
AEROMODELLER
ANNUAL 1950

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AEROMODELLER ANNUAL - 1950

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

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MODEL DIESELS

CONTROL LINE MODEL AIRCRAFT

AEROMODELLER ANNUAL - 1948

AEROMODELLER ANNUAL - 1949

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

We welcome the opportunity of publishing this shot of S.M.A.E. Chairman, Alex. Houlberg, A.F.R.Ae.S., launching his veteran Wakefield model *Isis* at the South Midland Area Rally at Halton as recently as September 3rd. It speaks volumes, both for his enthusiasm and the lasting attraction of the hobby, that after over forty years as contestant and administrator, he can still turn out in all sorts of weather and put up a sparkling performance. We know our readers will join with us in wishing the Grand Old Man of Aeromodelling many more flying years.

INTRODUCTION

FIFTY YEARS ON!

FEW, if any, of our readers can claim that fifty years ago they were in the heyday of their youthful zest as aeromodellers—though many youngsters in their sixties and seventies can still show a clean pair of wings in competition with experts less than a quarter of their years. If we throw our net a little closer in and consider how many of today's Grand Old Men had already adopted the hobby before the outbreak of World War I, then we are surprised at the flying fish in our catch. Foremost in that number must be Alex Houlberg, A.F.R.Ae.S., Chairman of the S.M.A.E., who only last winter received a presentation for forty years unremitting effort on behalf of the Society. In the period 1910-14 he was busy establishing assorted British records with rubber-powered models typical of the period. Another up-and-coming youngster of those days was then running a model aircraft club at Radley, and already devoting time and thought to power model flying—his military career yet before him—today he is still as active if better known as Lieut.-Col. C. E. Bowden, A.M.I.Mech.E. Our own Managing Editor, in short trousers, was augmenting his pocket money in Parliament Hill Fields retrieving models for older and more affluent youths . . . . The list could continue almost indefinitely with the famous and the not-so-famous, which serves to convince us not only that aeromodelling has an enduring grip on its followers, but that it brings in its wake long life and continued activity.

Starting as the complement to full-size flying, and the medium of much original research in those far-off days, the hobby passed through the inevitable period of depression when it ranked as little more than the curious pursuit of adults who should have known better and youngsters to whom it could do no harm, until, with the advent of the Wakefield Trophy in 1928 and the Brown Junior in 1929, it commenced the long uphill climb to national recognition and a worthy place amongst our sporting and educational activities. Today it occupies a position where the Royal Air Force can affiliate something over a hundred service clubs, where the Home Office must introduce legislation to ensure that its participants enjoy their fair share of the public open spaces available—though *some* Councils may not yet be alive to this aspect of the matter, where a thriving model industry is exporting all over the world and supplying an active home market, and where in this country alone two specialist magazines are able to exist side by side and most countries in Europe and throughout the world publish either an aeromodelling journal or have space in some full-size aeronautical publication. Aeromodelling has flown full circle and begins once more to enjoy the status of a science to enhance its already proud position as a sport and hobby.

Looking back, more particularly over the events of the year, it is a pity to see how bad weather has detracted from the attendances at what should have been record-breaking occasions. The Easter South-Eastern Area Control Line Championships held at Brighton and sponsored by that town enjoyed only a moderate success judged by what had been expected, whilst the first Northern Nationals at York suffered from the typical weather of the year.

Perhaps the most significant advance of the year has been the development of small-size lightweight radio-control units utilising the thyratron valve. Expert and not-so-expert are busily building and flying and enjoying equal success once the elements of simple electronics have been grasped. Another stride has been in control line flying where the motorised plank is fast giving way to more elegant machines worth looking at as well as flying. Growing numbers of scale model control line fans are concentrating on team racing which for the first time is offering the public a spectacle where even non-aeromodellers can enjoy the thrills of competitive racing.

In the International field, Wakefield history has been made with the holding of the contest in Finland, where a small but enthusiastic country were able to provide visiting contestants with an organisation and welcome second to none by dint of every able-bodied member of their Aeronautical Society getting down to the job—no suggestion here that aeromodelling was beneath the dignity of the parent body—as has sometimes been our gloomy experience in the not so distant past. It was fitting that Aarne Ellila should win once again on his home ground, where for the first time the contest was run in still air, that nearly mythical condition in which our aeromodelling writers claim anything up to five minutes duration—only Aarne approached it, though Ted Evans came within striking distance for G.B., and deserves our warmest congratulations. In Sweden the first of what we hope to be an annual series of contests for A/2 Nordic Class Sailplanes was won by Bernfest of Jugoslavia, a country making a welcome return to international model flying.

At Eaton Bray the popular *Aeromodeller* International Rally celebrated its fourth meeting, when Ron Yeabsley won the *Aeromodeller* Trophy, as the best all-rounder, for the first time recording a British victory. Here again our Jugoslav friends were well in evidence and impressed all with their true aeromodelling spirit and sportsmanship.

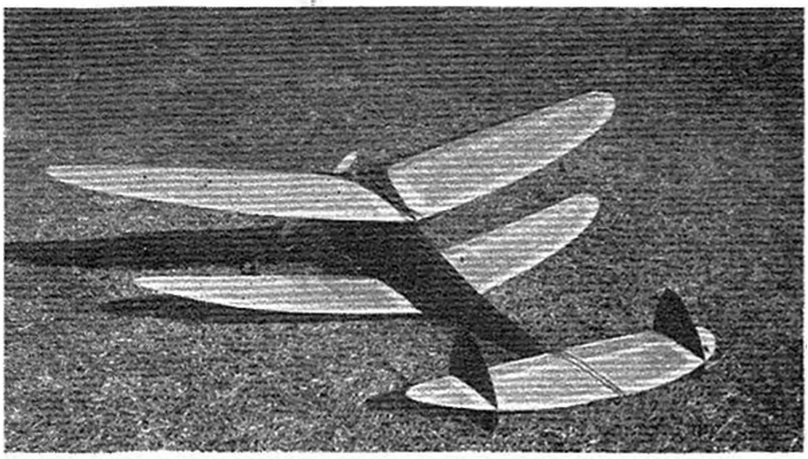
For the future it seems likely that international meetings will be run on a host and guest basis with the sponsoring country entertaining visitors free of charge—thus releasing a greater amount of hard-to-get foreign currency for a round of return visits.

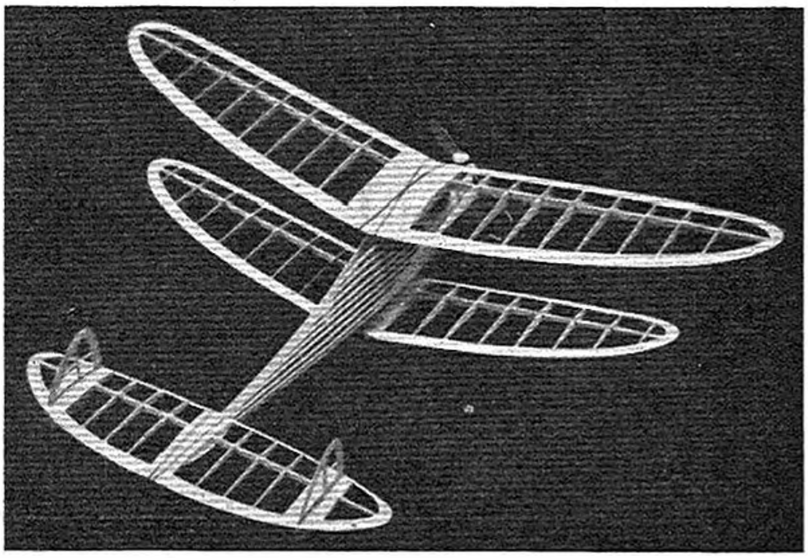
As usual, the model aircraft trade has anticipated rather than followed fashions with kits of such designs as Nordic gliders, team racers, and the like, while, as we suggested in our last Annual, quality has come to be the essential to any marked success, though the demon price is constantly forcing less than de luxe articles to be offered.

In making our third annual bow, we must not forget to thank the many foreign correspondents who have helped us in this book, our many overseas contemporaries whose courtesy we acknowledge in reprinting their plans, and not last, our public, who will, we hope, continue to buy *Aeromodeller Annual* and make our next year's task the pleasanter.

LADYBIRD SPECIAL POWER BIPLANE

By H. J. PRIDMORE





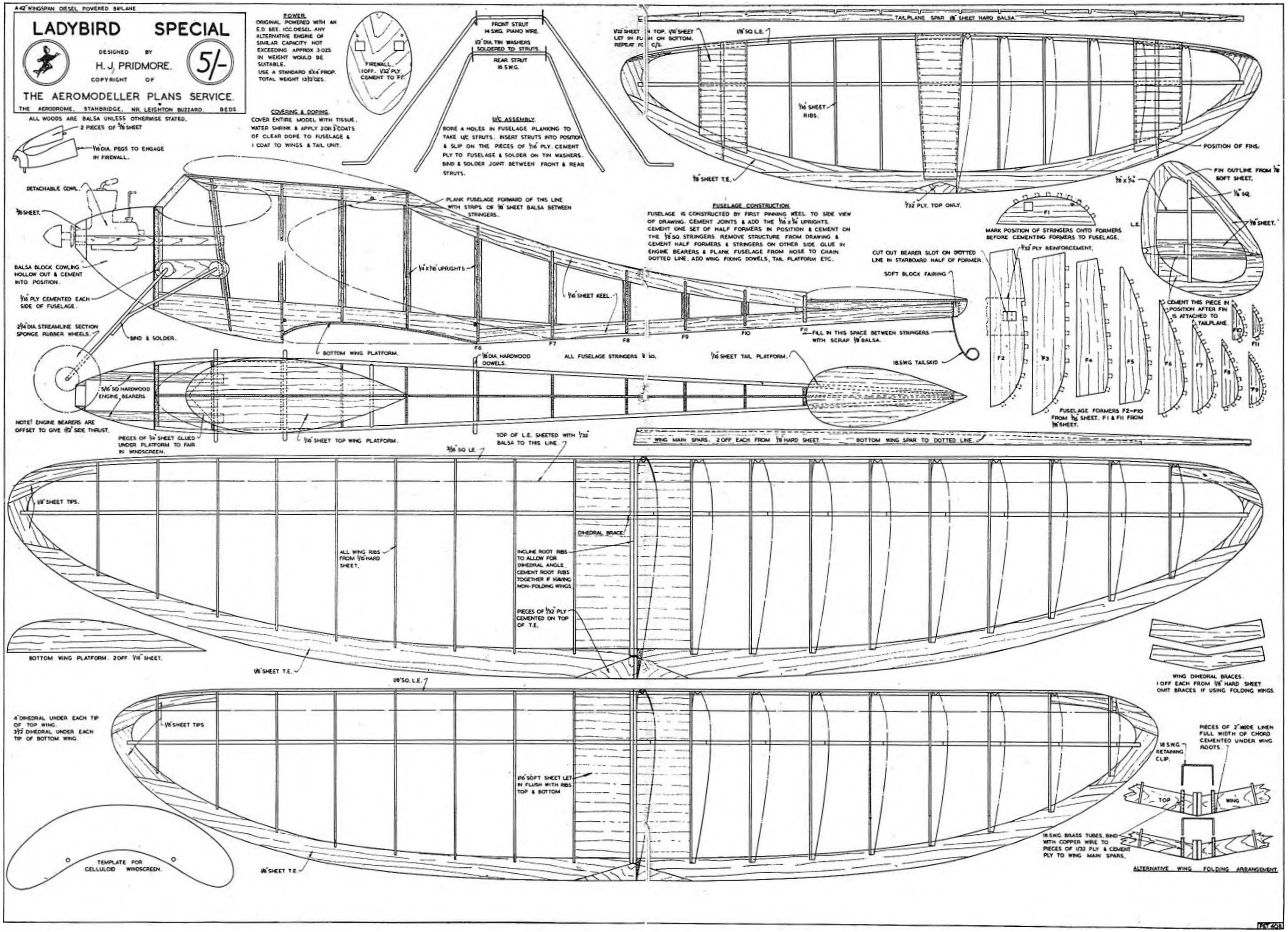
DESCRIPTION. — This is a development of the designer's popular rubber-driven biplane which appeared in *Aeromodeller*, April, 1948. The alternative wing-folding arrangement may be found very useful by builders who suffer from the usual transport troubles of these days. This is described in lowerright-handcorner of plan.

The completed model should balance about 3 ins. behind the leading edge of the upper wing. If C.G. position is incorrect the undercarriage wheels may be moved fore or aft to trim, by unsoldering the joint between the front and rear struts, finding the correct C.G. position, and re-soldering.

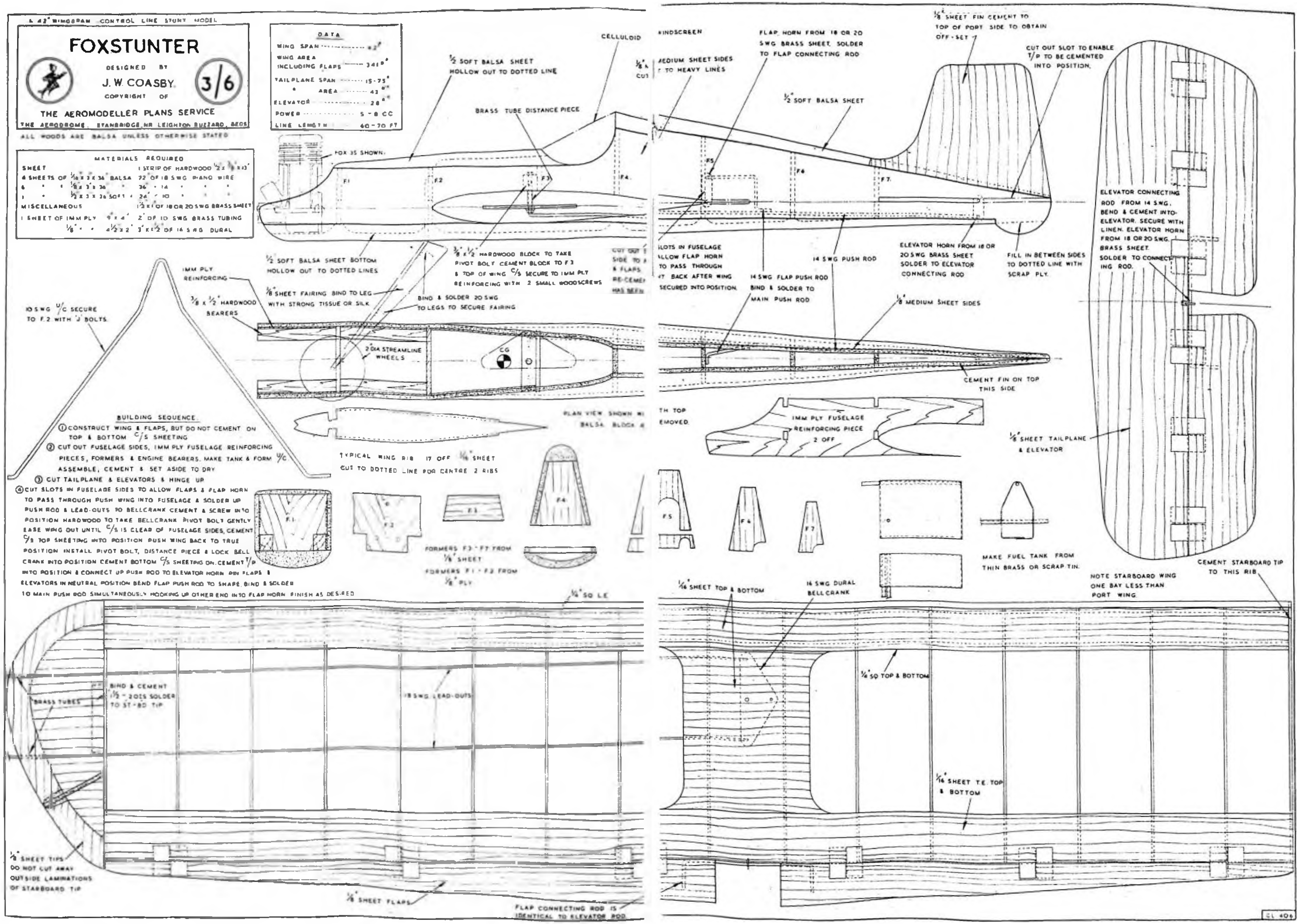
CONSTRUCTION.—Any reasonably experienced modeller should find Ladybird easy enough to build—but, as with all free flight models, care and accuracy will pay dividends. Fuselage is not so tricky to cover as might be expected. One piece of tissue will suffice for each side, and if flour paste is applied to all the stringers the tissue easily conforms to fuselage contour. Original colour scheme was red fuselage and fins, white wings and tailplane.

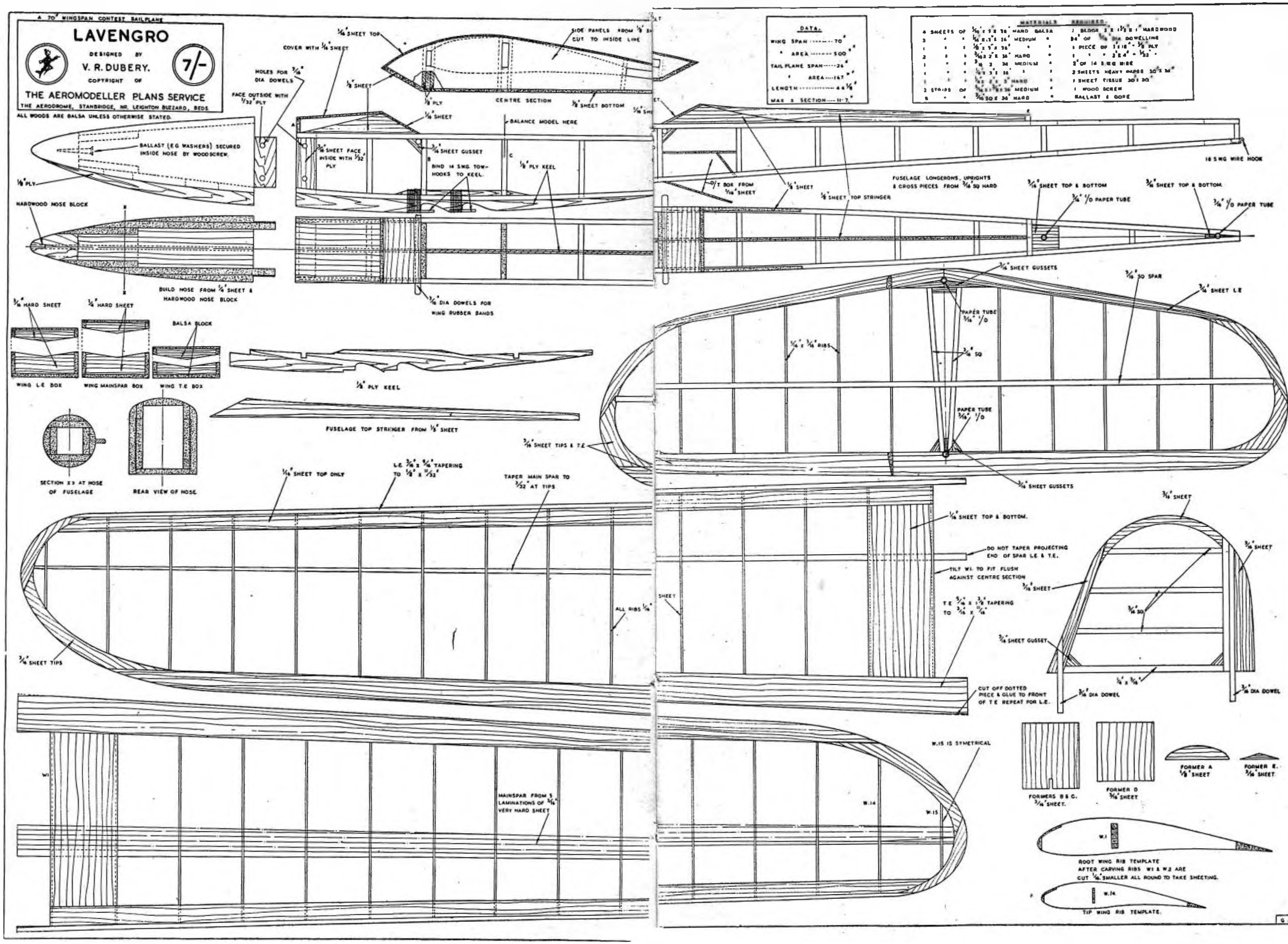
PERFORMANCE.—Powered with an E.D. Bee Ladybird Special, has a performance equal if not better than a well-trimmed pylon contest model ; On its sixth test flight the original flew o.o.s. after six minutes from a 25-second engine run. In more than a season's flying it never sustained a prang.

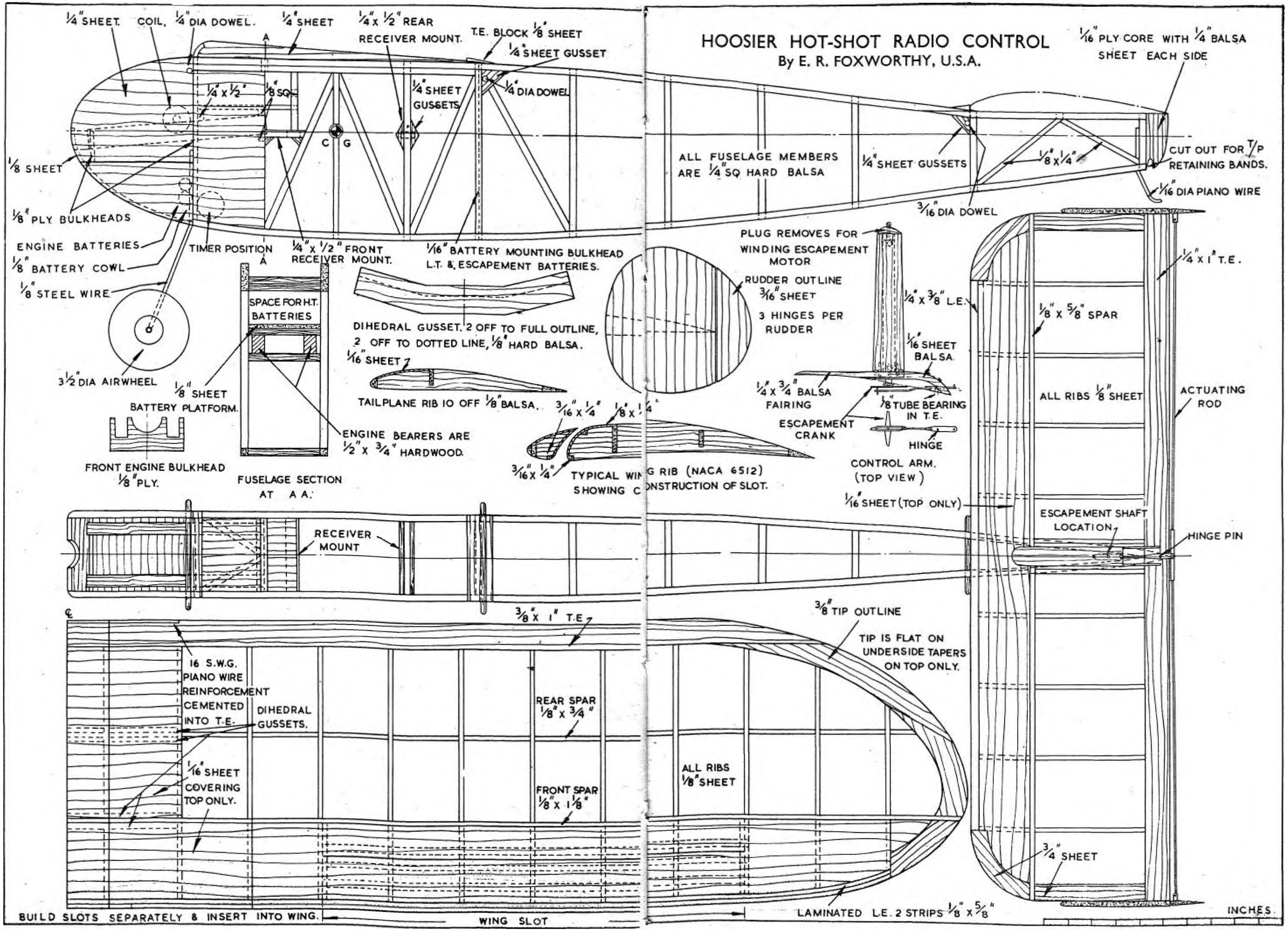
TRIMMING.—Straight flat glide should be obtained before power flights attempted. Then with ⅛-in. left rudder, obtained by slewing whole tail-unit slightly, let go with a 10-secs. engine run. With this adjustment plus the 1½° built-in side thrust the machine should climb to the right under power, and give a fairly tight left hand circle in the glide. No other adjustments should be necessary. When hand launching it is adviseable to grasp the fuselage just ahead of bottom wing where the planking enables a firm hold to be taken.

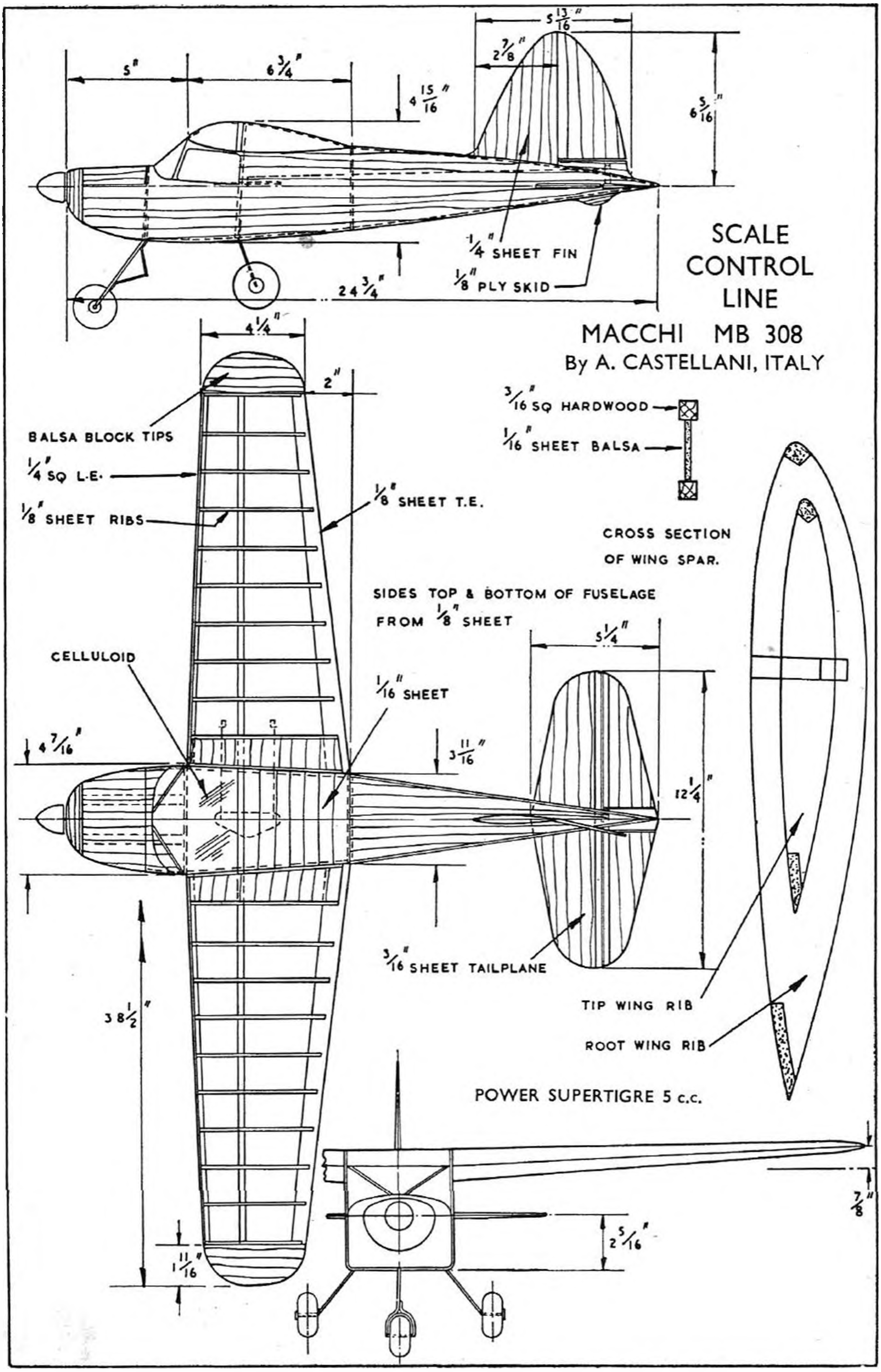


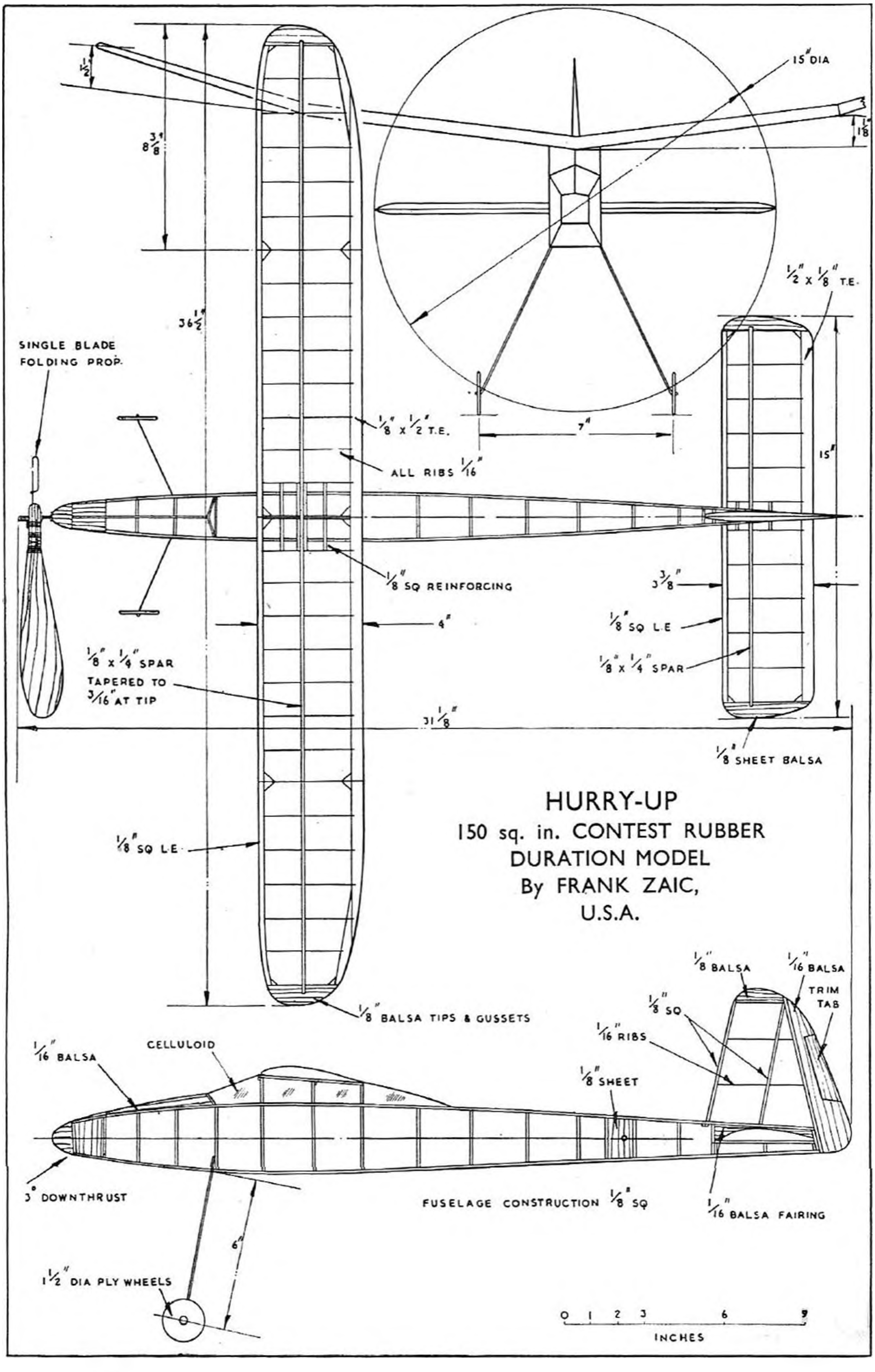
A 42" WINGSPAN DIESEL POWERED BIPLANE
LADYBIRD SPECIAL
DESIGNED BY
H. J. PRIDMORE.
5/-
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE.
THE AERODROME, STANBRIDGE, NR. LEIGHTON BUZZARD, BEDS.
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.
POWER.
ORIGINAL POWERED WITH AN E.D. BEE. 1CC DIESEL. ANY ALTERNATIVE ENGINE OF SIMILAR CAPACITY NOT EXCEEDING APPROX 3 OZS IN WEIGHT WOULD BE SUITABLE.
USE A STANDARD 8x4 PROP. TOTAL WEIGHT 13½ OZS.
COVERING & DOPING.
COVER ENTIRE MODEL WITH TISSUE. WATER SHRINK & APPLY 2 OR 3 COATS OF CLEAR DOPE TO FUSELAGE & 1 COAT TO WINGS & TAIL UNIT.
FIREWALL. 1 OFF. 1/32" PLY. CEMENT TO F1.
FRONT STRUT 14 S.W.G. PIANO WIRE.
1/2" DIA. TIN WASHERS SOLDERED TO STRUTS.
REAR STRUT 16 S.W.G.
U/C ASSEMBLY.
BORE 4 HOLES IN FUSELAGE PLANKING TO TAKE U/C STRUTS. INSERT STRUTS INTO POSITION & SLIP ON THE PIECES OF 1/16" PLY. CEMENT PLY TO FUSELAGE & SOLDER ON TIN WASHERS. BIND & SOLDER JOINT BETWEEN FRONT & REAR STRUTS.
2 PIECES OF 3/16" SHEET
1/16" DIA. PEGS TO ENGAGE IN FIREWALL.
DETACHABLE COWL.
3/16" SHEET.
BALSA BLOCK COWLING HOLLOW OUT & CEMENT INTO POSITION.
1/16" PLY CEMENTED EACH SIDE OF FUSELAGE.
2¼" DIA. STREAMLINE SECTION SPONGE RUBBER WHEELS.
BIND & SOLDER.
PLANK FUSELAGE FORWARD OF THIS LINE WITH STRIPS OF 1/8" SHEET BALSA BETWEEN STRINGERS.
1/4" x 1/16" UPRIGHTS
1/16" SHEET KEEL.
BOTTOM WING PLATFORM.
F6 F7 F8 F9 F10 F11
1/8" DIA. HARDWOOD DOWELS.
ALL FUSELAGE STRINGERS 1/8" SQ.
1/16" SHEET TAIL PLATFORM.
FILL IN THIS SPACE BETWEEN STRINGERS WITH SCRAP 1/8" BALSA.
18 S.W.G. TAILSKID
5/16" SQ. HARDWOOD ENGINE BEARERS
NOTE! ENGINE BEARERS ARE OFFSET TO GIVE 1/32" SIDE THRUST.
PIECES OF 1/4" SHEET GLUED UNDER PLATFORM TO FAIR IN WINDSCREEN.
1/16" SHEET TOP WING PLATFORM.
TOP OF L.E. SHEETED WITH 1/32" BALSA TO THIS LINE.
3/16" SQ. L.E.
TAILPLANE SPAR 1/8" SHEET HARD BALSA.
1/32" SHEET ON TOP, 1/16" SHEET LET IN FLUSH ON BOTTOM. REPEAT FOR C/S.
1/8" SQ. L.E.
1/16" SHEET RIBS.
1/8" SHEET T.E.
POSITION OF FINS.
1/32" PLY. TOP ONLY.
FUSELAGE CONSTRUCTION.
FUSELAGE IS CONSTRUCTED BY FIRST PINNING KEEL TO SIDE VIEW OF DRAWING. CEMENT JOINTS & ADD THE 1/16" x 1/4" UPRIGHTS. CEMENT ONE SET OF HALF FORMERS IN POSITION & CEMENT ON THE 1/8" SQ. STRINGERS. REMOVE STRUCTURE FROM DRAWING & CEMENT HALF FORMERS & STRINGERS ON OTHER SIDE. GLUE IN ENGINE BEARERS & PLANK FUSELAGE FROM NOSE TO CHAIN DOTTED LINE. ADD WING FIXING DOWELS, TAIL PLATFORM ETC.
F1
MARK POSITION OF STRINGERS ONTO FORMERS BEFORE CEMENTING FORMERS TO FUSELAGE.
CUT OUT BEARER SLOT ON DOTTED LINE IN STARBOARD HALF OF FORMER.
1/32" PLY REINFORCEMENT.
SOFT BLOCK FAIRING
F2 F3 F4 F5 F6 F7 F8 F9 F10 F11
FUSELAGE FORMERS F2–F10 FROM 1/16" SHEET. F1 & F11 FROM 1/8" SHEET.
1/8" x 1/4"
FIN OUTLINE FROM 1/8" SOFT SHEET.
1/8" SQ.
L.E.
1/8" SHEET.
CEMENT THIS PIECE IN POSITION AFTER FIN IS ATTACHED TO TAILPLANE.
WING MAIN SPARS. 2 OFF EACH FROM 1/8" HARD SHEET.
BOTTOM WING SPAR TO DOTTED LINE.
1/8" SHEET TIPS.
ALL WING RIBS FROM 1/16" HARD SHEET.
DIHEDRAL BRACE.
INCLINE ROOT RIBS TO ALLOW FOR DIHEDRAL ANGLE. CEMENT ROOT RIBS TOGETHER IF HAVING NON-FOLDING WINGS.
PIECES OF 1/32" PLY CEMENTED ON TOP OF T.E.
BOTTOM WING PLATFORM. 2 OFF 1/16" SHEET.
1/8" SHEET T.E.
1/8" SQ. L.E.
WING DIHEDRAL BRACES. 1 OFF EACH FROM 1/8" HARD SHEET. OMIT BRACES IF USING FOLDING WINGS.
4" DIHEDRAL UNDER EACH TIP OF TOP WING. 3½" DIHEDRAL UNDER EACH TIP OF BOTTOM WING.
1/8" SHEET TIPS
1/16" SOFT SHEET LET IN FLUSH WITH RIBS TOP & BOTTOM
PIECES OF 2" WIDE LINEN FULL WIDTH OF CHORD CEMENTED UNDER WING ROOTS.
18 S.W.G. RETAINING CLIP.
TOP
WING
18 S.W.G. BRASS TUBES. BIND WITH COPPER WIRE TO PIECES OF 1/32 PLY & CEMENT PLY TO WING MAIN SPARS.
ALTERNATIVE WING FOLDING ARRANGEMENT.
TEMPLATE FOR CELLULOID WINDSCREEN.
1/8" SHEET T.E.
PET 408


A 42" WINGSPAN CONTROL LINE STUNT MODEL
FOXSTUNTER
DESIGNED BY
J. W. COASBY
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS
3/6
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED
DATA
WING SPAN 42"
WING AREA INCLUDING FLAPS 341 □"
TAILPLANE SPAN 15·75"
TAILPLANE AREA 42 □"
ELEVATOR 28 □"
POWER 5 - 8 CC
LINE LENGTH 40 - 70 FT
MATERIALS REQUIRED
SHEET
MISCELLANEOUS
I SHEET OF IMM PLY
FOX 35 SHOWN
1/2 SOFT BALSA SHEET HOLLOW OUT TO DOTTED LINE
CELLULOID
BRASS TUBE DISTANCE PIECE
1/2 SOFT BALSA SHEET BOTTOM HOLLOW OUT TO DOTTED LINES
1/8 SHEET FAIRING BIND TO LEG WITH STRONG TISSUE OR SILK
BIND & SOLDER 20 SWG TO LEGS TO SECURE FAIRING
IMM PLY REINFORCING
3/8 x 1/2 HARDWOOD BEARERS
10 SWG U/C SECURE TO F.2 WITH 4 BOLTS
2" DIA STREAMLINE WHEELS
CG
BUILDING SEQUENCE
① CONSTRUCT WING & FLAPS, BUT DO NOT CEMENT ON TOP & BOTTOM C/S SHEETING
② CUT OUT FUSELAGE SIDES, IMM PLY FUSELAGE REINFORCING PIECES, FORMERS & ENGINE BEARERS. MAKE TANK & FORM U/C ASSEMBLE, CEMENT & SET ASIDE TO DRY
③ CUT TAILPLANE & ELEVATORS & HINGE UP
④ CUT SLOTS IN FUSELAGE SIDES TO ALLOW FLAPS & FLAP HORN TO PASS THROUGH PUSH WING INTO FUSELAGE & SOLDER UP PUSH ROD & LEAD-OUTS TO BELLCRANK CEMENT & SCREW INTO POSITION HARDWOOD TO TAKE BELLCRANK PIVOT BOLT GENTLY EASE WING OUT UNTIL C/S IS CLEAR OF FUSELAGE SIDES, CEMENT C/S TOP SHEETING INTO POSITION PUSH WING BACK TO TRUE POSITION INSTALL PIVOT BOLT, DISTANCE PIECE & LOCK BELL CRANK INTO POSITION CEMENT BOTTOM C/S SHEETING ON. CEMENT T/P INTO POSITION & CONNECT UP PUSH ROD TO ELEVATOR HORN PIN FLAPS & ELEVATORS IN NEUTRAL POSITION BEND FLAP PUSH ROD TO SHAPE, BIND & SOLDER TO MAIN PUSH ROD SIMULTANEOUSLY HOOKING UP OTHER END INTO FLAP HORN FINISH AS DESIRED
TYPICAL WING RIB 17 OFF 1/16" SHEET CUT TO DOTTED LINE FOR CENTRE 2 RIBS
FORMERS F3 - F7 FROM 1/8" SHEET
FORMERS F1 - F2 FROM 1/8" PLY
1/16" SQ L.E.
BIND & CEMENT
BRASS TUBES
18 SWG LEAD-OUTS
1/8" SHEET TIPS DO NOT CUT AWAY OUTSIDE LAMINATIONS OF STARBOARD TIP
1/8" SHEET FLAPS
FLAP CONNECTING ROD IS IDENTICAL TO ELEVATOR ROD
FLAP HORN FROM 18 OR 20 SWG BRASS SHEET. SOLDER TO FLAP CONNECTING ROD
1/2" SOFT BALSA SHEET
1/8" SHEET FIN CEMENT TO TOP OF PORT SIDE TO OBTAIN OFF-SET
CUT OUT SLOT TO ENABLE T/P TO BE CEMENTED INTO POSITION
14 SWG PUSH ROD
14 SWG FLAP PUSH ROD BIND & SOLDER TO MAIN PUSH ROD
ELEVATOR HORN FROM 18 OR 20 SWG BRASS SHEET SOLDER TO ELEVATOR CONNECTING ROD
FILL IN BETWEEN SIDES TO DOTTED LINE WITH SCRAP PLY
1/8" MEDIUM SHEET SIDES
CEMENT FIN ON TOP THIS SIDE
IMM PLY FUSELAGE REINFORCING PIECE 2 OFF
ELEVATOR CONNECTING ROD FROM 14 SWG. BEND & CEMENT INTO ELEVATOR. SECURE WITH LINEN. ELEVATOR HORN FROM 18 OR 20 SWG. BRASS SHEET. SOLDER TO CONNECTING ROD.
1/8" SHEET TAILPLANE & ELEVATOR
MAKE FUEL TANK FROM THIN BRASS OR SCRAP TIN.
NOTE STARBOARD WING ONE BAY LESS THAN PORT WING
CEMENT STARBOARD TIP TO THIS RIB
1/16" SHEET TOP & BOTTOM
16 SWG DURAL BELLCRANK
1/16" SQ TOP & BOTTOM
1/16" SHEET T.E. TOP & BOTTOM
CL 406

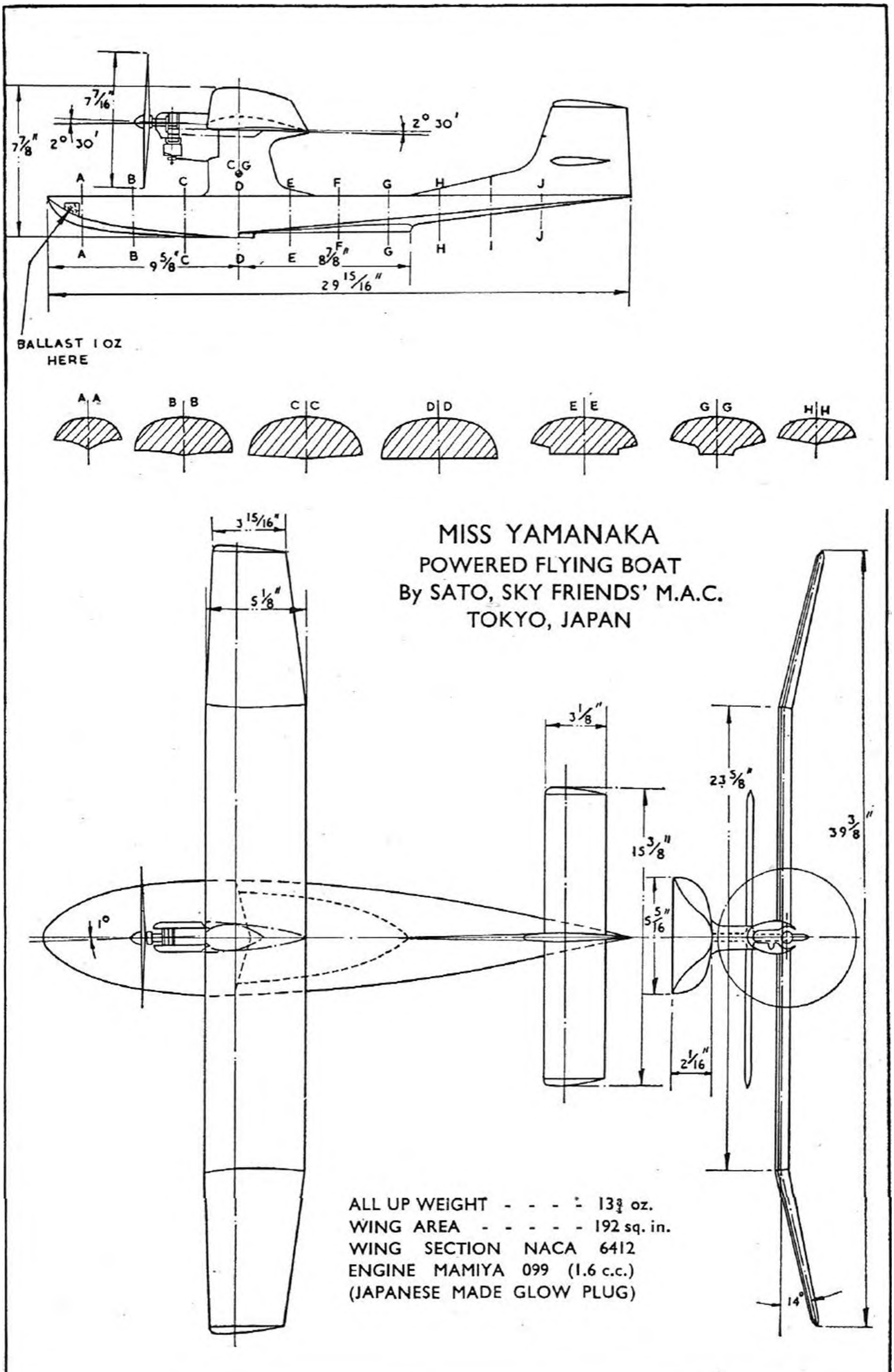

A 70" WINGSPAN CONTEST SAILPLANE
LAVENGRO
DESIGNED BY
V. R. DUBERY.
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR. LEIGHTON BUZZARD, BEDS.
7/-
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.
BALLAST (E.G. WASHERS) SECURED INSIDE NOSE BY WOODSCREW.
DATA.
WING SPAN .... 70"
" AREA .... 500 □"
TAIL PLANE SPAN ...... 26"
" AREA .... 167 □"
LENGTH .... 44⅛"
MAX X SECTION .... 11·7□"
MATERIALS REQUIRED.
CENTRE SECTION
BALANCE MODEL HERE
1/8" PLY KEEL
FUSELAGE TOP STRINGER FROM 1/8" SHEET
SECTION X.X AT NOSE OF FUSELAGE
REAR VIEW OF NOSE
WING L.E. BOX
WING MAINSPAR BOX
WING T.E. BOX
ROOT WING RIB TEMPLATE
TIP WING RIB TEMPLATE.
W.15 IS SYMETRICAL
G 405

