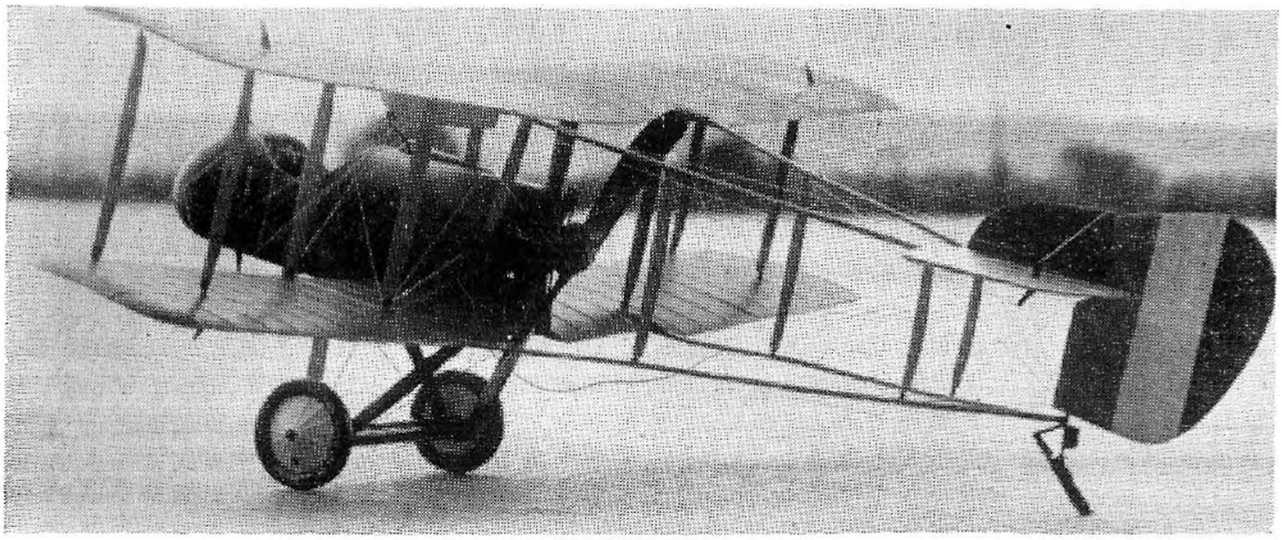
The models illustrated were all solid with the exception of the cabin area, which was usually cut out in one piece. The floor portion was then replaced and the remainder was used as a mould upon which sheet cellastoid was stretched with heat to form a hollow counterpart. Before the cellastoid cover was fitted, the floor portion was painted, and the seats, arm rests and controls fixed in place. The cover was then sprayed the correct interior colour with the window positions marked with squares of sticky paper, the masks removed and the cover cemented in place over the details.

The fabric-covered longerons on the decking were imitated by marking the longerons out accurately with pencil, and carving very slight hollows in between each line with a gouge. The effect of this method depends on how accurately the gouge follows the straight lines. The whole