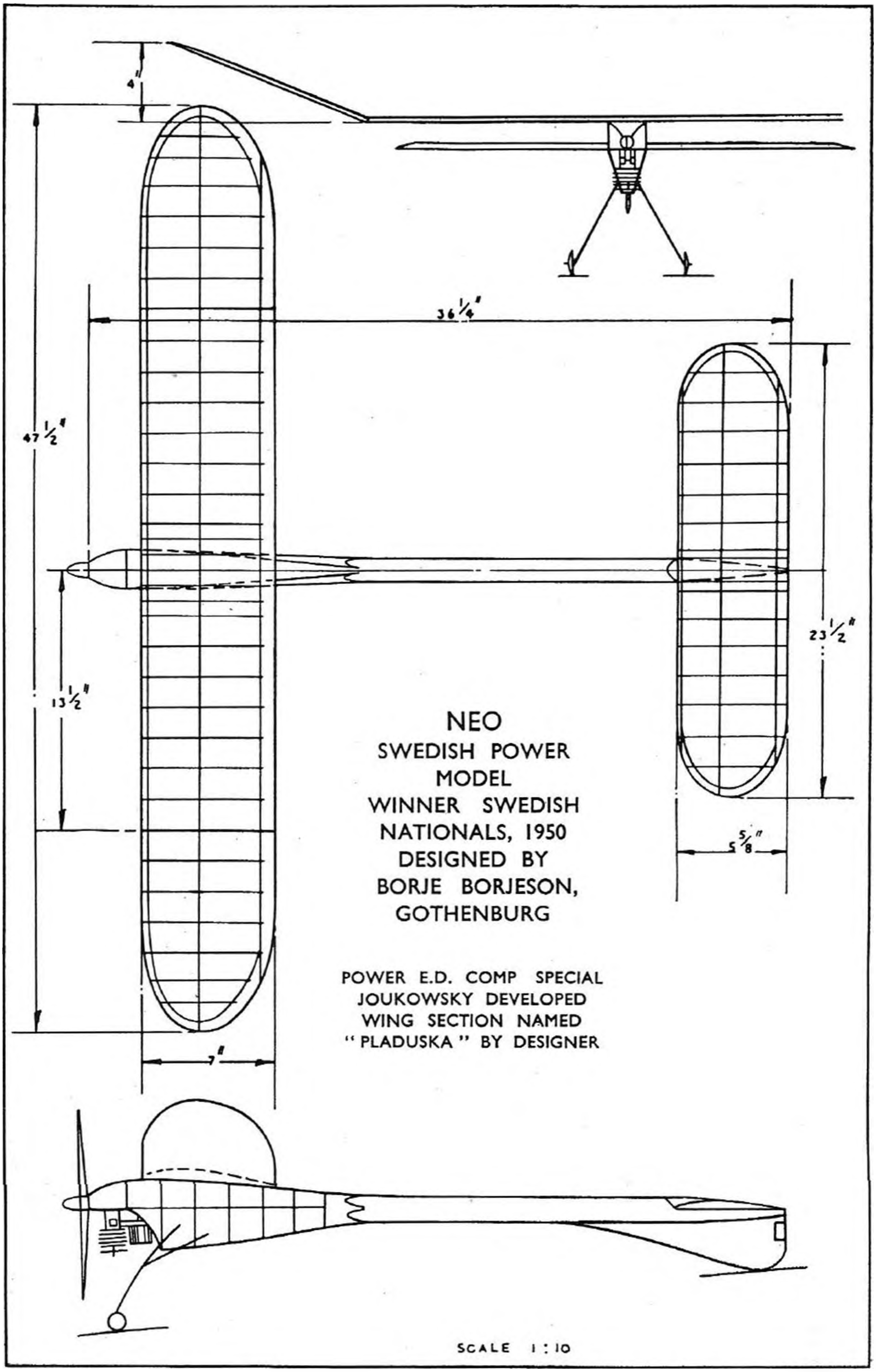

HOOSIER HOT-SHOT RADIO CONTROL
By E. R. FOXWORTHY, U.S.A.
1/4" SHEET
COIL
1/4" DIA DOWEL
1/4" SHEET
1/4" x 1/2" REAR RECEIVER MOUNT
T.E. BLOCK 1/8" SHEET
1/4" SHEET GUSSET
1/4" DIA DOWEL
1/4" SHEET GUSSETS
1/8 SQ
C G
1/8" SHEET
1/8" PLY BULKHEADS
ENGINE BATTERIES
1/8" BATTERY COWL
1/8" STEEL WIRE
TIMER POSITION
1/4" x 1/2" FRONT RECEIVER MOUNT
1/16" BATTERY MOUNTING BULKHEAD L.T. & ESCAPEMENT BATTERIES.
3 1/2" DIA AIRWHEEL
1/8" SHEET BATTERY PLATFORM
FRONT ENGINE BULKHEAD 1/8" PLY
SPACE FOR H.T. BATTERIES
FUSELAGE SECTION AT A A.
ENGINE BEARERS ARE 1/2" x 3/4" HARDWOOD.
DIHEDRAL GUSSET. 2 OFF TO FULL OUTLINE, 2 OFF TO DOTTED LINE, 1/8" HARD BALSA.
1/16" SHEET
TAILPLANE RIB 10 OFF 1/8" BALSA.
3/16" x 1/4"
1/8" x 1/4"
3/16" x 1/4"
TYPICAL WING RIB (NACA 6512) SHOWING CONSTRUCTION OF SLOT.
ALL FUSELAGE MEMBERS ARE 1/4" SQ HARD BALSA
1/4" SHEET GUSSETS
3/16" DIA DOWEL
1/8" x 1/4"
1/16" PLY CORE WITH 1/4" BALSA SHEET EACH SIDE
CUT OUT FOR T/P RETAINING BANDS.
1/16" DIA PIANO WIRE
PLUG REMOVES FOR WINDING ESCAPEMENT MOTOR
RUDDER OUTLINE 3/16" SHEET
3 HINGES PER RUDDER
1/4" x 3/8" L.E.
1/16" SHEET BALSA
1/4" x 3/4" BALSA FAIRING
1/8" TUBE BEARING IN T.E.
ESCAPEMENT CRANK
HINGE
CONTROL ARM. (TOP VIEW)
1/16" SHEET (TOP ONLY)
1/4" x 1" T.E.
1/8" x 5/8" SPAR
ALL RIBS 1/8" SHEET
ACTUATING ROD
ESCAPEMENT SHAFT LOCATION
HINGE PIN
RECEIVER MOUNT
3/8" x 1" T.E.
16 S.W.G. PIANO WIRE REINFORCEMENT CEMENTED INTO T.E.
DIHEDRAL GUSSETS.
1/16" SHEET COVERING TOP ONLY.
REAR SPAR 1/8" x 3/4"
FRONT SPAR 1/8" x 1 1/8"
3/8" TIP OUTLINE
TIP IS FLAT ON UNDERSIDE TAPERS ON TOP ONLY.
ALL RIBS 1/8" SHEET
3/4" SHEET
BUILD SLOTS SEPARATELY & INSERT INTO WING.
WING SLOT
LAMINATED L.E. 2 STRIPS 1/8" x 5/8"
INCHES

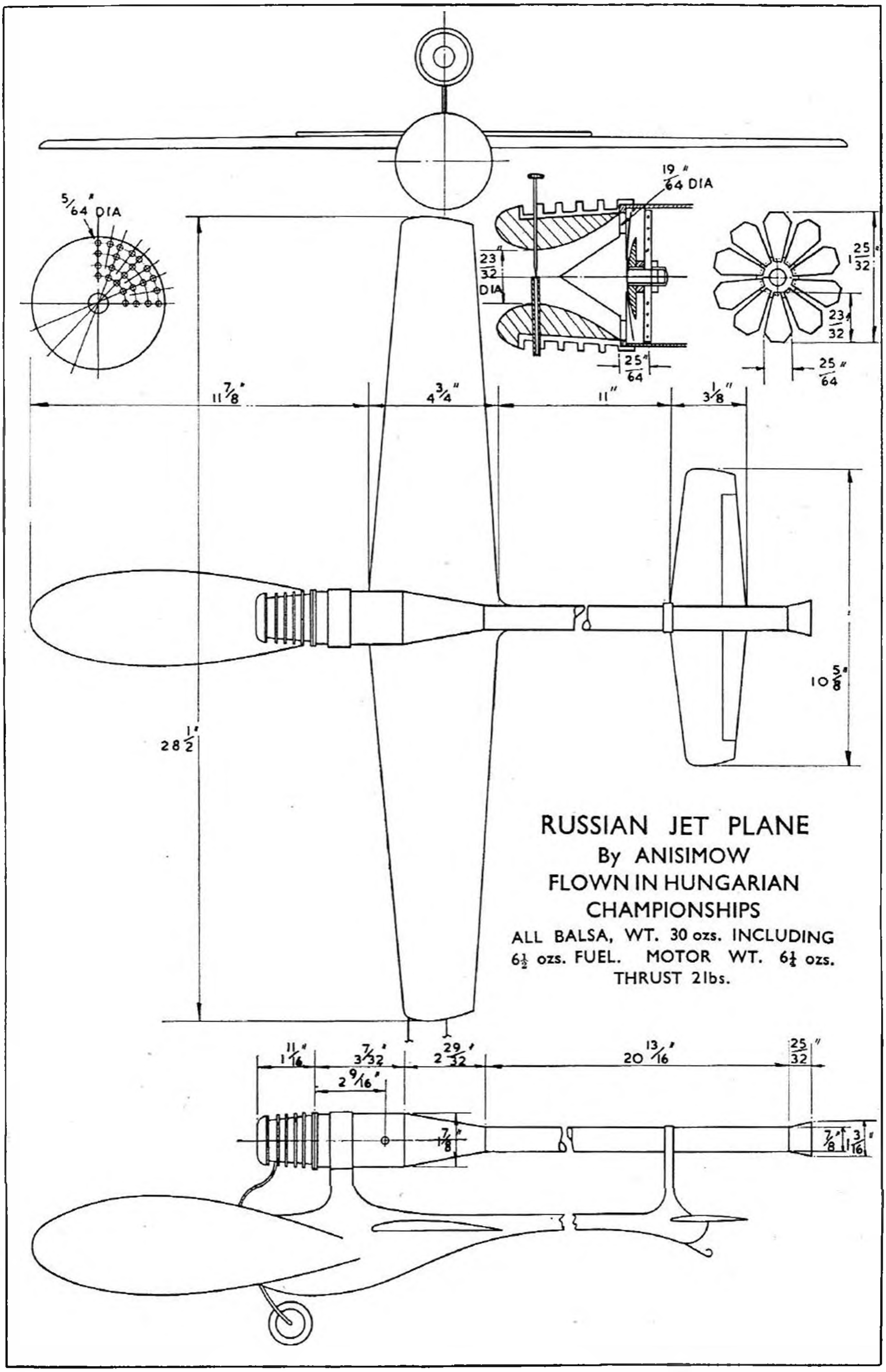

SCALE
CONTROL
LINE
MACCHI MB 308
By A. CASTELLANI, ITALY
5"
6 3/4"
5 13/16"
2 7/8"
4 15/16"
6 5/16"
1/4" SHEET FIN
1/8" PLY SKID
24 3/4"
4 1/4"
2"
BALSA BLOCK TIPS
1/4" SQ L.E.
1/8" SHEET RIBS
1/8" SHEET T.E.
3/16" SQ HARDWOOD
1/16" SHEET BALSA
CROSS SECTION
OF WING SPAR.
SIDES TOP & BOTTOM OF FUSELAGE
FROM 1/8" SHEET
CELLULOID
1/16" SHEET
5 1/4"
4 7/16"
3 11/16"
12 1/4"
3/16" SHEET TAILPLANE
38 1/2"
TIP WING RIB
ROOT WING RIB
POWER SUPERTIGRE 5 c.c.
7/8"
2 5/16"
1 11/16"



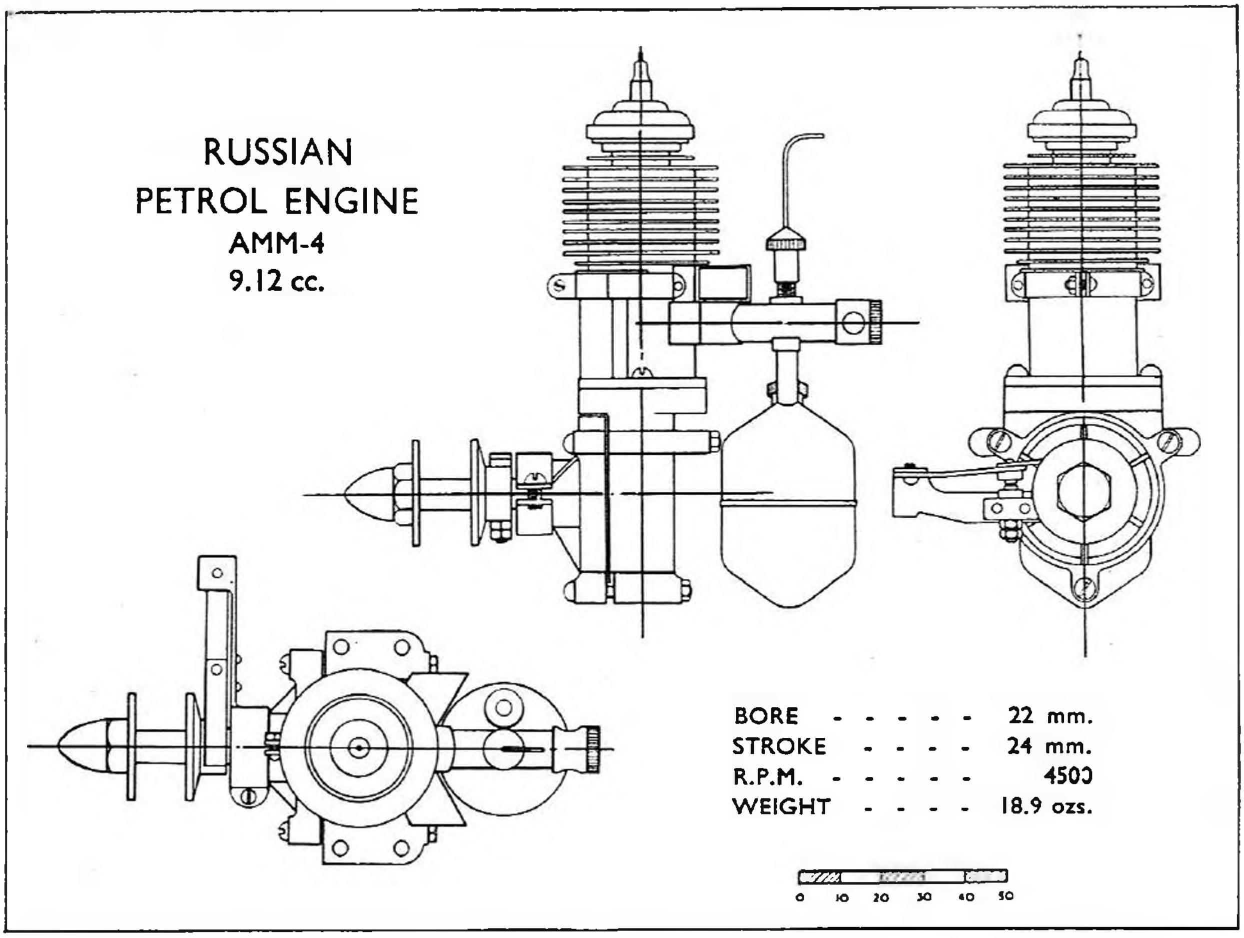
HURRY-UP
150 sq. in. CONTEST RUBBER
DURATION MODEL
By FRANK ZAIC,
U.S.A.

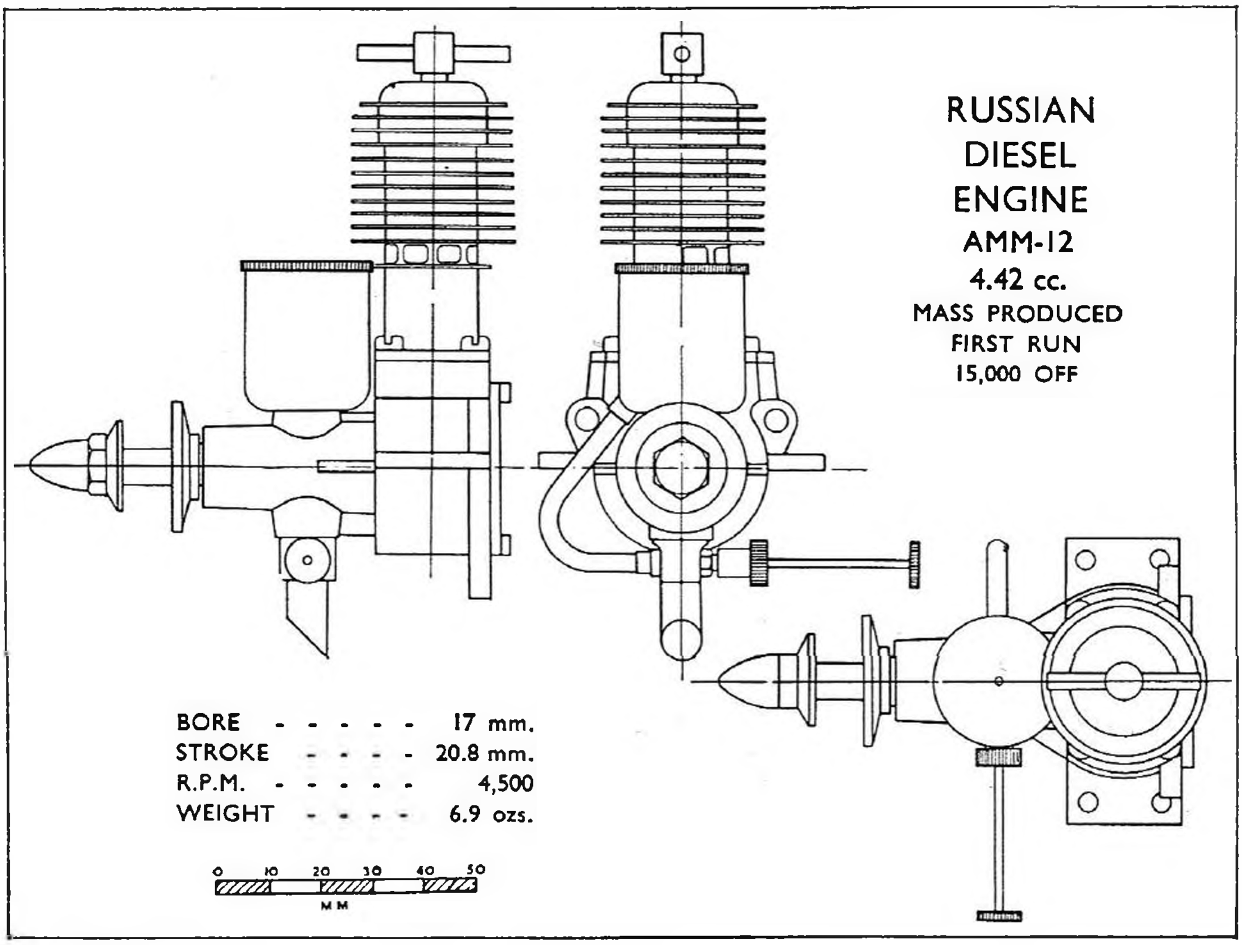

MISS YAMANAKA
POWERED FLYING BOAT
By SATO, SKY FRIENDS' M.A.C.
TOKYO, JAPAN
ALL UP WEIGHT - - - - 13¾ oz.
WING AREA - - - - - 192 sq. in.
WING SECTION NACA 6412
ENGINE MAMIYA 099 (1.6 c.c.)
(JAPANESE MADE GLOW PLUG)
BALLAST 1 OZ HERE
C.G
2° 30'
7 7/16"
7 7/8"
9 5/8"
8 7/8"
29 15/16"
3 15/16"
5 1/8"
3 1/8"
15 3/8"
5 5/16"
2 1/16"
23 5/8"
39 3/8"
14°
1°
A A
B B
C C
D D
E E
G G
H H

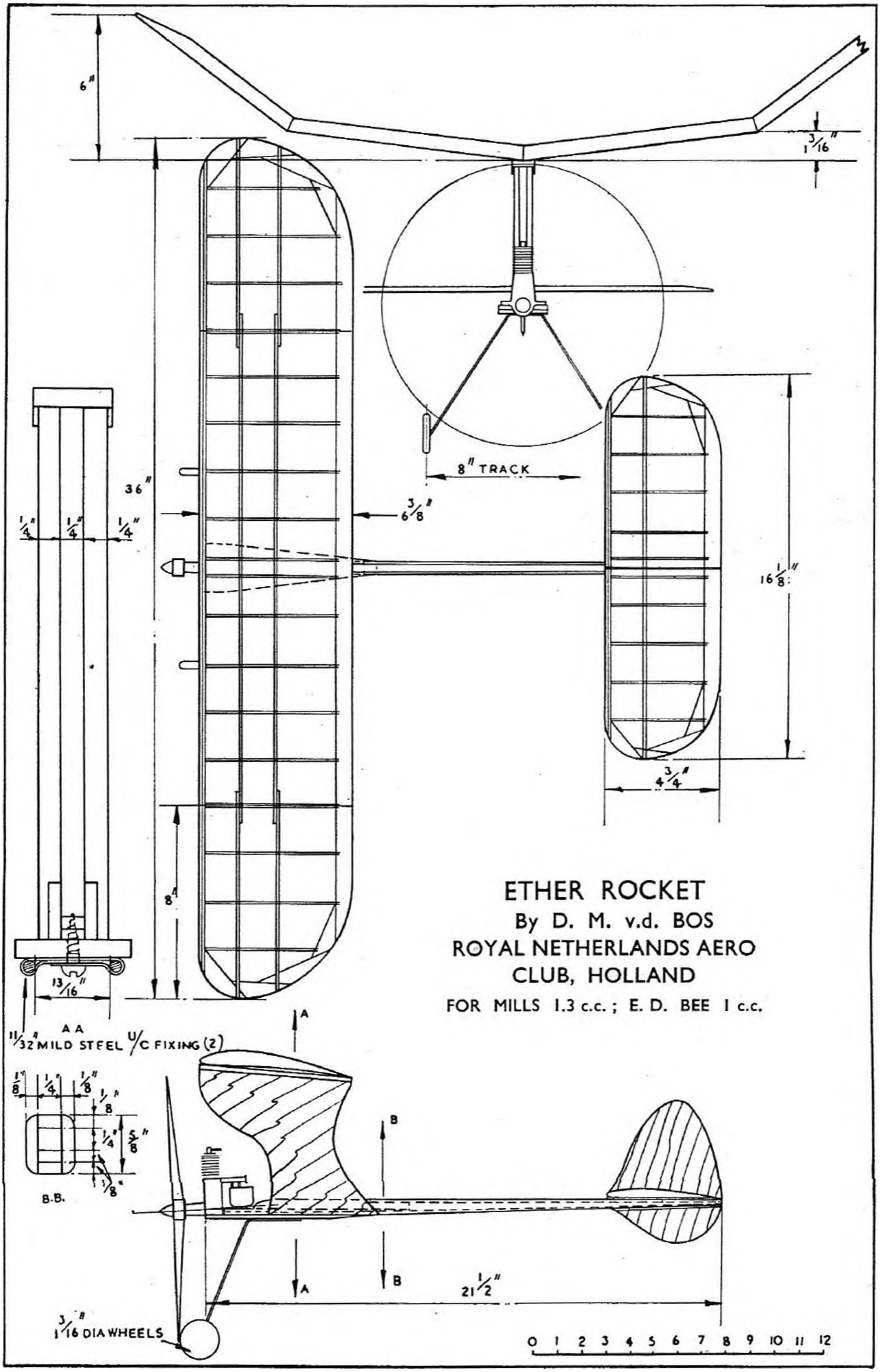

4"
47 1/2"
36 1/4"
23 1/2"
13 1/2"
5 5/8"
7"
NEO
SWEDISH POWER
MODEL
WINNER SWEDISH
NATIONALS, 1950
DESIGNED BY
BORJE BORJESON,
GOTHENBURG
POWER E.D. COMP SPECIAL
JOUKOWSKY DEVELOPED
WING SECTION NAMED
"PLADUSKA" BY DESIGNER
SCALE 1:10



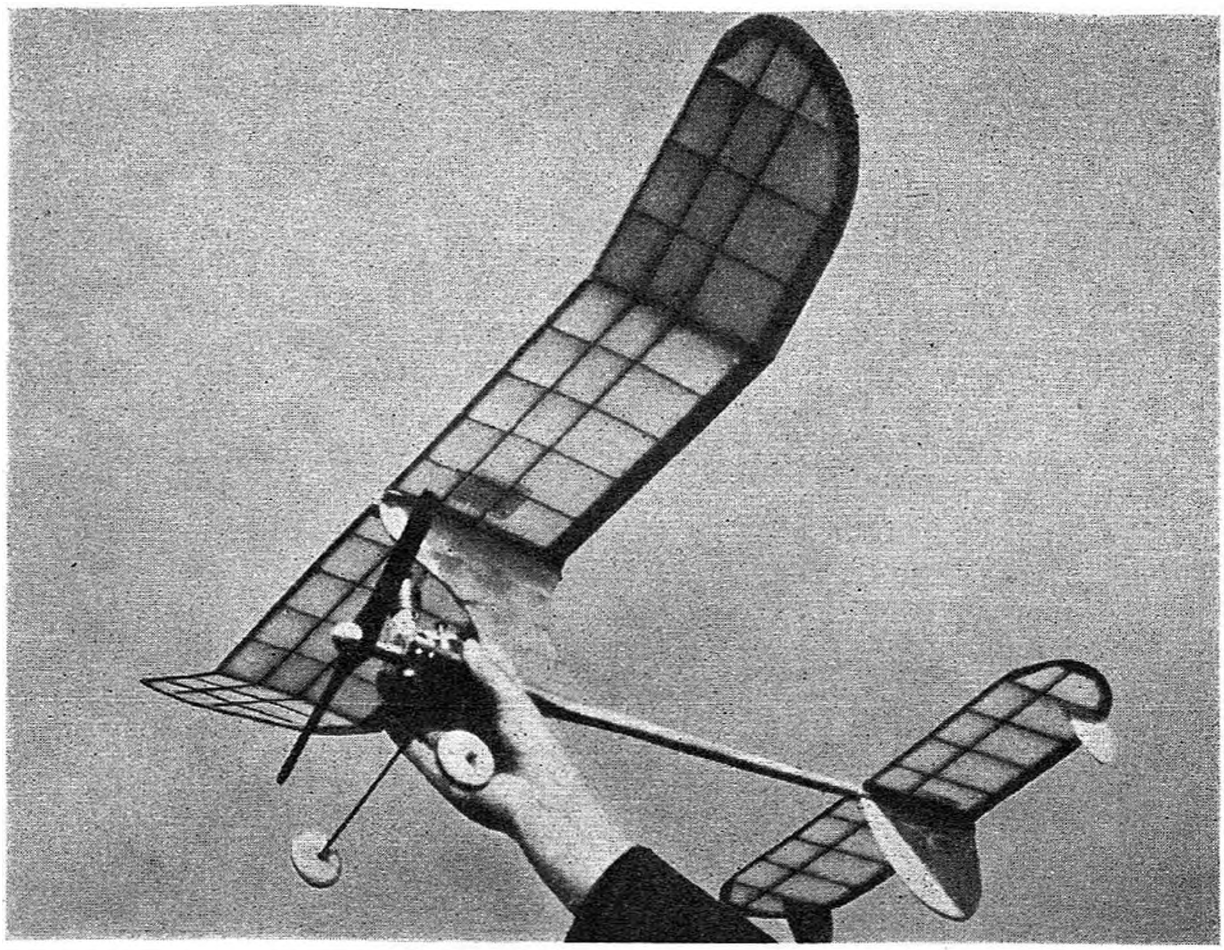
RUSSIAN JET PLANE
By ANISIMOW
FLOWN IN HUNGARIAN CHAMPIONSHIPS
ALL BALSA, WT. 30 ozs. INCLUDING 6½ ozs. FUEL. MOTOR WT. 6¼ ozs. THRUST 2lbs.


RUSSIAN
PETROL ENGINE
AMM-4
9.12 cc.
BORE - - - - - 22 mm.
STROKE - - - - 24 mm.
R.P.M. - - - - - 4500
WEIGHT - - - - 18.9 ozs.
0 10 20 30 40 50


RUSSIAN
DIESEL
ENGINE
AMM-12
4.42 cc.
MASS PRODUCED
FIRST RUN
15,000 OFF
BORE - - - - - 17 mm.
STROKE - - - - 20.8 mm.
R.P.M. - - - - - 4,500
WEIGHT - - - - 6.9 ozs.
0 10 20 30 40 50
MM



6"
1 3/16"
36"
8" TRACK
6 3/8"
1/4"
1/4"
1/4"
16 1/8"
4 3/4"
8"
ETHER ROCKET
By D. M. v.d. BOS
ROYAL NETHERLANDS AERO
CLUB, HOLLAND
FOR MILLS 1.3 c.c. ; E. D. BEE 1 c.c.
13/16"
A A
11/32" MILD STEEL U/C FIXING (2)
1/8"
1/4"
1/8"
1/8"
1/4"
5/8"
1/8"
B.B.
A
B
A
B
21 1/2"
1 3/16" DIA WHEELS
0 1 2 3 4 5 6 7 8 9 10 11 12

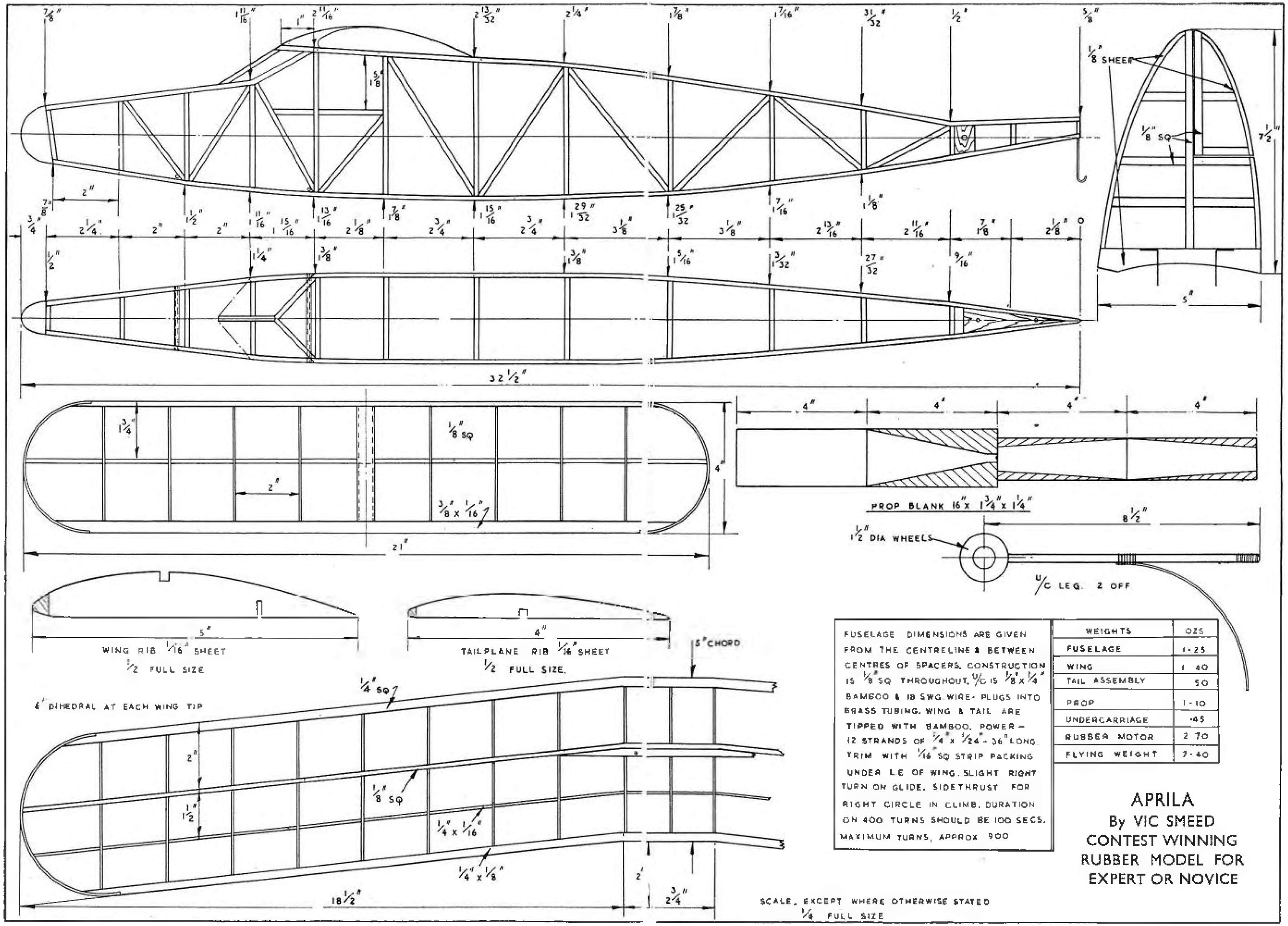


Ether Rocket. Dutch 1 cc. class Free-Flight Power Model by D. M. van den Bos, Schiedam.

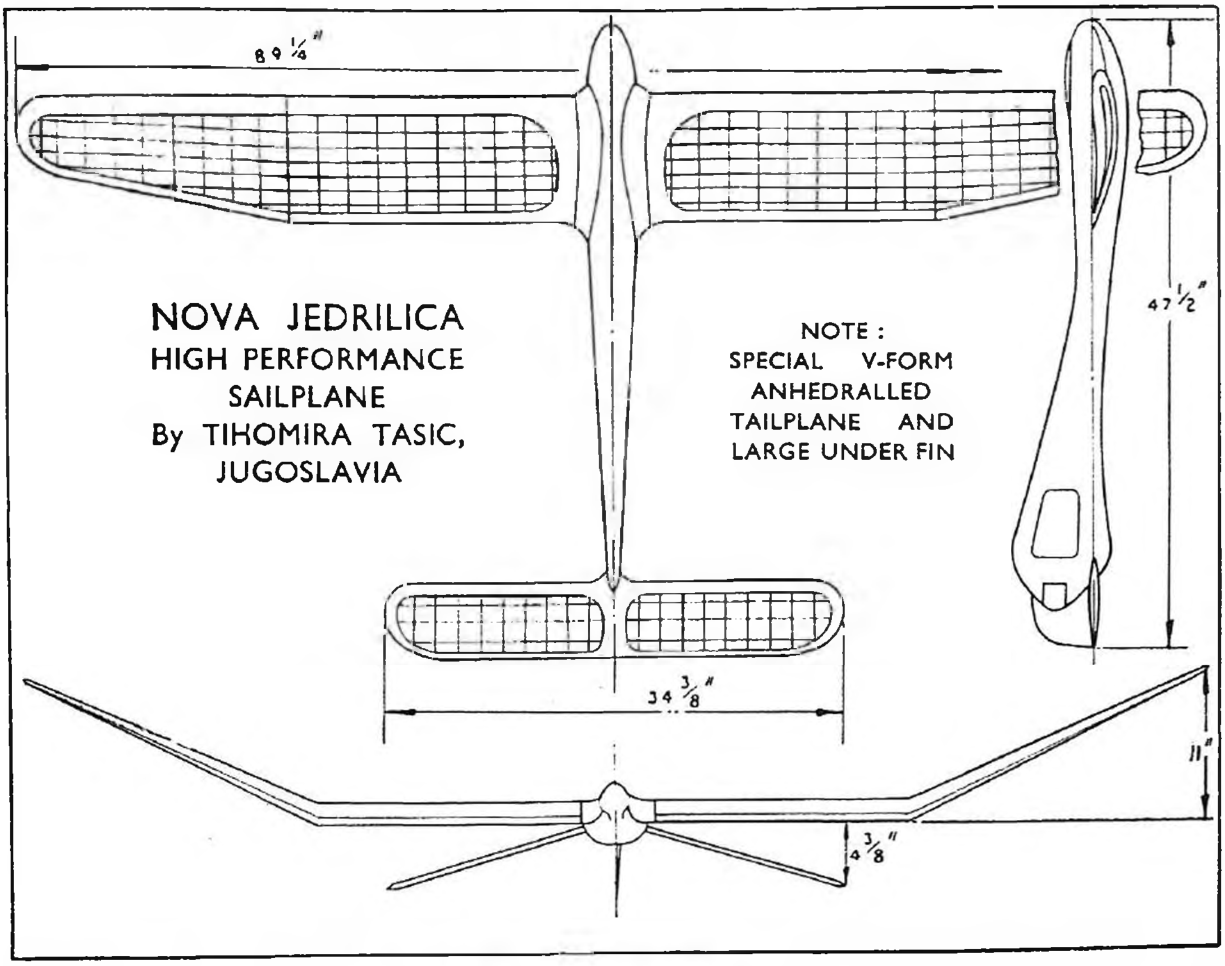
DESCRIPTION.—The design was inspired by the Danish models the maker saw when on a visit to that country and which proved very reliable. Great trouble was taken to keep the layout as simple as possible. The fuselage consists mainly of engine mount, pylon and tail-boom, all of very simple design. It was considered that refinements such as a fairing behind the engine and over the undercarriage retaining bolts would not pay on a model of such small size, and weight was to be kept as low as possible.

The wing is also of utmost simplicity and possesses only two breaks for dihedral, avoiding ply gussets by employing staggered spars. The tail being detachable, it is quite easy to install a tip-up tail dethermaliser.

The "Ether Rocket," when properly trimmed, truly lives up to its name, showing a very steep upward spiral, and reaches a great height in the time usually allowed for motor-run. When trimming is inefficient, the model spirals fast but gains very little height. It can be said that it possesses very few vices in spite of its apparently extreme layout.

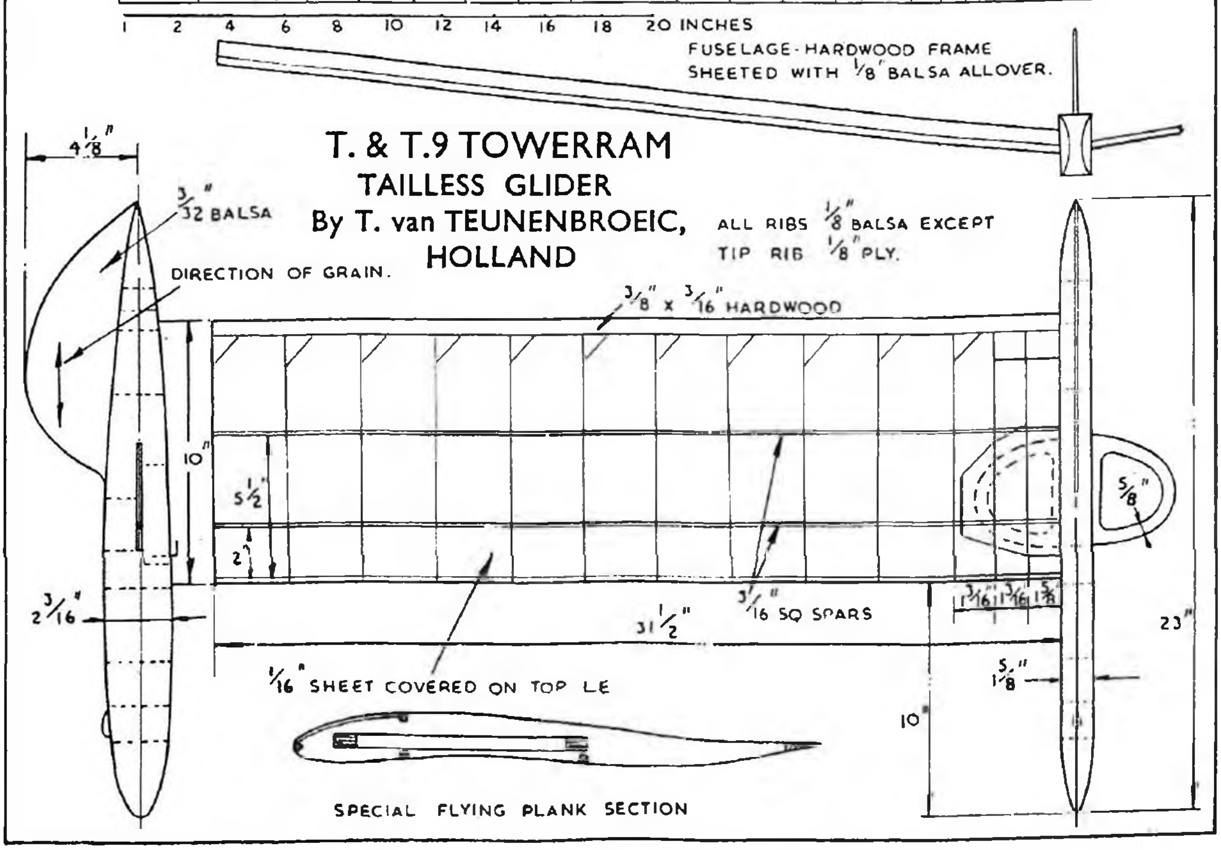


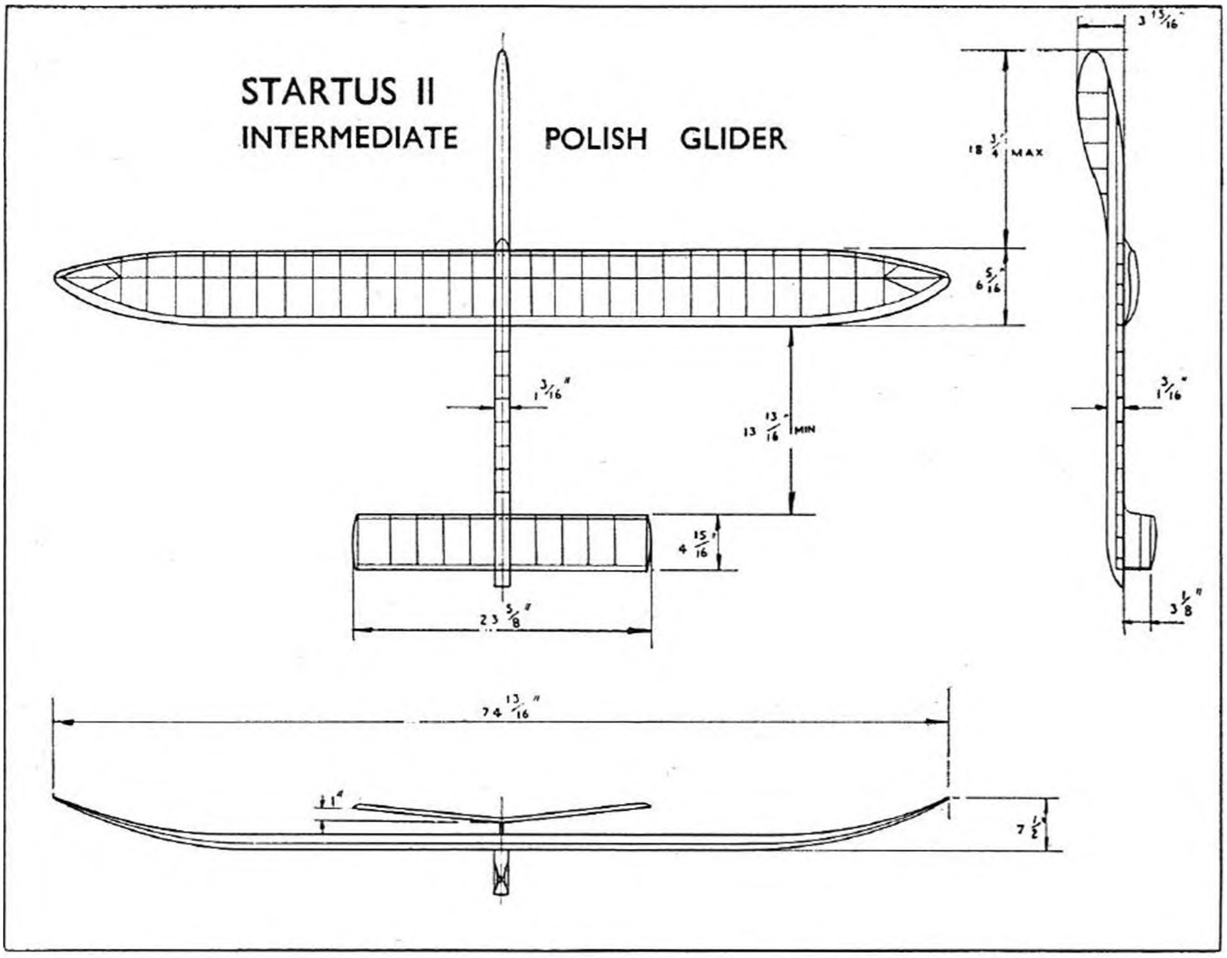
1/8" SHEET
1/8" SQ
7 1/2"
5"
32 1/2"
21"
1/8 SQ
3/8" x 1/16"
PROP BLANK 16" x 1 3/4" x 1 1/4"
1 1/2" DIA WHEELS
8 1/2"
U/C LEG. 2 OFF
WING RIB 1/16" SHEET
1/2 FULL SIZE
TAILPLANE RIB 1/16" SHEET
1/2 FULL SIZE.
5" CHORD
1/4" SQ
6" DIHEDRAL AT EACH WING TIP
1/4" x 1/16"
1/4" x 1/8"
18 1/2"
2 3/4"
FUSELAGE DIMENSIONS ARE GIVEN FROM THE CENTRELINE & BETWEEN CENTRES OF SPACERS. CONSTRUCTION IS 1/8" SQ THROUGHOUT. U/C IS 1/8" x 1/4" BAMBOO & 18 SWG. WIRE- PLUGS INTO BRASS TUBING. WING & TAIL ARE TIPPED WITH BAMBOO. POWER – 12 STRANDS OF 1/4" x 1/24" - 36" LONG. TRIM WITH 1/16" SQ STRIP PACKING UNDER L.E. OF WING. SLIGHT RIGHT TURN ON GLIDE. SIDETHRUST FOR RIGHT CIRCLE IN CLIMB. DURATION ON 400 TURNS SHOULD BE 100 SECS. MAXIMUM TURNS, APPROX 900
WEIGHTS | OZS
FUSELAGE | 1·25
WING | 1 40
TAIL ASSEMBLY | ·50
PROP | 1·10
UNDERCARRIAGE | ·45
RUBBER MOTOR | 2 70
FLYING WEIGHT | 7·40
APRILA
By VIC SMEED
CONTEST WINNING
RUBBER MODEL FOR
EXPERT OR NOVICE
SCALE, EXCEPT WHERE OTHERWISE STATED
1/4 FULL SIZE