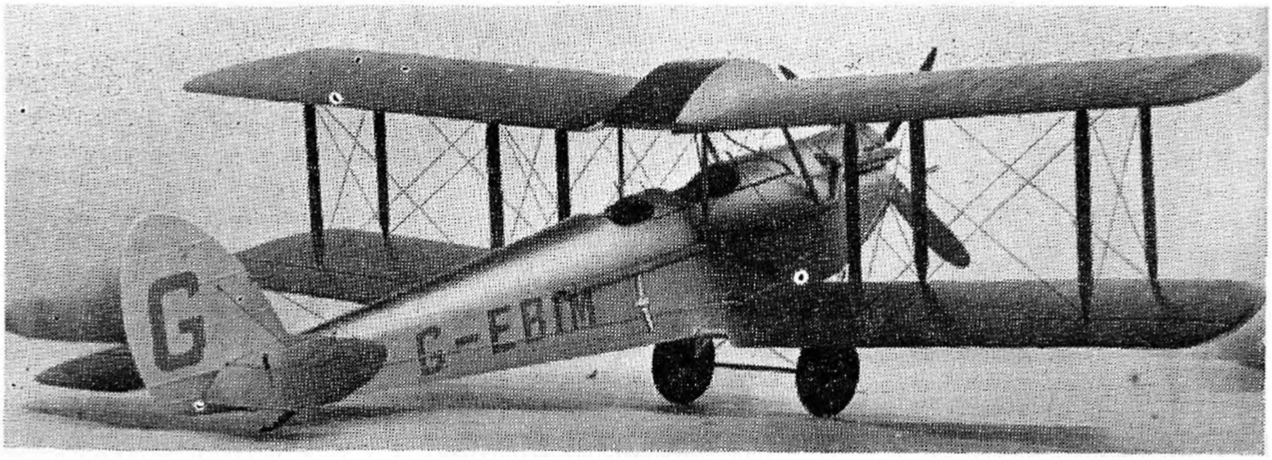


Above : This D.H.42 "Dingo" represents the "between wars" generation of military types.

Below : With a charm of their own, the 1914-18 war types make fascinating subjects for the modeller, as may be appreciated from this example of delicate construction by J. H. Elwell—a 1/24th scale D.H.2 Pusher Scout.



Below : Providing wide scope for miniature "signwriting" is the historic D.H.4a that won the first "King's Cup" race, and bore its honours on the fuselage sides. The model shown has no fewer than 131 separate letters.



The faithfully reproduced sliding cockpit coamings provide an unusual detail feature on this pleasing silver and blue model of the D.H.51 constructed in yellow pine.

is then sanded, to round off all the edges, and, when painted, the appearance is most realistic, as can be seen from the pictures.

All ribs were marked in the usual manner with paper strips, carefully stuck to the surfaces with red dope, and then sprayed with a thick coat of dope, and sanded well down before commencing to surface.

The normal method of surfacing is to apply one coat of grey filler to the model when the wood has been rubbed down as smooth as possible, two more coats of grey filler sanding down each with Durex abrasive paper, using it wet or dry as the surface demands. The surface should now be good enough to commence the finishing colours, but this depends on the model and the hardness of the wood used, and, if in doubt, another coat of grey filler should be used, finishing off with at least two coats of the correct finishing colour. If the colour is silver, one or two coats of undercoating silver with a final coat of finishing silver, after which the model may be either polished with a very light abrasive polish, or given a final coat of Nitro Cellulose Varnish.

On all the models illustrating this article the control surfaces were not scribed on in the usual manner, but were cut completely off, the edges sanded to the correct section, and then replaced with stiff pins. This gives a much cleaner and better looking control surface, and the impression that it is just part of the solid wing is avoided.

A saw cut was used to obtain the dihedral angle on the mainplanes, which was filled with cold water glue, the tip of the wing propped up to the correct dihedral, and the whole left thoroughly to dry. This method is amply strong enough if carried out carefully, and it goes without saying that the dihedral should not be added until all the rough work and sanding has been completely finished.

New tools are not so numerous as new materials, but the following list may at least add one or two to the readers' outfit.

For accuracy, a really good drawing is essential, and to transfer the measurements on to the wood, a 6 in. or 12 in. thin metal rule, a pair of metal dividers, and a small metal fitter's square are absolutely necessary. For metal details, a scriber is also essential.

Two small saws which will be found very useful are a 10 in. tenon saw with a round handle, and a smaller version of this saw, known as a jeweller's saw, with a blade about 4 in. long.