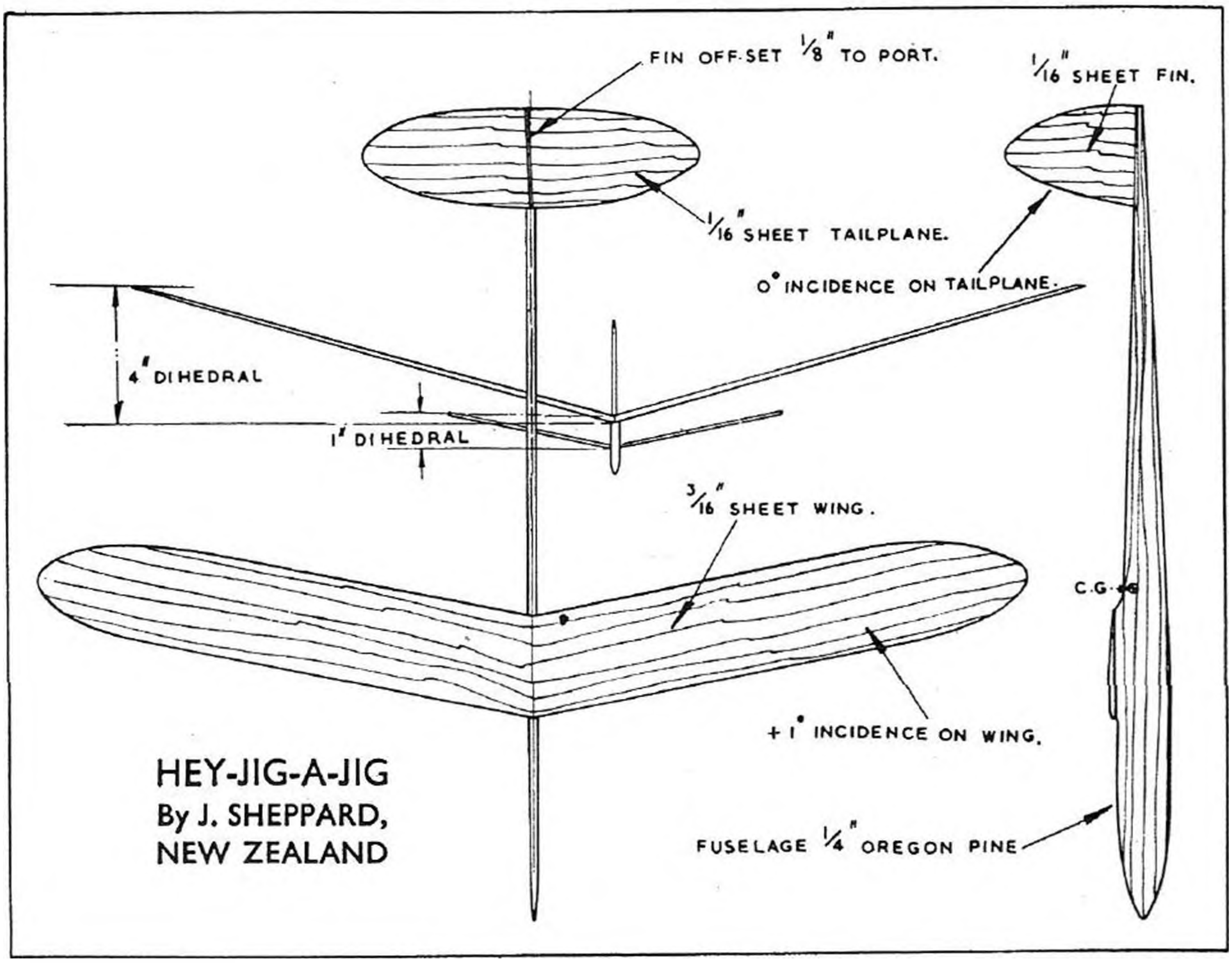


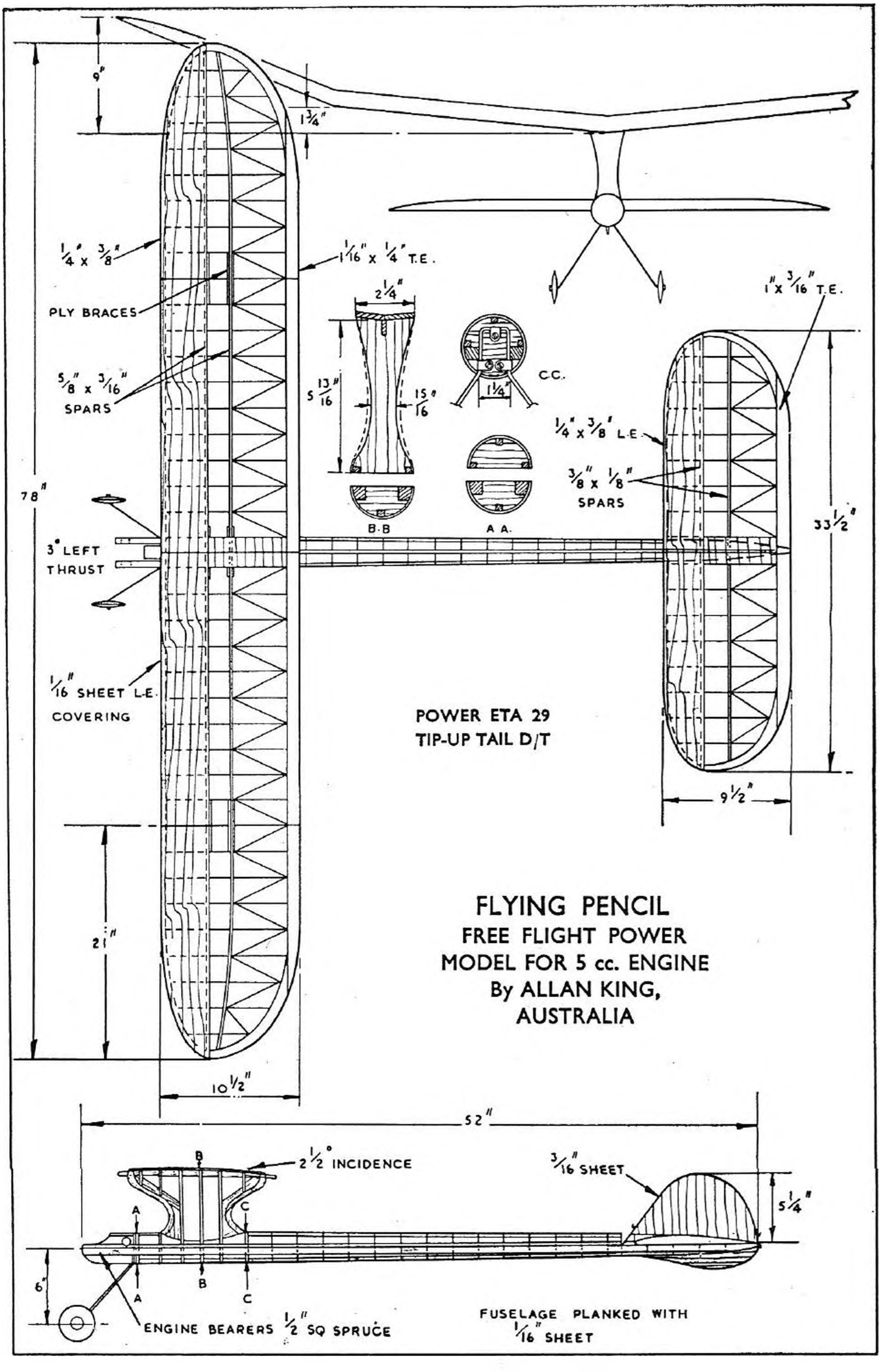
AIRFOIL ORDINATES

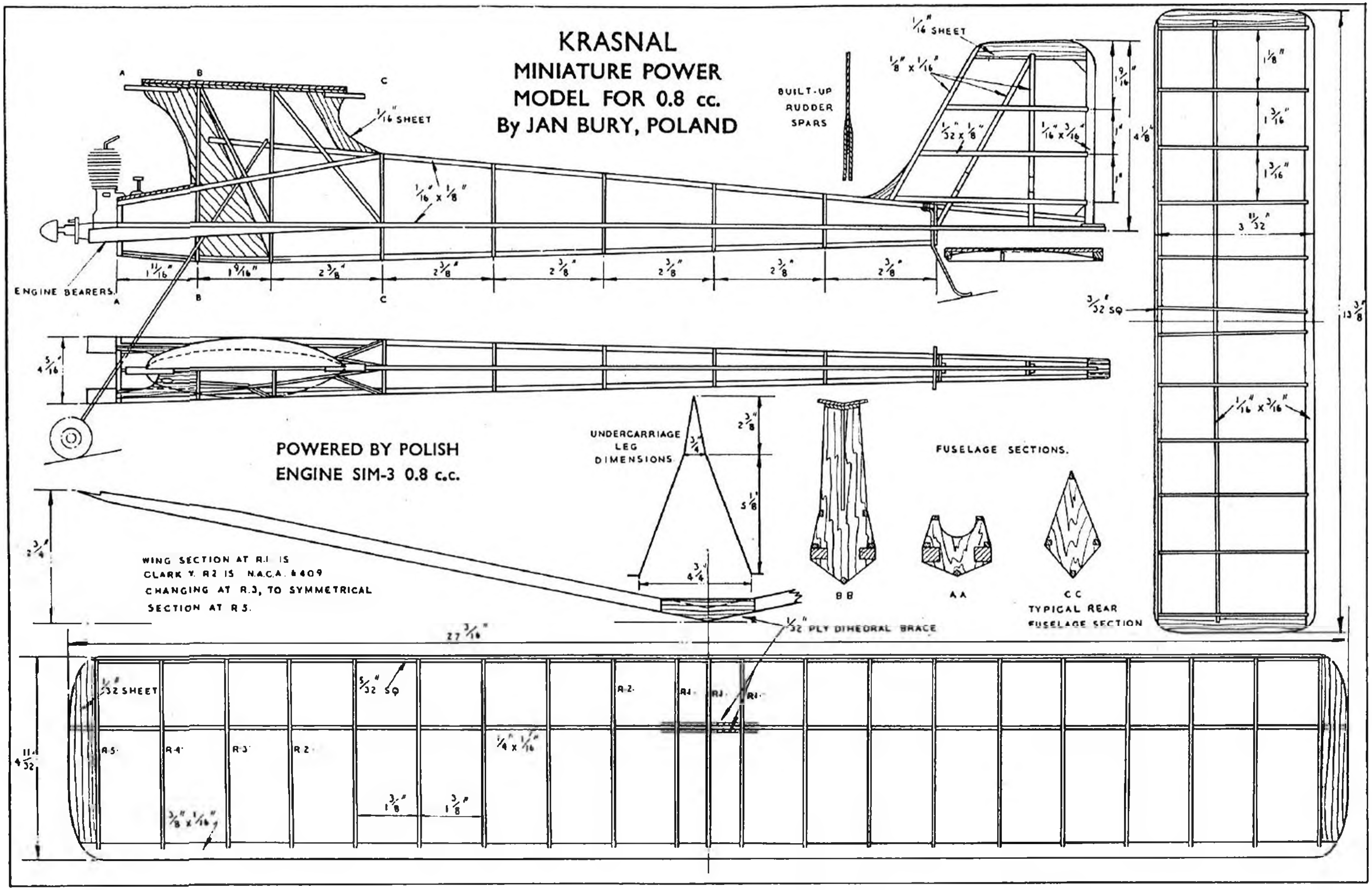
STATION	0	1,25	2,5	5	7,5	10	15	20	30	40	50	60	70	80	90	95	100
UPPER	3,5	5.0	6.0	7,0	7,8	8,3	9.0	9,3	9,5	9,0	8,0	6.5	5,2	4,7	4,7	4,8	4,8
LOWER	3,5	1,8	1,4	0,9	0.4	0,1	0.2	1,0	2,0	1,8	1,0	0,1	0,4	1,4	2,5	3,2	4,2

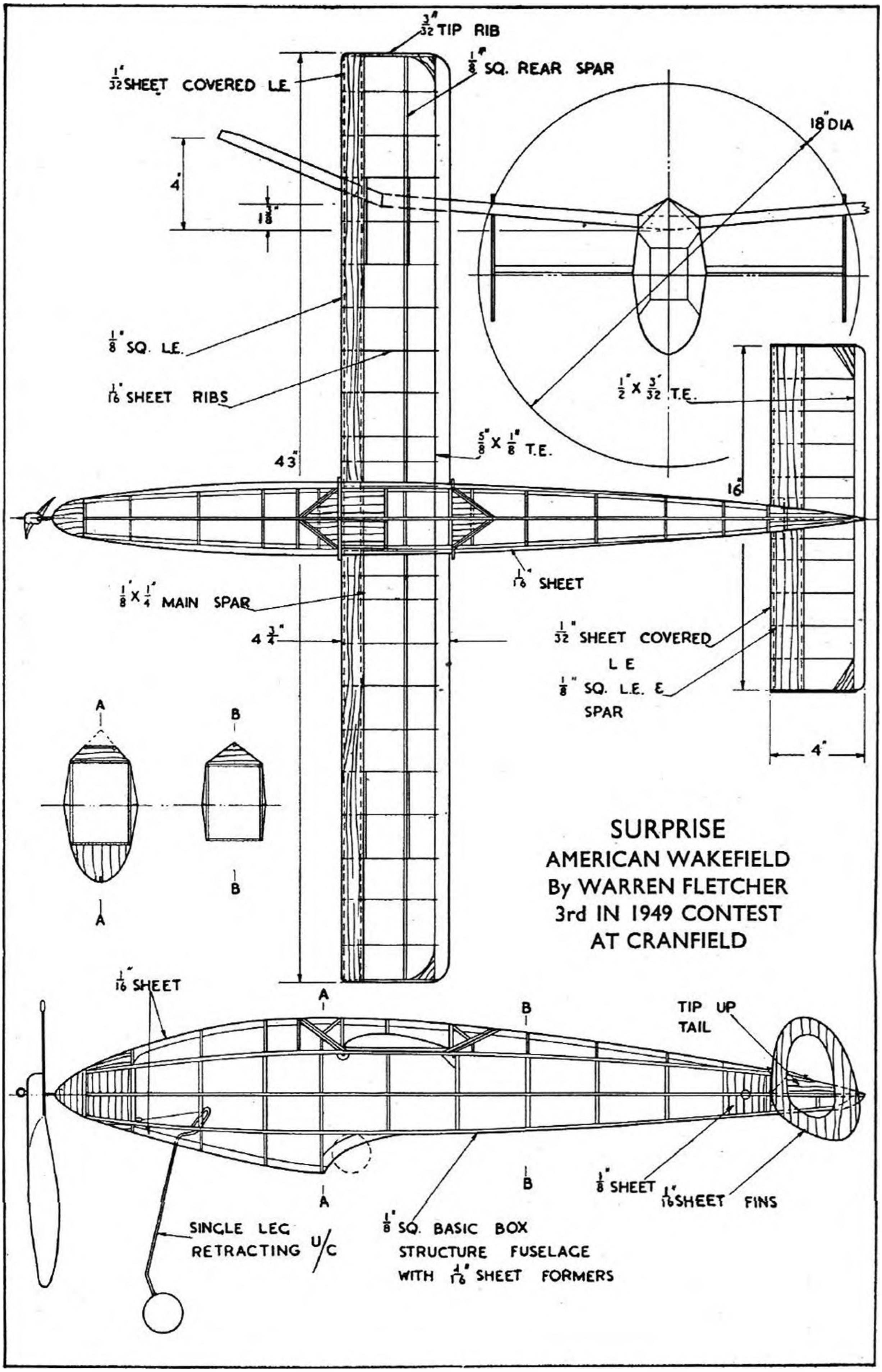



STARTUS II
INTERMEDIATE POLISH GLIDER
18 3/4 MAX
6 5/16"
1 3/16"
13 13/16" MIN
4 15/16"
23 5/8"
74 13/16"
1"
7 1/2"
3 13/16"
3 1/8"

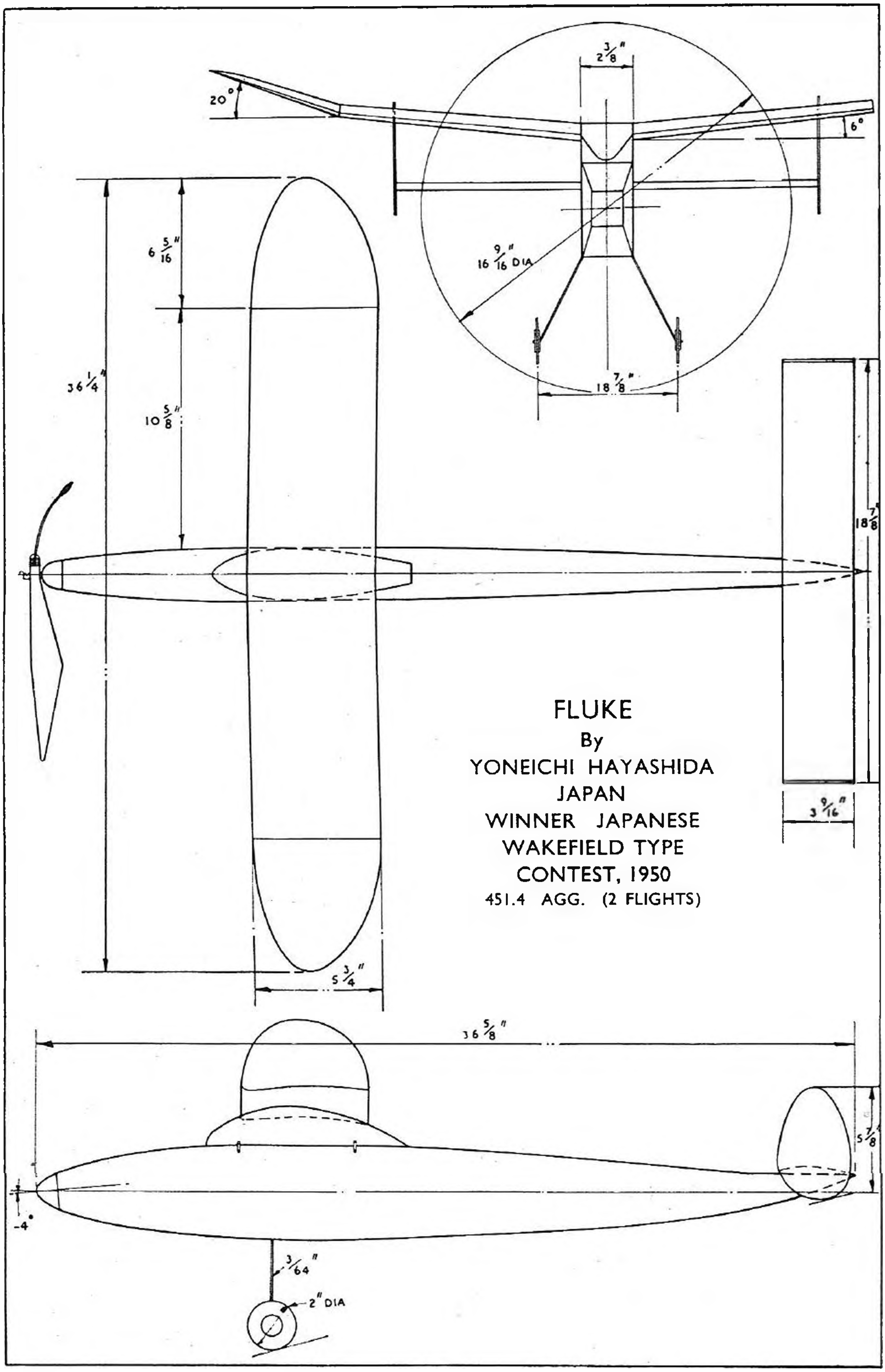

FIN OFF-SET 1/8" TO PORT.
1/16" SHEET FIN.
1/16" SHEET TAILPLANE.
0° INCIDENCE ON TAILPLANE.
4" DIHEDRAL
1" DIHEDRAL
3/16" SHEET WING.
C.G.
+ 1° INCIDENCE ON WING.
HEY-JIG-A-JIG
By J. SHEPPARD,
NEW ZEALAND
FUSELAGE 1/4" OREGON PINE

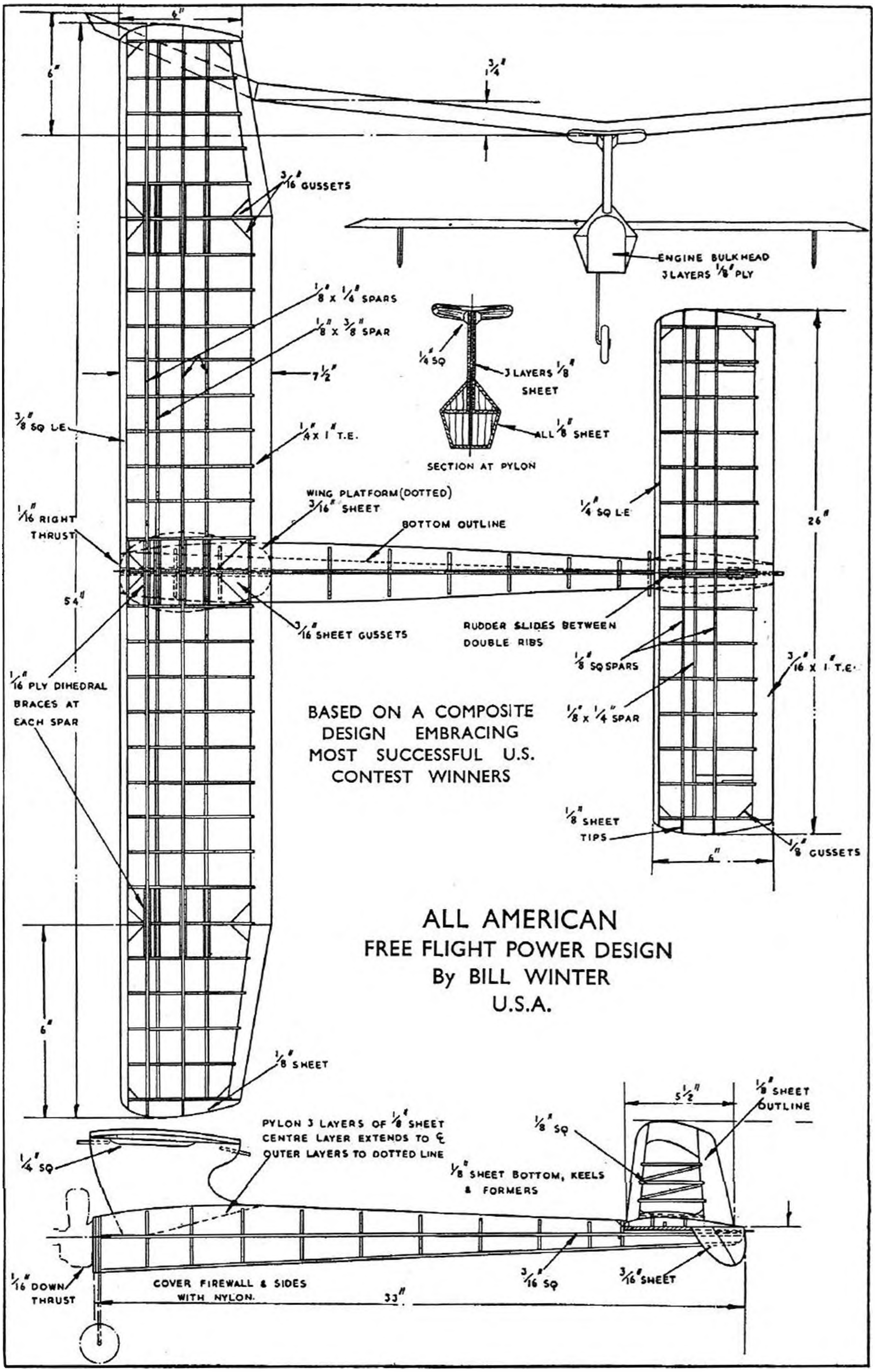

9"
1¾"
¼" x ⅜"
1/16" x ¼" T.E.
PLY BRACES
2¼"
1" x 3/16" T.E.
5/8" x 3/16"
SPARS
5 13/16"
15/16"
C.C.
1¼"
¼" x ⅜" L.E.
3/8" x 1/8"
SPARS
78"
B.B
A.A.
33½"
3° LEFT
THRUST
1/16" SHEET L.E.
COVERING
POWER ETA 29
TIP-UP TAIL D/T
9½"
FLYING PENCIL
FREE FLIGHT POWER
MODEL FOR 5 cc. ENGINE
By ALLAN KING,
AUSTRALIA
21"
10½"
52"
2½° INCIDENCE
3/16" SHEET
5¼"
6"
ENGINE BEARERS ½" SQ SPRUCE
FUSELAGE PLANKED WITH
1/16" SHEET


KRASNAL
MINIATURE POWER
MODEL FOR 0.8 cc.
By JAN BURY, POLAND
POWERED BY POLISH
ENGINE SIM-3 0.8 c.c.
BUILT-UP
RUDDER
SPARS
ENGINE BEARERS
1/16" SHEET
UNDERCARRIAGE
LEG
DIMENSIONS
FUSELAGE SECTIONS.
BB
AA
CC
TYPICAL REAR
FUSELAGE SECTION
WING SECTION AT R.1 IS
CLARK Y. R2 IS N.A.C.A. 6409
CHANGING AT R.3, TO SYMMETRICAL
SECTION AT R.5.
1/32" PLY DIHEDRAL BRACE
1/32 SHEET
5/32" SQ
3/32" SQ
1/4" x 1/16"
3/8" x 1/16"
1/16" x 3/16"
1/16" x 1/8"
1/8" x 1/16"
1/32" x 1/8"
R.1
R.2
R.3
R.4
R.5
27 3/16"
13 3/8"
4 11/32
4 5/16
4 3/4
2 3/4
2 3/8
5 1/8
3 11/32
4 3/8
1 11/16"
1 9/16"
2 3/8"
1 3/8"

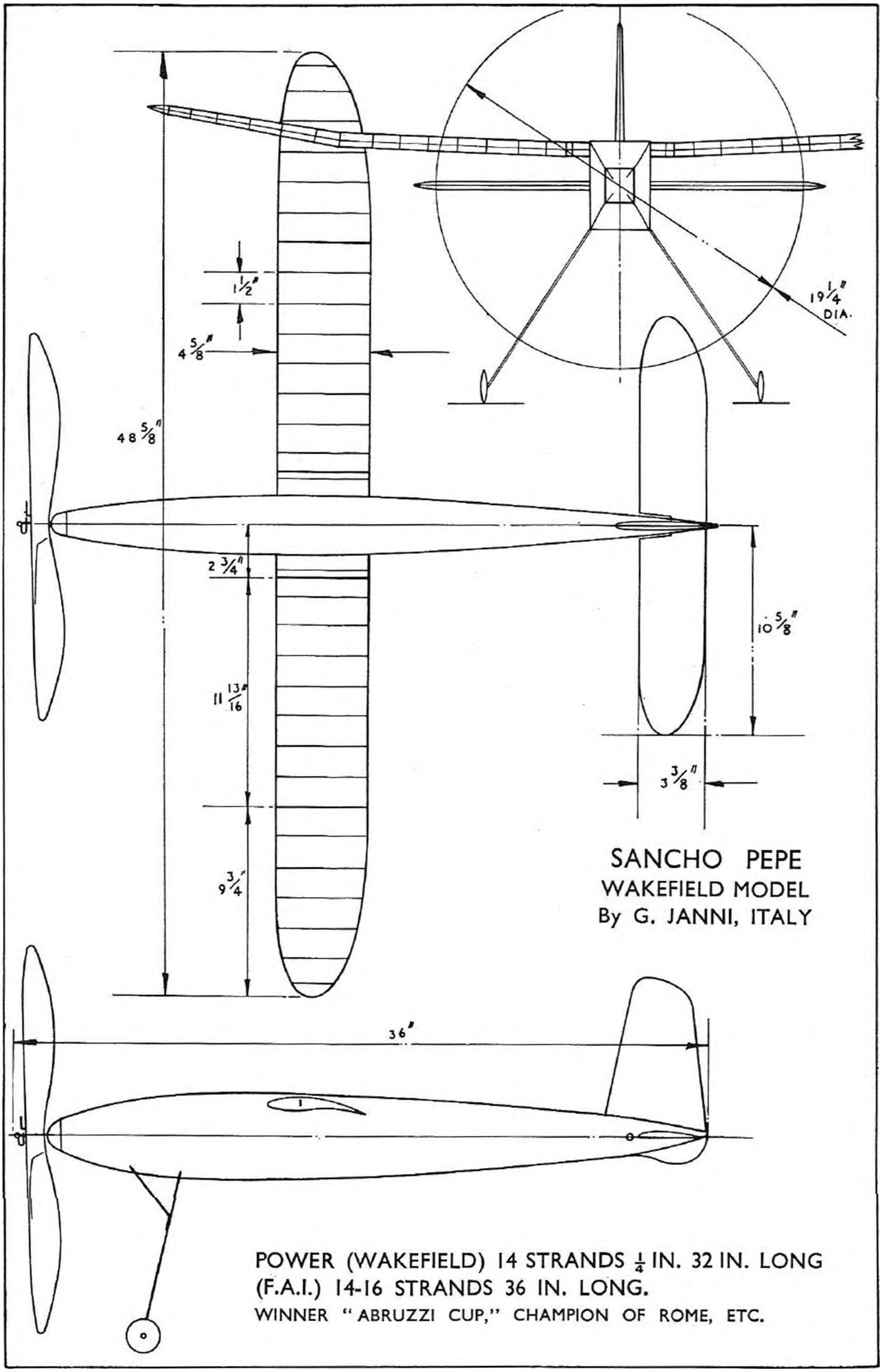


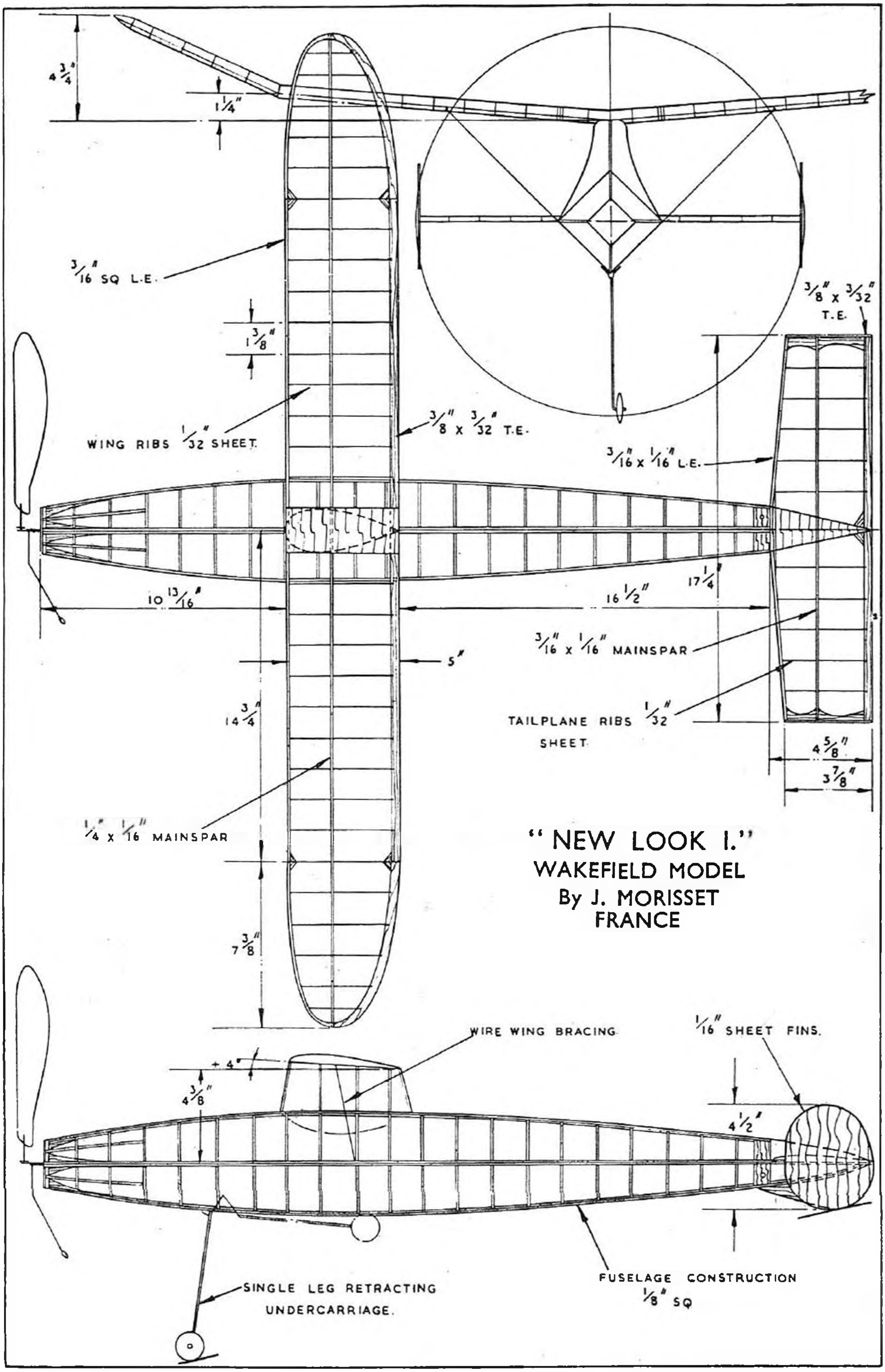
3/32" TIP RIB
1/32" SHEET COVERED L.E.
1/8" SQ. REAR SPAR
18" DIA
4"
1 3/8"
1/8" SQ. L.E.
1/16" SHEET RIBS
1/2" X 3/32" T.E.
5/8" X 1/8" T.E.
43"
16"
1/16" SHEET
1/8" X 1/4" MAIN SPAR
4 3/4"
1/32" SHEET COVERED L E
1/8" SQ. L.E. & SPAR
4"
A
B
SURPRISE
AMERICAN WAKEFIELD
By WARREN FLETCHER
3rd IN 1949 CONTEST
AT CRANFIELD
1/16" SHEET
TIP UP TAIL
1/8" SHEET
1/16" SHEET FINS
SINGLE LEG RETRACTING U/C
1/8" SQ. BASIC BOX STRUCTURE FUSELAGE WITH 1/16" SHEET FORMERS

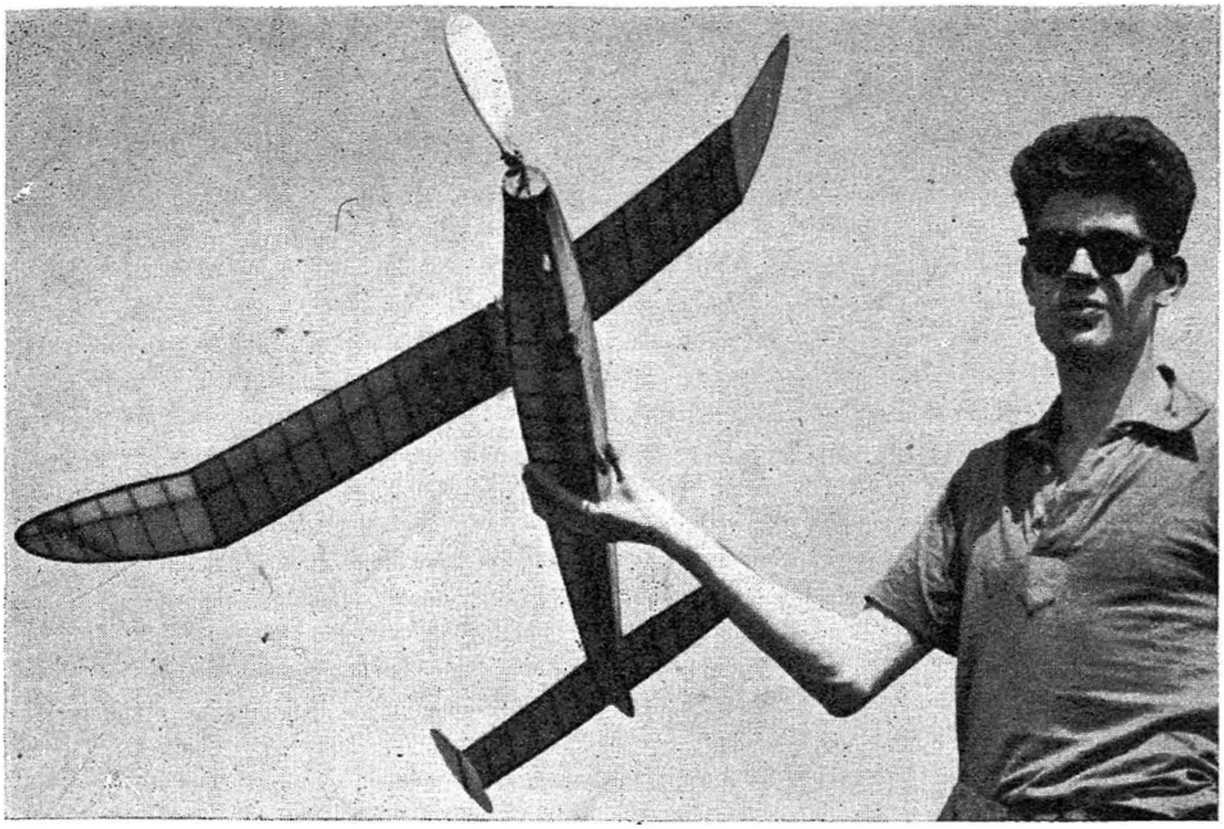

FLUKE
By
YONEICHI HAYASHIDA
JAPAN
WINNER JAPANESE
WAKEFIELD TYPE
CONTEST, 1950
451.4 AGG. (2 FLIGHTS)
2 3/8"
20°
6°
16 9/16" DIA
18 7/8"
6 5/16"
36 1/4"
10 5/8"
18 7/8"
3 9/16"
5 3/4"
36 5/8"
5 7/8"
-4°
3/64"
2" DIA



ALL AMERICAN
FREE FLIGHT POWER DESIGN
By BILL WINTER
U.S.A.
BASED ON A COMPOSITE DESIGN EMBRACING MOST SUCCESSFUL U.S. CONTEST WINNERS
3/16" GUSSETS
ENGINE BULKHEAD 3 LAYERS 1/8" PLY
1/8" x 1/4" SPARS
1/8" x 3/8" SPAR
1/4 SQ
3 LAYERS 1/8" SHEET
ALL 1/8" SHEET
SECTION AT PYLON
7 1/2"
3/8" SQ L.E.
1/4" x 1" T.E.
WING PLATFORM (DOTTED) 3/16" SHEET
BOTTOM OUTLINE
1/16" RIGHT THRUST
1/4" SQ L.E.
26"
54"
3/16" SHEET GUSSETS
RUDDER SLIDES BETWEEN DOUBLE RIBS
1/8" SQ SPARS
3/16" x 1" T.E.
1/16" PLY DIHEDRAL BRACES AT EACH SPAR
1/8" x 1/4" SPAR
1/8" SHEET TIPS
1/8" GUSSETS
6"
1/8" SHEET
5 1/2"
1/8" SHEET OUTLINE
PYLON 3 LAYERS OF 1/8" SHEET CENTRE LAYER EXTENDS TO ℄ OUTER LAYERS TO DOTTED LINE
1/8" SQ
1/4" SQ
1/8" SHEET BOTTOM, KEELS & FORMERS
1/16" DOWN THRUST
COVER FIREWALL & SIDES WITH NYLON.
33"
3/16" SQ
3/16" SHEET


19 1/4" DIA.
1 1/2"
4 5/8"
48 5/8"
2 3/4"
10 5/8"
11 13/16"
3 3/8"
9 3/4"
SANCHO PEPE
WAKEFIELD MODEL
By G. JANNI, ITALY
36"
POWER (WAKEFIELD) 14 STRANDS 1/4 IN. 32 IN. LONG
(F.A.I.) 14-16 STRANDS 36 IN. LONG.
WINNER "ABRUZZI CUP," CHAMPION OF ROME, ETC.


4 3/4"
1 1/4"
3/16" SQ L.E.
1 3/8"
WING RIBS 1/32" SHEET
3/8" x 3/32" T.E.
3/8" x 3/32" T.E.
3/16" x 1/16" L.E.
10 13/16"
16 1/2"
17 1/4"
3/16" x 1/16" MAINSPAR
5"
14 3/4"
TAILPLANE RIBS 1/32" SHEET
4 5/8"
3 7/8"
1/4" x 1/16" MAINSPAR
"NEW LOOK I."
WAKEFIELD MODEL
By J. MORISSET
FRANCE
7 3/8"
WIRE WING BRACING
1/16" SHEET FINS.
+ 4°
4 3/8"
4 1/2"
SINGLE LEG RETRACTING UNDERCARRIAGE.
FUSELAGE CONSTRUCTION 1/8" SQ



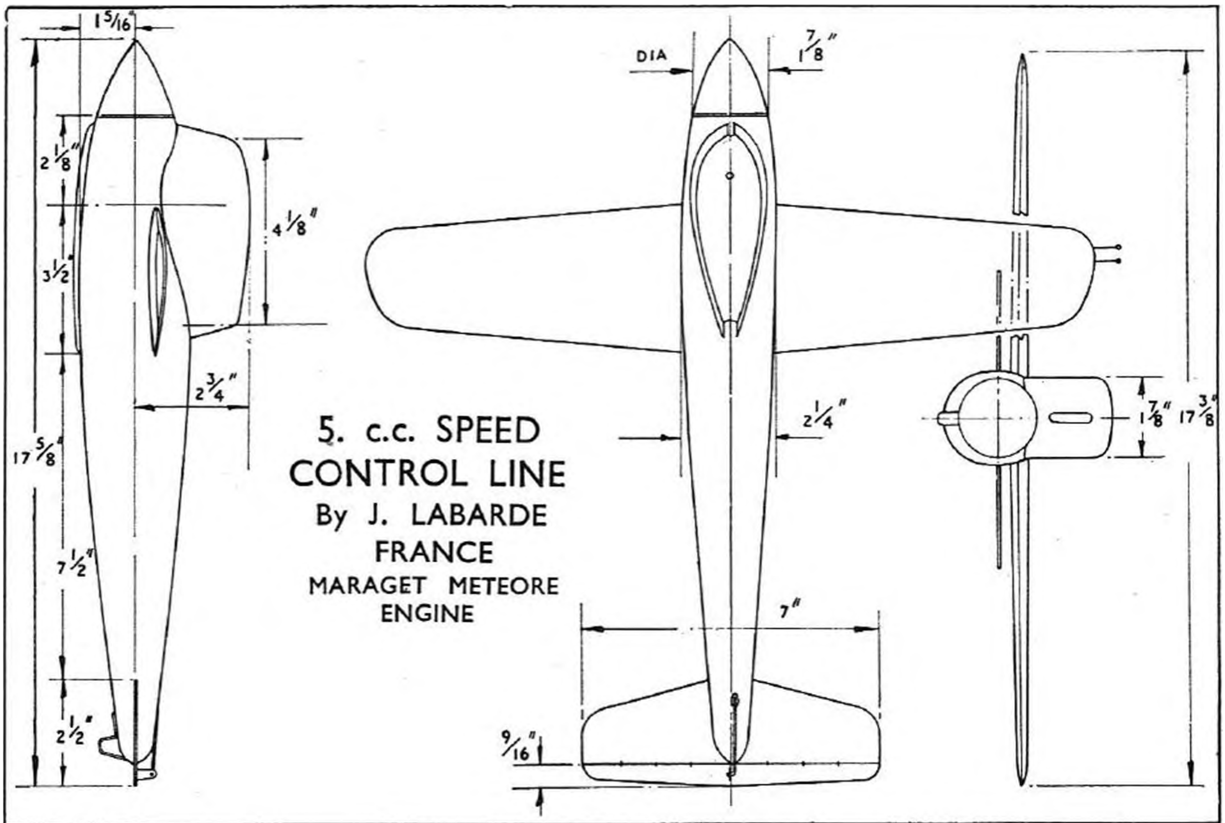
New Look I. Leading French Wakefield Design by Jacques Morisset.

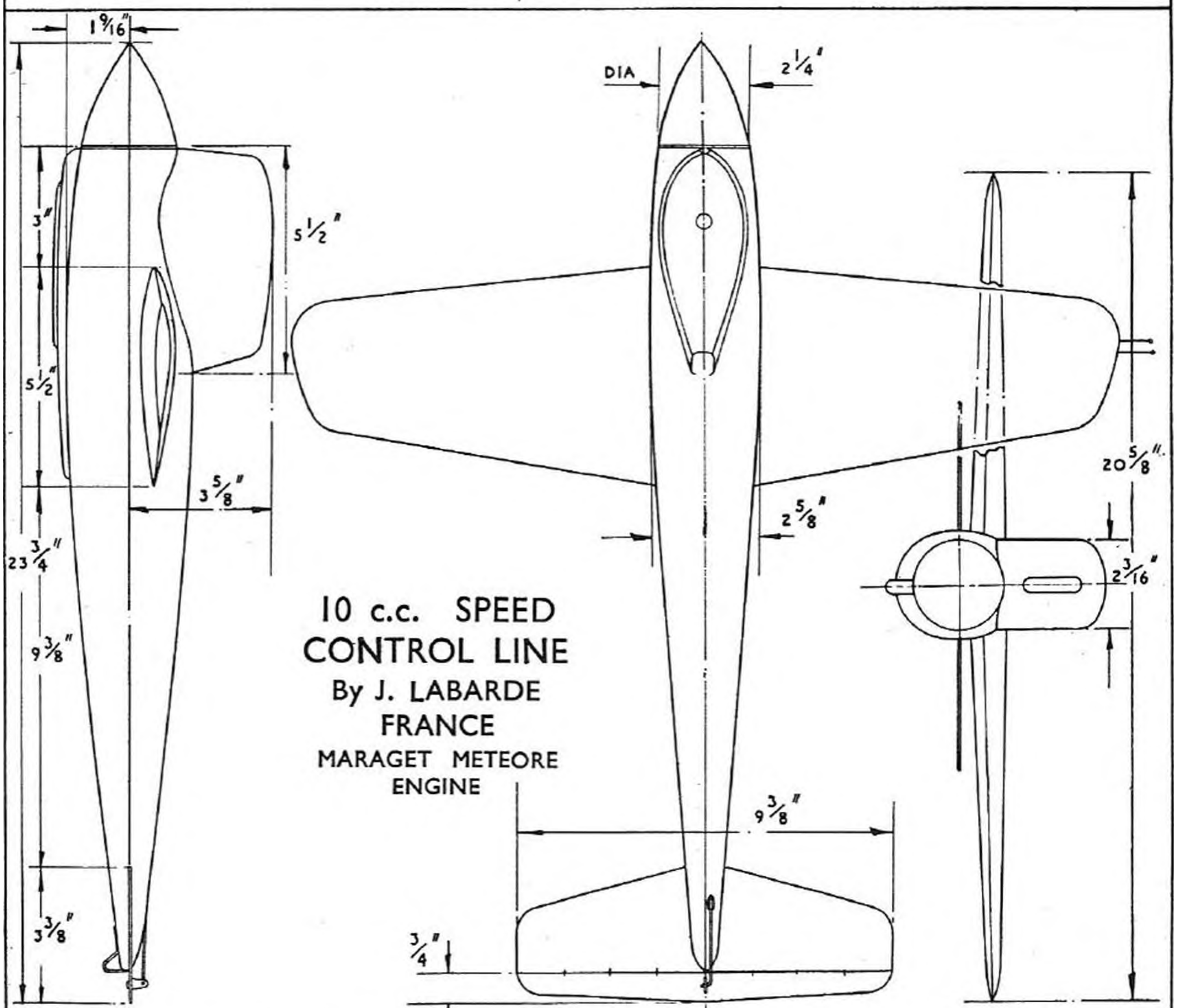
DESCRIPTION.—Prototype New Look O was built in 1948 and lost after second flight. New Look I, built immediately after has made between 2/300 flights and outlasted some dozens of rubber motors! In its two years of life, weight has crept up by reason of repairs. Originally $8\frac{1}{2}$ ozs. including $4\frac{1}{3}$ oz. of rubber, it now weighs $9\frac{1}{2}$ ozs. including $4\frac{2}{5}$ ozs. rubber.

Airfoil is designer's own with thickness 5.6%, and maximum camber 4.7%, tailplane 4% and 4%. Mainplane set at 4° positive incidence and tailplane $2\frac{1}{2}$° positive. Airscrew is a single blade folder of 19 in. diameter pitch 24 in. maximum width $2\frac{5}{8}$ in. Rubber motor comprises 16 strands of Dunlop $\frac{1}{4} \times 1/24$ 49 in. long. Hook is in the form of an anchor (no bobbin). For contests put on 800/850 turns, giving motor run of about 55 secs. Climb and glide is to the right. Note particularly that there is no downthrust. Washout of mainplane 3°.

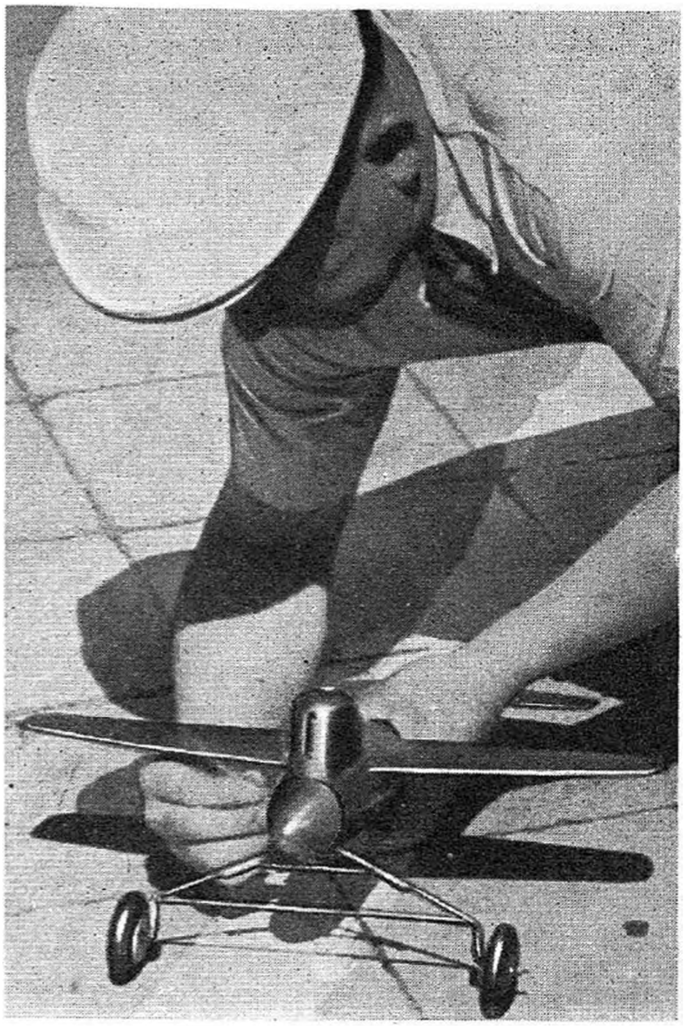
New Look II is now on test and embodies slight fuselage and pylon modifications and a new propeller scheme in ply and balsa shaped round a carved hardwood block. Weight of Mark II is $8\frac{1}{2}$ ozs. including $4\frac{1}{2}$ ozs. of rubber.