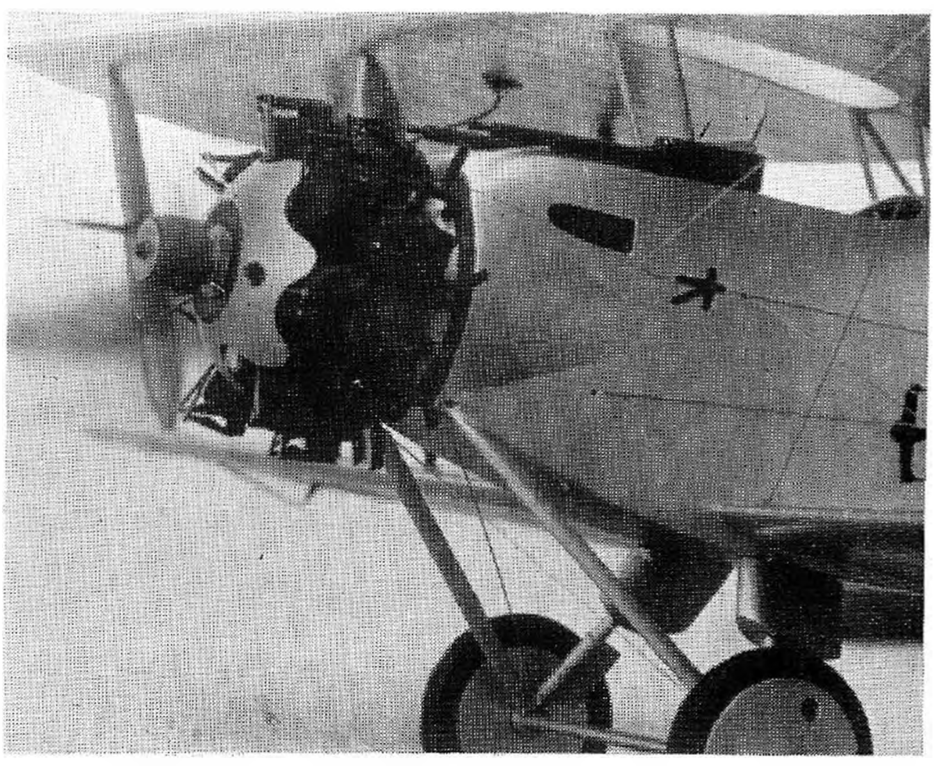
Metal cutting blades can now be obtained to fit in fret or coping saw frames, and will be found to be capable of cutting quite thick sheet brass for such small details as machine guns and scarf rings.

Several good pairs of pliers, with variously shaped jaws are useful, as is a large pair of pointed-nosed tweezers similar to those used by stamp collectors. These are useful for sticking small details in place in awkward positions when the model is nearly complete.

A good selection of small number drills, also 1/64 in. and 1/32 in. drills should be used with a set of three pin chucks specially made to take them. These small chucks can either be used in the hand in an ordinary hand drill, or in a power drill if you are fortunate enough to possess one.

Two electric soldering irons, one with a fairly small and pointed bit, and the other with a larger and flatter bit, are all the average model builder will require in this line, but both of these should be fitted with a fairly long flex to enable the iron to be taken to awkward parts of the model.

On opposite page : Finish is all-important on models such as this four-feet wing-span Dakota IV built for showcase display.



Right : Patient detail work is amply repaid in this close-up of the 1/24th scale Jaguar engine of the "Dingo" revving at full throttle—a photographic trick within the scope of any painstaking "table-top" enthusiast.

Try to build up a collection of assorted Swiss files. These are some of the most useful tools a modeller can acquire.

The few tools mentioned, plus the usual equipment of saws, planes and chisels, should be all that is required to build really professional models, but in any first-class tool shop you will always find small tools which can be added to the outfit to increase its efficiency.

J. H. ELLWELL.

THE LAST WORD

IN ASSEMBLING this year's *Aeromodeller Annual* we have endeavoured to cover as wide a surface of the aeromodelling world as possible. Newcomers amongst countries represented include Australia, Jugoslavia, Spain, Denmark, and Hungary, while we have been able to include several Russian glider examples and a fine "typical" Russian contest rubber duration plan. But there are still many lands where aeromodelling flourishes that have not contributed their quota. Our first annual encouraged wide correspondence, and one New Zealand reader deplored the lack of data on his country's activities. That lack continues, alas, not of bias on our part, but for lack of concrete information from New Zealand. We were lucky to have several long chats with visiting Wakefield-man Bethwaite, which served to whet our appetite for New Zealand models—but no plans have come our way. The best we can do is offer next door neighbour Australia's power champion. Similarly, we note with great interest the increase of activity in India, where a governing body is now functioning, and will be holding contests about the time we are enjoying Christmas in potentially seasonable weather. Again aeromodelling is moving in a big way in South America: elegant Argentine models, quite the best constructed of all entries, took part in the Jetex Contest finals at Fairlop. Japanese modellers, too, are active, and some improvement in the position in China encourages us to hope for developments there. All these will, we trust, figure in future years—but our chances of personally visiting these far-flung parts are remote and we must rely on our readers to send in material, particularly plans and good photographs of successful models. Countries already sufficiently advanced to have regular aeromodelling literature are generally well covered by our own correspondents, but news of progress in all other countries will be particularly welcome—and will appear either in these pages, or as *Aeromodeller* articles.