PERFORMANCE.—New Look has won contests at Rouen, Rheims, Troyes, Paris (Championship of France, 1950), Eaton Bray and 4th at Brussels, totalling some ten to twelve major successes. Morisset's club, P.A.M. (Paris-Air-Modele) champion club of the year, are building it as the standard machine and have already had second places to the designer at Troyes and Rheims. Other clubs are also building it as a standard design. Still air time on 800 turns is around 200 seconds.


5. c.c. SPEED
CONTROL LINE
By J. LABARDE
FRANCE
MARAGET METEORE
ENGINE
DIA


10 c.c. SPEED
CONTROL LINE
By J. LABARDE
FRANCE
MARAGET METEORE
ENGINE
DIA

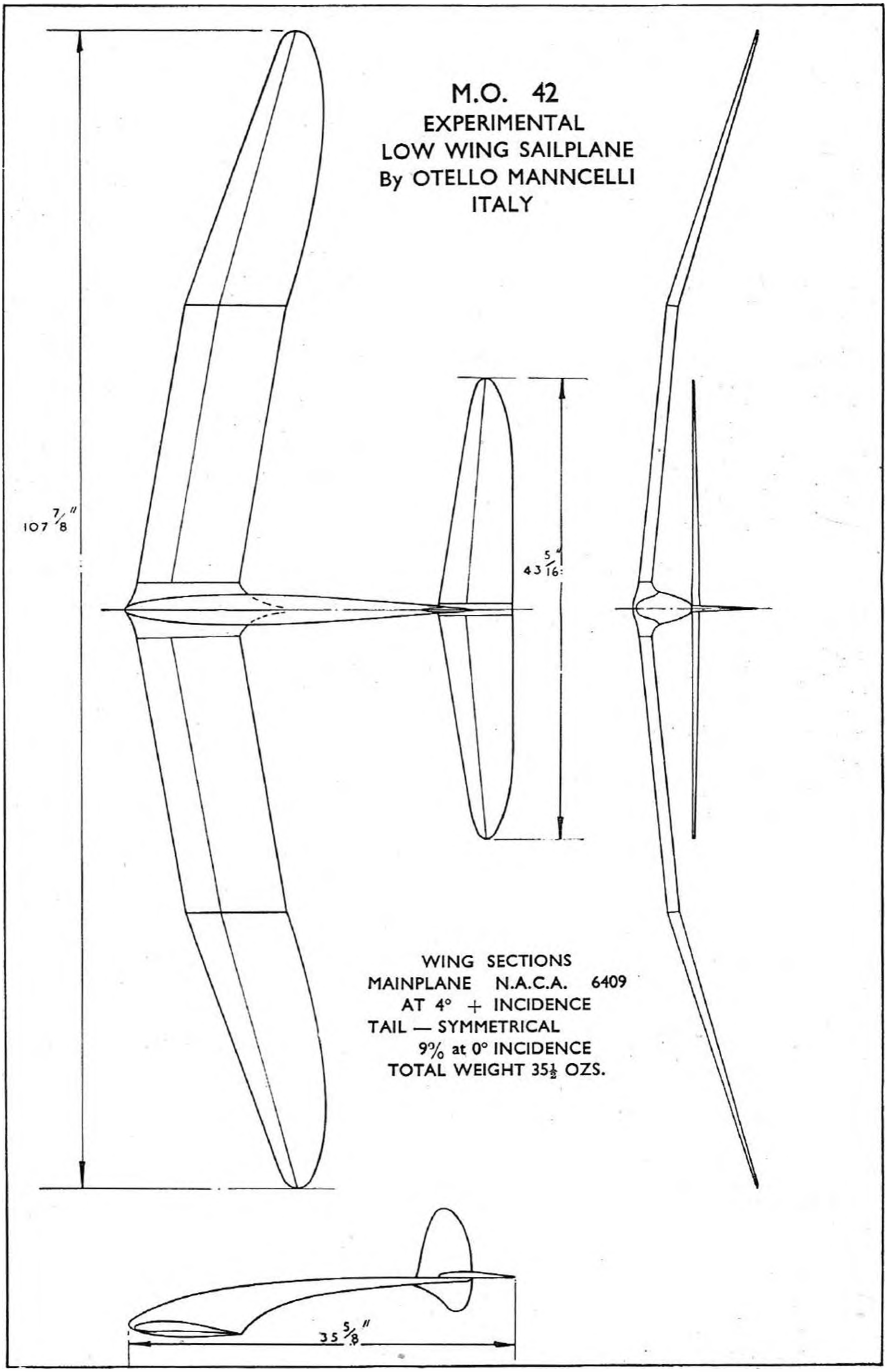
Speed Control Liners by French Expert Labarde.

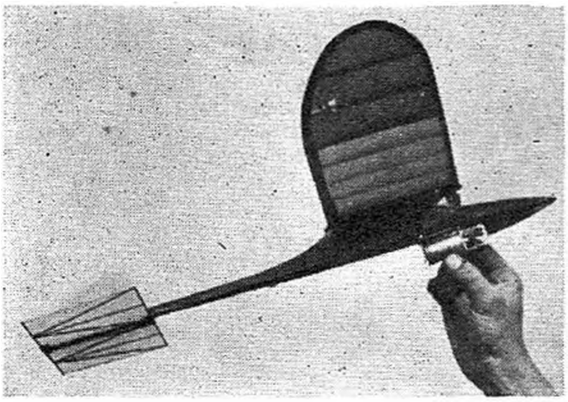


DESCRIPTION.—The French control line contest team of Labarde-Maraget has performed in public throughout Europe with such conspicuous success, that some digression on the human element before discussing the models might be profitable. Labarde is the actual pilot who flies these speed models in a peculiar Chinese shuffle, imitated by no other that we have seen. It is Labarde too who designed them in the first place and maintains them in their invariable spotless trim. Maraget is the genius behind the Meteore range of diesel, petrol and glowplug engines that he has so conscientiously turned out, both as a commercial proposition and as a " one-off " series of specials for the experts who can appreciate them. As a pair, these two might be the ideal combination having strangely enough a certain amount of quite un-Gallic phlegm, a great deal of patience, and enough Latin fire to bring something out of the bag when required.

The models themselves follow exactly the same layout in both 5 c.c. and 10 c.c. classes, being streamlined layouts with conventional coal-scuttle fully enclosed cowls. Undercarriages are the two-leg drop-off variety with releasing " whisker." As such, they invariably behave perfectly during the difficult take-off period. In the many events at which we have seen Labarde perform, we have *never* seen him boob a take-off and very rarely so much as chip a prop blade on landing. Just as truly we have never seen him fly a speed control line model other than the style here described—surely a proof that practice makes perfect !

PERFORMANCE.—By continental and American standards there *are* faster models, but in both 5 c.c. and 10 c.c. classes a regular 120 m.p.h. plus can be relied upon day in and day out. Naturally this means a lot of contests are won though not necessarily any records broken.


M.O. 42
EXPERIMENTAL
LOW WING SAILPLANE
By OTELLO MANNCELLI
ITALY
107 7/8"
43 5/16"
WING SECTIONS
MAINPLANE N.A.C.A. 6409
AT 4° + INCIDENCE
TAIL — SYMMETRICAL
9% at 0° INCIDENCE
TOTAL WEIGHT 35½ OZS.
35 5/8"

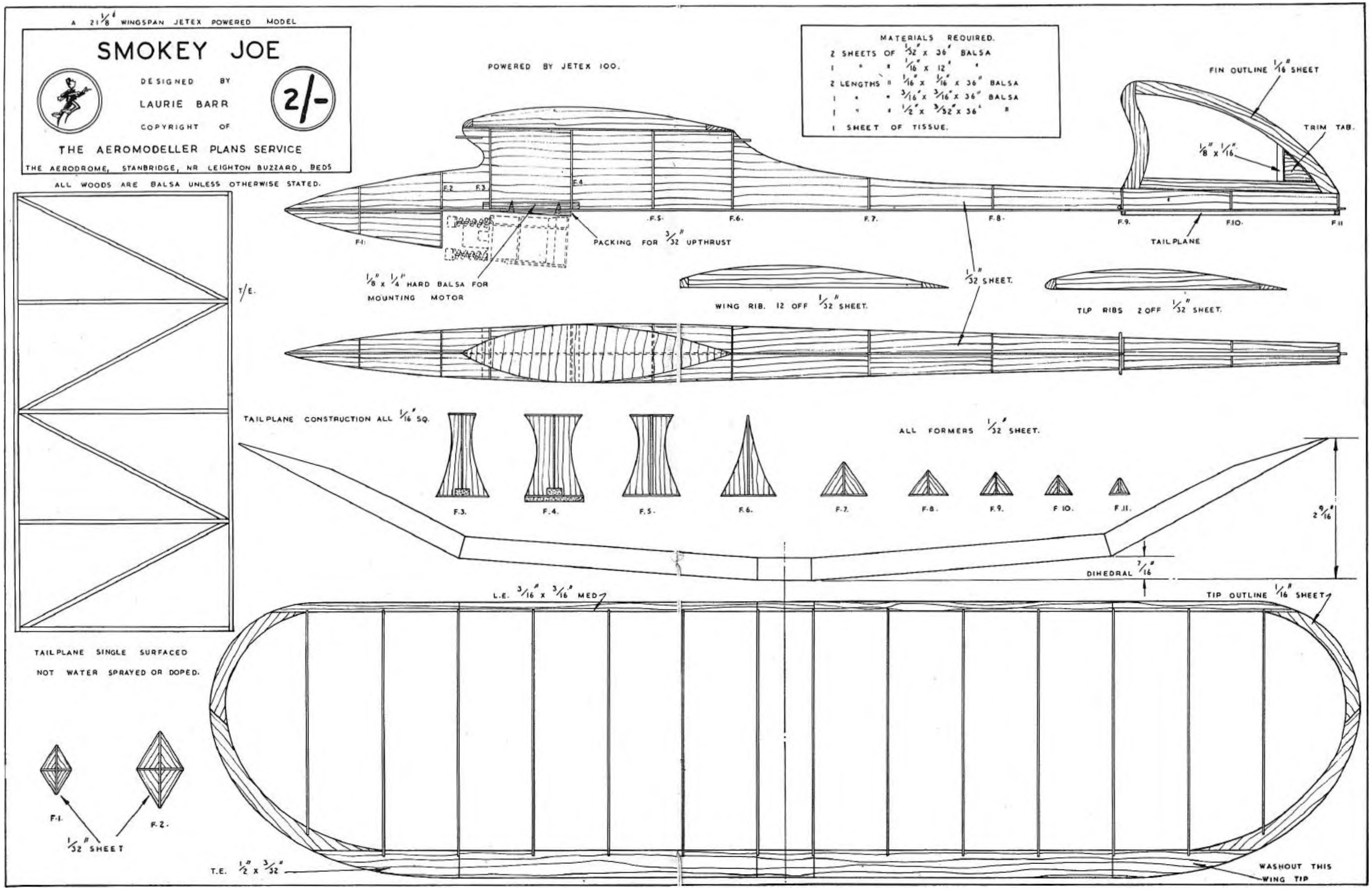


Smokey Joe. Jetex 100 design by Laurie Barr.

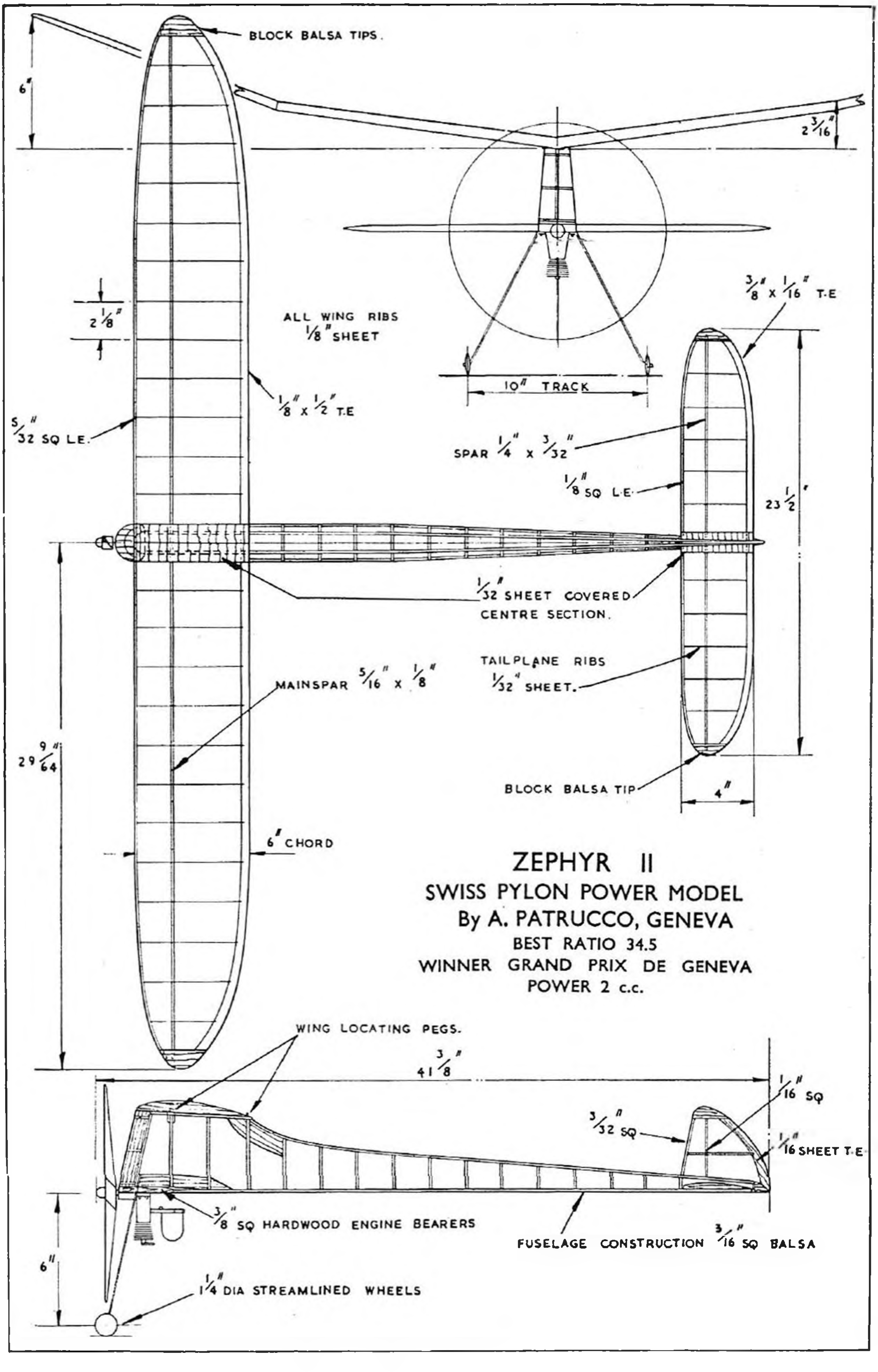
DESCRIPTION. — Since its introduction in June, 1948, the Jetex power unit has gone from strength to strength and can now fairly be said to have its place in every aeromodeller's scheme of things. At the moderate prices asked, few enthusiasts can resist at some stage in their career " having a go " with one or other of the assorted sizes. Whether their enthusiasm rises or drops off depends entirely on the sort of model they use for initial efforts. Unfortunately, apart from a few really excellent kit designs, little has been done to cater for the would be jetexer. In offering Laurie Barr's " Smokey Joe," we know we are providing a simple design that can win contests against the best or serve as a useful general purpose flyer.

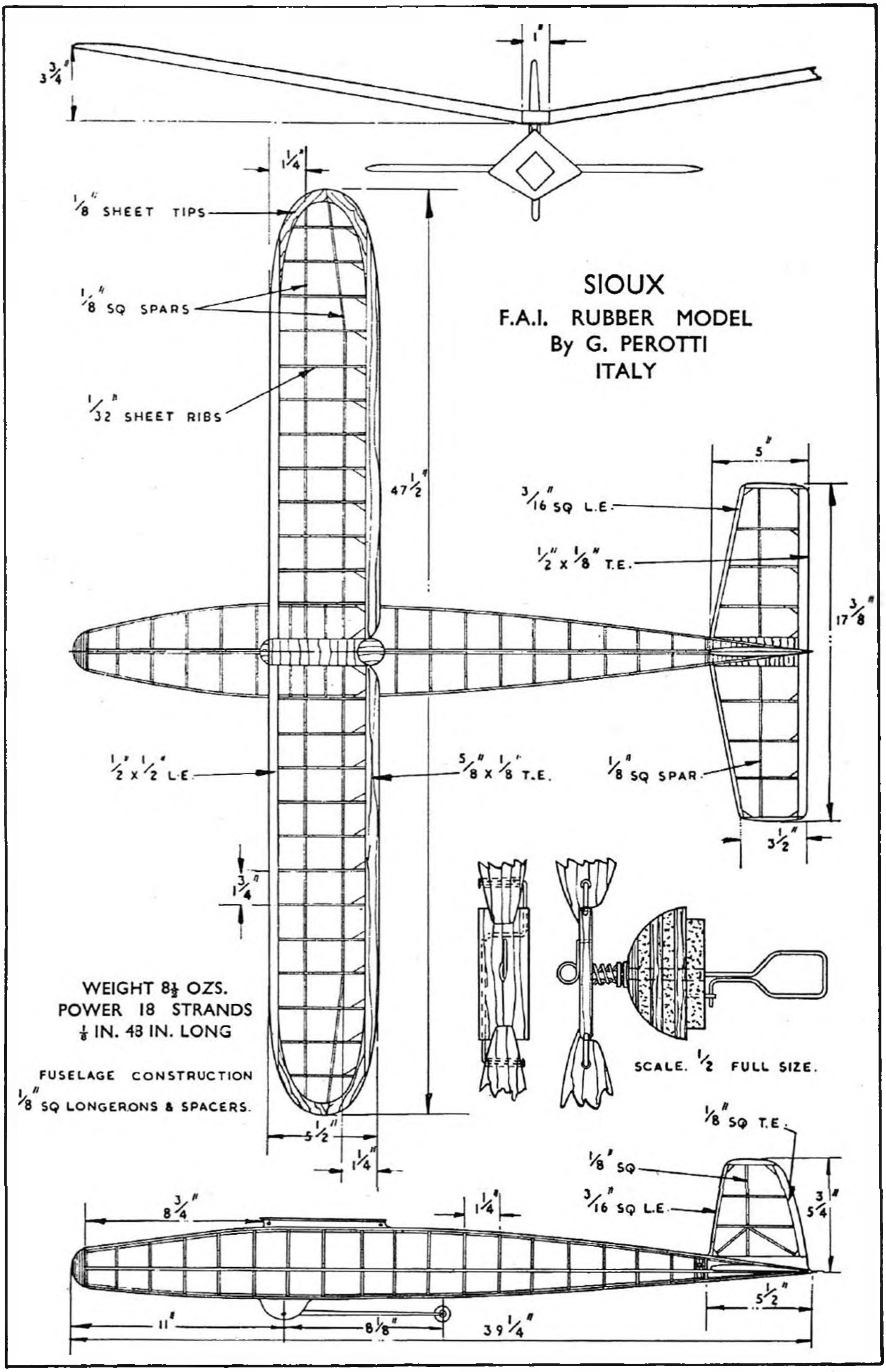
There is little in the design that calls for explanation—the one vital point to remember, is that the packing indicated under the motor clip must be fitted as shown, for on this most of the performance depends. Next point is that, while all power pellets will fly the model, some are better than others. The uninitiated should therefore enlist the help of some more experienced clubmate to go through his box of pellets and put on one side those likely to have slightly more thrust to use on contest occasions.

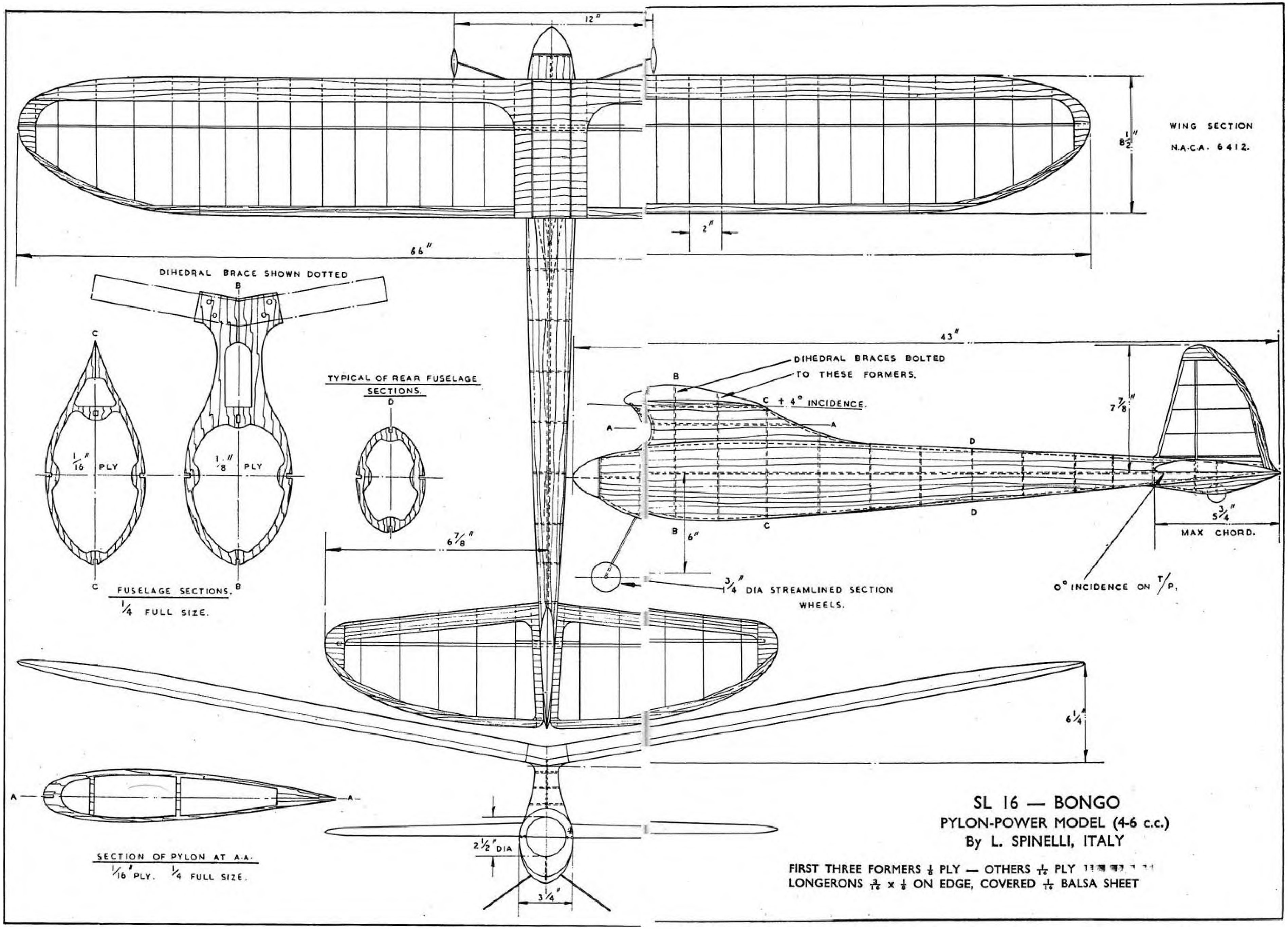
PERFORMANCE.—More trouble will be occasioned by losing Smokey Joe than in making it fly. Name and address is a very necessary decoration on every fuselage. With average pellets, flights of 2-2½ minutes should be normal without thermal assistance. In contest trim under average conditions maximums should be possible as often as the next man's, provided weight is kept down to the minimum. So little material is required that it pays to make two or three Smokey Joes and switch the Jetex unit round rather than increase weight unduly by repair work.



A 21 1/8" WINGSPAN JETEX POWERED MODEL
SMOKEY JOE
DESIGNED BY
LAURIE BARR
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS
2/-
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.
POWERED BY JETEX 100.
MATERIALS REQUIRED.
2 SHEETS OF 1/32" x 36" BALSA
1 " " 1/16" x 12" "
2 LENGTHS " 1/16" x 1/16" x 36" BALSA
1 " " 3/16" x 3/16" x 36" BALSA
1 " " 1/2" x 3/32" x 36" "
1 SHEET OF TISSUE.
FIN OUTLINE 1/16" SHEET
TRIM TAB.
1/8" x 1/16"
F.2 F.3 F.4 F.5 F.6 F.7 F.8 F.9 F.10 F.11
F.1
PACKING FOR 3/32" UPTHRUST
TAILPLANE
1/8" x 1/4" HARD BALSA FOR MOUNTING MOTOR
T/E.
1/32" SHEET.
WING RIB. 12 OFF 1/32" SHEET.
TIP RIBS 2 OFF 1/32" SHEET.
TAILPLANE CONSTRUCTION ALL 1/16" SQ.
ALL FORMERS 1/32" SHEET.
F.3. F.4. F.5. F.6. F.7. F.8. F.9. F.10. F.11.
2 9/16"
DIHEDRAL 7/16"
L.E. 3/16" x 3/16" MED.
TIP OUTLINE 1/16" SHEET
TAILPLANE SINGLE SURFACED
NOT WATER SPRAYED OR DOPED.
F.1. F.2.
1/32" SHEET
T.E. 1/2" x 3/32"
WASHOUT THIS WING TIP


BLOCK BALSA TIPS.
6"
2 3/16"
3/8" x 1/16" T.E
2 1/8"
ALL WING RIBS
1/8" SHEET
10" TRACK
1/8" x 1/2" T.E
5/32 SQ L.E.
SPAR 1/4" x 3/32"
1/8" SQ L.E.
23 1/2"
1/32" SHEET COVERED
CENTRE SECTION.
TAILPLANE RIBS
1/32" SHEET.
MAINSPAR 5/16" x 1/8"
29 9/64"
BLOCK BALSA TIP
4"
6" CHORD
ZEPHYR II
SWISS PYLON POWER MODEL
By A. PATRUCCO, GENEVA
BEST RATIO 34.5
WINNER GRAND PRIX DE GENEVA
POWER 2 c.c.
WING LOCATING PEGS.
41 3/8"
1/16" SQ
3/32" SQ
1/16" SHEET T.E
3/8" SQ HARDWOOD ENGINE BEARERS
FUSELAGE CONSTRUCTION 3/16" SQ BALSA
6"
1 1/4" DIA STREAMLINED WHEELS


SIOUX
F.A.I. RUBBER MODEL
By G. PEROTTI
ITALY
1/8" SHEET TIPS
1/8" SQ SPARS
1/32" SHEET RIBS
1/2" x 1/2" L.E.
5/8" x 1/8" T.E.
47 1/2"
1 1/4"
1"
3 3/4"
1 3/4"
5 1/2"
5"
3/16" SQ L.E.
1/2" x 1/8" T.E.
17 3/8"
1/8" SQ SPAR
3 1/2"
WEIGHT 8½ OZS.
POWER 18 STRANDS
⅛ IN. 43 IN. LONG
FUSELAGE CONSTRUCTION
1/8" SQ LONGERONS & SPACERS.
SCALE. 1/2 FULL SIZE.
1/8" SQ T.E.
1/8" SQ
3/16" SQ L.E.
5 3/4"
8 3/4"
11"
8 1/8"
39 1/4"



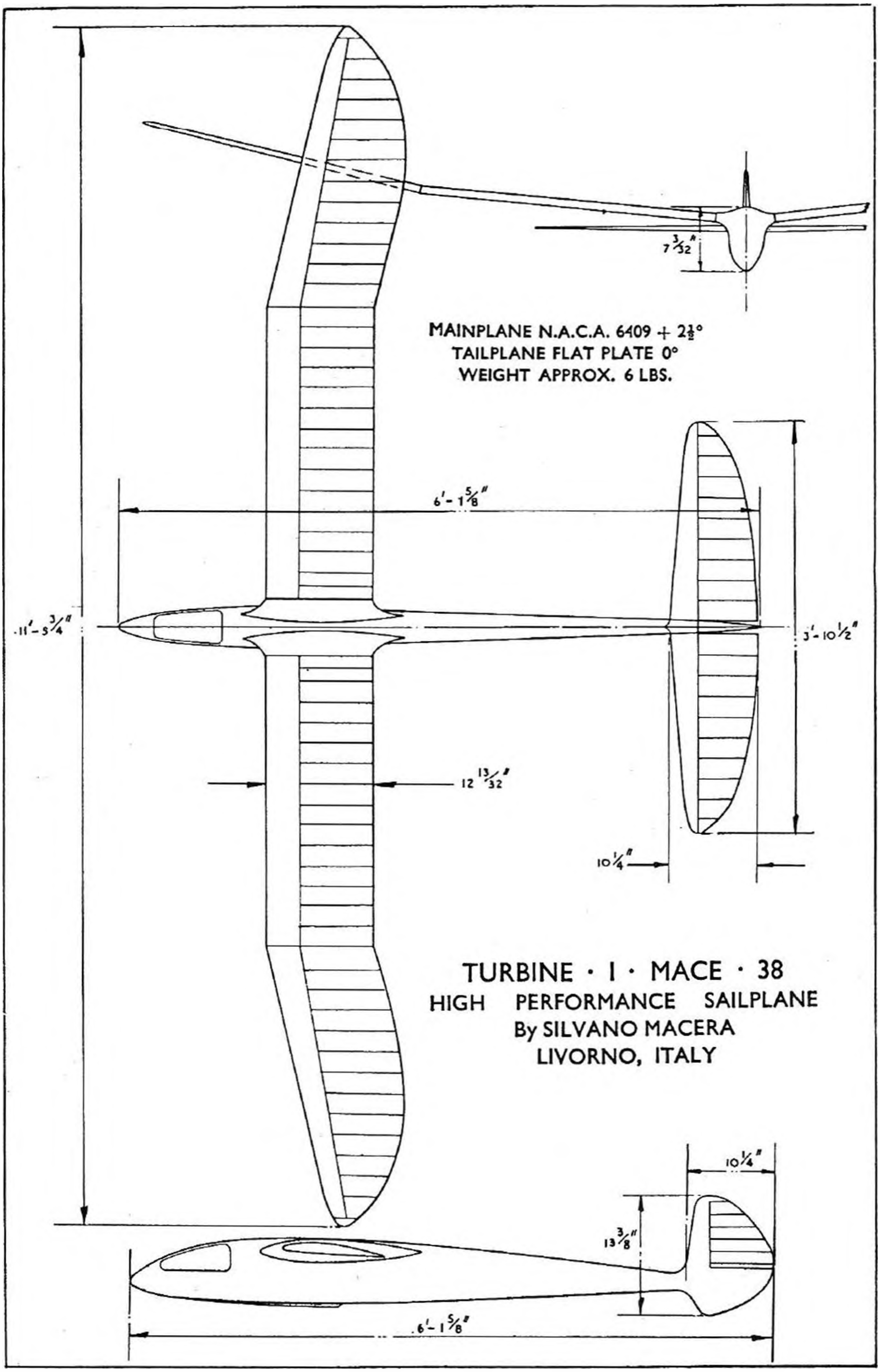
SL 16 — BONGO

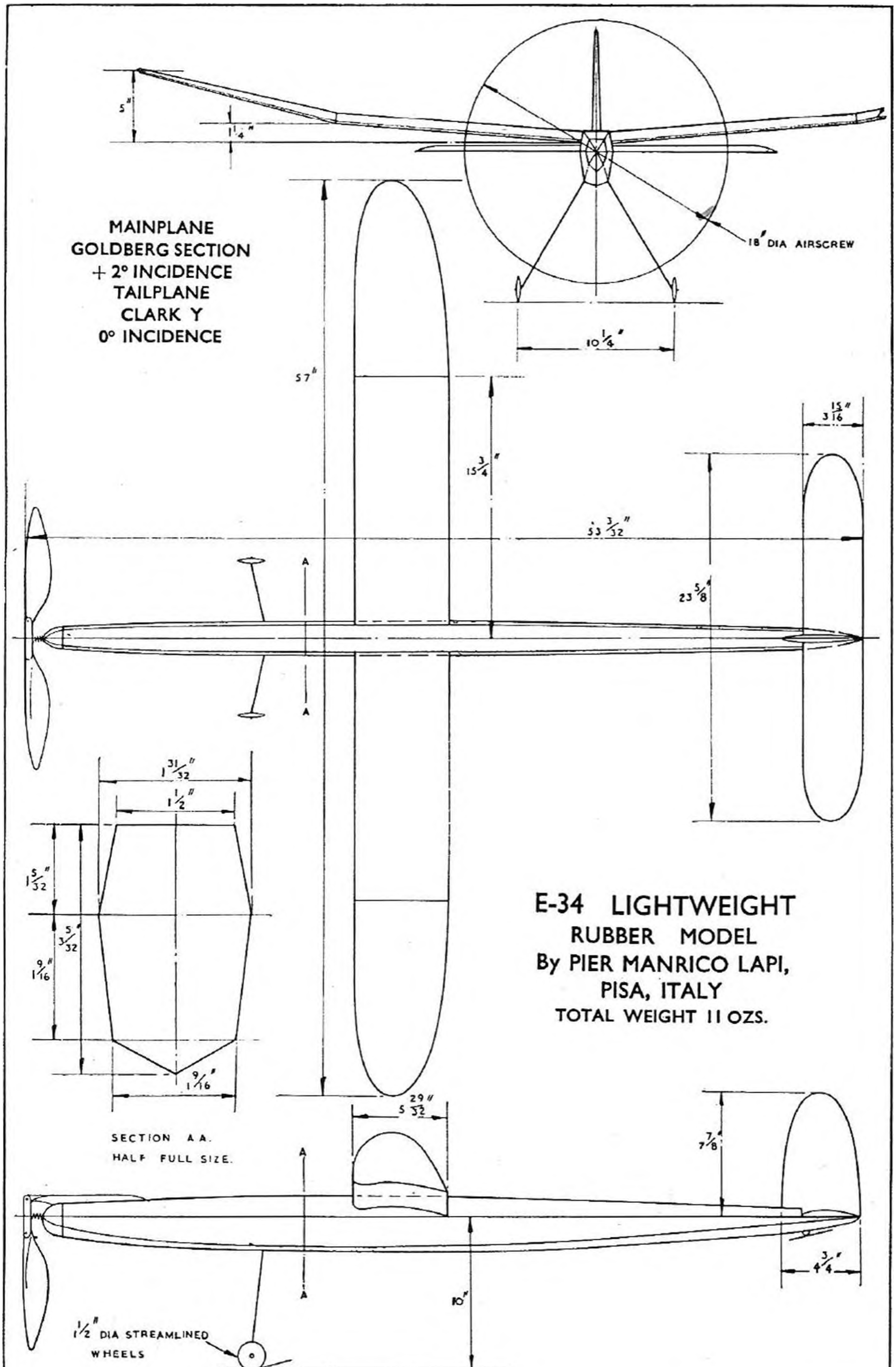
PYLON-POWER MODEL (4-6 c.c.)

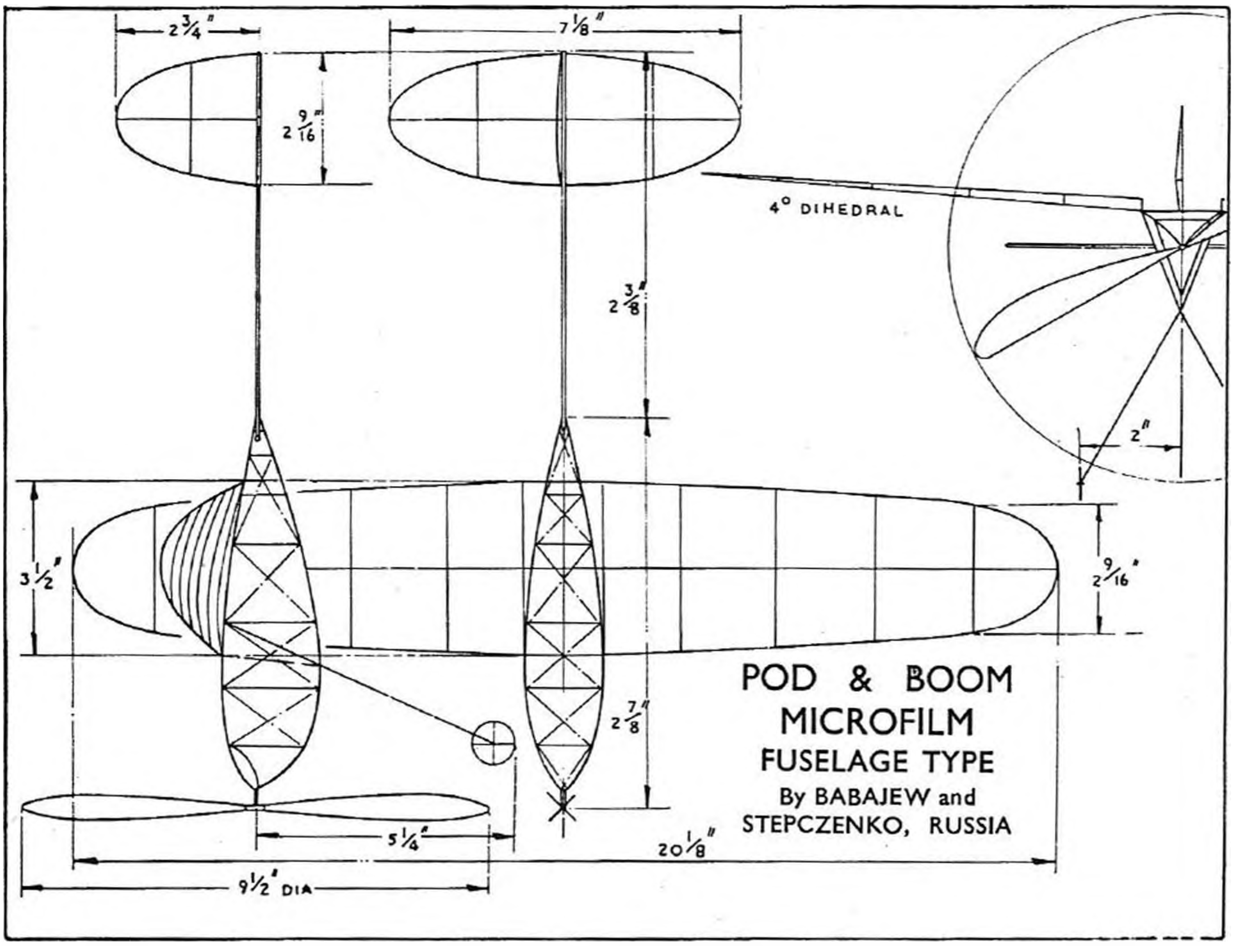
By L. SPINELLI, ITALY

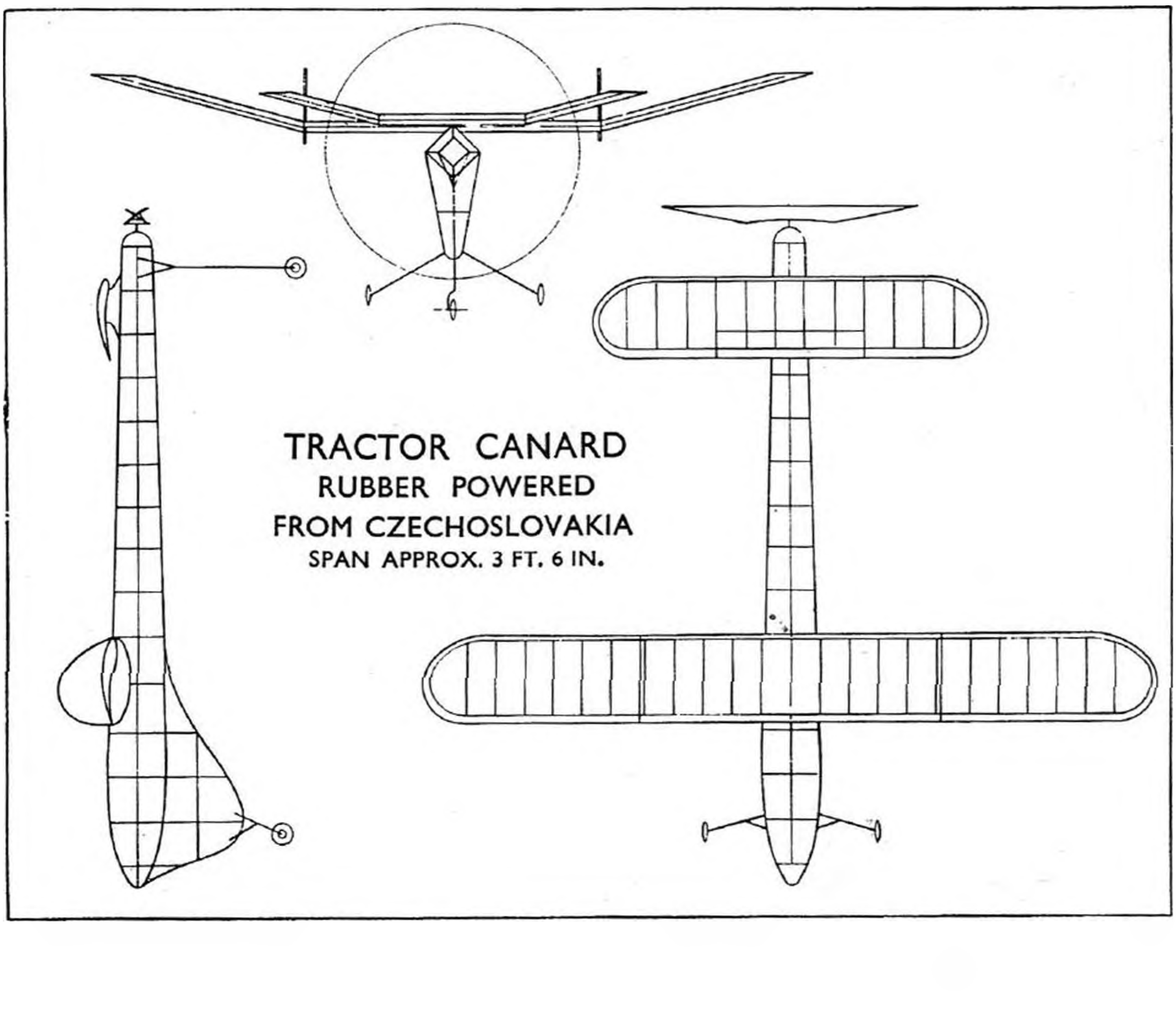
FIRST THREE FORMERS 1/8 PLY — OTHERS 1/16 PLY

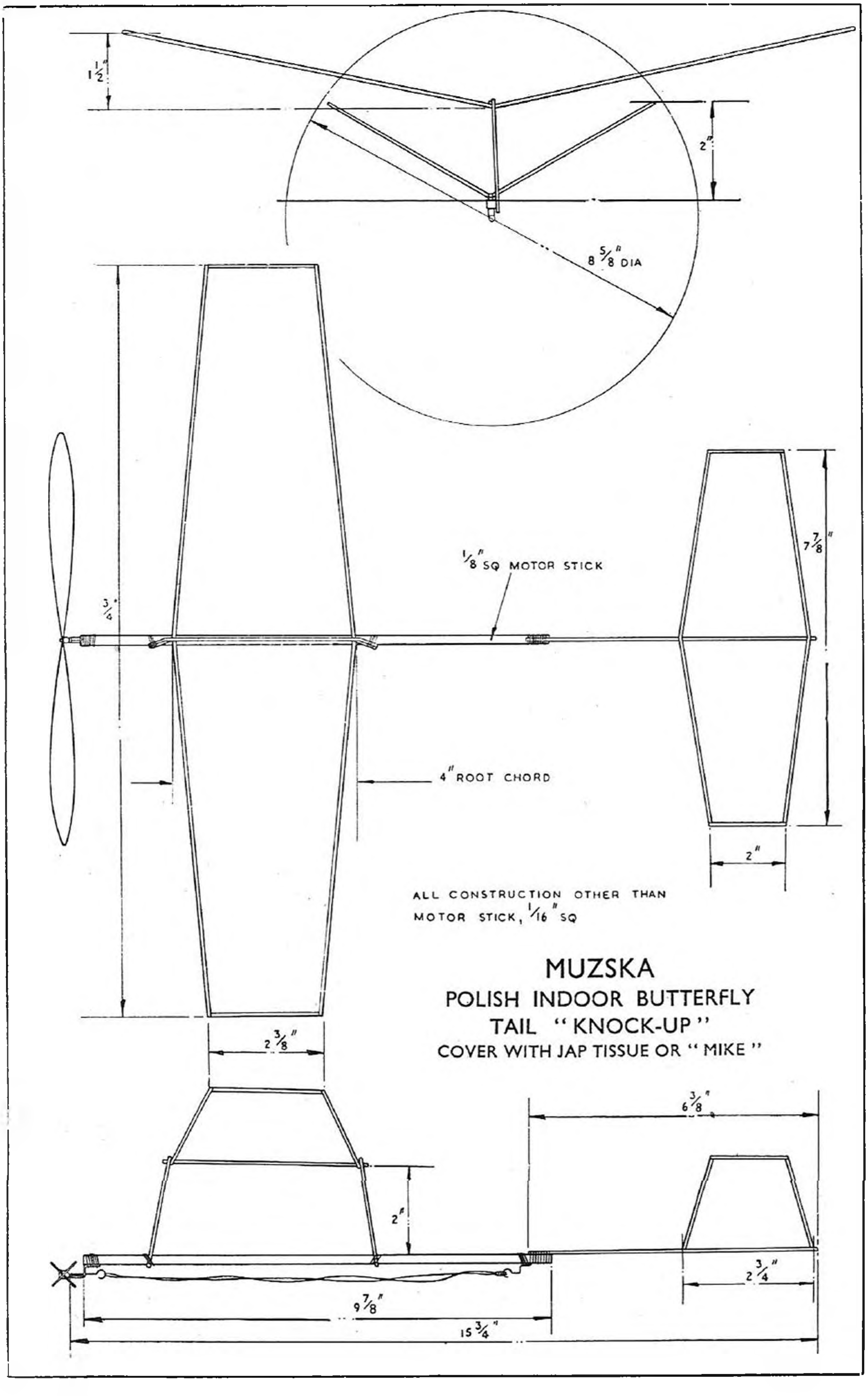
LONGERONS 3/16 x 1/8 ON EDGE, COVERED 1/16 BALSA SHEET