Certain features have been omitted from this edition and new ones incorporated. We are particularly happy to offer Ron Warring's useful design charts which provide, in our opinion, the most useful data offered for many years. In future *Annuals* we hope we will be able to keep them up to date with the latest winners. Purely technical articles have been avoided and certain tables of engines that have served their purpose have been omitted; reference to our earlier issue will provide the answers. Although solid builders are fewer in number than in the wartime years, we feel there are quite enough of them to justify our article on modern methods, so happily illustrated with work done during the past year.

Once more we would thank the many who have assisted us, the journals who have gladly agreed to exchange of articles, and, finally, thanks in advance, to the many new friends who will, we hope, be writing us from unexplored aeromodelling territory.

INDEX

Contest winners and runners-up and items listed in tables have not been indexed individually.


"O-My"
"O-MY" GLOSSY DOPE
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Put your money on the THREE-FORTY-SIX
— **it's a certain record breaker** —

SPECIFICATION

Cubic Capacity	3.46 c.c. (.21 cu. ins.)
Bore	.656
Stroke	.625
Weight	5¾ ozs.
Height	3 ins.
Width	1 7/8 ins.
Length (with extended prop. hub and spinner)	4 7/8 ins.
Engine Bearer Centres ...	9/16 ins. x 1.9/16 ins.
R.P.M.	10,000
B.H.P.	.250

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Compression Ratio ...	Variable to infinity
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Ball bearing main shaft. Floating bronze bush big end bearing (reduces big end wear to a minimum). Forged duralumin crankcase (gives strength and lightness).

E.D. Range of Diesels includes the 1 c.c. Mk. (Bee) at £2/5/-, 2 c.c. Mk. II at £3/10/-, 2 c.c. *Competition Special* at £3/17/6, and the 2.49 c.c. Mk. III at £4/5/-.

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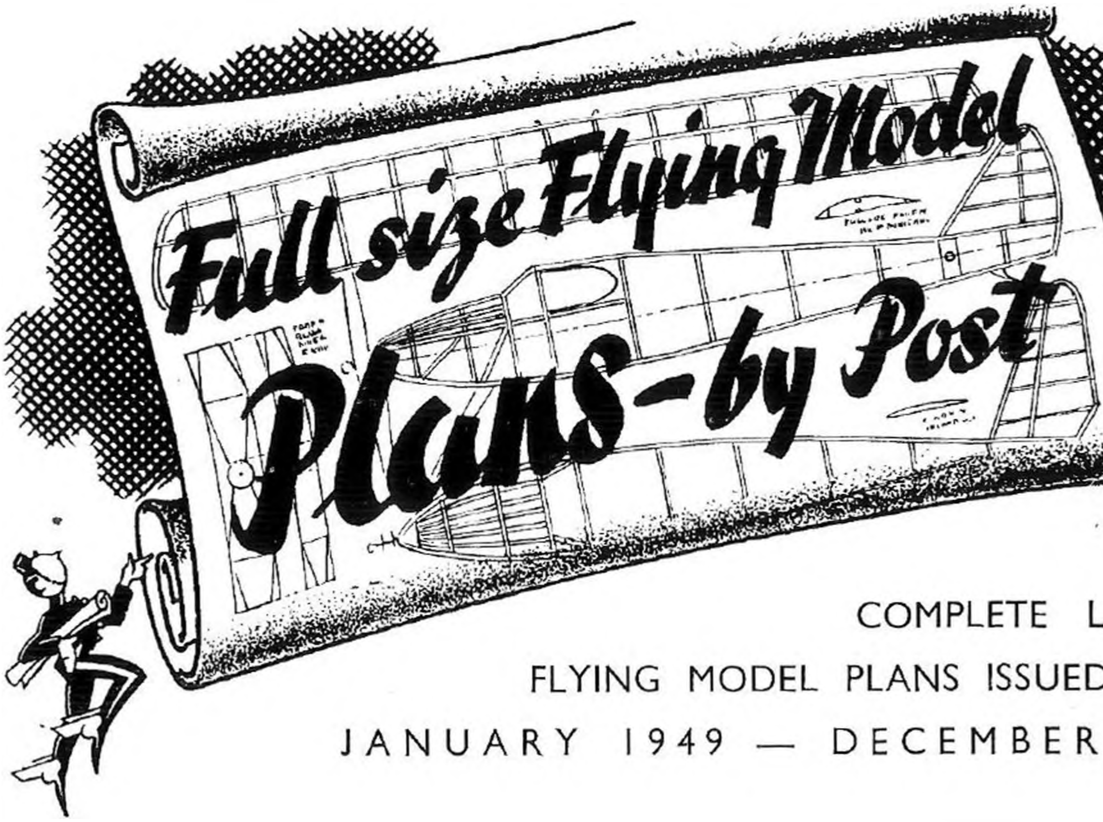