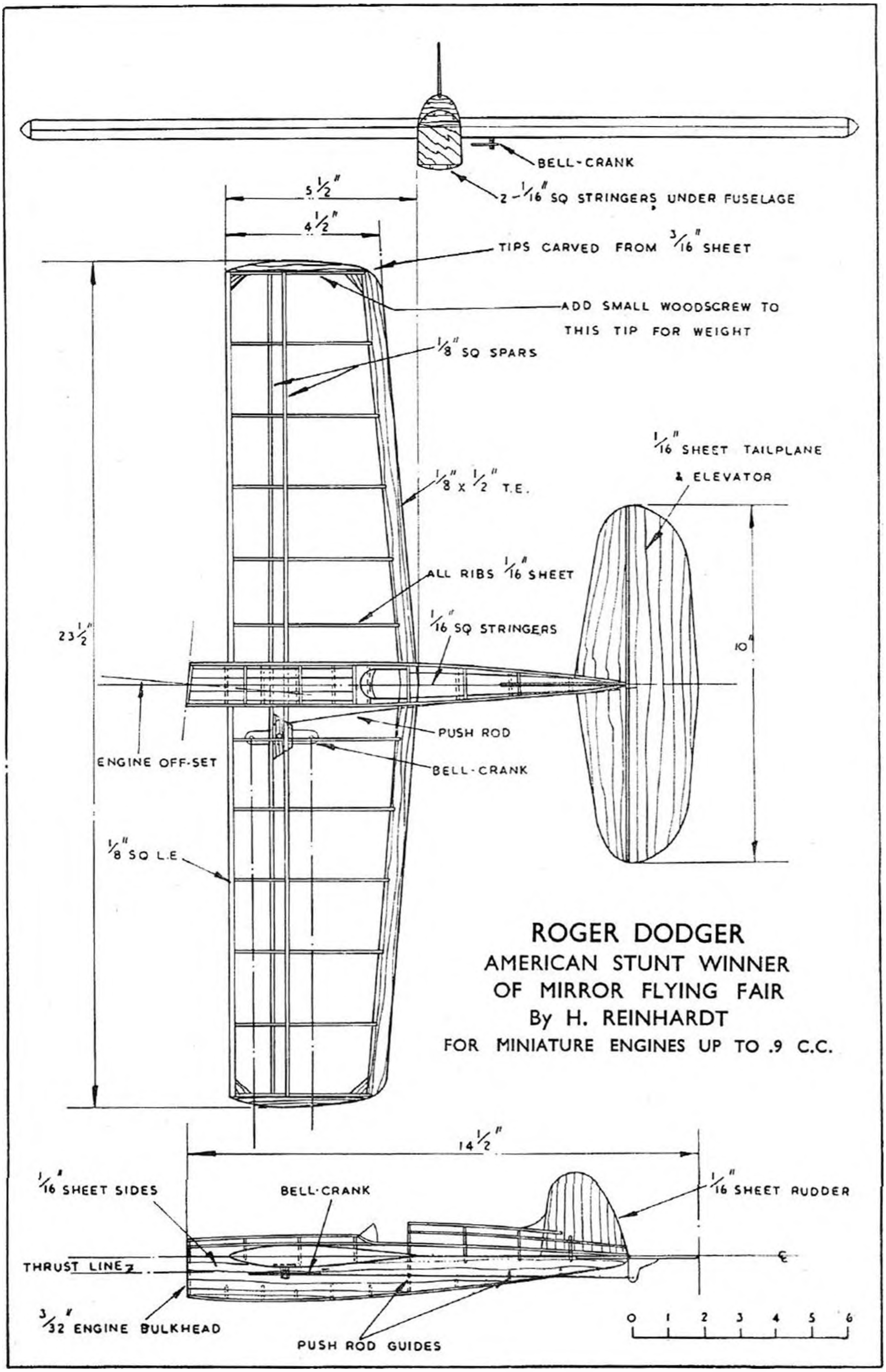

7 3/32"
MAINPLANE N.A.C.A. 6409 + 2½°
TAILPLANE FLAT PLATE 0°
WEIGHT APPROX. 6 LBS.
6'-1 5/8"
11'-5 3/4"
3'-10 1/2"
12 13/32"
10 1/4"
TURBINE · I · MACE · 38
HIGH PERFORMANCE SAILPLANE
By SILVANO MACERA
LIVORNO, ITALY
10 1/4"
13 3/8"
6'-1 5/8"

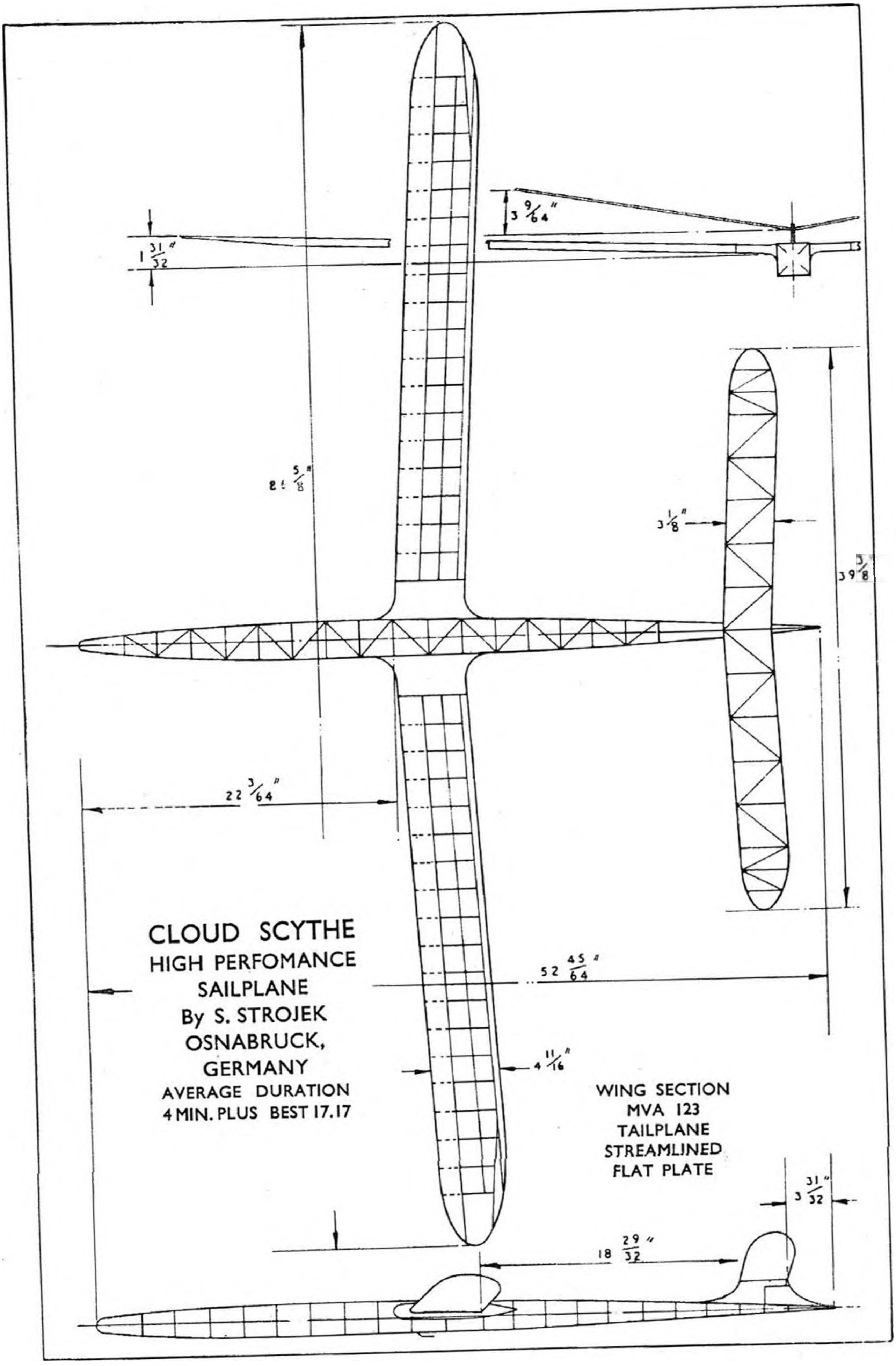

MAINPLANE
GOLDBERG SECTION
+ 2° INCIDENCE
TAILPLANE
CLARK Y
0° INCIDENCE
18" DIA AIRSCREW
10 1/4"
57"
15 3/4"
3 15/16"
53 3/32"
23 5/8"
1 31/32"
1 1/2"
1 5/32"
3 5/32"
1 9/16"
1 9/16"
SECTION A A.
HALF FULL SIZE.
5 29/32"
7 7/8"
4 3/4"
10"
1 1/2" DIA STREAMLINED
WHEELS
E-34 LIGHTWEIGHT
RUBBER MODEL
By PIER MANRICO LAPI,
PISA, ITALY
TOTAL WEIGHT 11 OZS.


2¾"
7⅛"
2 9/16"
4° DIHEDRAL
2⅜"
2"
3½"
2 9/16"
POD & BOOM
MICROFILM
FUSELAGE TYPE
By BABAJEW and
STEPCZENKO, RUSSIA
2⅞"
5¼"
20⅛"
9½" DIA

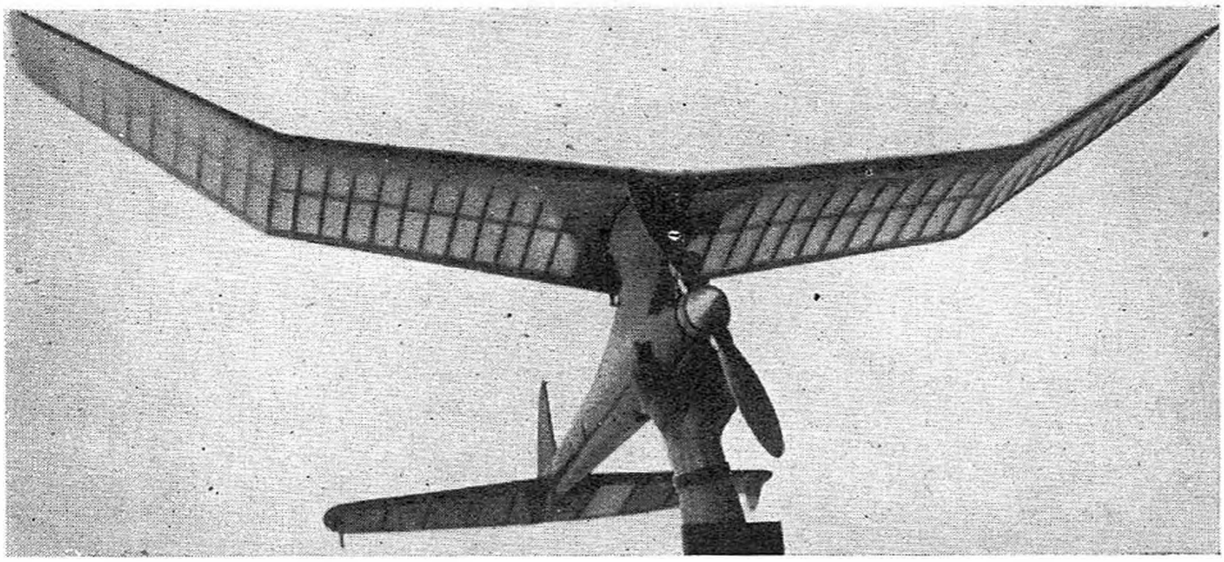

TRACTOR CANARD
RUBBER POWERED
FROM CZECHOSLOVAKIA
SPAN APPROX. 3 FT. 6 IN.


1½"
2"
8 5/8" DIA
1/8" SQ MOTOR STICK
7 7/8"
3/4"
4" ROOT CHORD
2"
ALL CONSTRUCTION OTHER THAN
MOTOR STICK, 1/16" SQ
MUZSKA
POLISH INDOOR BUTTERFLY
TAIL "KNOCK-UP"
COVER WITH JAP TISSUE OR "MIKE"
2 3/8"
6 3/8"
2"
2 3/4"
9 7/8"
15 3/4"

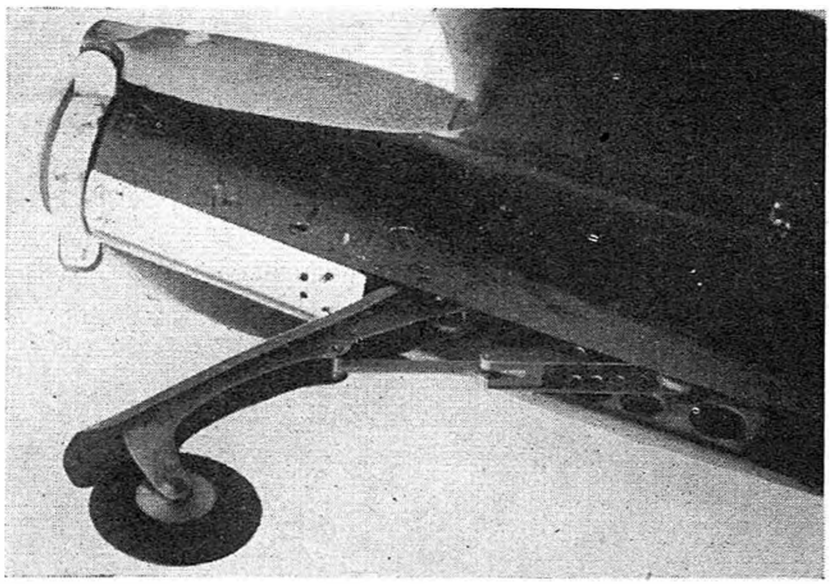

BELL-CRANK
2 - 1/16" SQ STRINGERS UNDER FUSELAGE
5 1/2"
4 1/2"
TIPS CARVED FROM 3/16" SHEET
ADD SMALL WOODSCREW TO THIS TIP FOR WEIGHT
1/8" SQ SPARS
1/16" SHEET TAILPLANE & ELEVATOR
1/8" x 1/2" T.E.
ALL RIBS 1/16" SHEET
1/16" SQ STRINGERS
23 1/2"
10"
PUSH ROD
ENGINE OFF-SET
BELL-CRANK
1/8" SQ L.E.
ROGER DODGER
AMERICAN STUNT WINNER
OF MIRROR FLYING FAIR
By H. REINHARDT
FOR MINIATURE ENGINES UP TO .9 C.C.
14 1/2"
1/16" SHEET SIDES
BELL-CRANK
1/16" SHEET RUDDER
THRUST LINE
℄
3/32" ENGINE BULKHEAD
PUSH ROD GUIDES
0 1 2 3 4 5 6

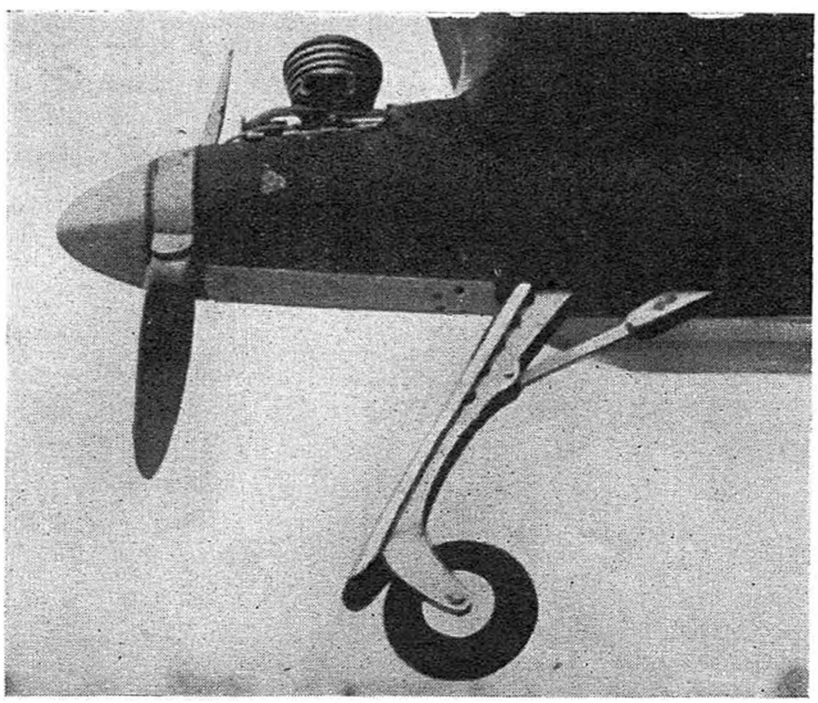


CLOUD SCYTHE
HIGH PERFOMANCE
SAILPLANE
By S. STROJEK
OSNABRUCK,
GERMANY
AVERAGE DURATION
4 MIN. PLUS BEST 17.17
WING SECTION
MVA 123
TAILPLANE
STREAMLINED
FLAT PLATE



"W" Jugoslav Record *w*ower Model by Dorde Zigic.

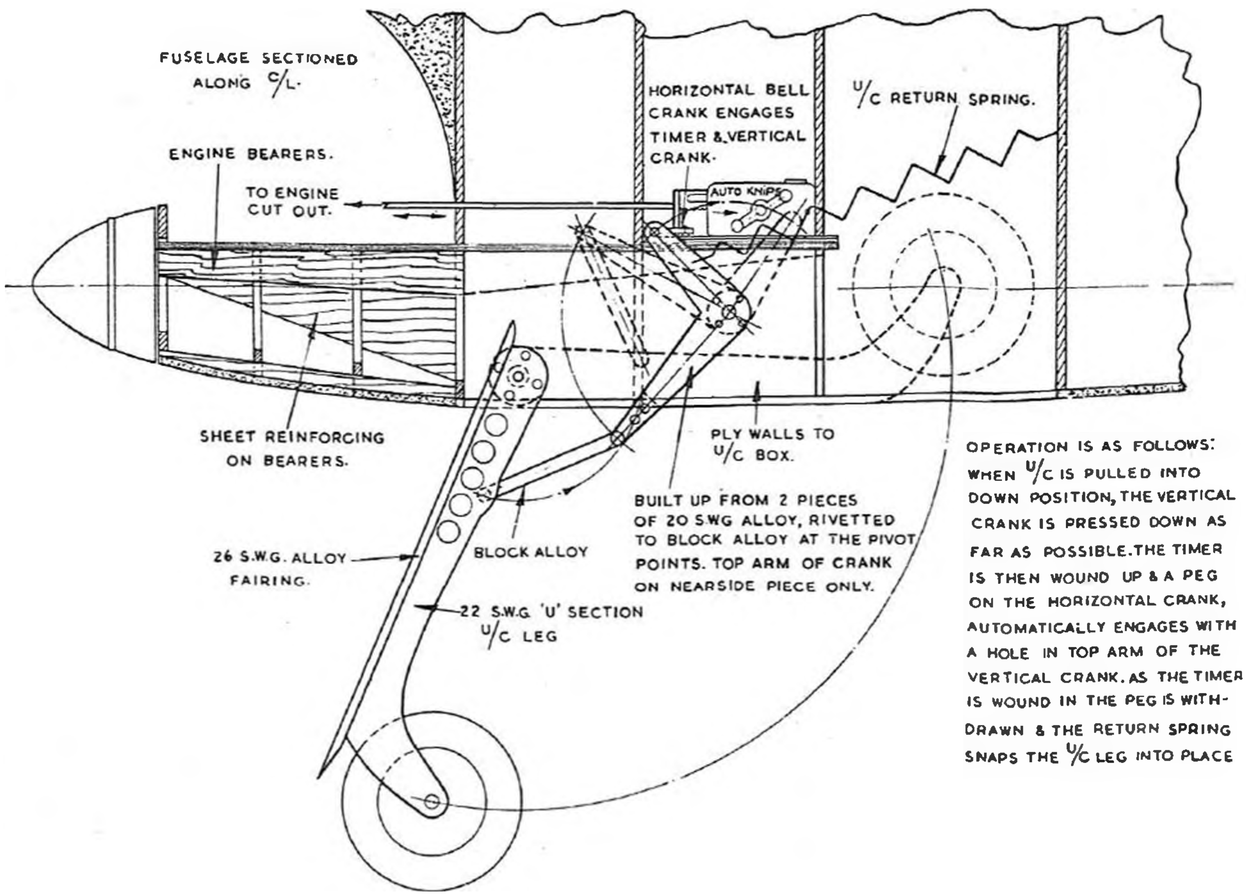




DESCRIPTION. Dorde Zigic would be the first to admit how much his design owes to the typical Shulman formula that created Zoomer, Zombie and Banshee contest models.

After that due acknowledgment the Jugoslav really goes to town. First of all even his power plant, a Drone Diesel, has had a certain amount of breathing on and magic 'fluence by virtue of polishing ports, etc.

Most interesting feature must be, of course, the delayed action retracting peg-leg undercarriage. This folds back into fuselage 7 seconds after timer has been set for the engine—then after a

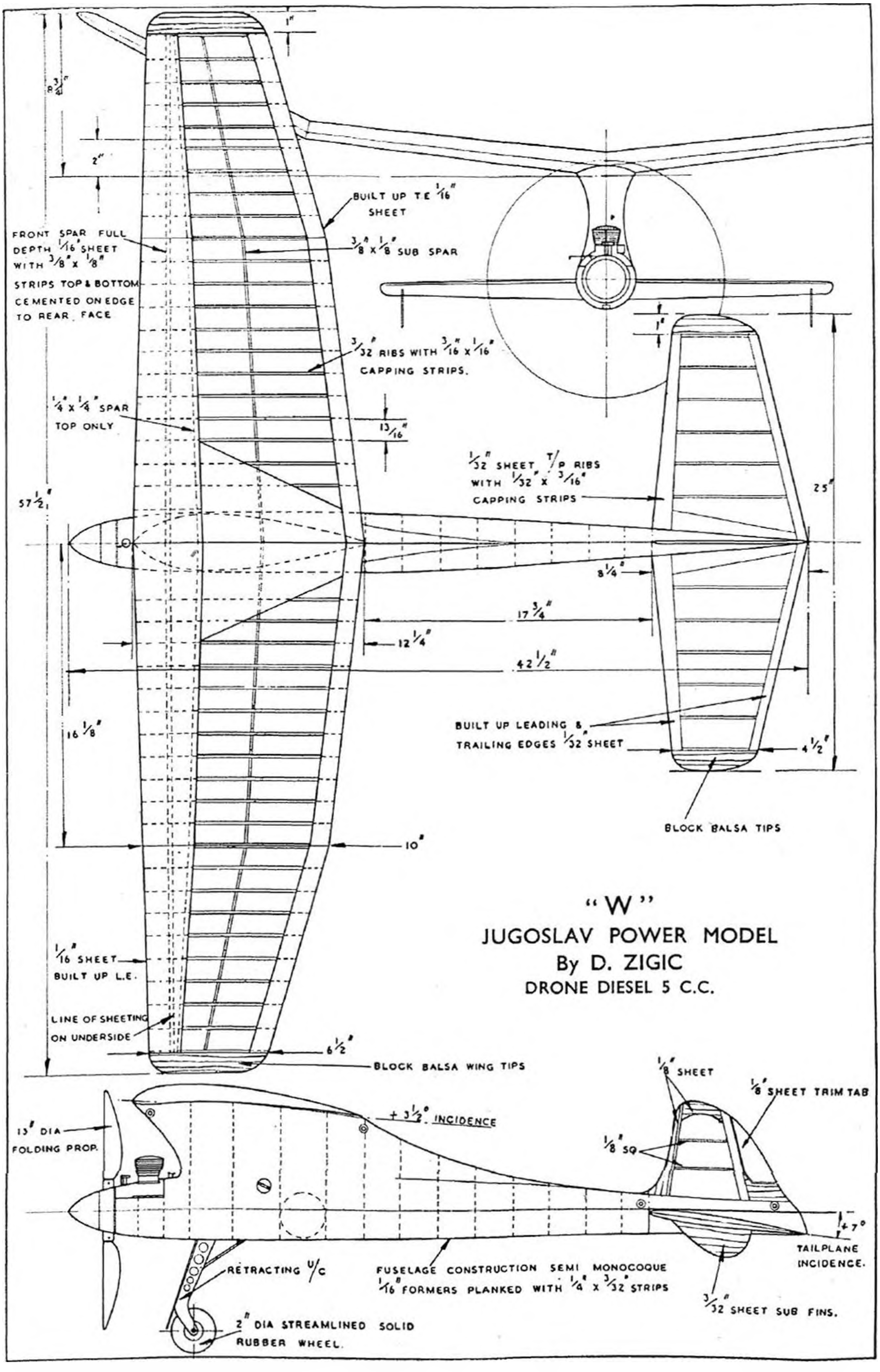


further 3-10 seconds comes the normal engine cut-out operating on the same timer with the same set. Unlike so many gadgets of this sort the Zigic undercarriage is 100% rigid in operation and never fails to operate. As a natural consequence, a folding propeller is essential—or at any rate preferable to relying on a horizontal stop every time.

A point to notice, is that symmetrical tailplane is set at high positive angle of incidence actually greater than that of mainplane—incidentally a modified N.A.C.A. 6409—a set up that has also attracted considerable investigation by the Shulmanites, and offers possibilities provided flyer is patient at the trimming stage.

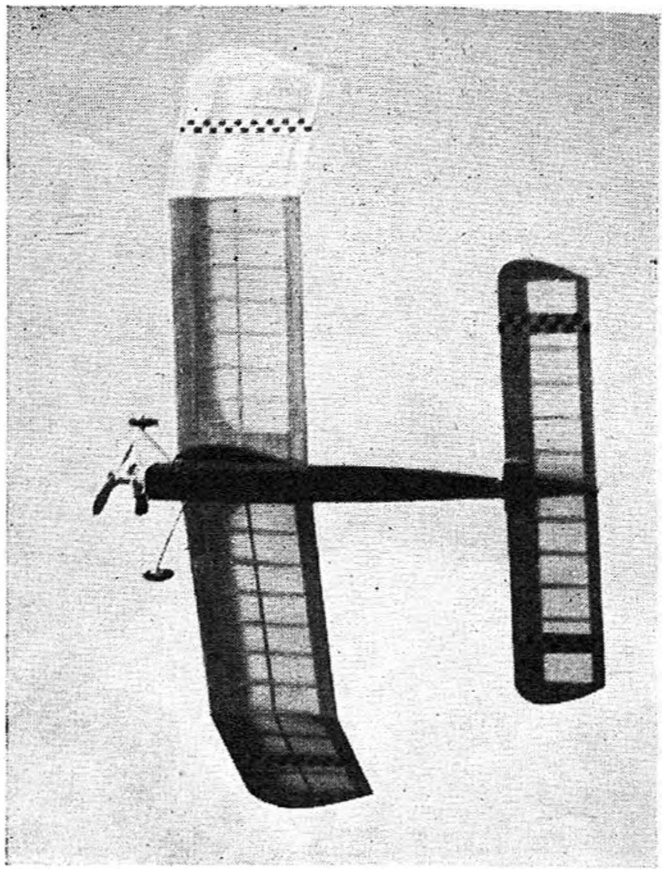
Apart from its design features " W " is also a fine example of beautiful workmanship. The retracting mechanism is finely made in light alloy, all parts being cut from block and suitably lightened. The folding airscrew blades are made up from multi-laminations, while the streamlined fuselage is beautifully strong and might well serve as the traditional " blunt instrument " without any particular damage.

Performance.—On its native Jugoslav soil " W " holds a distance record of 60 km. (about 37½ miles) and height of 1,450 m. (4,740 ft.). On its two flights in this country it registered ratio/power/durations of 9.6 and 19.58. After being lost for several days, it was found undamaged about ten miles from take-off point.



BUILT UP T.E. 1/16" SHEET
FRONT SPAR FULL DEPTH 1/16" SHEET WITH 3/8" x 1/8" STRIPS TOP & BOTTOM CEMENTED ON EDGE TO REAR FACE
3/8" x 1/8" SUB SPAR
3/32" RIBS WITH 3/16" x 1/16" CAPPING STRIPS.
1/4" x 1/4" SPAR TOP ONLY
13/16"
1/32" SHEET T/P RIBS WITH 1/32" x 3/16" CAPPING STRIPS
25"
57 1/2"
8 1/4"
17 3/4"
12 1/4"
42 1/2"
BUILT UP LEADING & TRAILING EDGES 1/32" SHEET
4 1/2"
16 1/8"
BLOCK BALSA TIPS
10"
"W"
JUGOSLAV POWER MODEL
By D. ZIGIC
DRONE DIESEL 5 C.C.
1/16" SHEET BUILT UP L.E.
LINE OF SHEETING ON UNDERSIDE
6 1/2"
BLOCK BALSA WING TIPS
1/8" SHEET
1/8" SHEET TRIM TAB
13" DIA FOLDING PROP.
+3 1/2° INCIDENCE
1/8" SQ
+7°
TAILPLANE INCIDENCE.
RETRACTING U/C
FUSELAGE CONSTRUCTION SEMI MONOCOQUE 1/16" FORMERS PLANKED WITH 1/4" x 3/32" STRIPS
3/32" SHEET SUB FINS.
2" DIA STREAMLINED SOLID RUBBER WHEEL.

Pylonius. Pylon Power Model by Peter Christiansen, Denmark.

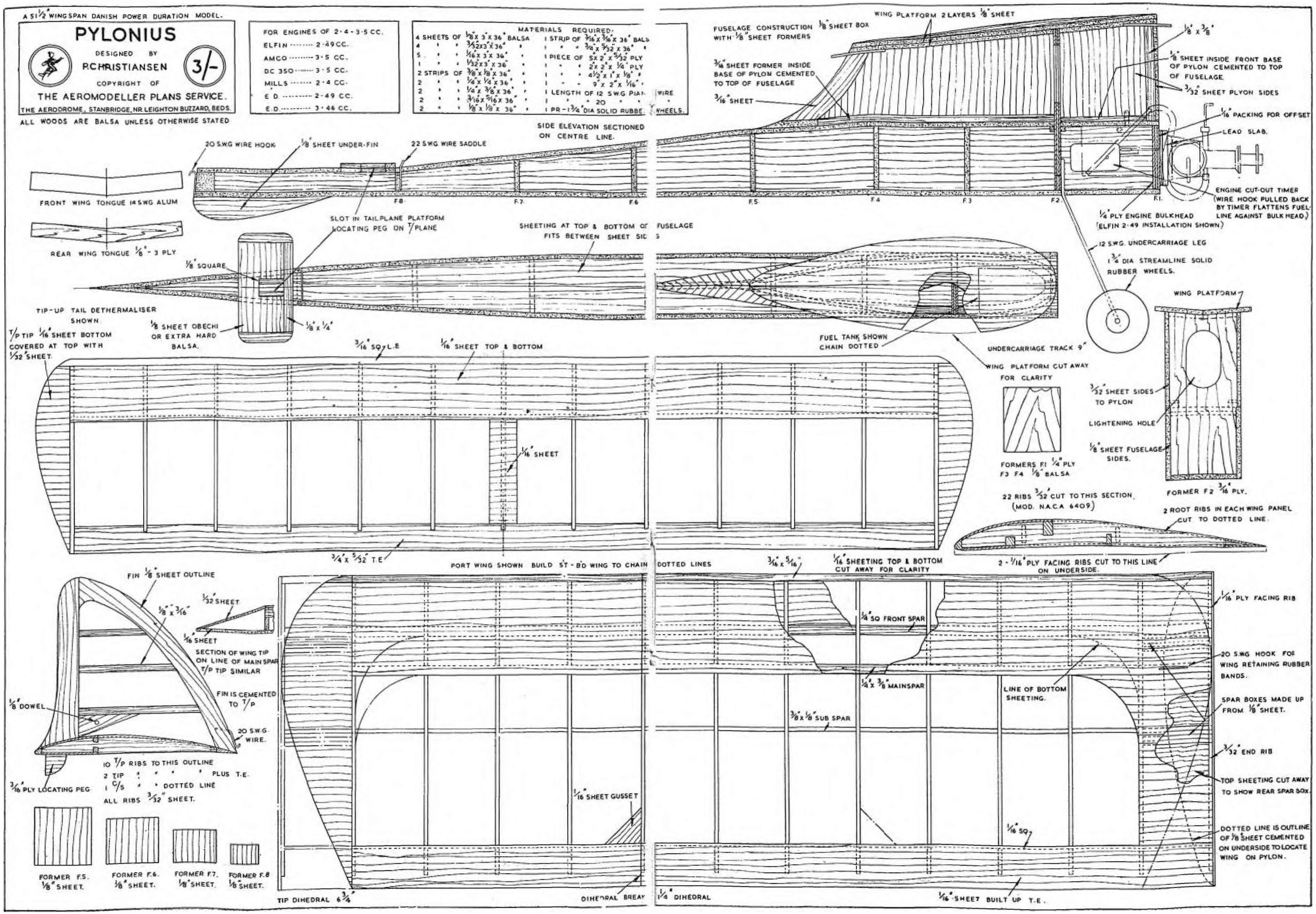


DESCRIPTION.—This very attractive pylon power model took no part in the Aeromodeller Rally at Eaton Bray this year as it was lost on a test flight the evening before the contest. Happily, it turned up again a very few days later quite unharmed and we were sufficiently impressed to include it in this volume. It enjoys that neatness and simplicity combined with good performance that is all too rarely in evidence, and usually proves a popular design when it *does* turn up.

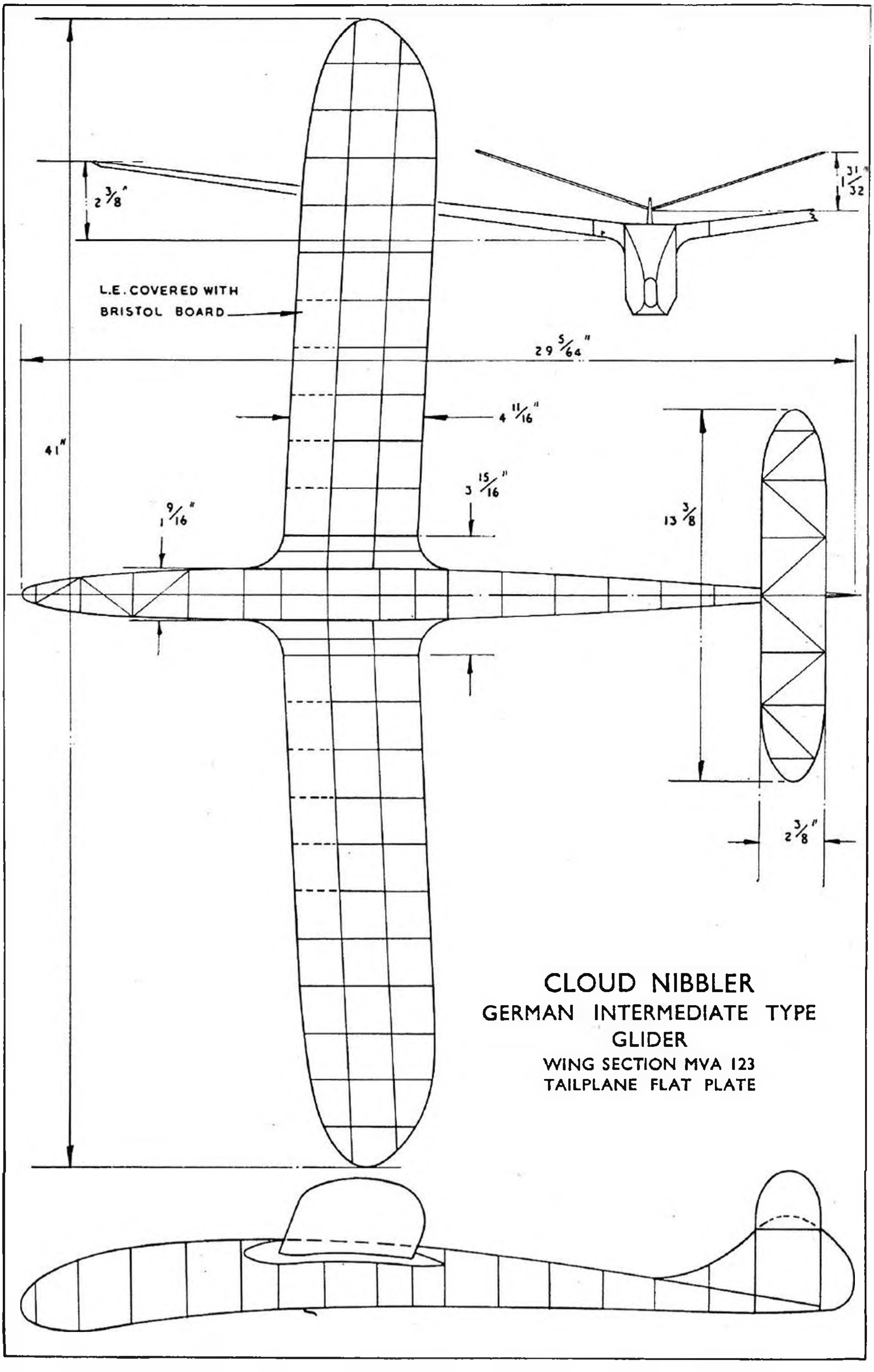
Fuselage is a straightforward box with built up sheet covered streamlined pylon above. Wing platform is adequate in size to enable good firm location of mainplane. Detachable tailplane and fin has a small locating tongue and box to ensure that it is truly parallel to mainplane. Two-piece mainplane is stoutly built with sheeted leading edge, and tip dihedral—parallel chord with rounded tips. Wheels are of hardwood, but there is no reason why solid rubber control-line or lightweight pneumatic wheels should not be fitted, particularly as the prototype required over an ounce of leading packing behind the engine mounting for trimming purposes.

Original engine was an Elfin 2.49 c.c. mounted as a sidewinder—this bolts direct on to bulkhead, at rear of which nuts are soldered in placed—note that a little packing for side thrust is desirable. The popular continental type of photo-timer was installed flush with the fuselage, with winding arm on the outside. This controlled a short hook which compressed the plastic tube fuel lead, thus cutting off supplies. A word of warning is necessary for those employing this method—tubing must be comparatively new ; once it gets older and harder the hook cannot compress it enough to shut off supplies, with the risk of unrehearsed flyaways, such as lost the original on test ! Use of one of the proprietary cutouts, or a fuel-metering device is probably a safer practice, a modification which the chastened designer is now embodying !

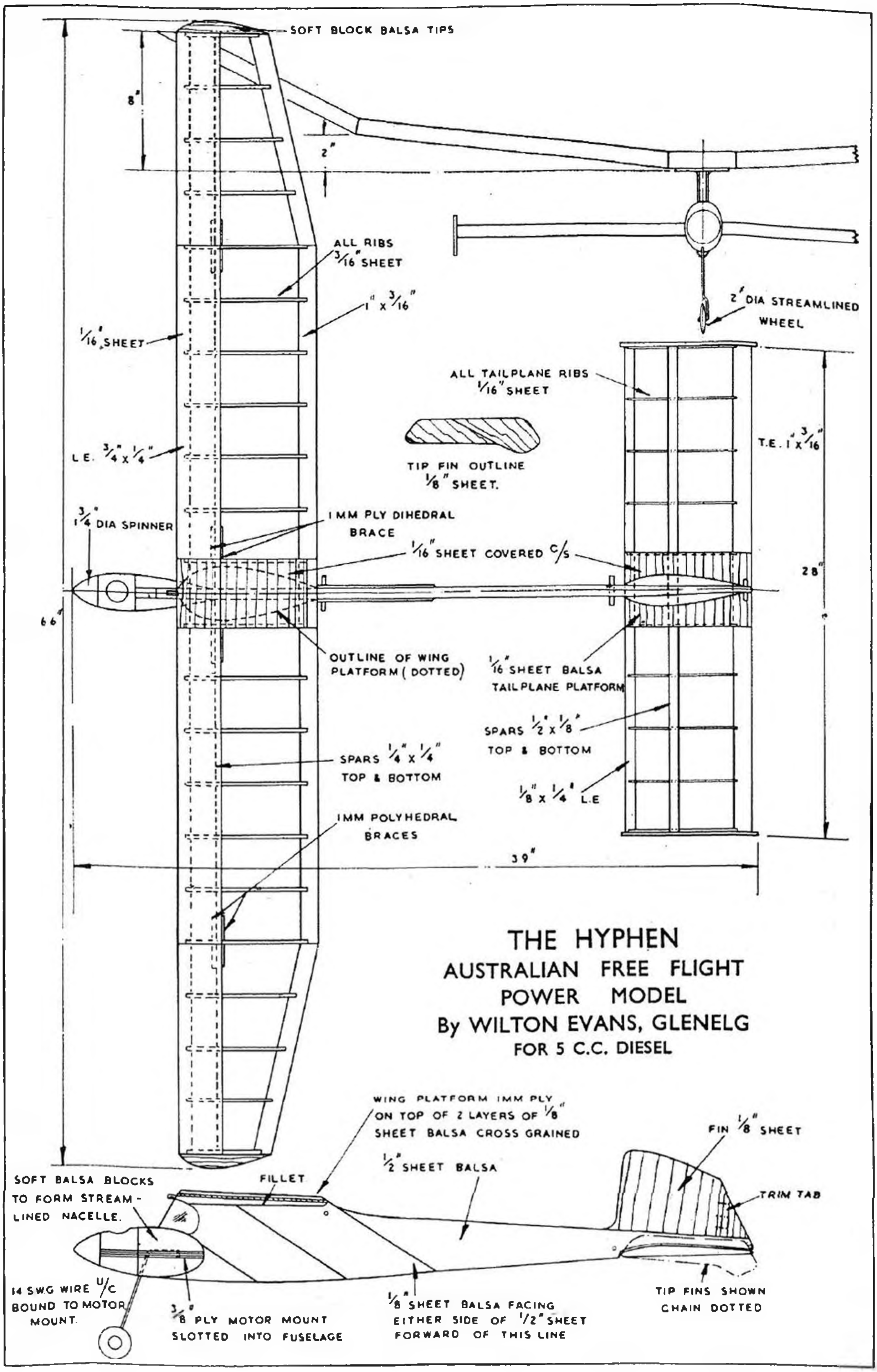
PERFORMANCE.—With a 10-15 second motor run, 2-3 minute flights are the usual reward without particular thermal assistance. Given a little riser then considerably better will be achieved.

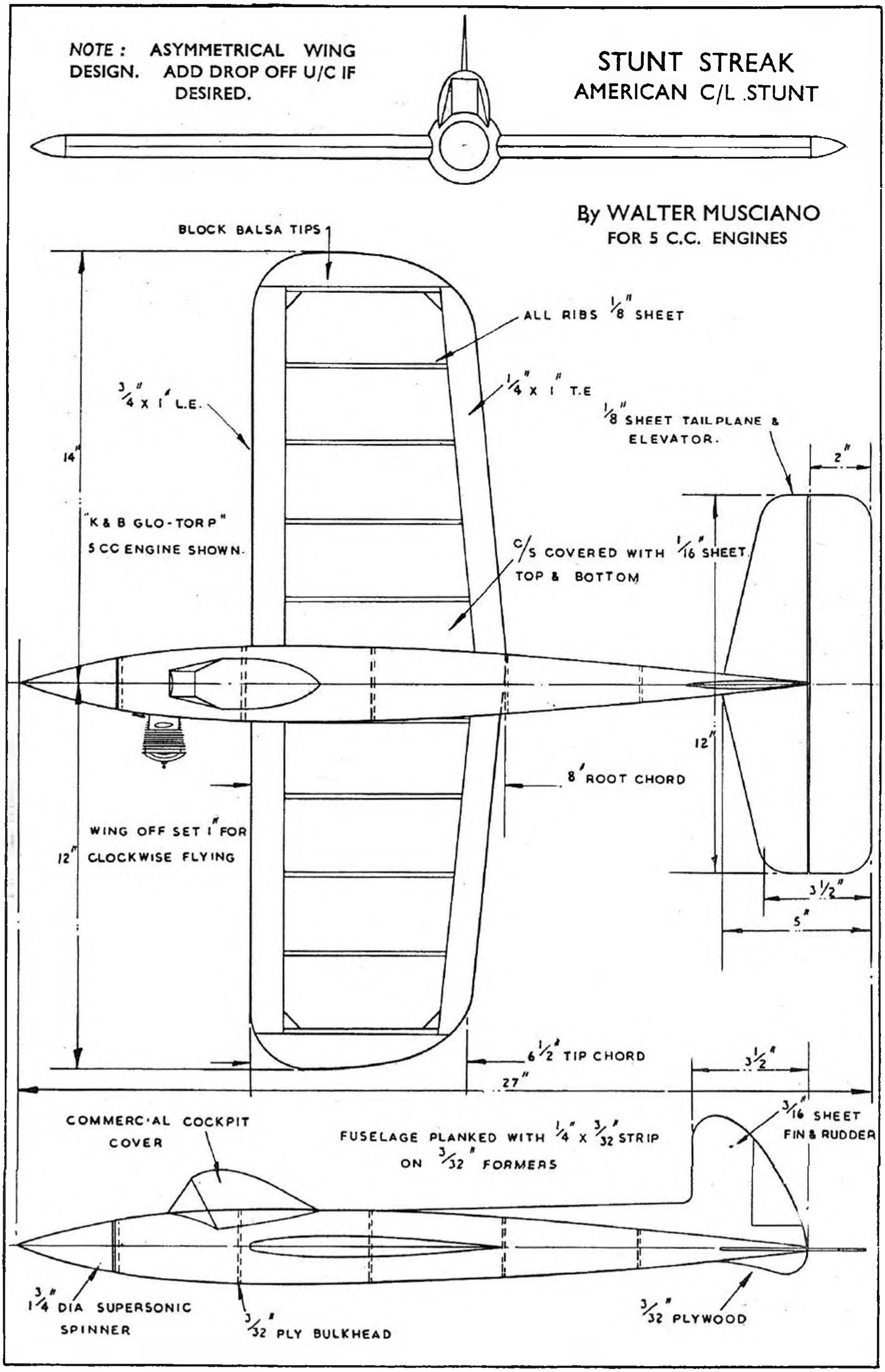


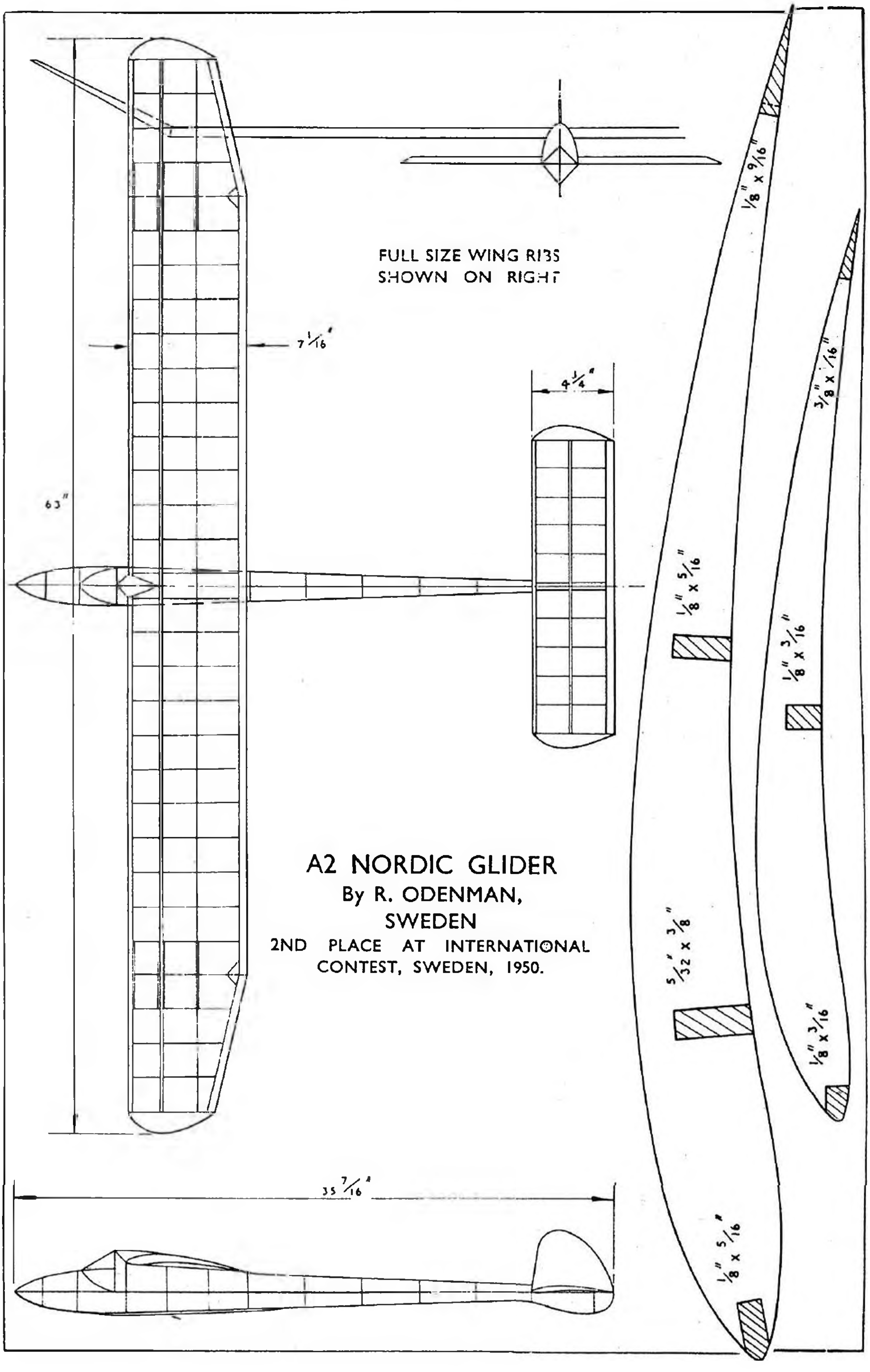
A 51½" WINGSPAN DANISH POWER DURATION MODEL.
PYLONIUS
DESIGNED BY P. CHRISTIANSEN
3/-
COPYRIGHT OF THE AEROMODELLER PLANS SERVICE.
THE AERODROME, STANBRIDGE, NR. LEIGHTON BUZZARD, BEDS.
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED
FOR ENGINES OF 2·4-3·5 CC.
ELFIN 2·49 CC.
AMCO 3·5 CC.
DC 350 3·5 CC.
MILLS 2·4 CC.
E.D. 2·49 CC.
E.D. 3·46 CC.
MATERIALS REQUIRED:
4 SHEETS OF 1/8" x 3" x 36" BALSA
4 " " 3/32 x 3" x 36" "
5 " " 1/16 x 3" x 36" "
1 " " 1/32 x 3" x 36" "
2 STRIPS OF 3/8" x 1/8" x 36" "
2 " " 1/4" x 1/4" x 36" "
2 " " 1/4" x 3/8" x 36" "
2 " " 3/16 x 5/16 x 36" "
2 " " 1/8" x 1/8" x 36" "
1 STRIP OF 3/16" x 3/16" x 36" BALSA
1 " " 3/4" x 5/32" x 36" "
1 PIECE OF 5" x 2" x 5/32" PLY
1 " " 2" x 2" x 1/4" PLY
1 " " 4½" x 1" x 1/8" "
1 " " 9" x 2" x 1/16" "
1 LENGTH OF 12 S.W.G. PIANO WIRE
1 " " 20 " "
1 PR - 1¾" DIA SOLID RUBBER WHEELS.
SIDE ELEVATION SECTIONED ON CENTRE LINE.
20 S.W.G. WIRE HOOK
1/8" SHEET UNDER-FIN
22 S.W.G. WIRE SADDLE
FRONT WING TONGUE 14 S.W.G. ALUM
REAR WING TONGUE 1/8" - 3 PLY
SLOT IN TAILPLANE PLATFORM LOCATING PEG ON T/PLANE
SHEETING AT TOP & BOTTOM OF FUSELAGE FITS BETWEEN SHEET SIDES
1/8" SQUARE
TIP-UP TAIL DETHERMALISER SHOWN.
T/P TIP 1/16" SHEET BOTTOM COVERED AT TOP WITH 1/32" SHEET.
1/8" SHEET OBECHI OR EXTRA HARD BALSA.
1/8" x 1/4"
FUSELAGE CONSTRUCTION 1/8" SHEET BOX WITH 1/8" SHEET FORMERS
WING PLATFORM 2 LAYERS 1/8" SHEET
1/8" x 3/8"
1/8" SHEET INSIDE FRONT BASE OF PYLON CEMENTED TO TOP OF FUSELAGE.
3/32" SHEET PYLON SIDES
3/16" SHEET FORMER INSIDE BASE OF PYLON CEMENTED TO TOP OF FUSELAGE
3/16" SHEET
1/16" PACKING FOR OFFSET
LEAD SLAB.
ENGINE CUT-OUT TIMER (WIRE HOOK PULLED BACK BY TIMER FLATTENS FUEL LINE AGAINST BULKHEAD.)
1/4" PLY ENGINE BULKHEAD (ELFIN 2·49 INSTALLATION SHOWN)
F8 F7 F6 F5 F4 F3 F2 F1
12 S.W.G. UNDERCARRIAGE LEG
1¾" DIA STREAMLINE SOLID RUBBER WHEELS.
WING PLATFORM
FUEL TANK SHOWN CHAIN DOTTED
UNDERCARRIAGE TRACK 9"
WING PLATFORM CUT AWAY FOR CLARITY
3/32" SHEET SIDES TO PYLON
LIGHTENING HOLE
1/8" SHEET FUSELAGE SIDES.
FORMERS F1 1/4" PLY F3 F4 1/8" BALSA
FORMER F2 3/16" PLY.
22 RIBS 3/32" CUT TO THIS SECTION (MOD. N.A.C.A. 6409)
2 ROOT RIBS IN EACH WING PANEL CUT TO DOTTED LINE.
2 - 1/16" PLY FACING RIBS CUT TO THIS LINE ON UNDERSIDE.
3/16" SQ. L.E.
1/16" SHEET TOP & BOTTOM
1/16" SHEET
3/4" x 5/32" T.E.
PORT WING SHOWN BUILD ST-BD WING TO CHAIN DOTTED LINES
3/16" x 5/16"
1/16" SHEETING TOP & BOTTOM CUT AWAY FOR CLARITY
FIN 1/8" SHEET OUTLINE
1/32" SHEET
1/8" x 3/16"
1/16" SHEET
SECTION OF WING TIP ON LINE OF MAINSPAR T/P TIP SIMILAR
FIN IS CEMENTED TO T/P
1/8" DOWEL
20 S.W.G. WIRE.
3/16" PLY LOCATING PEG
10 T/P RIBS TO THIS OUTLINE
2 TIP " " " " PLUS T.E.
1 C/S " " DOTTED LINE
ALL RIBS 3/32" SHEET.
FORMER F.5. 1/8" SHEET.
FORMER F.6. 1/8" SHEET.
FORMER F.7. 1/8" SHEET.
FORMER F.8 1/8" SHEET.
1/4" SQ FRONT SPAR
1/4" x 3/8" MAINSPAR
3/8" x 1/8" SUB SPAR
LINE OF BOTTOM SHEETING.
1/16" PLY FACING RIB
20 S.W.G. HOOK FOR WING RETAINING RUBBER BANDS.
SPAR BOXES MADE UP FROM 1/8" SHEET.
3/32" END RIB
TOP SHEETING CUT AWAY TO SHOW REAR SPAR BOX.
1/16" SHEET GUSSET
1/16" SQ.
DOTTED LINE IS OUTLINE OF 1/8" SHEET CEMENTED ON UNDERSIDE TO LOCATE WING ON PYLON.
TIP DIHEDRAL 6¾"
DIHEDRAL BREAK
1¼" DIHEDRAL
1/16" SHEET BUILT UP T.E.



2 3/8"
31/32"
1
L.E. COVERED WITH
BRISTOL BOARD
29 5/64"
4 11/16"
41"
3 15/16"
1 9/16"
13 3/8
2 3/8"
CLOUD NIBBLER
GERMAN INTERMEDIATE TYPE
GLIDER
WING SECTION MVA 123
TAILPLANE FLAT PLATE


SOFT BLOCK BALSA TIPS
8"
2"
ALL RIBS 3/16" SHEET
1" x 3/16"
1/16" SHEET
2" DIA STREAMLINED WHEEL
ALL TAILPLANE RIBS 1/16" SHEET
T.E. 1" x 3/16"
L.E. 3/4" x 1/4"
TIP FIN OUTLINE 1/8" SHEET.
1 3/4" DIA SPINNER
1MM PLY DIHEDRAL BRACE
1/16" SHEET COVERED C/S
28"
66"
OUTLINE OF WING PLATFORM (DOTTED)
1/16" SHEET BALSA TAILPLANE PLATFORM
SPARS 1/2" x 1/8" TOP & BOTTOM
SPARS 1/4" x 1/4" TOP & BOTTOM
1/8" x 1/4" L.E
1MM POLYHEDRAL BRACES
39"
THE HYPHEN
AUSTRALIAN FREE FLIGHT POWER MODEL
By WILTON EVANS, GLENELG
FOR 5 C.C. DIESEL
WING PLATFORM 1MM PLY ON TOP OF 2 LAYERS OF 1/8" SHEET BALSA CROSS GRAINED
FIN 1/8" SHEET
1/2" SHEET BALSA
SOFT BALSA BLOCKS TO FORM STREAM-LINED NACELLE.
FILLET
TRIM TAB
14 S.W.G WIRE U/C BOUND TO MOTOR MOUNT.
3/8" PLY MOTOR MOUNT SLOTTED INTO FUSELAGE
1/8" SHEET BALSA FACING EITHER SIDE OF 1/2" SHEET FORWARD OF THIS LINE
TIP FINS SHOWN CHAIN DOTTED

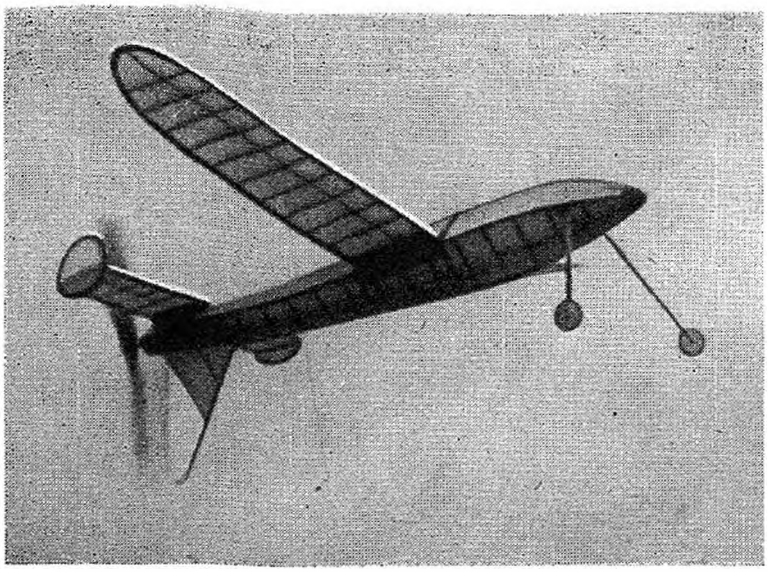

NOTE: ASYMMETRICAL WING DESIGN. ADD DROP OFF U/C IF DESIRED.
STUNT STREAK
AMERICAN C/L STUNT
By WALTER MUSCIANO
FOR 5 C.C. ENGINES
BLOCK BALSA TIPS
ALL RIBS 1/8" SHEET
3/4" x 1" L.E.
1/4" x 1" T.E
1/8" SHEET TAILPLANE & ELEVATOR.
14"
2"
"K & B GLO-TORP" 5 CC ENGINE SHOWN.
C/S COVERED WITH 1/16" SHEET TOP & BOTTOM
12"
8" ROOT CHORD
WING OFF SET 1" FOR CLOCKWISE FLYING
12"
3 1/2"
5"
6 1/2" TIP CHORD
3 1/2"
27"
COMMERCIAL COCKPIT COVER
FUSELAGE PLANKED WITH 1/4" x 3/32" STRIP ON 3/32" FORMERS
3/16" SHEET FIN & RUDDER
1 3/4" DIA SUPERSONIC SPINNER
3/32" PLY BULKHEAD
3/32" PLYWOOD



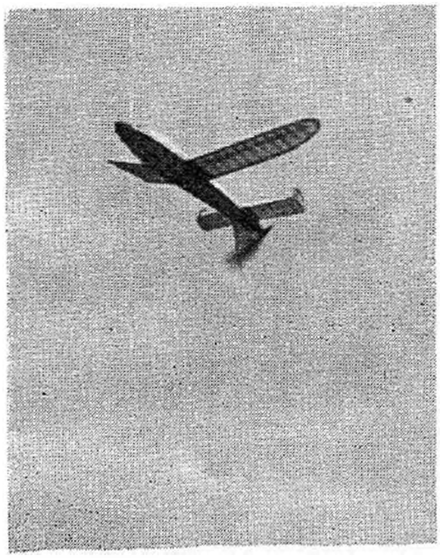
A2 NORDIC GLIDER

By R. ODENMAN, SWEDEN

2ND PLACE AT INTERNATIONAL CONTEST, SWEDEN, 1950.

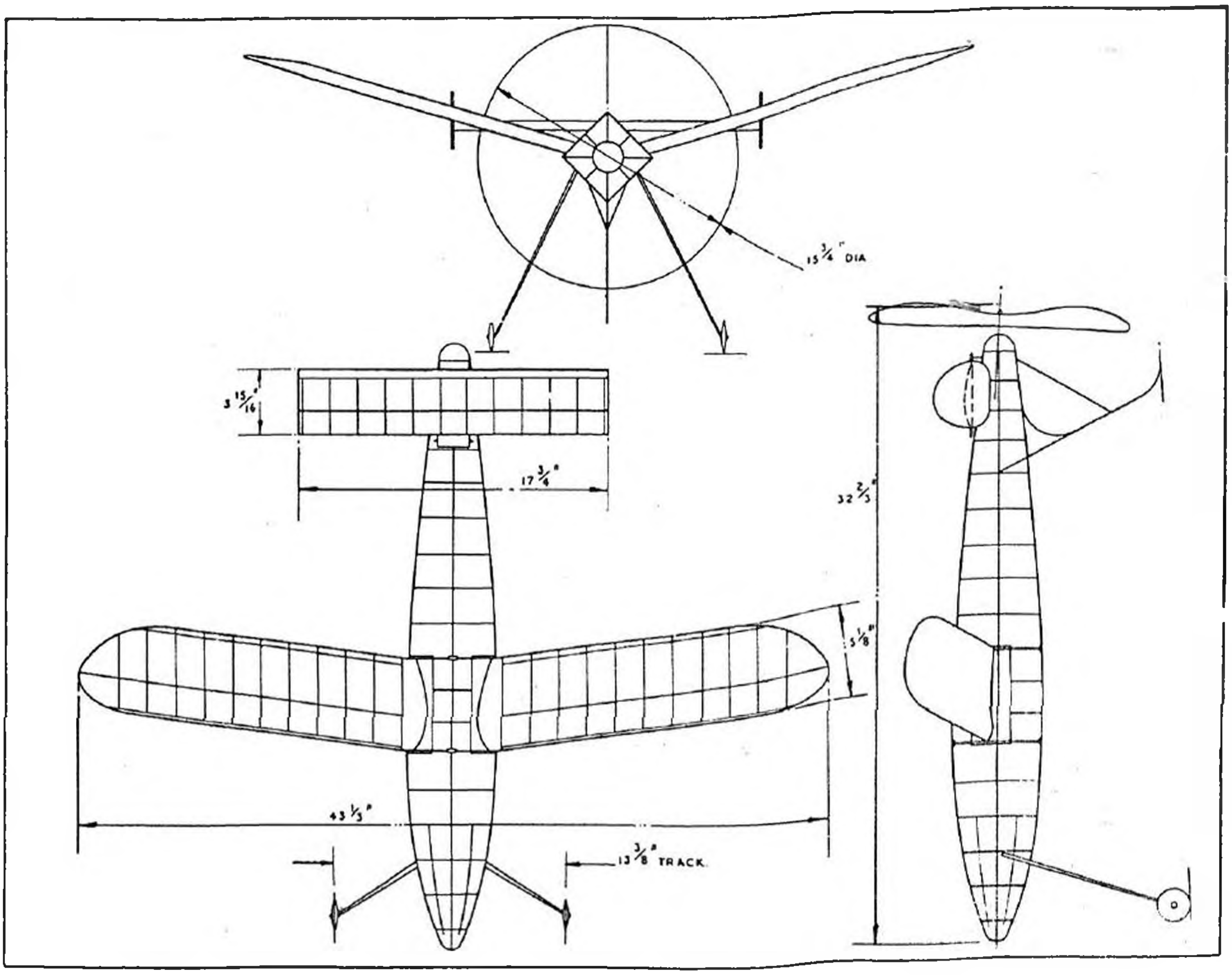


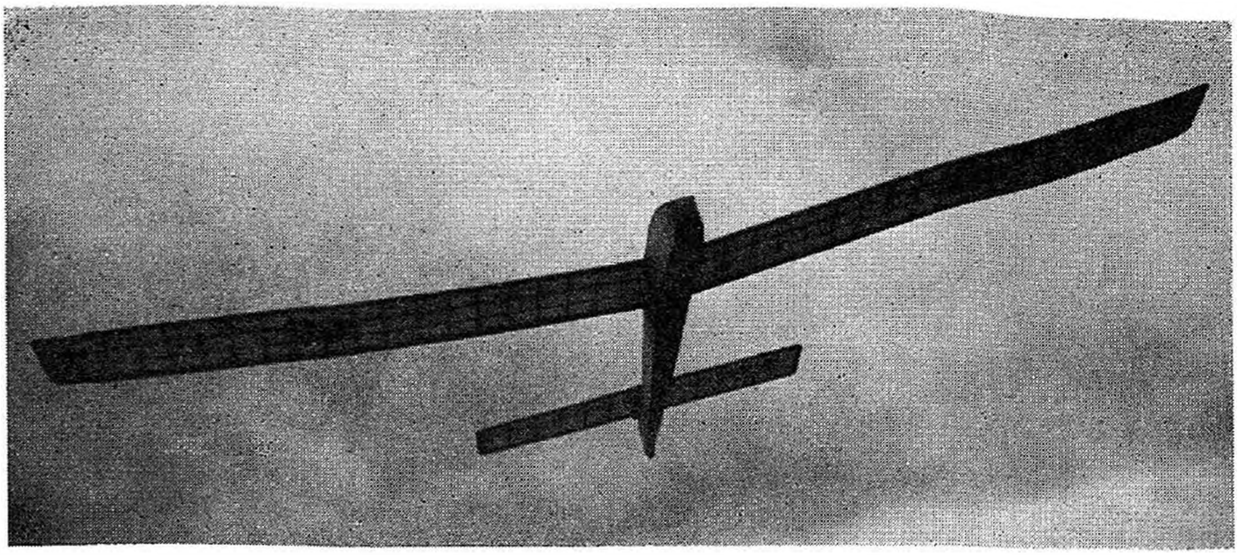
Power 18 strands 3/64 × 5/32 ins. Average still air performance 120-150 secs., below best standard layout, but definitely promising.



Mixmaster-150.—Pusher Wakefield by Helmut Meyer, Bremen, Germany.

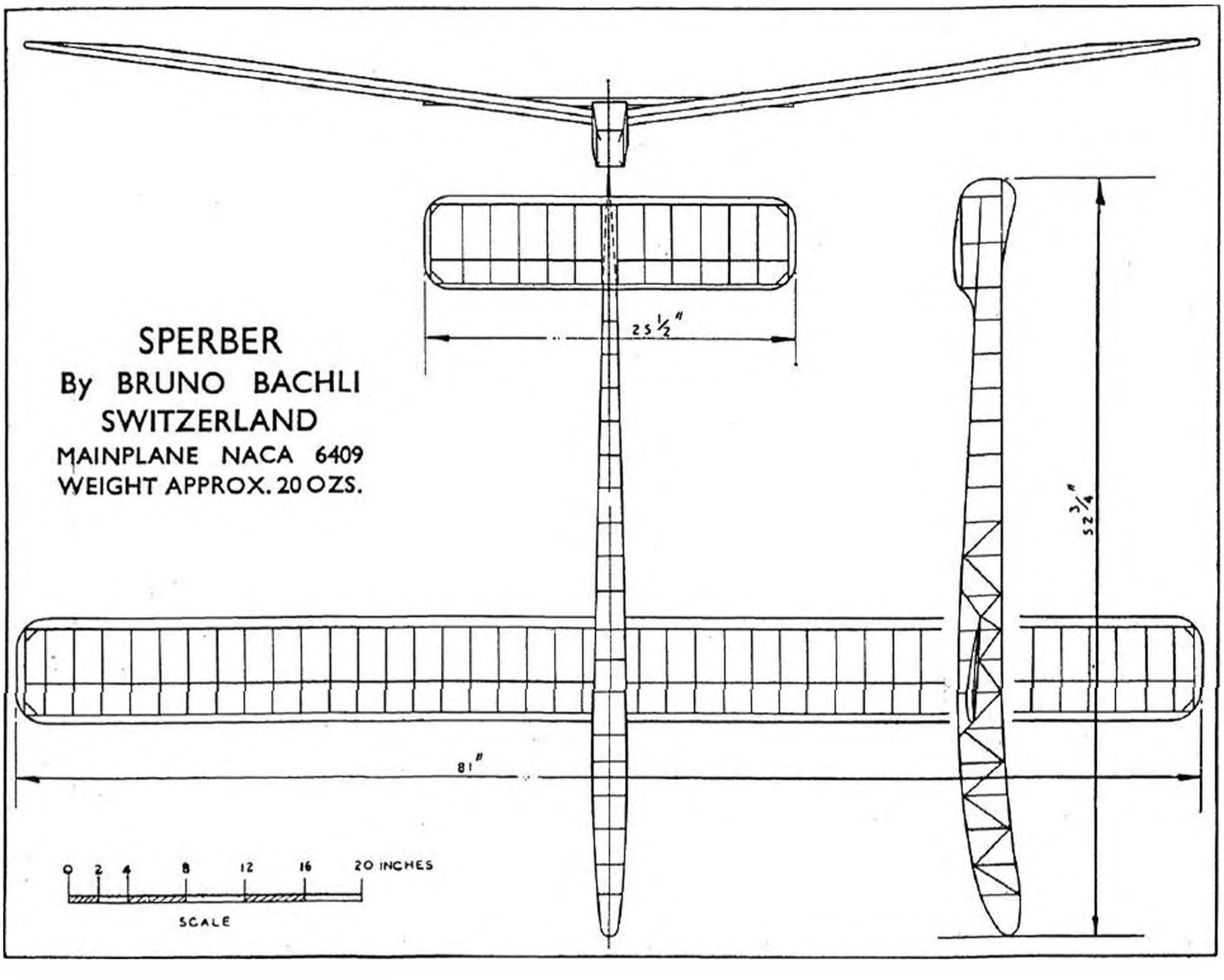
Unusual design developed over a long period. On right is seen earlier version without undercarriage, and on left final model with undercarriage fitted. Mainplane is R.A.F. 32 and tailplane Clark Y.

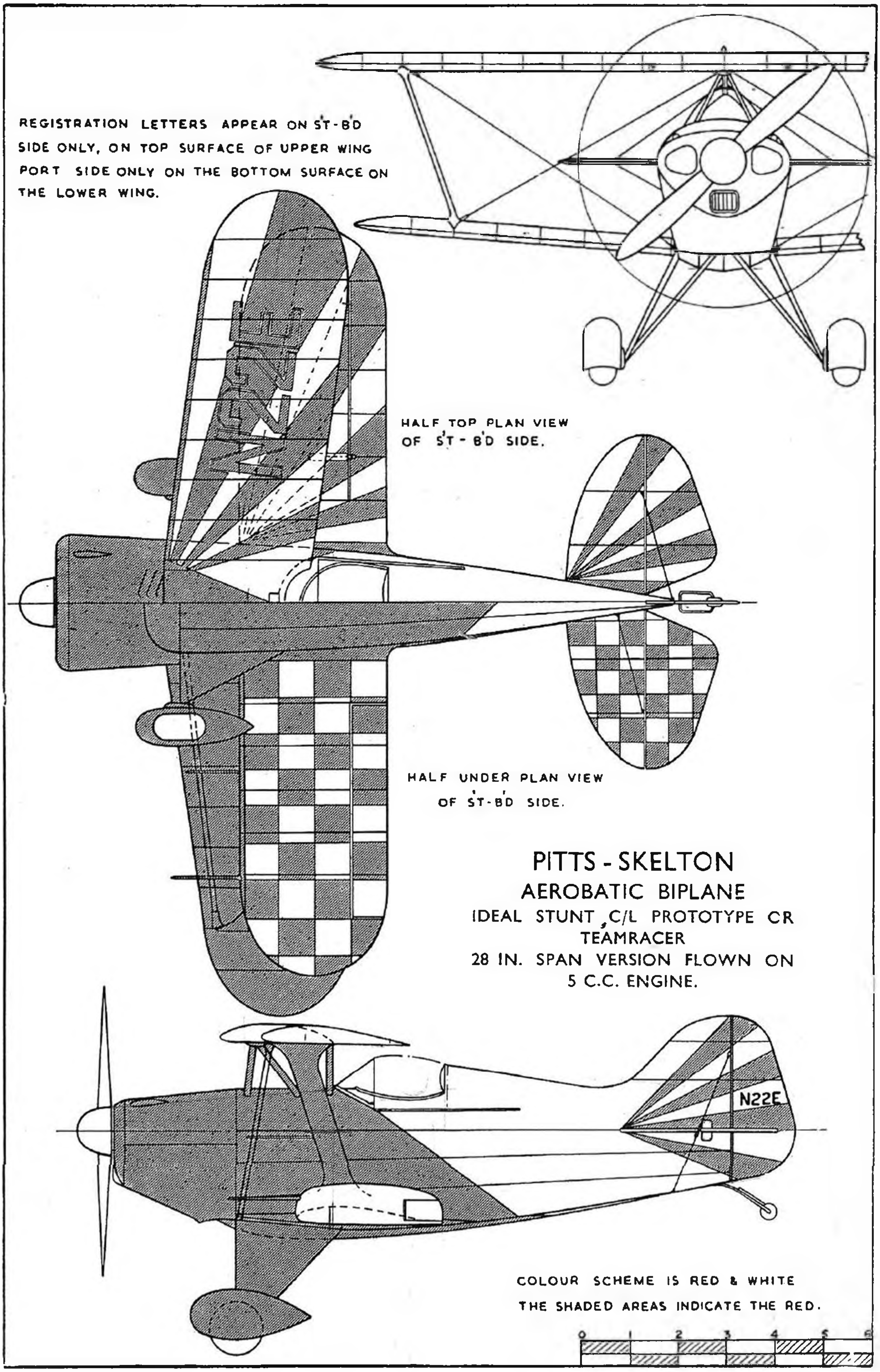




Sperber. Swiss High Performance Sailplane by Bruno Bachli.

The aptly named Sperber (Sparrowhawk) was conceived in October, 1948, but owing to other modelling not ready until October, 1949. In its first season flights as follows are typical : 23.10.49 at Solothurn, 27 min.o.o.s., with total time of 1 : 11 : 30. 5.3.50 at Birrfeld, 4 : 30 o.o.s., distance of over 8 miles. 19.3.50., again at Birrfeld 20 mins. A number of examples were built for Swiss Nationals at Grenchen, that illustrated above being built by Meyer. It proved most successful model at the meeting, Meyer winning with 1,006 secs. for three flights nearly a 100 secs. ahead of number two.




REGISTRATION LETTERS APPEAR ON ST-BD SIDE ONLY, ON TOP SURFACE OF UPPER WING PORT SIDE ONLY ON THE BOTTOM SURFACE ON THE LOWER WING.
HALF TOP PLAN VIEW OF ST-BD SIDE.
HALF UNDER PLAN VIEW OF ST-BD SIDE.
PITTS - SKELTON
AEROBATIC BIPLANE
IDEAL STUNT, C/L PROTOTYPE OR TEAMRACER
28 IN. SPAN VERSION FLOWN ON 5 C.C. ENGINE.
N22E
COLOUR SCHEME IS RED & WHITE
THE SHADED AREAS INDICATE THE RED.
0 1 2 3 4 5 6

CLUB BADGES

Upton M.F.C. Silver wings and lettering, light blue ground to shield.

Southend Senior Model Club. In silver and dark blue.

South Birmingham M.F.C. At present a hand-painted "tie" motif in red, black and white.

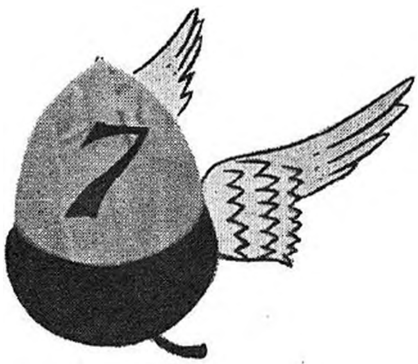
IN presenting this selection of some thirty odd club badges and transfers no attempt has been made to provide even a representative territorial coverage, still less to cope with the five hundred or more clubs throughout the country. Many unrepresented will have cleverer, more artistic or original designs, while very many more may have more hackneyed motifs, but all serve the same useful purpose of identifying a group of fellow enthusiasts. One of the first things a live club secretary and his committee will do once a new club is financially on its feet is to explore the possibilities of a badge. Usually their explorations come upon the immediate snag of high cost and anything up to six months delivery delay. Unless badges are ordered in lots of one hundred or more cost is apt to be excessive—a fair figure for the minimum order would be 2s. 6d. per badge, reducing to as little as 1s. for lots of one thousand—obviously beyond *any* club needs. These approximate figures are for three-colour designs, some economy can be made by choosing a one-colour emblem, using the plain white or yellow metal of the badge as a second colour.

Our illustrations have been selected to show what can be done by clubs in quite a modest financial state and equally how more ambitious designs can be developed. At the same time some of the cleverer schemes are included to encourage budding art students amongst our aeromodellers. In the economy class several badges should be noted, particularly the Plymouth M.F.C., which is in maroon on

Plymouth M.F.C. Silver with red inlaid motif.

West Essex M.F.C. Bold red and orange transfer—slightly different badge design.

Southwick M.A.C. Silver and black miniature less than one inch diameter to airscrew.



Sevenoaks M.F.C. Bright transfer in blue, white and gold.

Pilgrims M.F.C. Old English " P " in black on gold shield, typical of Canterbury, their district.

Northampton M.A.C. City arms transfer in blue, gold, silver, green and white.

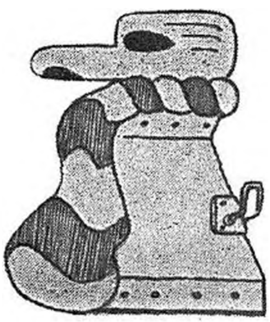
Waterloo M.A.C. Simple red and white design.

Bournemouth M.A.S. Silver and dark blue badge based on very early S.M.A.E. design.

Swindon M.A.C. Wings and lettering in silver, dark blue ground.

Reading and D.M.A.C. Red, blue and gold bird design transfer.

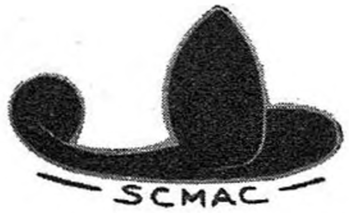
Southern Cross A.C. Neat black and silver design—avoiding the obvious play on club name.



Beverley and D.M.A.C. In black and white—a curious design perhaps based on some local story.

white metal in plain relief, thus reducing the heavy initial cost of dies. For simple one colour badges using white metal material as second colour, there are Upton M.F.C., in light blue, Southwick, Southend, and Swindon, all in dark blue. Three of these four use conventional wings, whilst one introduces a propeller motif, and provides a very pleasing small but elegant badge. A more original, and certainly more expensive, design is the Bournemouth M.A.S., where wings form part of an aircraft which is the integral basis of the design. In the two-colour de luxe category we find the Bristol & West M.A.C., with yellow metal background, dark blue and white enamel, bearing a central motif of an old A-frame twin pusher again in gold. This is small and neat and worthy of one of the larger clubs in the West Country.

For those clubs with small membership but great enthusiasm we would recommend the ingenuity of the Zenith M.A.C., who sport a small kite-shaped metal badge, with their initials stamped thereon, and a safety-pin soldered on the back. These are made by a club-member at a cost of 1s. each, proceeds going direct to club funds. The completed job is most impressive and shows that lack of funds



Sutton Coldfield M.A.C. A simple transfer in black and gold.

Darlington M.A.C. Black, red, yellow, white and gold transfer, that we have also seen as immense lapel badge.

Zenith M.A.C. Simple "kite" badge hand-made and lettered by the club.

Leicester M.A.C. Running fox in brown on green ground, black lettering, typical of another local sport.

By-pass Modellers, Sutton. Black, red and gold transfer.

is no real bar to progress given a little skill—all aeromodellers have that!—and an artistic bent.

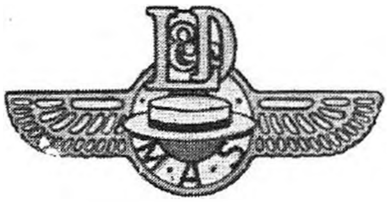
Another bright idea is that followed by South Birmingham M.F.C., who sport a familiar horned gentleman—doubtless to suggest that they are all regular devils at model flying—but wear him on their *ties*; As a development of the American hand-painted tie, usually with lightly clad damsels thereon, this is quite something for aeromodellers, and depends on the skill of a club member who rattles them off at high speed. Decorative ties are coming in, as, for example, the new S.M.A.E. tie now being seen on more affluent members—those who wear ties, that is.

Credit must go to Sevenoaks M.F.C. for the cleverest symbolism in a badge, bearing winged acorn with a figure "7" on it. Another happy slant is to be found in the Regent's Park M.F.C., who introduce a swan as typical of birds and animals ever associated with their flying ground. Leicester again offer an animal motif, with their running fox, reminding foxhunting people that Leicester is the centre of the famous hunting "shires" immortalised by Surtees and his Mr. Jorrocks. Luton slip in the straw hat on

Folkestone and D.M.A.C. The only club "seal."—in black and gold representing the "white cliffs."

Wimbledon Power M.A.C. Black, white and yellow design which owes something to an American make of engine.

Belfairs M.A.C. Blue, white and orange, incorporating the "bell" idea.



Luton and D.M.A.S. Blue, yellow, red and black design—the hat is the famous Luton "straw."

Gravesend A.C. Red and white—the Kentish horse dressed up appropriately as "Pegasus."

Isle of Thanet M.A.C. Light and dark blue design.

Wallasey M.A.C. Arms motif dolphin on a trident, or in club parlance, kipper on a toasting fork.

Southport M. & E.C. Wheel, wings and anchor symbolise varied interests of members. In blue on white.

1218 Sqd. A.T.C.M.F.C. Typical R.A.F. club badge with service motif.

Bristol and We t M.A.C. Blue, gold and white badge—the old A-frame pusher is novel feature.

Regents Park M.F.C. Red ground, black and gold lettering and white swan. Another "locality" design.

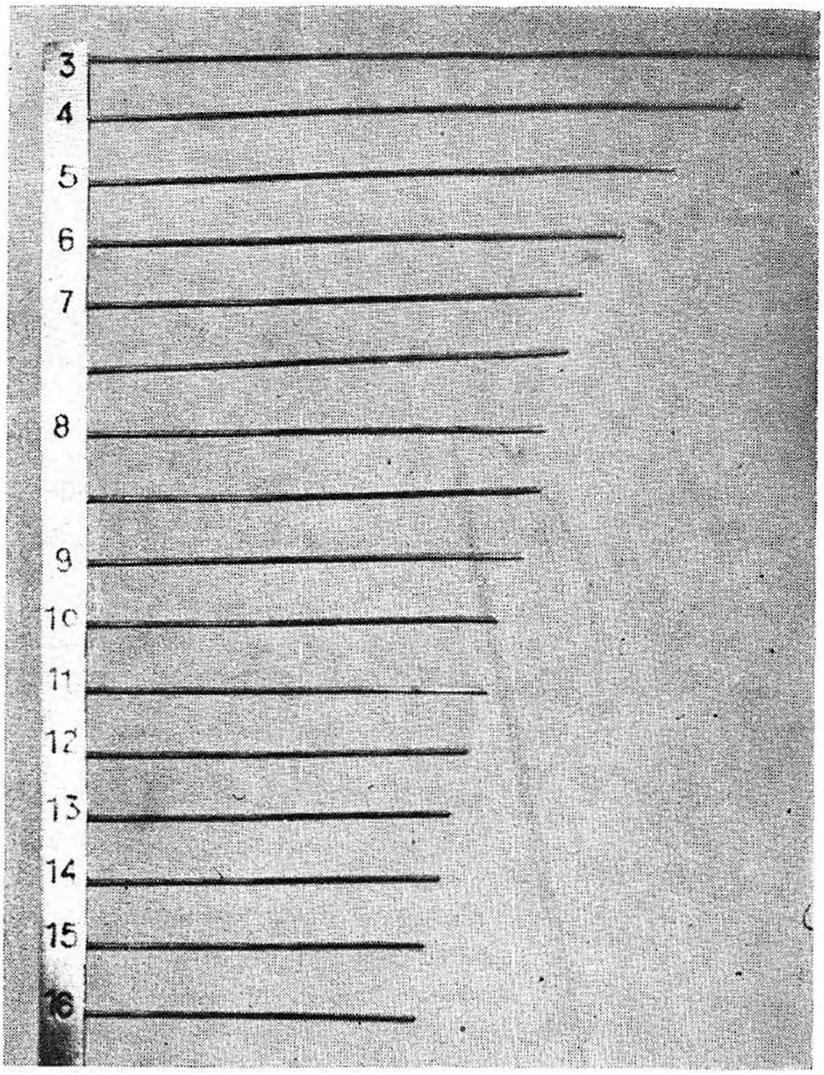
Birmingham M.A.C. Black, gold, blue and white transfer—a bold design equally suitable for badge use.

which their town's fortunes were founded, though nowadays a Vauxhall car might be nearer the mark. For simplicity we like the Pilgrims M.F.C., with their old English "P," appropriate to a club located in the Canterbury district.

Generally, in designing club badges, there seem to be two schools of thought—those who desire wings, birds or aircraft to be worked in somewhere, and these are in the majority, and the other school of thought anxious to tie up the club with the locality, by a judicious introduction of some local product, coat of arms or the like. From a purely opportunist angle we favour the latter group, for a local council would be very hard-hearted to refuse a sympathetic hearing to a club bearing their own local bearings, and they can thus the more easily encourage commercial support to rallies and the like.

We shall be very happy to assist any clubs who have not as yet branched out with transfers, badges, and so on, with advice and suggestions—though we must admit here and now that we simply cannot produce out of the hat philanthropic manufacturers prepared to make small numbers of badges at microscopic prices !

CONTINUOUS REV-COUNTER



THE rev-counter can be secured to a test bench, thus leaving the hands free for throttle and compression adjustment ; or it may be used as usual by holding it against the engine.

To construct, find an old piece of metal 1 ft. long about $\frac{1}{4}$ in. × $\frac{1}{4}$ in. or $\frac{1}{4}$ in. diameter, drill 20 holes $\frac{3}{8}$ in. apart with a 64s. Morse drill, cut 20 pieces of 20s. S.W.G. Piano wire $4\frac{1}{2}$ ins. long approx., and force into the holes. Pinch them firmly by hammering the sides of the bar with the ball of a hammer, then cut to length as follows :

The figure of 367 in the formulae below can be used, but to obtain the greatest accuracy, a piece of the wire should be gripped in a pair of flat-nosed pliers and held in the field of a coil connected to 50 cycle mains, an old mains transformer coil will do nicely. Adjust the length of wire protruding from the jaws until it is vibrating at its maximum. Measure this length, which corresponds to 6,000 r.p.m.

The following simple formula can then be applied to obtain the remaining lengths.

This is $l = \sqrt{\frac{K}{R}}$, where $R = \frac{RPM}{1,000}$, l=length required in cms.

and K is a constant varying with your own piece of wire. In our case l when at maximum vibration in the coil was 7.84 cms. and R was 6,000 r.p.m. $\therefore$ K=367.

For example : To find length for, say, 8,000 r.p.m.

$$l = \sqrt{\frac{367}{8}} = \sqrt{45.87} = 6.77 \text{ cms.}$$

More wires can be added to give finer degree of readings, but we find that 3,000 to 16,000 with 7,500 and 8,500 as a couple of intermediate steps are quite suitable for normal purposes.

PROPELLER ASSEMBLIES

By J. A. Howard and J. B. Knight

Recent contributors to the Model Aeronautical Press on the subject of contest models have placed considerable emphasis on the need for consistency of performance. We have, in fact, been led to believe that rubber models have reached the ultimate stage of development, and contest performances can only be improved by increasing the reliability of the components of our models. Last year's flying has shown the former statement to be true of few, if any modellers, but it is generally agreed, however, that more contest flyers would do themselves justice if a higher degree of reliability could be incorporated into their models. Many soundly designed, carefully built models fail to obtain a high placing due to one of their flights being completely spoiled by the lack of attention to an apparently unimportant detail.

In an effort to improve the performance and consistency of our own models we have given considerable thought to the propeller assembly, and have constructed a number of units which have given complete satisfaction over a long period of flying. Although in principle the design of the freewheel has remained unaltered, a few refinements have resulted in a reliability hitherto unobtainable.

The requirements of a good nose assembly may be summarised as follows :

(*a*) It should be possible to wind the model up completely without the winding loop climbing up the winding hook.

(*b*) When the motor is fully wound the freewheel lever should engage easily before removing the winder from the winding loop. Removable propellers, spinner caps and other fittings which require attaching to the propeller shaft after winding the motor should be avoided as they invariably cause a delay between the completion on the wind and the launching of the model. The removable propeller type of assembly often leads to a wrecked fuselage since one end of a fully wound motor has to be held between the fingers while the airscrew is slid on to the spindle. Many streamlined models feature a freewheel which is enclosed inside the spinner. It is alleged that this type offers less drag than an exterior clutch ; in practice no improvement is apparent, whilst the unit is difficult to make and a source of danger in use, since the torque of the motor is transmitted to the propeller via a soldered joint.

(*c*) The freewheel should be self-engaging so that in the event of a temporary bunch during unwinding of the motor, causing disengagement, the propeller will re-engage without many turns being lost. The fuselage will also be saved from serious damage, and the risk of a poor flight averted.

The above features will now be applied to (1) slabsided propeller assembly and (2) streamlined propeller assembly.

Slab-sided Propeller Assembly.

(1) The commonest type of assembly is that using an arm pivoted at the root of the airscrew which engages a loop at the front of the shaft. This type has been a good servant in the past, and is fairly safe providing a separate loop is formed on the shaft for winding, and that one does not

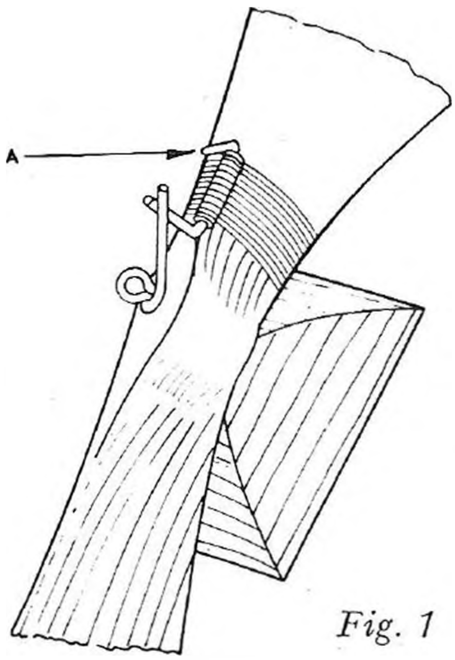


Fig. 1

rely on soldered joints. This assembly, and others, only satisfies (*a*) if the winding loop is roughly $1\frac{1}{2} \times$ diameter of wire used for winding hook, and that the winding hook itself has a small radius bend. Condition (*b*) is partially satisfied, but (*c*) is not satisfied at all (although the freewheel may re-engage by a fluke).

A type of assembly which admirably fulfils all the conditions laid down is shown in Fig. (1). This type originated many years ago, and is well known to most flyers. In order to make it 100% reliable, however, one should ensure that the tube holding the trip or pawl is firmly bound to the propeller. The strongest method is to bind a narrow strip of tin across the front face of the airscrew to which the tube may be soldered and additionally bound to the propeller with thread or Nylon. The trip should be an easy fit, and the rear arm (A) should be longer than the forward arm since this will ensure self-engagement should disengagement occur during flight.

Those possessing a lathe can make the asembly shown in Fig. (2), which, if machined from aluminium alloy, is both strong and light. Note the method of forming the winding loop and torque arm; this obviates the use of solder and is much stronger. Fig. (4).

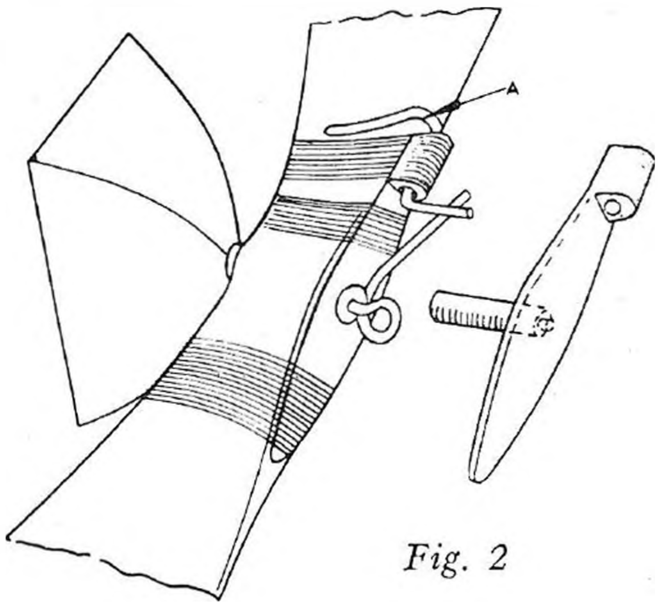
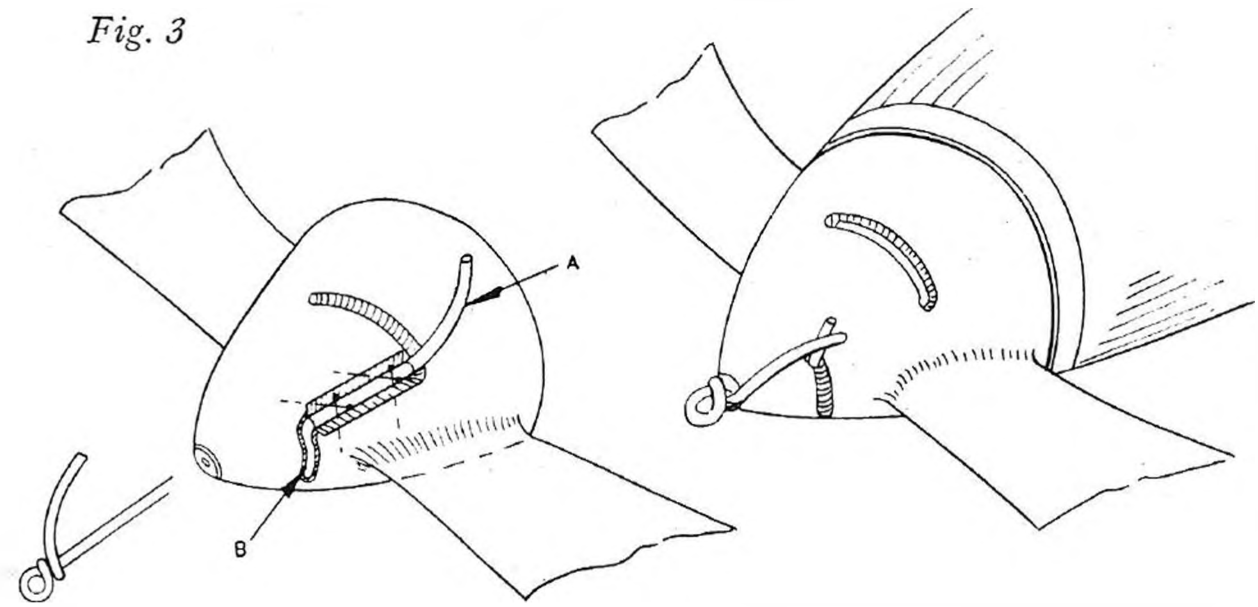


Fig. 2

Streamlined Propeller Assembly.

(2) With the advent of the stream-lined slabsider these assemblies are probably more numerous than their slabsided counterparts. The usual enclosed freewheel type does not fulfil conditions (*b*) and (*c*) and is a very difficult job to make. A neat design which overcomes the disadvantages usually present with spinner type assemblies is shown in Fig. (3). In appearance it compares favourably with the fully enclosed type, is far easier to engage and much more reliable in operation. It is only necessary to hollow out slightly the back of the spinner so that a cup washer can be soldered in place on the shaft to take the pull of the motor. The gap between the spinner and nose block should be as small as possible without allowing rubbing to take place. During the propeller run the rear arm (A) of the pawl retracts into a slot cut in the face of the spinner, the torque being transmitted from the shaft to the forward pawl arm (B).

Fig. 3



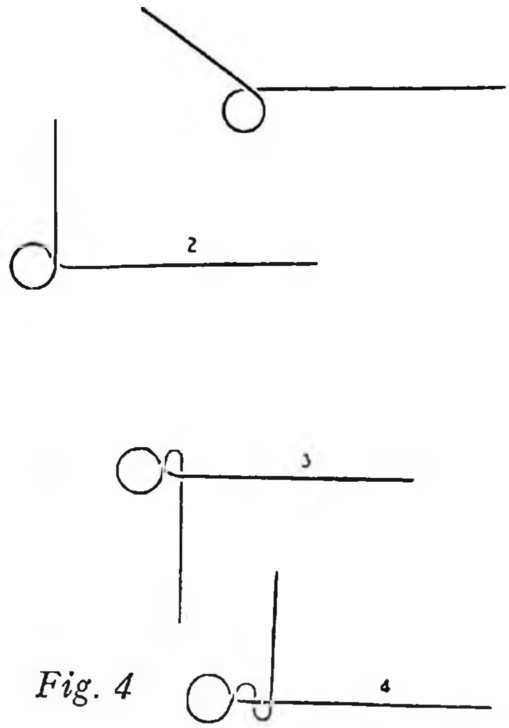


Fig. 4

Constructional sequence for this assembly is: Cut requisite slots in spinner; bend clutch pawl to shape with length of brass tubing in place; secure pawl in position using pins and cement, and fill gap in groove with plastic wood; bend driving arm and winding loop at end of wire and insert propeller on the shaft; solder thrust washer behind spinner, place nose-block on shaft and bend rubber hook.