COMPLETE LIST OF
FLYING MODEL PLANS ISSUED FROM
JANUARY 1949 — DECEMBER 1949

GLIDERS

G/317. **COBRA.** By R. Twomey. British Class A.H.L. Record holding glider with elliptic dihedral round fuselage. Span 48 ins. 3/-

G/330. **DREAM BOGEY.** By D. Posner. Low aspect ratio high wing contest sailplane. Span 60 ins. 5/-

G/314. **JINX.** By N. G. Marcus. Streamlined parasol wing type sailplane with parallel chord elliptic tipped wings and spring-up tail dethermaliser. Span 72 ins. 5/-

G/338. **LULU.** By J. Roberts. Beginners' slab-sided contest glider. Span 50 ins. 3/-

G/310. **MOBY DICK.** By Eric Smith. Shoulder wing high performance contest sailplane utilising laminar flow wing section. Span 82½ ins. 8/-

G/341. **WALTHEW GLIDER.** By Roland Scott. Novices' first glider. Parasol wing, parallel chord wing, slabsider. Span 29 ins. 2/-

CONTROL LINERS

CL/325. **ARIEL.** By R. J. North. Super-simple basic stunt control line trainer or contest model. For 1-1.5 c.c. engines. Span 30 ins. 3/6

CL/313. **CHEETAH.** By. E. Wiggall. Profile fuselage high wing stunt control-liner with folding prop. Engines 1-1.5 c.c. Span 23 ins. 2/-

CL/342. **HAPPY HAROLD.** By H. Butcher. Lightweight slabsider stunt control-liner. Engines 1.8-2 c.c. Span 30 ins. 3/-

CL/318. **JET TRAINER.** By R. C. Jude. An ultra-simple basic control-line model for British and American jets. Span 30 ins. 3/-

CL/339. **LI'L ZOWIE.** By B. T. Falconer. Simple midwing stunt control-liner for 1 c.c. engines. Span 22 ins. 2/-

CL/347. **M 48 CONVERSION.** By H. J. Pridmore. Control-line adaptation to designer's earlier scale model. Miles M.48. 2/-

CL/336. **TEMPEST.** By H. J. Pridmore. Scale control-liner for engines 2.5-5 c.c. Span 31 ins. 3/-

CL/321. **TIPSY JUNIOR.** By H. G. Hundleby. 1¼ in. scale stunt control-liner complete with "pilot" for 1-2 c.c. engines. Span 28½ ins. 4/-
(Also available as *CL*/322. 34 ins. span for motors 2.5-5 c.c. 5/-
and *CL*/323. 39¾ ins. span for motors 5-10 c.c.) 6/-

CL/328. **SIRIUS.** By W. Musciano. Scale control-line model of the Lockheed floatplane. For engines 2.5-5 c.c. Span 32 ins. 3/-

CL/334. **YOICKS.** By J. W. Coasby. Biplane stunt control-liner; using laminar flow wing section. For engines 5-10 c.c. Span 33 ins. 3/-

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PET/315. **DOLPHIN.** By R. A. Collins. Elegant streamlined power model with mono-wheel U/C and twin fin tail. For engines 3-5 c.c. Span 80 ins. 7/-

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