The table given below shows the sizes of wire which should be used for the four main classes of model, and although the weights of some propeller assemblies may lie outside the limits given, we have found that the lower limits represent just about the lightest job which will stand up to rough usage without the blades breaking or the shaft bending.

Type of Model	*Size of Wire* *Shaft*	*Pawl, etc.*	*Weights* *Prop.*	*Com. Assy.*
Queen's Cup ...	14 S.W.G.	16 S.W.G.	0.7 —1.1 oz.	1.3—1.8 oz.
Wakefield ...	14 ,,	16 ,,	0.6 —0.8 ,,	1.1—1.4 ,,
Medium Weight	16 ,,	18 ,,	0.4 —0.6 ,,	0.7—1.1 ,,
Light Weight ...	18 ,,	20 ,,	0.15—0.3 ,,	0.3—0.6 ,,

Folding Airscrews.

Both in this country and in the U.S.A. the folding propeller has a strong following for slabsided models. Although there are many theoretical objections to folders, they have proved equal, if not superior, to freewheelers when used by experienced modellers. Their mode of action necessitates the use of a mechanical tensioner, and this feature accounts for the major fault inherent in folding propeller assemblies.

Towards the end of the propeller run the striker arm tends to hit the stop, but due to the springiness of the wire a period of "clicking" occurs before the propeller finally comes to rest. Since the model is trimmed to glide with the blades folded, it follows that during this often prolonged period of "clicking" the model is nose-heavy and the cruise is therefore steep. The problem of obviating this undesirable period from the model's flight had remained unsolved, but we claim now to have overcome the trouble by using a "spring-loaded tensioner stop." (Fig. (5).)

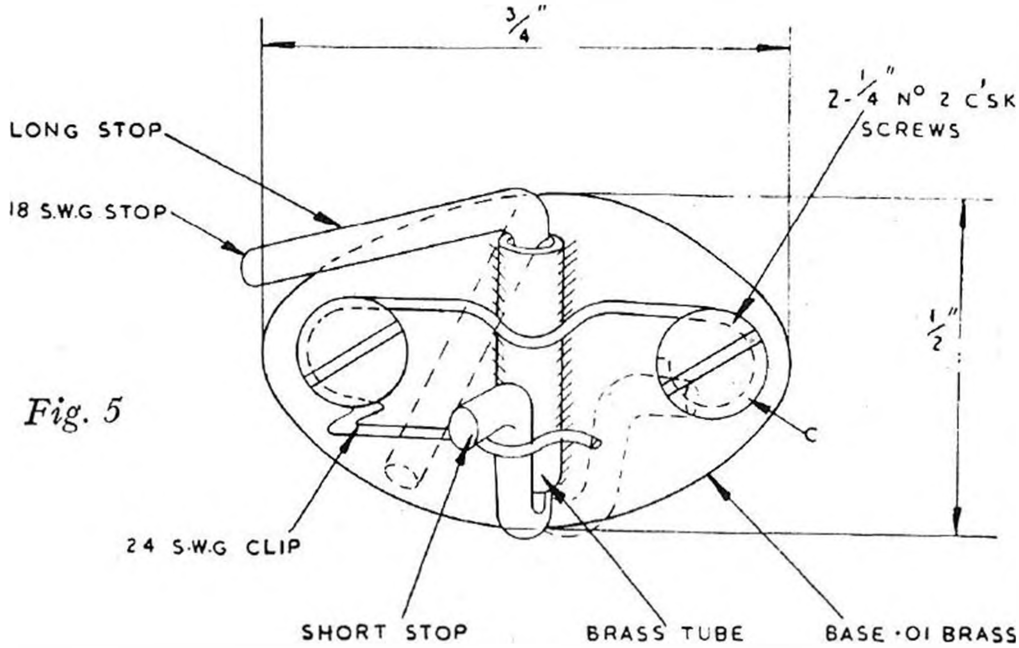


Fig. 5

The basis of the idea is to have two stops of different lengths bent at right angles to each other at the ends of a length of wire, with a spring clip arranged to hold the short stop "out." The usual tensioner spring is fitted between the noseblock and propeller so that when about one hundred turns remain on the motor the striker arm hits the short stop, knocking it out of the clip. The stops rotate through 90 degrees, leaving the longer stop in the "out" position, so that after a further half-rev., the striker contacts the long stop over which it cannot jump.

The assembly is quite easy to make, although a strong pair of pointed pliers are necessary to get the bends in the correct places. The base is cut from brass foil or thin tin, and the brass tube containing the 18 S.W.G. wire stop is soldered on in the required position. The clip is bent from 24 S.W.G. spring steel wire, and soldered in place. One-sixteenth diameter holes are drilled in the base through the two loops (*c*), so that the tensioner can be held in place with the two ¼-in. No. 2 counter-sunk screws. The spring clip should be carefully adjusted until it just holds the short stop in the projecting position, so that as soon as the striker arm touches it the long stop rotates into the projecting position.

As with all other mechanical tensioners, a certain amount of adjustment is necessary before it will operate when the desired number of turns remain on the motor. Sufficient adjustment can usually be obtained by bending the striker arm, but in extreme cases the strength of the tensioner spring can be altered or the stop shortened.

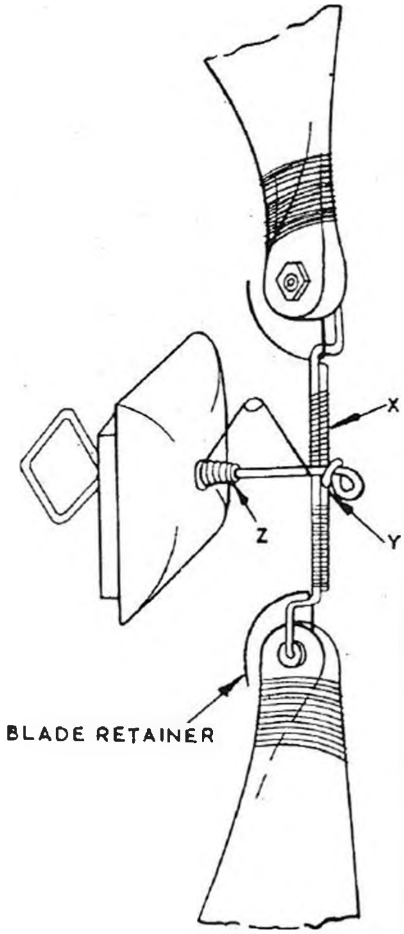
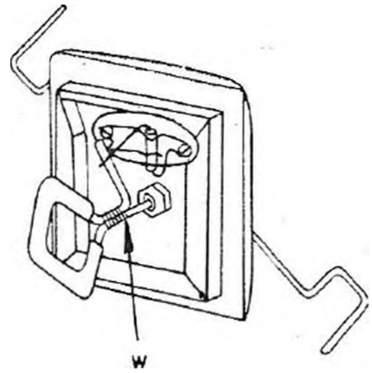


Fig. 6



Double-Bladed Folding Propeller. (Fig. (6).)

This assembly is made entirely from wire so that many of the weaknesses inherent in assemblies employing a balsa and plywood hub are eliminated. The unit features detachable blades which permit the replacement of broken or damaged blades, and is useful when experimenting with propeller-rubber combinations.

The components should be bent to the shapes shown in Fig. (7) and the length of wire forming the hub bound and soldered at X to the propeller shaft. After soldering the tensioner spring position at Y, place a short bush on the shaft, solder to the loop Z and pass the shaft through the noseblock bush. The rubber hook and striker arm may now be formed fairly close to the noseblock. The propeller blades are bushed (16 S.W.G.) at their roots, and the 22 S.W.G. wire blade retainers bound in place. Finally the position of the striker arm should be adjusted so that the blades fold flat against the fuselage sides.

The tensioner may be improved by soldering the striker arm and propeller shaft at W, although this will necessitate making a motor of twice the correct length and half the required number of strands, in order that it may be passed through the hook. The weight of the complete assembly should be about 1.2 oz. maximum.

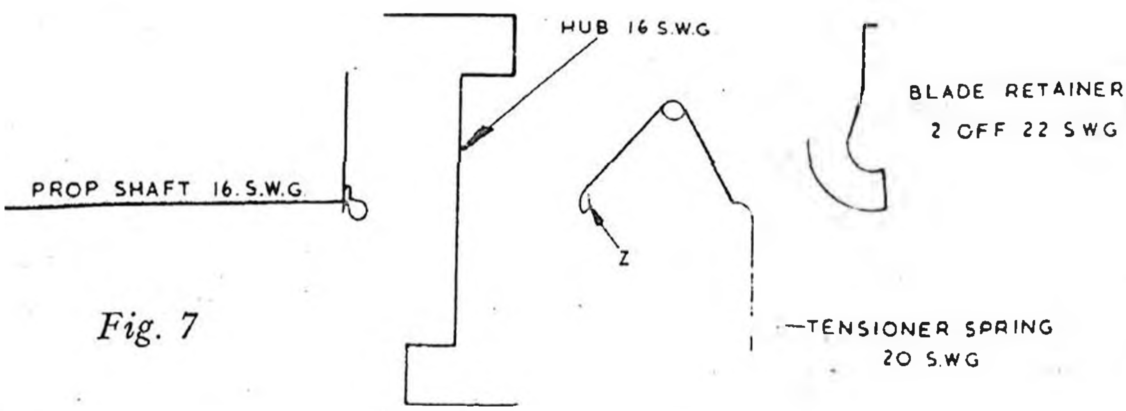


Fig. 7

YOU CAN CHROME PLATE PISTONS!

By C. O. ("Pop") WRIGHT, Topeka, Kansas

THE DIFFERENCE between a hot motor and a sick, hard starting and missing one may be only wear on the piston that an ordinary micrometer could not measure. Too loose a fit on the piston not only decreases compression above the piston, it weakens the crankcase compression, lessens the by-pass charge and makes needle valve adjustment erratic. An easy repair may be made by chromium plating the piston if it is a motor without rings.

Chromium is the ideal metal for piston plating as its coefficient of friction is low and it unites well with iron and steel. It will not come off. Chrome is not only as slick as banana peel, it is almost as hard as diamond. Chrome plating is not expensive and is not too difficult if you are willing to go at the job with sufficient deliberation and care and if you are willing to follow the simple directions given below without being too concerned as to the technical reasons why.

During the last eight years I have plated hundreds of pistons, usually with good success, that is with motors coming out hotter than when new. If the motor is of the sleeve piston type, that is without piston rings, and the piston is of cast iron or steel, it is a candidate for chrome plating. Aluminium and its alloys will not chrome plate without an undercoat of nickel or other metal, so for the average modeller, aluminium, brass and metals other than iron and steel are out. Among the motors which respond well to the chromium treatment may be listed : Torpedo, Forrester, Arden, Bantam, DeLong, O.K., including CO_2, Ohlsson, Cannon, old model Atwoods and Cyclones, Vivell, Madewell, and the new baby motors.

The directions given in this article were discovered the hard way. Before the war, I had a few pistons plated with success by a commercial plater. With the war, commercial plating was restricted because of the scarce metals and I was out of luck. At the same time new motors left the market. In desperation, I worked for the secret formula. Some six months of intermittent experimentation at length led to success. First, I turned to the books on the subject which I secured from engineering libraries at three universities. I soon discovered that much of the material, the chemical formulae and electrical data were " too far over in the book " for my comprehension. However, I picked up enough essentials to get going and I gathered a collection of volt and ammeters, thermometers and rheostats. I soon left these instruments behind as belonging to the scientific laboratory and not to a typical modeller's shop. I don't use any of these instruments now except a crude rheostat made from a spring taken from a common window shade roller. All the other rheostats burned up anyway.

Yes, the first thing to know is that it takes a lot of amps to chrome plate, though the voltage should only be from four and a half to six and the cells in your battery will largely determine that. A good hot automobile battery is ideal. Don't try to use dry cells for they are not powerful enough. Be careful how you use the battery from the family bus. I got in Dutch with the Missus one day when I exhausted the battery in both my car and hers when I was trying to learn how. The process uses about as much juice as the starter—a slight exaggeration, but not too far off.

However, the average piston with the outfit throwing well will generally plate to the correct thickness in three to five minutes.

The first thing, and the constant thing to remember is *cleanliness* ! After the outfit is set up and the bath is heating you should start cleaning the piston, and the cylinder too as it is needed for testing. *The piston must be free of all oil, even the natural oil from your skin.* The bath must be kept free from an oil scum on the surface. You can pick oil off the bath with a piece of dry balsa wood.

Most motors that still run but have lost their peak will need only a three to five minute plate, others may need up to fifteen minutes. For each minute in the bath, with the plate at the bright stage, something like .0005 is deposited, so the books say. I plate for three minutes, try the piston in the cleaned cylinder for a fit and if necessary plate for two minutes more, etc. If too much chromium is deposited, it may be easily removed with no damage to the piston by immersing the piston in concentrated hydrochloric acid, HCl (Muriatic Acid at your tinsmith's). A *slightly* tight piston may be lapped in with jeweller's rouge, and you can bet that the cutting will be on the cylinder as the plate is harder than a file. Don't try to lap much as you may loosen the piston pin. Then, too, lapping with rouge is a slow process, like a cat eating a grindstone.

The skill, of course, is in getting the piston plated to the right snugness—not too tight or too loose. Deposit is greatest the first few minutes and the rate drops sharply after the first fifteen minutes.

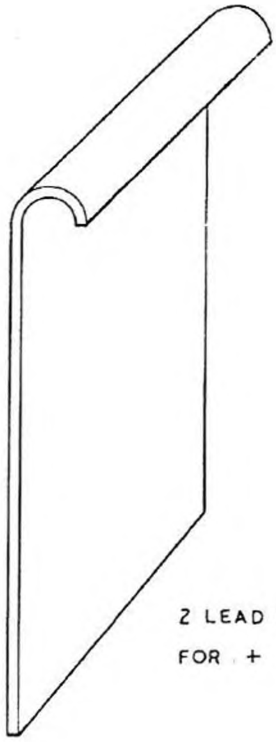
Crankshafts and other parts may be plated, too, but it is not practical to build up much wear. With the entire shaft in the bath, it will tend to plate the shaft tapered, with the heavy plate at the prop end, because of the diffused magnetic field at the crank throw of the shaft. (For you electrical wizards, the magnetic field is also strongest at the top and bottom edges of the piston. There is a slight " snow drift " at these points, but this is insignificant on a three to ten minute deposit.)

The Equipment Needed is Modest

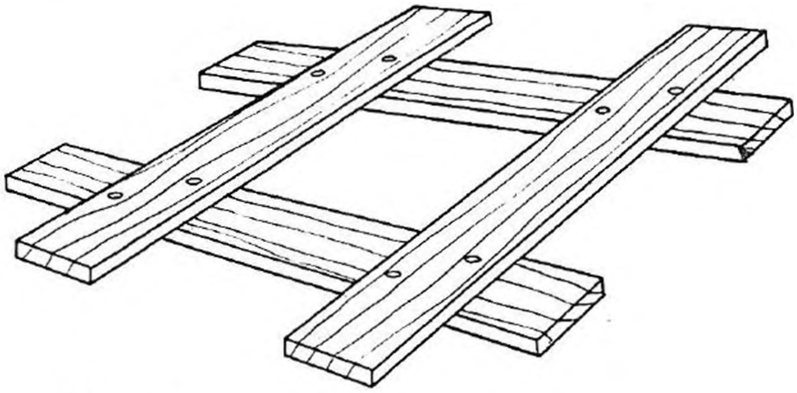
You will need, in addition to a well-charged standard automobile battery, the following inexpensive material :

1. One-quarter pound Chromium Trioxide Crystals (CrO_3).
2. One shy teaspoon of Sulphuric Acid (H_2SO_4).
3. One and a half quarts of distilled water.
4. Two lead plates for the positive electrodes 4½ in. × 2½ in. Convenient thickness.
5. Three busbars about ¼ in. diameter, 6 in. long, made of convenient material. Old automobile gas tubing well polished with sandpaper will do.
6. Eight or ten feet of standard house wire. Number 10 or 12 will work well.
7. A steel spring from a discarded window roller shade for a crude rheostat.
8. Some spring clothes pins or simple snap clamps.
9. Six or seven inches of 1/16 steel wire for holding the piston.

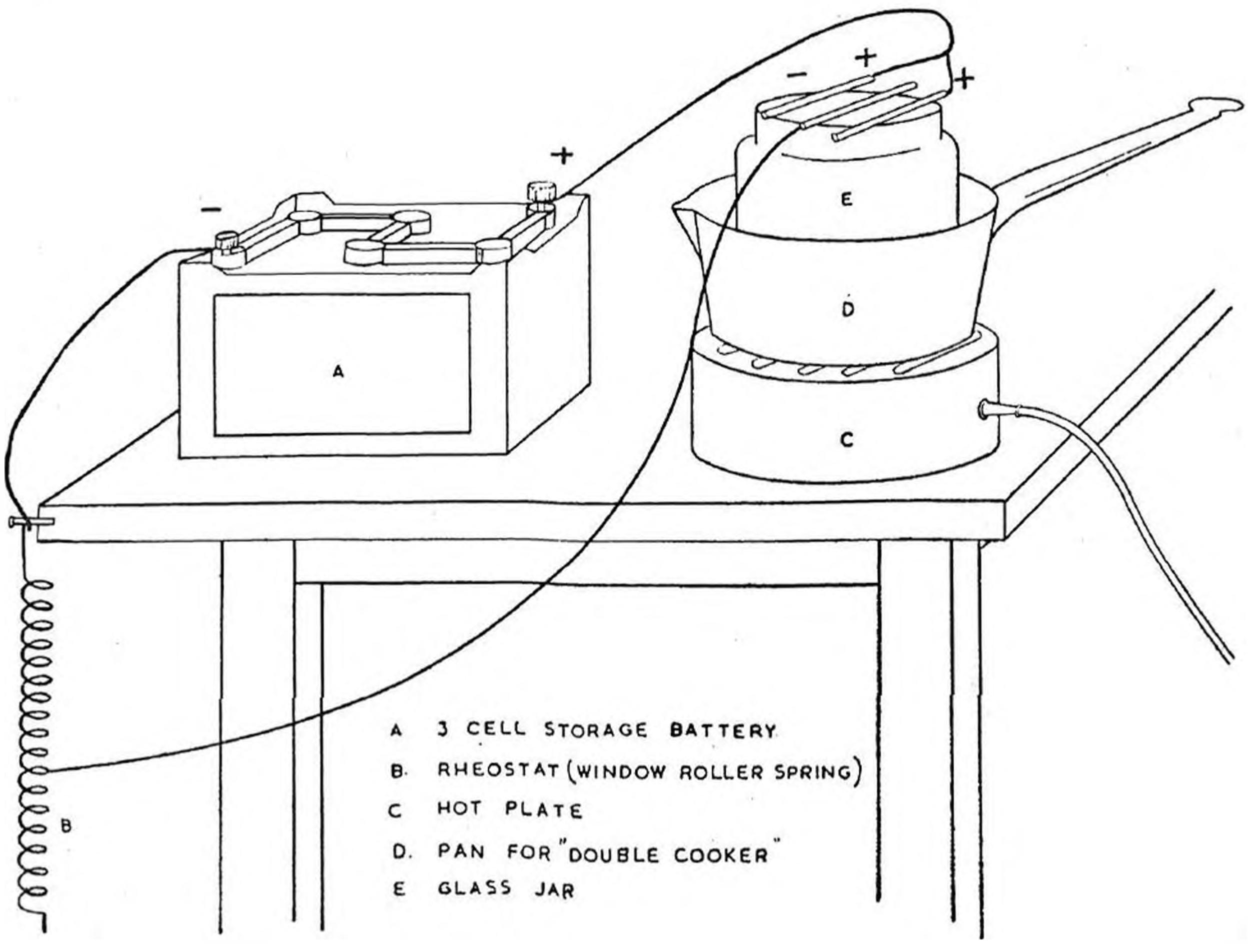
10. A glass jar some six inches in diameter, quart and half capacity, with about a 4 in. opening. (I use a pound glass tobacco jar).
11. A hot plate and galvanised pan with wooden grill in bottom for a double boiler for heating the solution during the plating process. (I use the bottom half of an old waffle iron.)

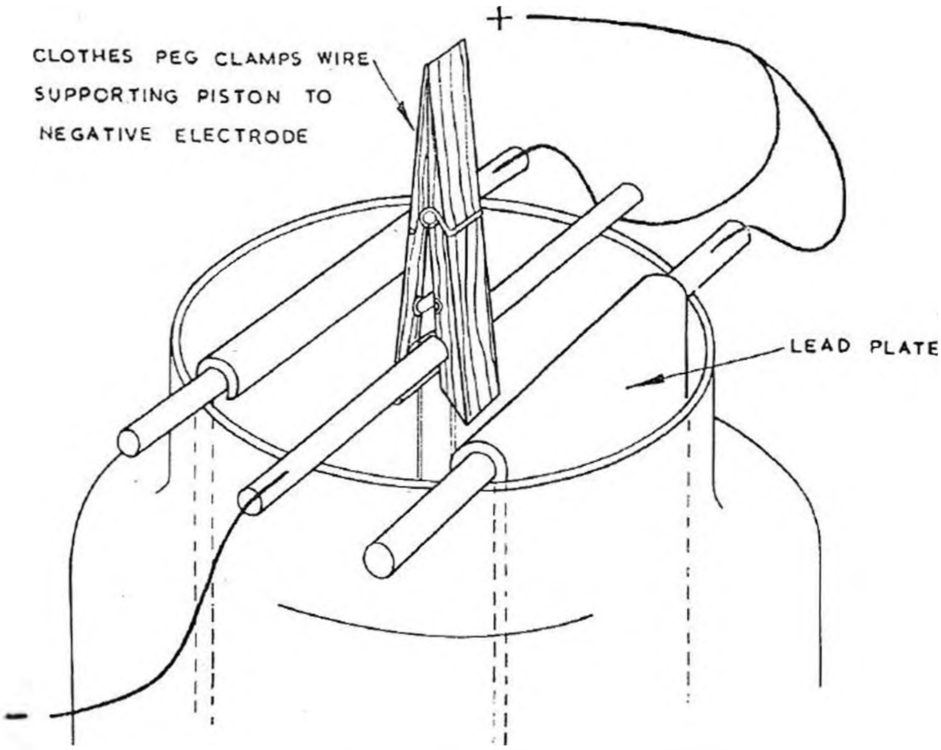


2 LEAD PLATES $4\frac{1}{2}'' \times 2\frac{1}{2}''$ FOR + ELECTRODES



$\frac{1}{8}'' \times 1''$ SLATS TO FORM WOOD GRILL, FOR BOTTOM OF PAN.





PISTON HANGS AT CENTRE ON NEGATIVE ELECTRODES LEAD PLATES HANG AT EDGES ON POSITIVE ELECTRODES

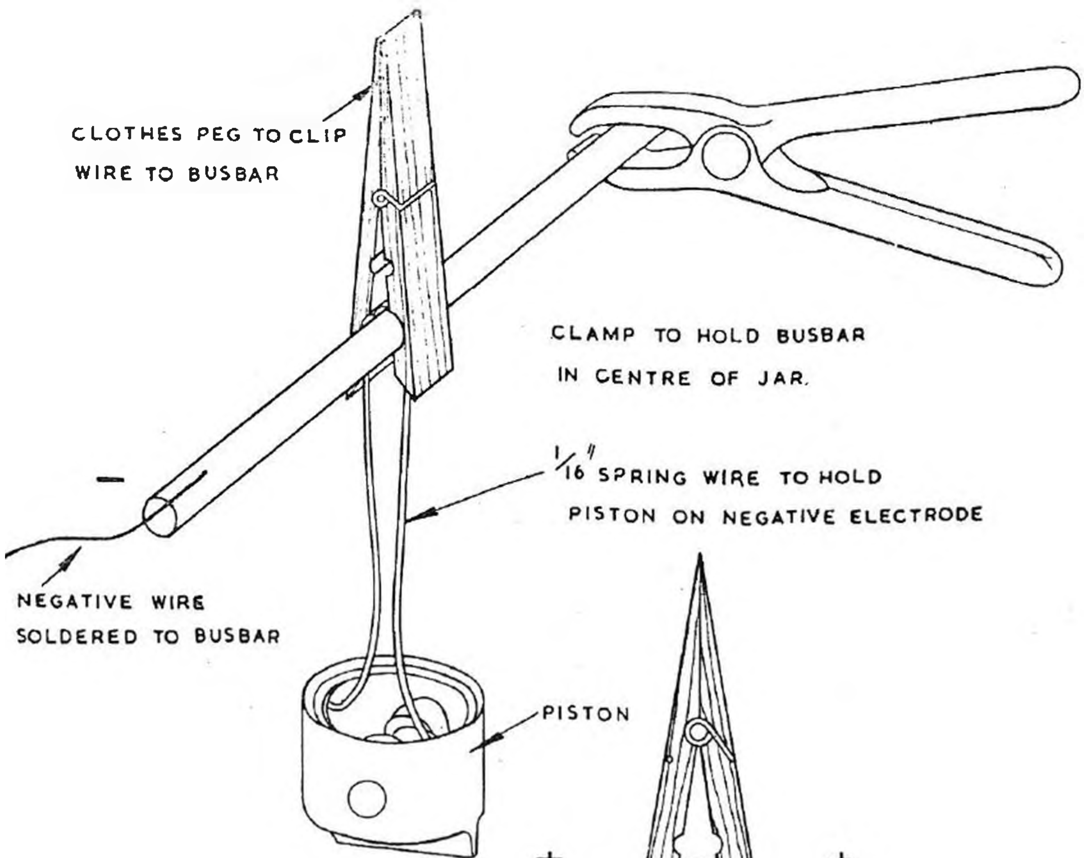
Rig the Outfit this Way

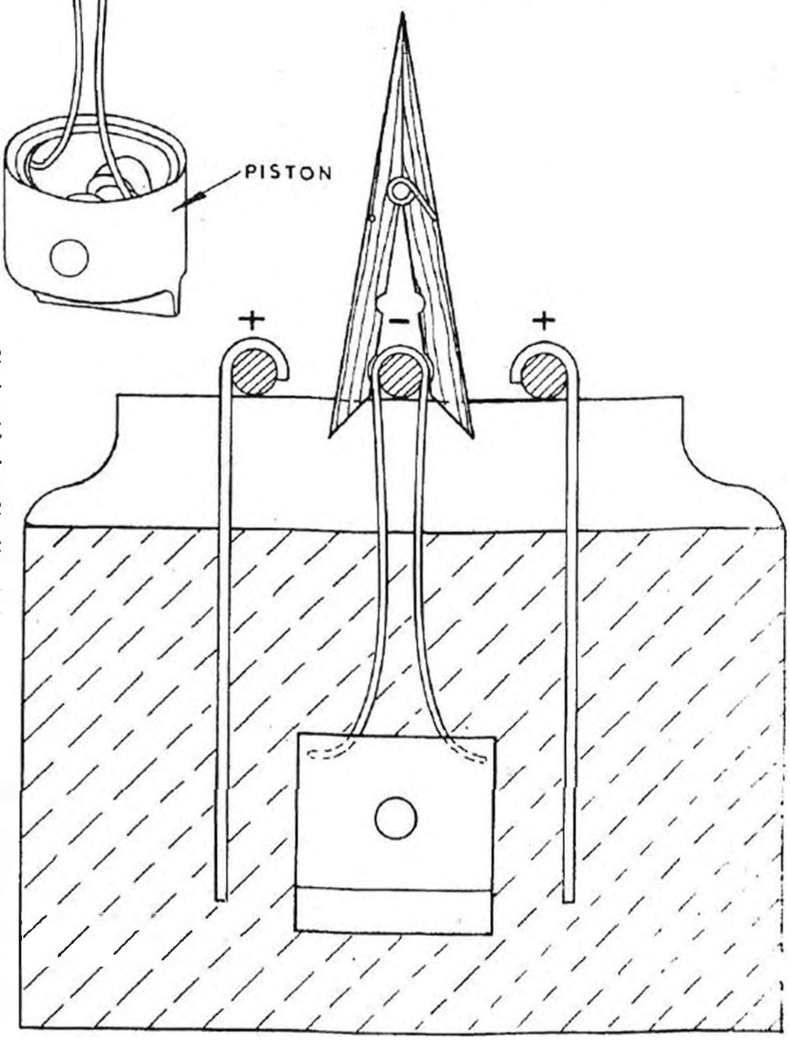
Mix the one-fourth pound of CrO_3 crystals and the quart and a half of distilled water in the glass jar and add a shy teaspoon of Sulphuric Acid (H_2SO_4). Go easy on the acid ! This is your plating solution and will plate hundreds of pistons. After using, cover carefully and save. The solution I am using now is over three years old. If you wish and if you can, you might purchase the solution all mixed from a commercial plater. He usually knows his business and often improves the bath and reclaims it with other ingredients which you need not know for they are not practical with small batches of electrolite. Commercial platers usually zealously guard their " secrets." however, but if you have a friend in the business he can give you valuable tips.

Remember, the solution is a poison so wash off your hands and provide ventilation for the fumes which rise in the plating process. The fumes will irritate the nose and throat and give you a " cold." Don't breathe them. They are not dangerous as cyanide, but don't be careless with any kind of poison.

Place the jar in the double boiler with a wooden grill in the bottom and heat to a " coffee cup heat." Most books say 100 to 120 degrees Fahrenheit. Stir now and then with a glass rod and add distilled water to replace that which evaporates. The temperature is not too critical as the current is to be adjusted to the heat. In general, if the plating is too heavy, as described later, cut the heat down. If too light, raise the temperature of the bath. Use of the rheostat (window roller spring) accomplishes a similar result with variations of the electrical current.

Solder two of the busbars together with a Y connection, using heavy stranded wire, for the outside busbars that are to hold the lead plates for the positive connection. In most plating the positive electrode is the metal deposited. In chromium plating, the metal comes from the electrolite and the plus electrode is inert. The piston is suspended on wire at the centre busbar electrode which is negative. There should be spring tension in the wire holding the piston to ensure a good electrical contact. *Remember, outside lead plates positive, inside piston negative.*





Either lead can be run through the window shade spring. Connect at one end to the busbar and the lead from the battery is placed in the coil at the proper location to give the necessary resistance for plating.

The Piston Must be Clean

Commercial platers apparently use acid cleaning followed by a " bright dip " solution made of several acids. I started with bright dip, but discarded it in favour of mechanical cleaning which worked better and was less trouble. First scrape and sand the carbon off the piston head. Then run the piston and the cylinder (it must be free of oil for testing) through three baths of white (unleaded) gasolene. While the piston " soaks " a minute or two in the last bath, wash your hands clean with soap to remove all oil. Dry the piston on a clean rag. Give the piston a slight sanding with very fine sandpaper (250 to 400) to remove oxidation. Place on the spring wire, dust the sanding off with a clean rag and insert in the bath on the negative busbar.

Judging the Deposit

Start with too little rather than too much current. If plating is in process, bubbles will appear at the piston and fumes will rise. Lift the piston attached to the busbar to observe the plating. Lower or raise the current with the spring rheostat until the bubbling is just above the intermittent stage. As you become expert, the bubbles will indicate the nature of the deposit. The ideal is a mirror polish plate like you have on your car. Mildly frosty deposit is satisfactory also.

The stages of deposit from nothing to too much follow. The temperature of the bath and the strength of the electrical current decide the degree of deposit. Correct with the rheostat and if necessary change the heat.

Stages of Deposit

1. No deposit. (Too little current, too low heat.)
2. Milky. (Exactly like milk on the piston. Raise current or temperature.)
3. Bright. (This is ideal.)
4. Frosty. (This is O.K. Cut current on next one.)
5. Treeing. (Like hoar frost. Lower both heat and current and if absolutely necessary dilute electrolyte with distilled water).
6. Burning. (Brown and black. Ease up on everything—and how.)

Some Suggestions

On many motors it may be best to plate the top third of the piston heavier than the bottom part. Lower the piston some 3/8 inch in the bath and plate for, say, three minutes and then submerge the whole piston for the complete plating. Some motors, often Ohlsson's, have slightly warped piston skirts and it is unwise to plate these as heavily as the top of the piston.

If you plate for an extended period rotate the piston every few minutes to ensure uniform deposit. On short plates have the piston pin parallel to the busbars so as to plate slightly heavier at the sides where wear is greatest due to piston slap.

If after one plating and after piston is used, it may be necessary to re-plate, " cut " the old plate slightly with HCl acid the same as deposits may be removed.

Pistons may be safely plated without removing rods and piston pins if all oil is removed from the assembly.

Plating is fun and it really works. But remember, take it easy. The process is not for the " mad rushing " type, and remember that " Cleanliness is next to Godliness " when you chrome plate.

RADIO CONTROL 1950-51.

By W. H. C. ('FUNF') TAYLOR

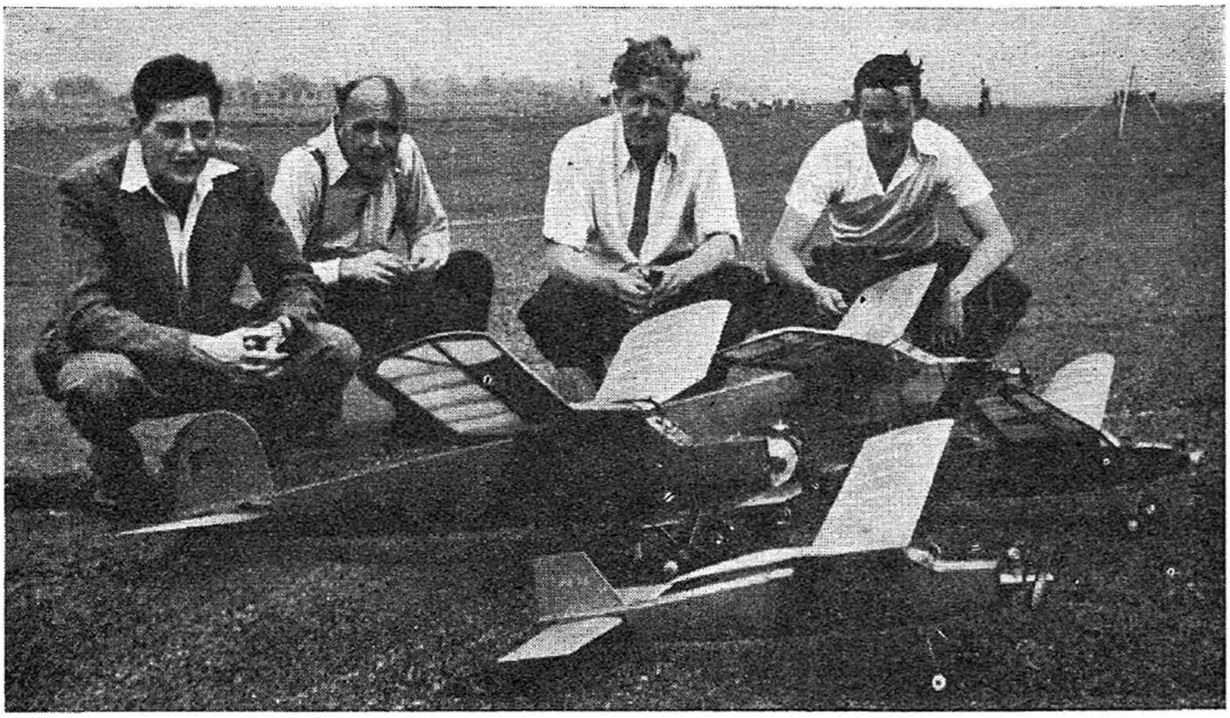
THE 1950 season will long be remembered as the year in which Radio Control model flying in the British Isles took a very long leap ahead and was firmly established as an extremely popular branch of our hobby. In fact so rapid has the progress been that it may fairly be said that, thanks to the foresight of the few who secured the licence free wavebands with the co-operation of the G.P.O. back in 1944, nowhere else in the world can so much good, safe, reliable and often artistic radio flying be seen where almost any group of ordinary Sunday fliers gathers for a weekly "sesh."

The author stripped for action ! Handlaunch is almost universal for fast flying radio controlled jobs. Here "Funf" is seen launching Den Allen's model in the Taplin Trophy.

Without the slightest hesitation the writer would attribute the greater part of the year's progress to the XFGI valve. The benefits derived from its use have been many and not least among them the writer lists the fact that many keen modellers were attracted by its possibilities as compared with previous equipment, and have worked hard throughout the season improving their models and flying technique rather than battling with baulky and unnecessarily complicated radio. It has thus brought about a minor revolution in the design of the models themselves, many of which are beginning to assume a characteristic "radio" appearance. Models in general compared with those seen during the 1949 season have become usually much smaller and often with somewhat hair-raising flight characteristics to attain allweather flyability.

There have been critics of the XFGI, but the best answer to them had been in the year's lists of contest results. Firsts were taken with XFGI receivers in all three National contests (Ripmax, York Nationals and Taplin) besides all second and third places. Only exception was George Honnest-Redlich, who tied for first in the Ripmax, using a three-valve modulation receiver. He is, in fact, the only notable exception amongst other flyers regularly placing at the top.

As the XFGI seems to have caused such a stir during the season, a few words about it should prove of help to those few lonely souls who sometimes have trouble in making their receivers tick. This valve is a sub-miniature gas-filled triode (actually the gas is the inert element ARGON) only 40 × 10 × 7.2 millimetres and weighing 4 grams. Filament



"The Radio (control) Revellers." *Left to right:* Den Allen, Bill Tickner, Sid Sutherland and Bill Taylor. In front are their models of typical "penetrative" design, powered by Frog 500, Elfin 1.8, Amco 3.5 and Javelin 1.49; all using "Flight-control."

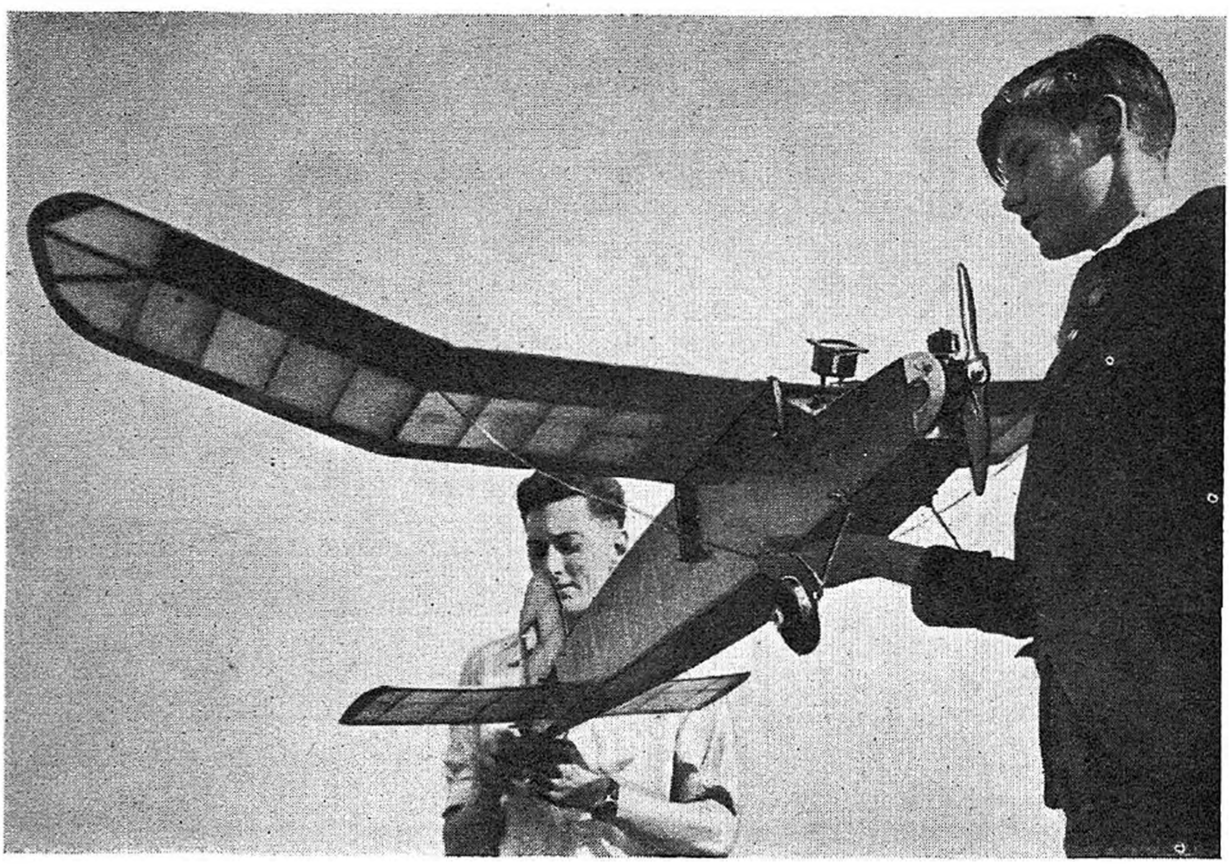
heater current provided by a single dry cell of 1.5 volts is 50 milliamperes. Recommended anode current is 1.5 m/A, which should come from a 45 volts H.T. battery. Experience has shown that this can usually be exceeded after careful experimentation. Initial price is 17s. 6d. to which H.M. Customs and Excise have most illogically added 3s. 10d. purchase tax. The valve is manufactured by Messrs. Hivac, who were introduced to the possibilities of such a valve by Steve Fairbrass and Fred Borders at the end of the 1949 season.

The XFGI is unique in valve manufacturing history and has therefore not been without teething troubles. These were almost entirely caused by the great difficulty of standardising perfectly the pressure of the inert gas within the tiny glass envelope and to this fact alone may be attributed practically all the trouble occasionally experienced with a small percentage of the quite large output. The first few valves were all hand-made and gave exceptionally good and long service. A change over to mass production brought a crop of teething troubles occasioned by too high gas pressure, which severely limited range. This phase quickly passed, and it should be recorded that Messrs. Hivac replaced a good number of recalcitrant valves. For a short while after this a few slipped through with too low gas pressure so that life was short in the extreme; most of them were replaced. Since that time (about two weeks before Whitson, 1950) the standard has been remarkably good. The writer has handled many hundreds of valves since that time and can say that genuine complaints have been received concerning only two or three. All valves have batch numbers printed on them; the first were labelled 86c. Since 88a appeared there has been little or no trouble, the latest batch numbers at the time of writing being 93a.

Messrs. Hivac have not issued any specific data, such as performance curves for their valve, as it is obvious that characteristics vary enormously rom valve to valve with each minute change in gas pressure. Similarly each individual valve changes gradually during its life, which in a good superregen circuit is usually between ten and fifteen hours at 1.5 m/A. The majority behave in the following manner in a typical circuit : when brand new, using fresh batteries of approved voltage, it is found that range is usually on the short side. At the same time by readjusting the usual variable resistance to zero, it will be found that the maximum current that will flow is between 3 and 5 m/A. As the life of the valve progresses the receiver becomes noticeably more sensitive, easier to tune and will possess indefinite range with a good transmitter. A short cut to reach this stage is to run the valve at about 3.5 m/A. for about twenty minutes or until emission starts to fall below 3 m/A. The "sensitive" stage rises to a peak when it seems practically impossible to detune the receiver at any range. A check at intervals throughout the life of the valve on the maximum available current (make this check only briefly) will show a gradual drop until it falls below the 1.5 m/A., actually used during flights. This is the time to start worrying and applying remedies, as the current will then be liable to fall during flight below the usual relay setting of 1.0 m/A. which would be quite disastrous. The writer has used or heard of many remedies to be applied, one of them quite humorous, but none the less effective. Among the most common are :—

1. Shorten the aerial. Two of us in our club have on more than

Den Allen, at rear, winds up his actuator prior to the winning flight in the Taplin Trophy, 1950.



one occasion flown at good ranges without any aerial at all other than the tuned circuit. The extra standing current obtainable is about 0.5 to 2 m/A. above that with the usual 52in. aerial. A change to 26in. or 13in. is usually sufficient to give an extra dozen flights. Further remedies can then be applied.

It is most common practice, at least with the "Flight Control" receiver, to trail the aerial from a rigid fixing on the fuselage near the receiver location. Varying the aerial length is then simple, giving optimum reception from the usual types of transmitter aerial (*vide* television practice in this country—all vertical—and in America where all are horizontal for long range transmission). Another good tip on aerials: if your initial "Maximum current" is very high and range poor, lengthening the aerial to 9ft. will often improve matters until the valve ages.

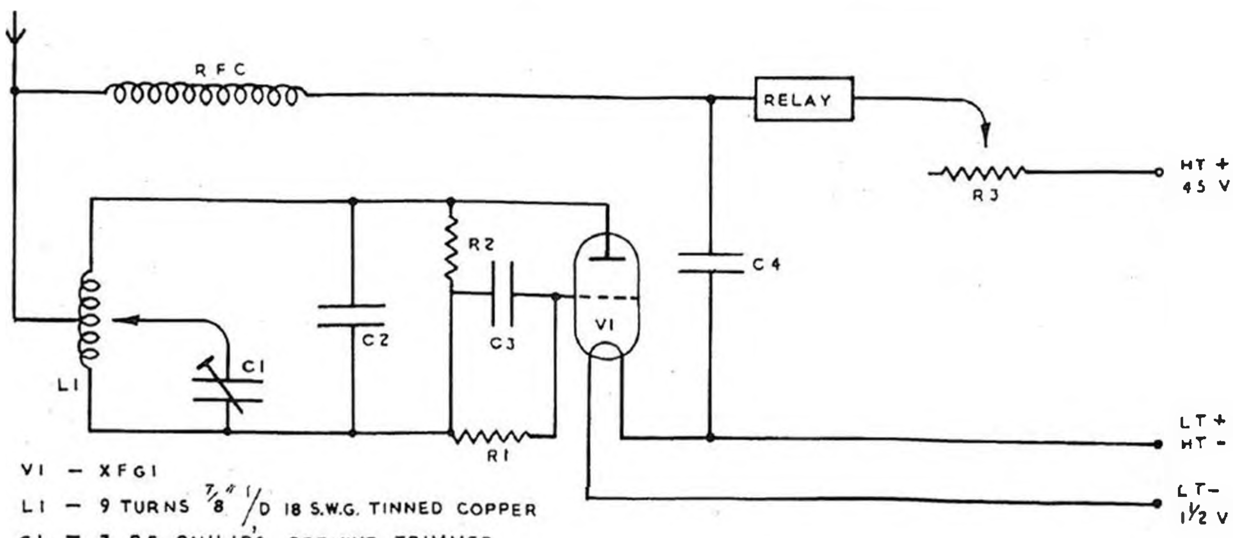
2. Try reversing the polarity of the L.T. Battery, *i.e.*, connect H.T.— L.T.+. This usually increases current by 1 m/A.

3. Increase H.T. voltage from 45 to 60 or $67\frac{1}{2}$ v. This is the surest method of all, but do not on any account use this higher voltage until the valve is well worn.

4. If yours is a home-made receiver, try the effect of increasing the value of the gridleak resistor.

5. Again on home-built receivers, increase the capacity of the condenser(s) across the tuned coil, decreasing the diameter of the coil at the same time to keep to the original 27 mcs. frequency. A typical example: instead of a coil of 9 turns $\frac{7}{8}$ in. diameter tuned by a total of 30 pt., use a coil of 9 turns $\frac{5}{8}$ in. diameter tuned by a total of about 50 pf. (say 40 pf. fixed and 7 pf. variable).

A good deal of variation in tuning can be effected by opening or squeezing together the turns of the coil, assuming it to be of the formerless type.



V1 — XFG1
L1 — 9 TURNS 7/8" I/D 18 S.W.G. TINNED COPPER
C1 — 7 PF PHILIP'S BEEHIVE TRIMMER
C2 — 25 PF
C3 — 100 PF
C4 — ·05 MFD
R1 — 3·3 M
R2 — 75 K
R3 — 1/4 MEG CARBON VARIABLE

"FLIGHT CONTROL" RECEIVER CIRCUIT.
(PUBLISHED BY PERMISSION OF JUDGE INDUSTRIES)

6. A humorous but effective remedy, and used regularly by one modeller who obtains a further 35 flights each time. It is " to suspend the valve in a dish and bake in an oven at Regulo No. 8 for about 20 minutes." Those are his words, and no further comment is added. Try it some time when in a really desperate fix!

Quite often, rapidly falling standing current is caused by a deteriorating L.T. battery. This must always be very fresh for the XFGI and show a minimum of 1.5 volts under 50 m/A. load. Two or more pen cells soldered in parallel make the best compromise, giving about three or four hours' service.

Although R.C. of model aircraft is already a vast subject which is filling volumes, the writer's duty to " Annual " readers, is to pick out the salient points where greatest common benefit will result. Other than the XFGI receivers the greatest progress during 1950 has been the design of the models themselves, and it is certain that winners in 1951 will show the steady advances. So far only a few modellers have realised that, given reliable radio using rudder only and a little flying practice, it is only the design of models that distinguishes the contest winners from the general run.

The lighter equipment has allowed much smaller models, although so far the very small models have yet to prove themselves in contests. The contest winners have preferred medium size models (often now referred to as " large ") powered by 3.5 to 5. c.c. engines, using the lightweight equipment but often employing extra actuator and L.T. batteries in parallel to make up weight. British weather, particularly the 1950 variety, has produced a few hardy all-weather fliers able to penetrate into quite high winds. It was quickly discovered that the usual type of cabin kit job was useless, as in even light winds it could not be brought back to base owing to the usual slow flying nose-up attitude. Special designs have appeared sprouting quite long noses with rather powerful, high revving engines with smallish props set at a pronounced angle of downthrust. Among the higher revving engines finding favour are the Frog 500, Amco 3.5, Elfins of all sizes and Allbon Javelin 1.5 c.c., while the E.D. IV 3.46 c.c. diesel has powered a large number of slower flying jobs.

According to the prevailing wind strength, the tail trim can be changed. At the York Nationals (Whitsun, 1950) Sid Sutherland and other West Essex members were flying at Marston Moor on the evening prior to the contest. The evening was calm making flying easy. Anticipating bad weather on the morrow, they tried under elevated trims to push up the ground speed—usually entailing up to $\frac{1}{4}$ in. packing under the tailplane L. E. Sid had his model flying so fast that ceiling was 10 ft., which was most hair-raising as the ground speed was 45 m.p.h. or so, with the Amco 3.5 really screaming on a $9\frac{1}{2} \times 8$ prop. The following day, with the addition of even more packing, his was the *only model capable of* fighting the fierce gale; he just held the wind for about a minute, until, performing a turn, the model was whipped back 400 yards in a few seconds, but landed safely under control. That show pointed the way to possible future design. Probably some time before we get too crotchety to wield a balsa cleaver, radio jobs will look like today's team racers and take about as much notice of the wind as a modern jet fighter.

A branch of R.C. that seems so far to have received little serious attention, except perhaps in the North of England, is slope soaring gliders with radio. The writer, being of yore an ardent glider fan, has a yen to try his hand before the 1951 season. The problems of R.C. gliders are unusual and could prove severe, the greatest being adequate wind penetration, and not the least being deteriorating batteries and standing current during long flights. Cyril Mayes has shown that his own E.D. III powered model can penetrate better on the glide than during the power flight, and has gone on to build a 100 in. R.C. glider to investigate the vertical qualities of a west wind at Dunstable. Probably 1951 will see R.C. gliders entering regularly in S.M.A.E. contests and it will not be long before they become sufficiently advanced to have an " unfair advantage." Yet another type of contest will then be needed in the calendar—for R.C. gliders only! Or perhaps that problem will solve itself through loss of interest in any other type of glider!

Among the commercial and published designs the " Rudderbug " seems to have been built by quite a large number of modellers. Considering this force of numbers, its success has not been conspicuous and it appears to be quite unsuited to British weather. Its usual 4½ pounds weight makes every flight appear a struggle. The Junior 60 has deservedly been built in even greater numbers by beginners in R.C. although needing considerable modification. Fran McElwee's Radart, originally published in *Air Trails*, seems a good design well suited to our conditions, and Brian Hewitt reports very good results flying from a football field. Incidentally Fran McElwee knows his onions in bad weather. The weather at the 1950 Mirror Meet in New York, was typically English, but he managed to push a McCoy 29 job — a good way upwind and perform all the manoeuvres on the way back to base! The " Skyskooter," produced specially for R.C. work, is already giving good service, although it seems to need the urge from a " Javelin " for real performance.

Practically all the good performances last season were put up by plain left and right rudder only models with no frills at all. All the contests that mattered were won by models so equipped. Proportional control appears to many, especially uninitiated beginners, to be the Eldorado of R.C., but those who have tried it will testify that it has many vices, mainly because we, the pilots, are on the ground and there is therefore an inevitable time lag in countering any upset. Two known to the writer affirm that ordinary " bang-bang " control is little short of ideal for the average model. Some Bolton club members tried out Jim Walker's " Pozzipo " system and found it so sluggish in action that the model had crashed before any appropriate control could save it. Similarly, Alfie and Eric Hook, who have shown they are wizards with their own 3S4 receivers and self-neutralising escapements, came similarly unstuck with their proportional system. However, some means of elevator control is clearly an advantage, and for most, two receivers and transmitters on different frequencies working rudder and elevator separately would seem to be the answer for 1951. Probably the finest degree of control could be obtained with " bang-bang " rudder to take care of sudden upsets together with proportional elevator to be used for trimming during flight. All hail to Ed. Lorenz!

Three team racers belonging to Barking M.A.C. club members are being made ready for a practice race. Whilst it is normal to space the racers, with a wider safety margin between each, a cluster start like this can provide an exciting release.

TEAM RACING

By RON MOULTON

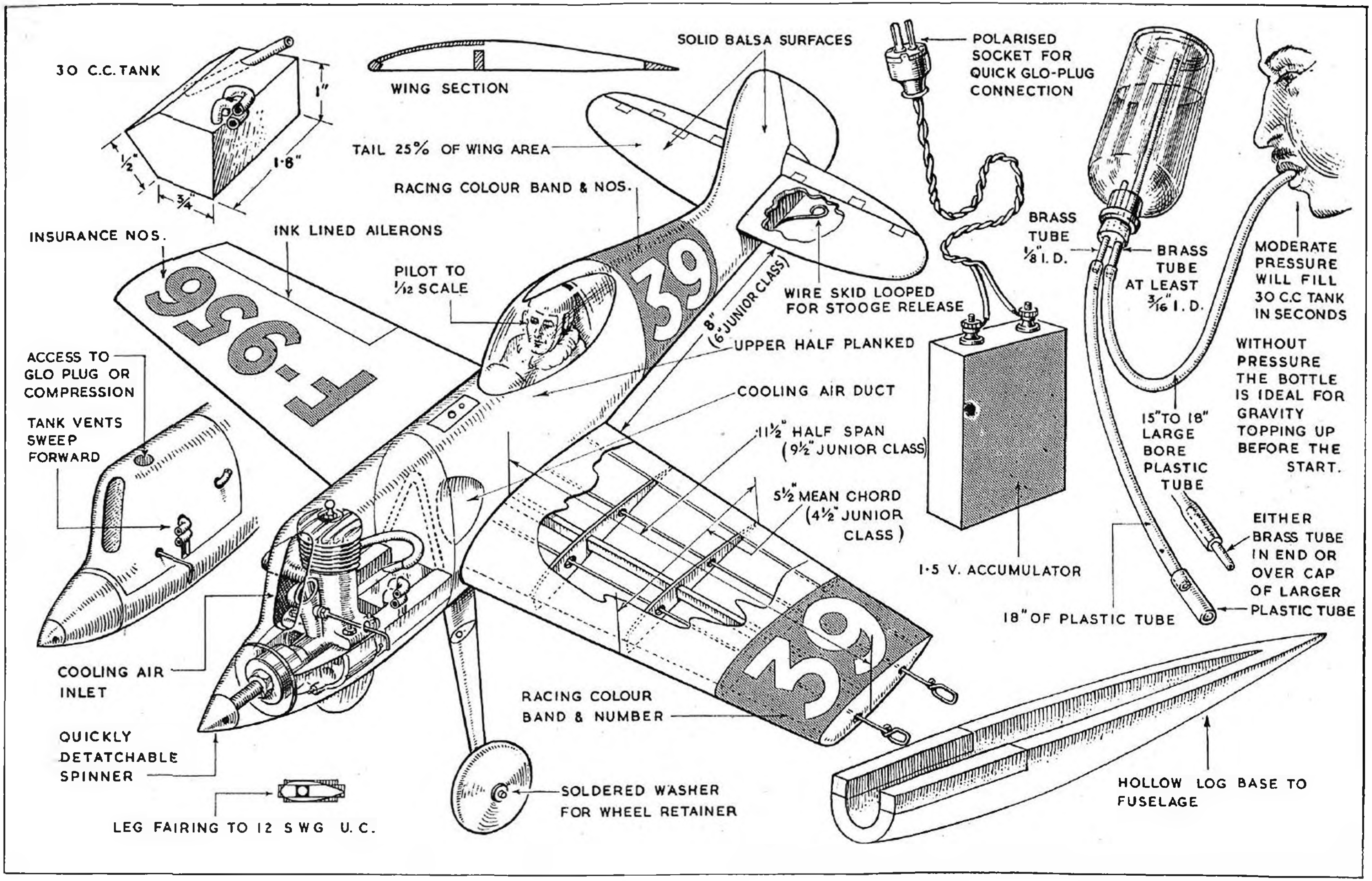
An American, quoted in an issue of the Australian Model Hobbies magazine, said : " Control-line needs more than stunt, scale and speed. Best thing yet is team racing. People are tired of the same old stunts and screaming speed models." He pretty well analysed world-wide modelling opinion in that brief statement, for throughout the Commonwealth, the United States and Britain, the 1950 snowball of enthusiasm for this new branch of control-line flying has eclipsed interest in stunt and speed contests. At least the human errors of stop-watch operation and stunt judging are eliminated in team races, for, providing the lap counters can be relied upon to count up to 160, the results are never open to doubt.

Team racing began, as is customary with new ideas in control-line, in California during 1949. At first, there appeared to be two schools of thought, those who considered the models should be to accurate scale and thus known as " prototypes " and the other school, whose decision to have semi-scale models built to limit specifications, met with universal acclaim and whose basic rules are now adopted everywhere.

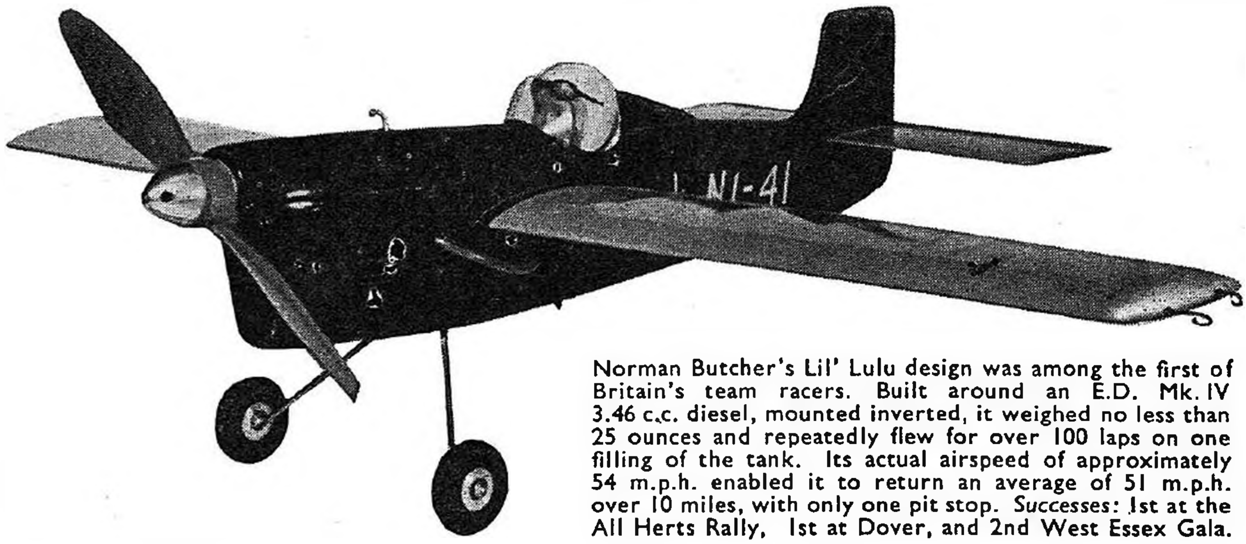
BRITISH RULES FOR TEAM RACE MODELS

1. A team race shall consist of two or more models, each made to the correct specification, flown at the same time, in the same circle over a predetermined distance. The winner shall be the first to cover the required distance from a standing start. All models must start at the same time and be flown in an anti-clockwise direction.

2. Models shall be either scale or semi-scale in appearance. If semi-scale, the model must have a raised cockpit or cabin and contain a dummy pilot. It must have a completely cowled engine, except for access to spark-plug, glow-plug and compression adjustment. Wheels must be of specified diameter and the undercarriage must be fixed or retractable—if of the latter type it must be lowered before each landing. The foremost point of the cabin should not be lower than the engine cowling top.



30 C.C. TANK
1"
1/2"
1·8"
3/4"
WING SECTION
SOLID BALSA SURFACES
TAIL 25% OF WING AREA
RACING COLOUR BAND & NOS.
INSURANCE NOS.
INK LINED AILERONS
PILOT TO 1/12 SCALE
F-956
39
WIRE SKID LOOPED FOR STOOGE RELEASE
8" (6" JUNIOR CLASS)
UPPER HALF PLANKED
ACCESS TO GLO PLUG OR COMPRESSION
TANK VENTS SWEEP FORWARD
COOLING AIR DUCT
11½" HALF SPAN (9½" JUNIOR CLASS)
5½" MEAN CHORD (4½" JUNIOR CLASS)
COOLING AIR INLET
QUICKLY DETATCHABLE SPINNER
LEG FAIRING TO 12 SWG U.C.
RACING COLOUR BAND & NUMBER
SOLDERED WASHER FOR WHEEL RETAINER
POLARISED SOCKET FOR QUICK GLO-PLUG CONNECTION
BRASS TUBE 1/8" I.D.
BRASS TUBE AT LEAST 3/16" I.D.
MODERATE PRESSURE WILL FILL 30 C.C TANK IN SECONDS
WITHOUT PRESSURE THE BOTTLE IS IDEAL FOR GRAVITY TOPPING UP BEFORE THE START.
15" TO 18" LARGE BORE PLASTIC TUBE
1·5 V. ACCUMULATOR
EITHER BRASS TUBE IN END OR OVER CAP OF LARGER PLASTIC TUBE
18" OF PLASTIC TUBE
HOLLOW LOG BASE TO FUSELAGE



Norman Butcher's Lil' Lulu design was among the first of Britain's team racers. Built around an E.D. Mk. IV 3.46 c.c. diesel, mounted inverted, it weighed no less than 25 ounces and repeatedly flew for over 100 laps on one filling of the tank. Its actual airspeed of approximately 54 m.p.h. enabled it to return an average of 51 m.p.h. over 10 miles, with only one pit stop. *Successes:* 1st at the All Herts Rally, 1st at Dover, and 2nd West Essex Gala.

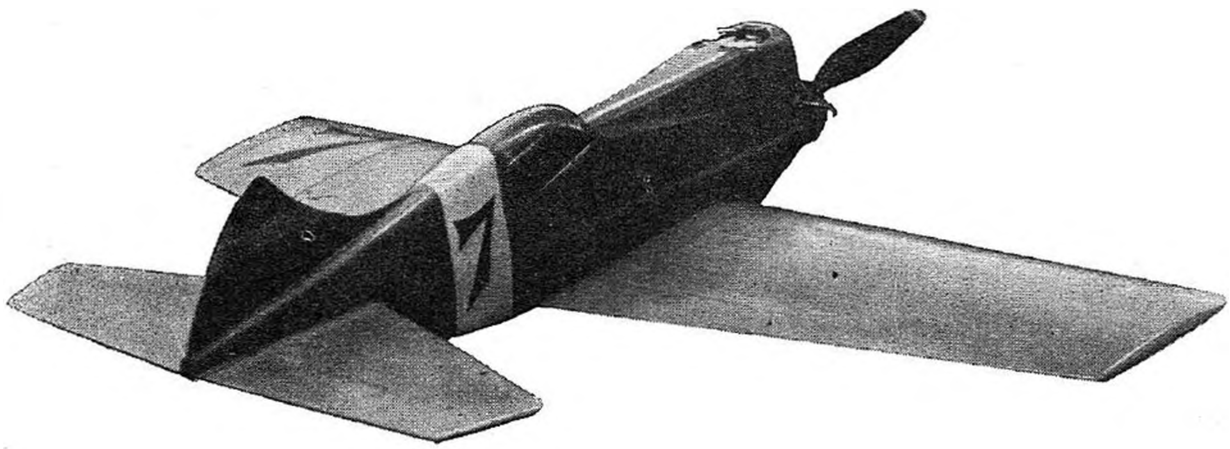
3. Team racing is divided into two classes, according to engine capacity, i.e., Class A and Class B.

4. Class A models shall conform to the following specification :—
(*a*) Minimum wing area, 70 sq. ins.
(*b*) Engine capacity, 0 to 2.5 cc.
(*c*) Maximum tank capacity, 15 cc. (0.915 cu. in.).
(*d*) Line length from C/L of handle to centre of model, 42 ft.
(*e*) Fuselage depth at the cabin to be at least 3 ins.*
(*f*) Pilot head to be $\frac{3}{4}$ ins. deep.*
(*g*) Minimum wheel diameter $1\frac{1}{2}$ ins. [**To be ratified*].

5. Class B models shall conform to the following specification :—
(*a*) Minimum wing area, 125 sq. ins.
(*b*) Engine capacity, 2.51 to 5.0 cc.
(*c*) Maximum tank capacity, 30 cc. (1.83 cu. ins.).
(*d*) Line length from C/L handle to centre of model, 52 ft. 6 ins.
(*e*) Fuselage depth at the cabin to be at least 4 ins.*
(*f*) Pilot head to be 1 in. deep.*
(*g*) Minimum wheel diameter 2 ins. [**To be ratified*].

American rules go further with limitations on the appearance of the racer, for example, the pilot must be in keeping with the proportion of the model and flying wing designs are barred. They also require looped tail skids for " stooge " releases and cut-outs, not yet found necessary at British races. Australians require engine displacement to be within 3.25 cc. and 5 cc. to conform with M.A.A. of Australia Class " B," while Victorian clubsters of that country enjoy a 10 cc. class using scale models of approximately 36 in. span and 3 ounce fuel tanks.

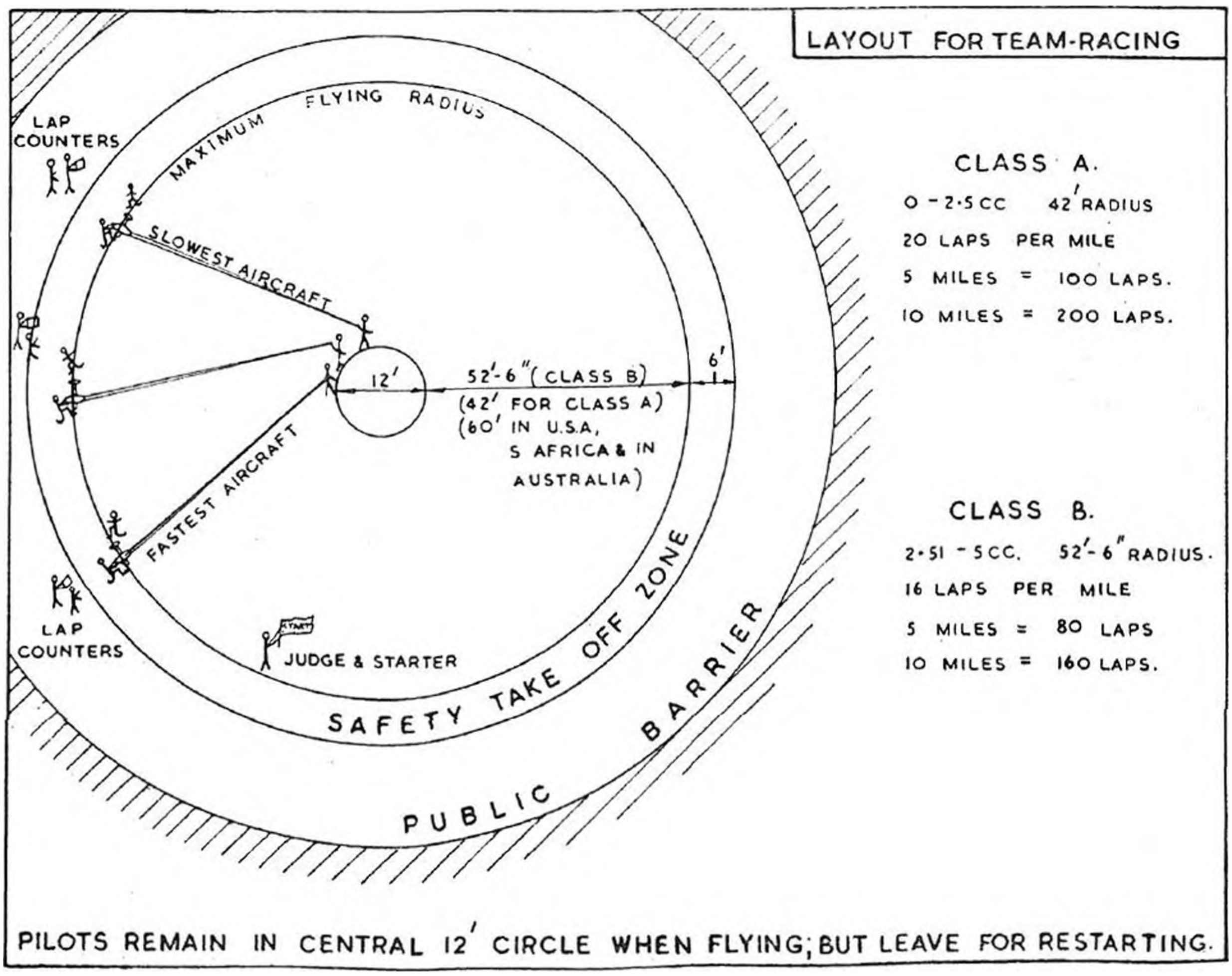
Though wing areas and engine capacity restrictions are universal, *British rules differ in two important points. Unlike all other countries* where the fluid ounce is quoted as 1.8 cu. ins. or 29.50 cc., the British fluid ounce is stated to be 28.35 cc. or 1.73 cu. ins. Quite obviously these British figures would offer some difficulty, both in the manufacture and checking of tanks, so the S.M.A.E. control-line committee fixed an easier round figure of 30 cc., which works out at 1.83 cu. ins., to facilitate checking at races and to ease manufacture.



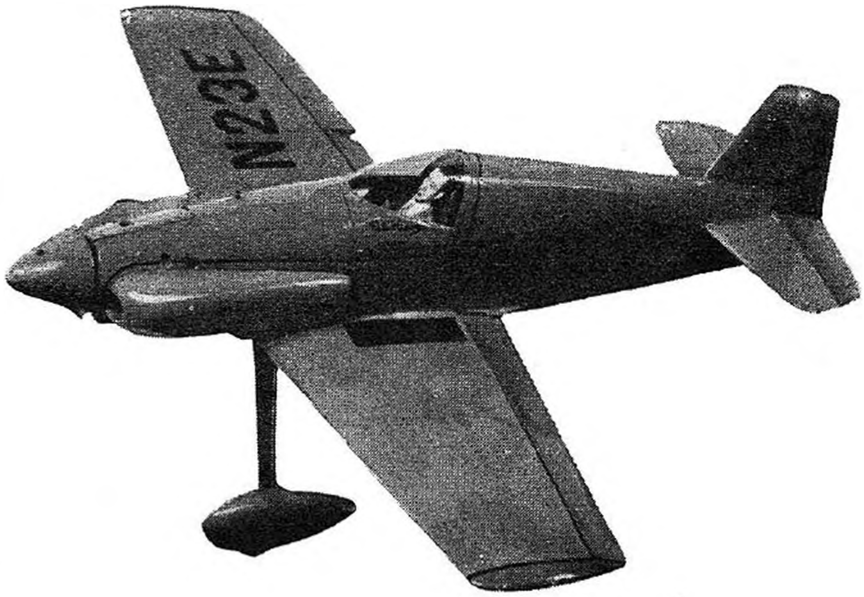
The other difference, that of line length, means that, instead of using units of 7 and 14, etc., for the half-mile and mile distances with a working 60 ft. radius, British contests use 52 ft. 6 in. radius for Class B and count in units of 8 and 16, etc., for the half-mile and mile. Simpler still is the newly introduced Class A, which is counted in units of 10 and 20, etc., for its 42 ft. radius.

HOW TO WIN

Team racing, as its name implies, cannot be won by the model or any individual alone. Three people—and a model—constitute the team and their duties are : (*a*) Pilot ; (*b*) Starter, usually the engine owner,



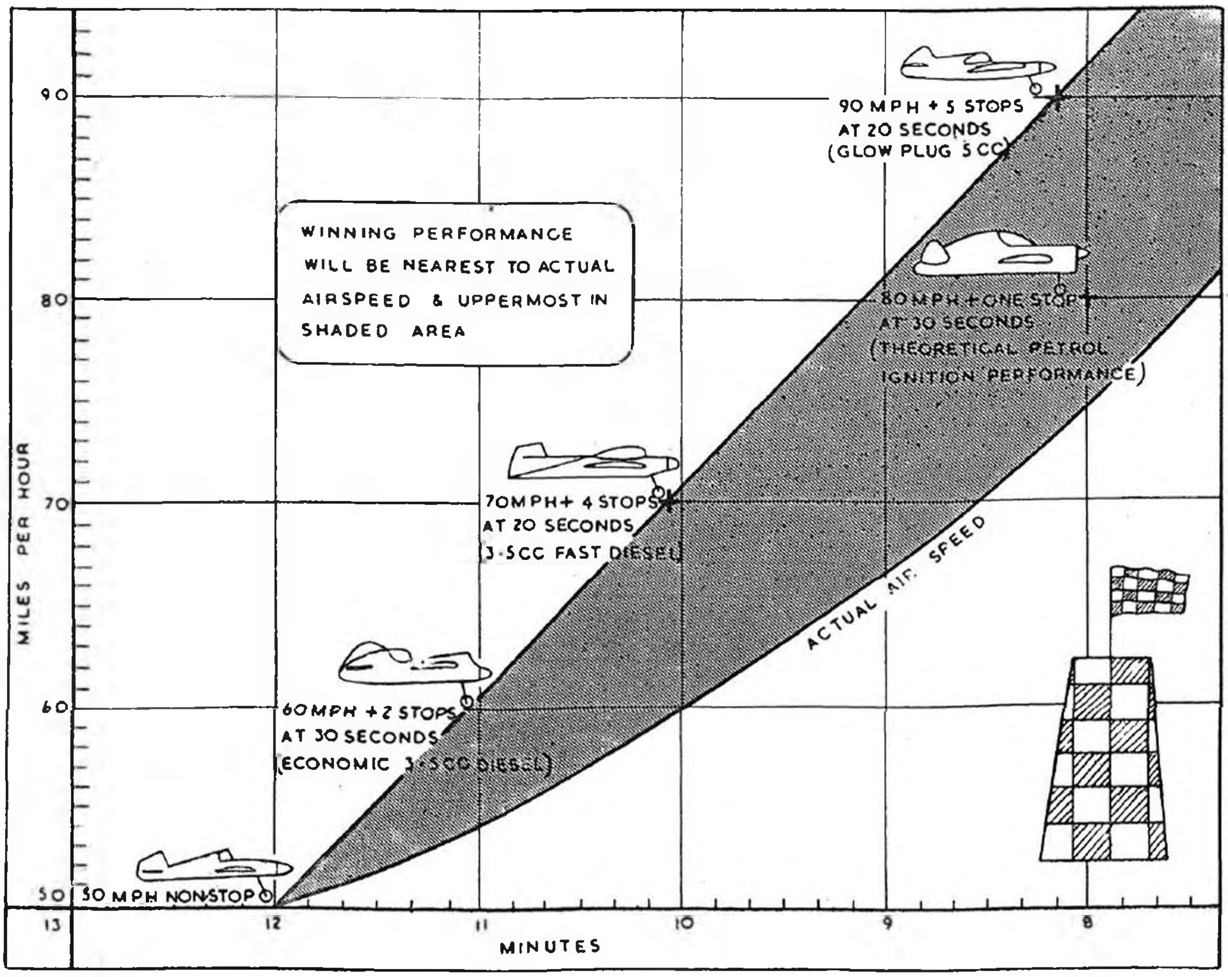
On opposite page: An example of the junior class of team racer is this squared-up but nevertheless attractive Class A model, by Mr. Wheldon, of Birmingham. Appropriately named "Time Chaser," it weighs only 6 ounces, flies at 62 m.p.h., and sports an Elfin 1.49 c.c. diesel power unit.

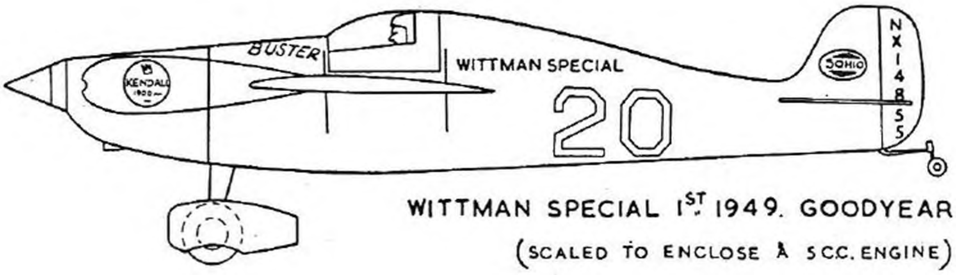


Right: Peter Donavour-Hickie's scale version of the Long Midget racer has an actual photograph of Pete mounted as pilot in the cockpit. Using an Amco 3.5 c.c. diesel, it weighs 18½ ounces and features flaps, which operate when the third line is used to cut the motor.

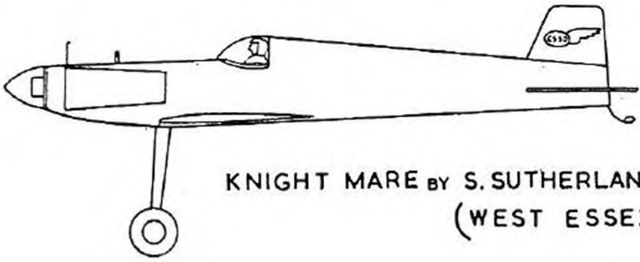
and (*c*) the essential handyman, who helps refuel and carries most of the spares and starting clobber.

The pilot can win a race by judiciously flying to maximum altitude permissible, shortening his radius by standing still and making others walk around him, or by holding his handle close to the opponent's shoulders and gaining an arm's length (which can shorten a mile by 75 yards). He can also lose by flying above the allowed maximum altitude, or fouling the progress of his opponents.

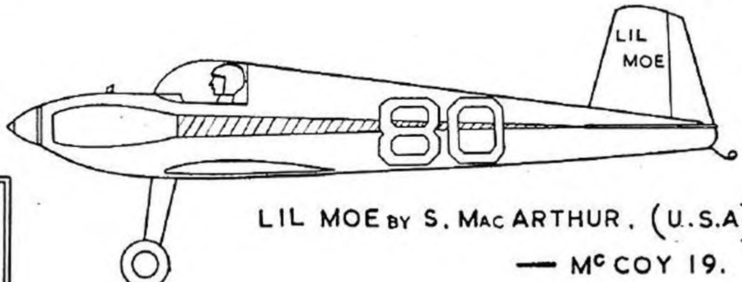


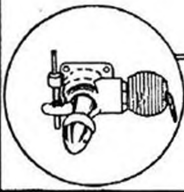


WITTMAN SPECIAL 1ST 1949. GOODYEAR RACE.
(SCALED TO ENCLOSE A 5 C.C. ENGINE)



KNIGHT MARE BY S. SUTHERLAND & W. TICKNER.
(WEST ESSEX)—AMCO 3·5 CC.

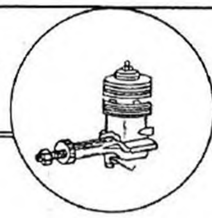


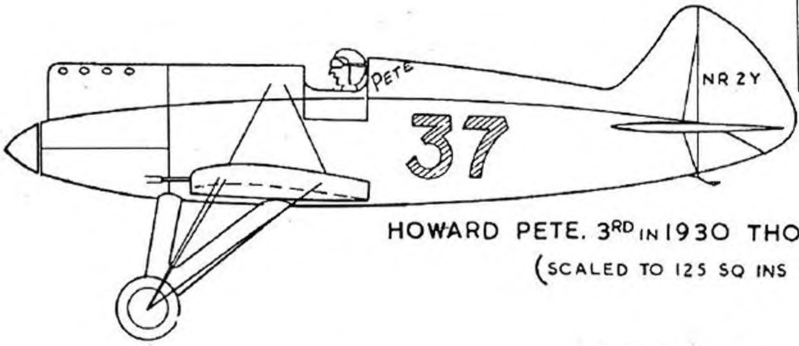


FOR
SIDE MOUNTED
MOTORS

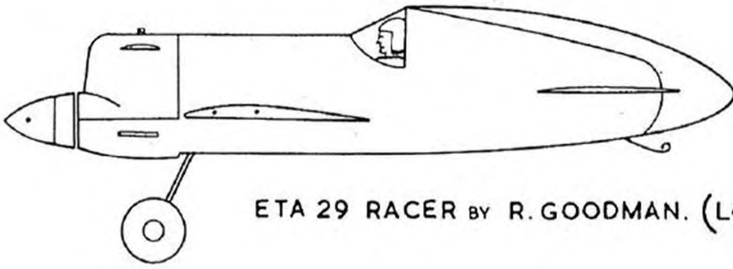
LIL MOE BY S. MAC ARTHUR. (U.S.A.)
— McCOY 19.

FOR
UPRIGHT
MOTORS

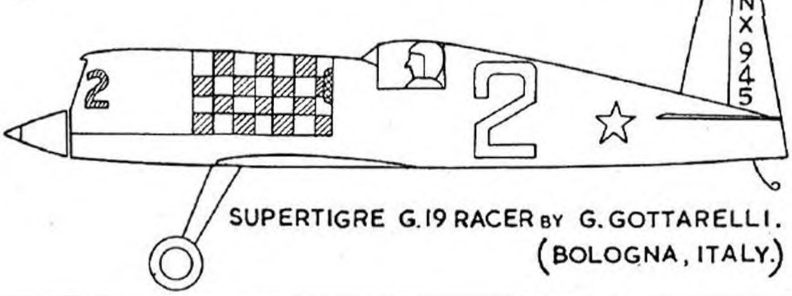




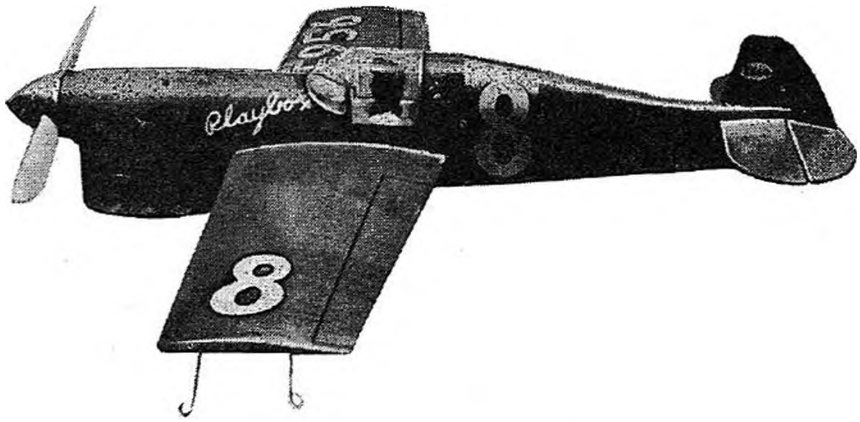
HOWARD PETE. 3RD IN 1930 THOMPSON TROPHY.
(SCALED TO 125 SQ INS WING AREA)



ETA 29 RACER BY R. GOODMAN. (LONDON.)



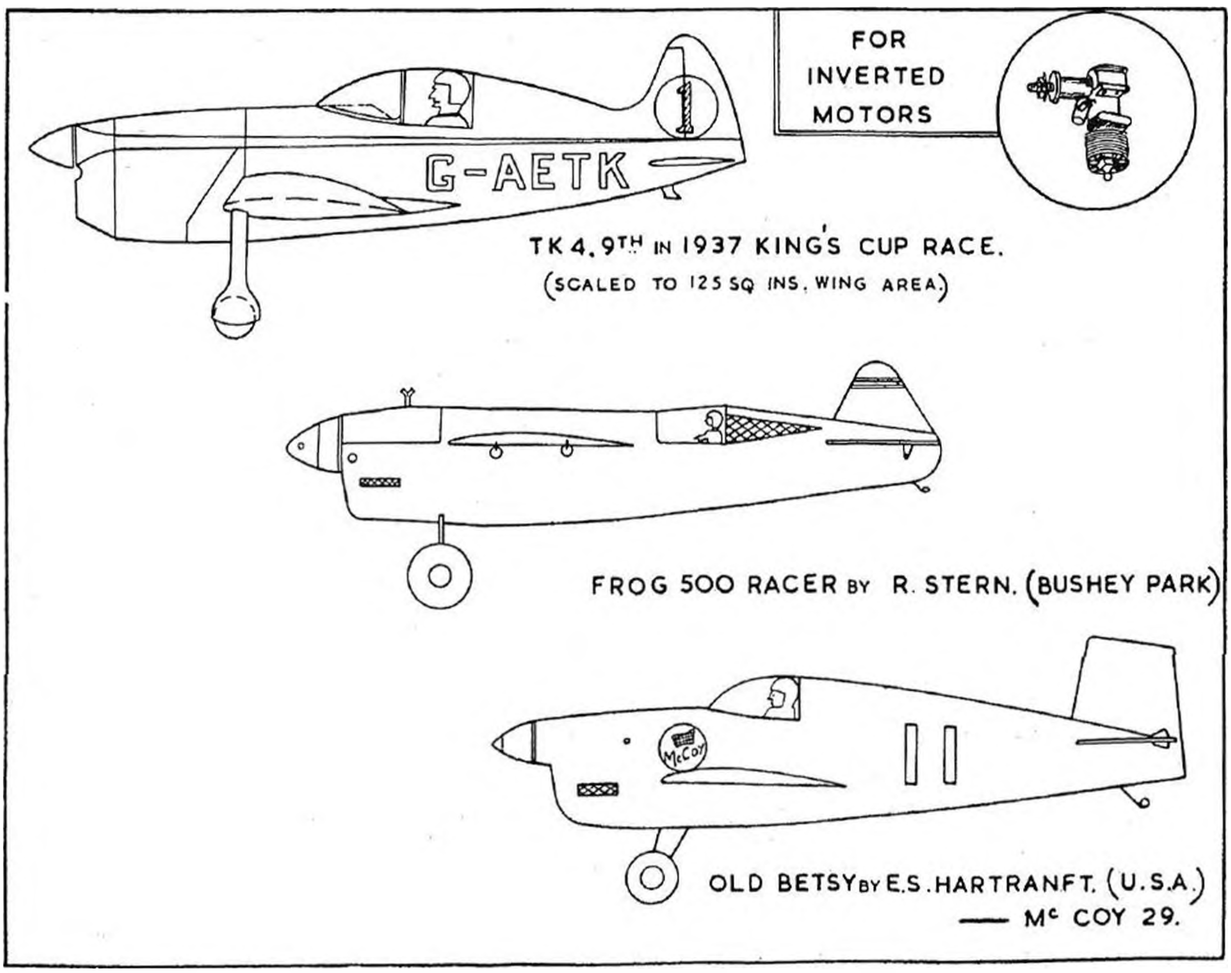
SUPERTIGRE G.19 RACER BY G. GOTTARELLI.
(BOLOGNA, ITALY.)

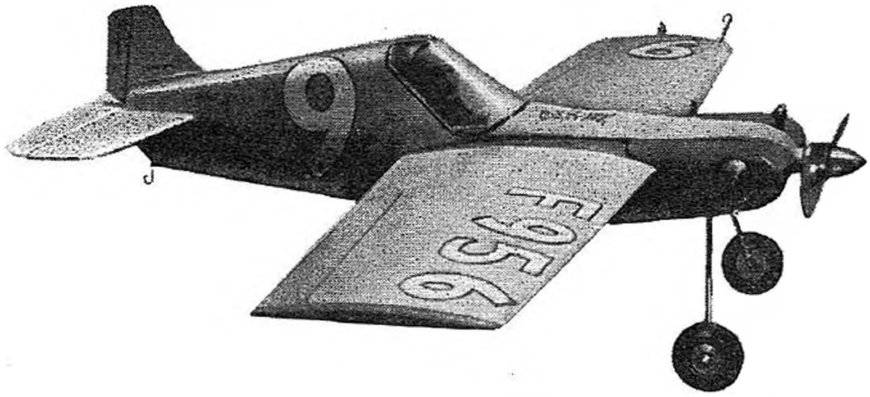


Probably the first British class B racer, and the guinea pig used to excite team race enthusiasm in the London area was Playbox, by Ron Moulton. The Delong 30, 5 c.c. glow-plug motor was mounted inverted to retain realistic appearance, and an aluminium hinged cowling exposed the engine for maintenance. Model weighed 22 ounces and flew at 75-80 m.p.h., though never for more than 32 laps.

For the starter, team racing is an exhilarating experience, for on his shoulders rests the burden of rapid get-away at each refuelling. He can win a race by anticipating the stopping point of the racer, by calm and fast restarting, by leaving the needle valve alone if it is set correctly, and by releasing the model as soon as the engine fires, and he is sure the tank is full to the point of overflowing. He, like the handyman, can lose a race by trying to arrest the model as it glides to earth, and thus damaging the essential minimum 125 sq. ins. He can also cripple the team's chances by flooding the engine or not proceeding with haste to the landing spot.

On the handyman depends a complete psychological understanding of the starter. He must immediately appreciate what is wanted should a spare be needed and should be hearty in breath to refuel the tank in the minimum time by the accepted, fastest, air pressure method. He can



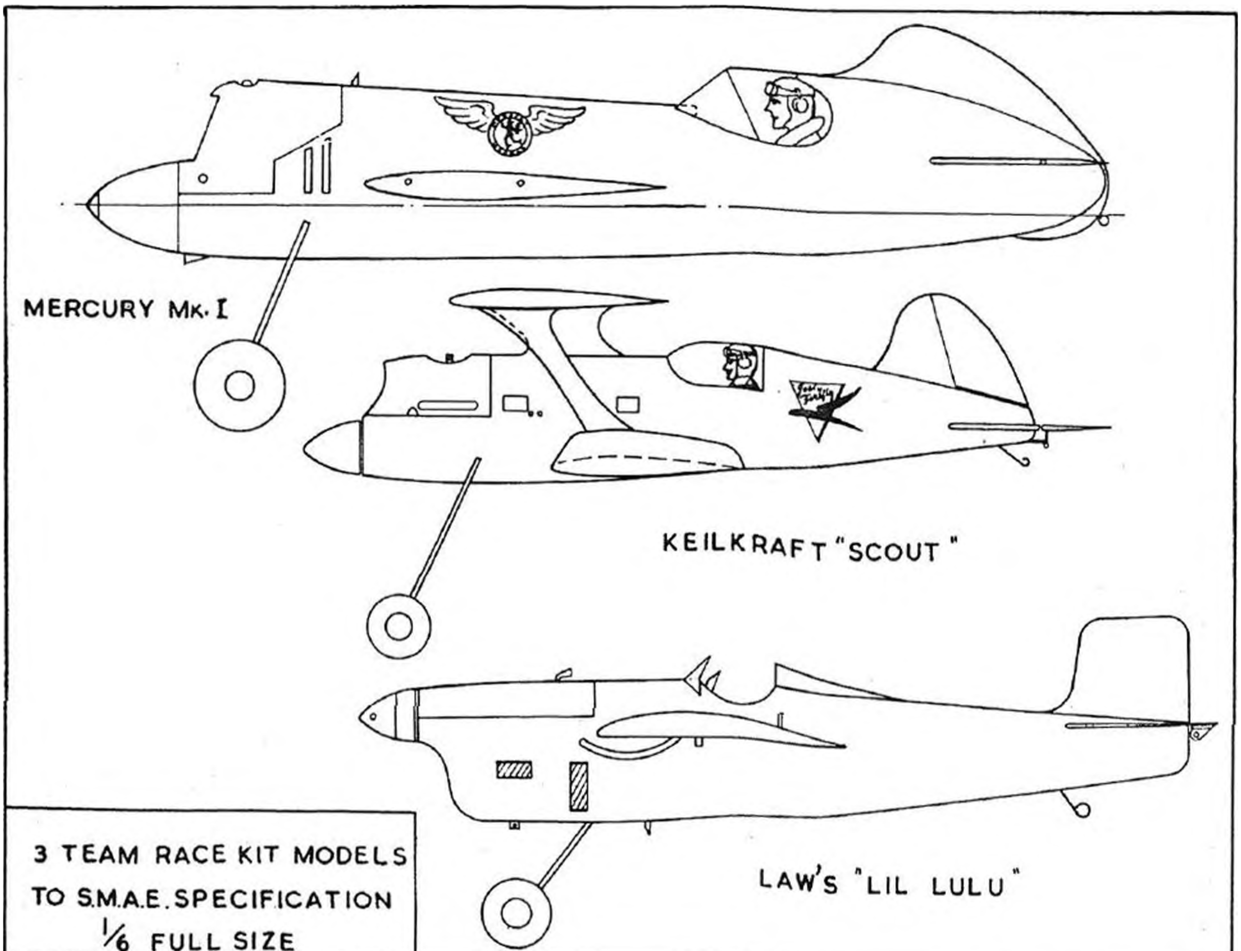


Built as a " long range " contestant, the Battler was of Class B size, but under the 1951 rules can only fly in Class A with a 15 c.c. tank. Capable of over 80 laps, as a Class B model, it could complete the five mile eliminator non-stop, and fly 10 miles with but one pit stop. Weight 14 ounces, airspeed 55 m.p.h.

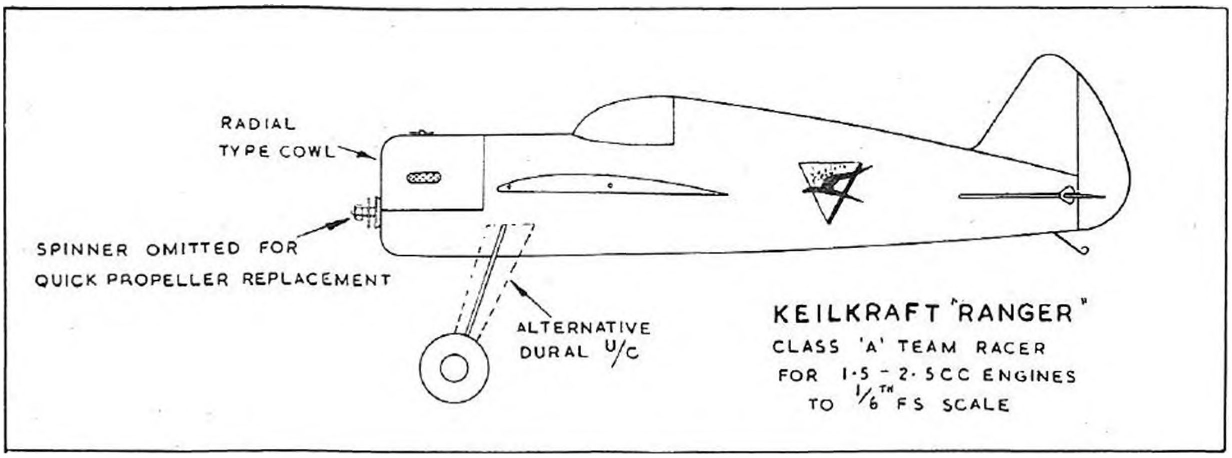
lose a race by not filling the tank completely, or by forgetting to check accumulator connections and he must always be prepared to bear the blame for slow and delayed refuelling.

But, given the most crafty of pilots, the fastest of flickers and the handiest of handymen, the performance of the team will depend entirely upon the combination of model/tank/engine to win a team race.

The first British race at the Easter Monday contests, Brighton, was won at an average speed of 44 m.p.h. over the 10 mile distance, including five refuelling stops. The second, at the West Essex Gala, was faster by 1 m.p.h. and the succession of races since held have each shown an increase of the average speed, up to the fastest at the time of writing—54 m.p.h. at the Southern Counties' Rally, Thorney Island. Assuming that progress will continue to the rate of ten miles at 60 m.p.h.



3 TEAM RACE KIT MODELS TO S.M.A.E. SPECIFICATION 1/6 FULL SIZE

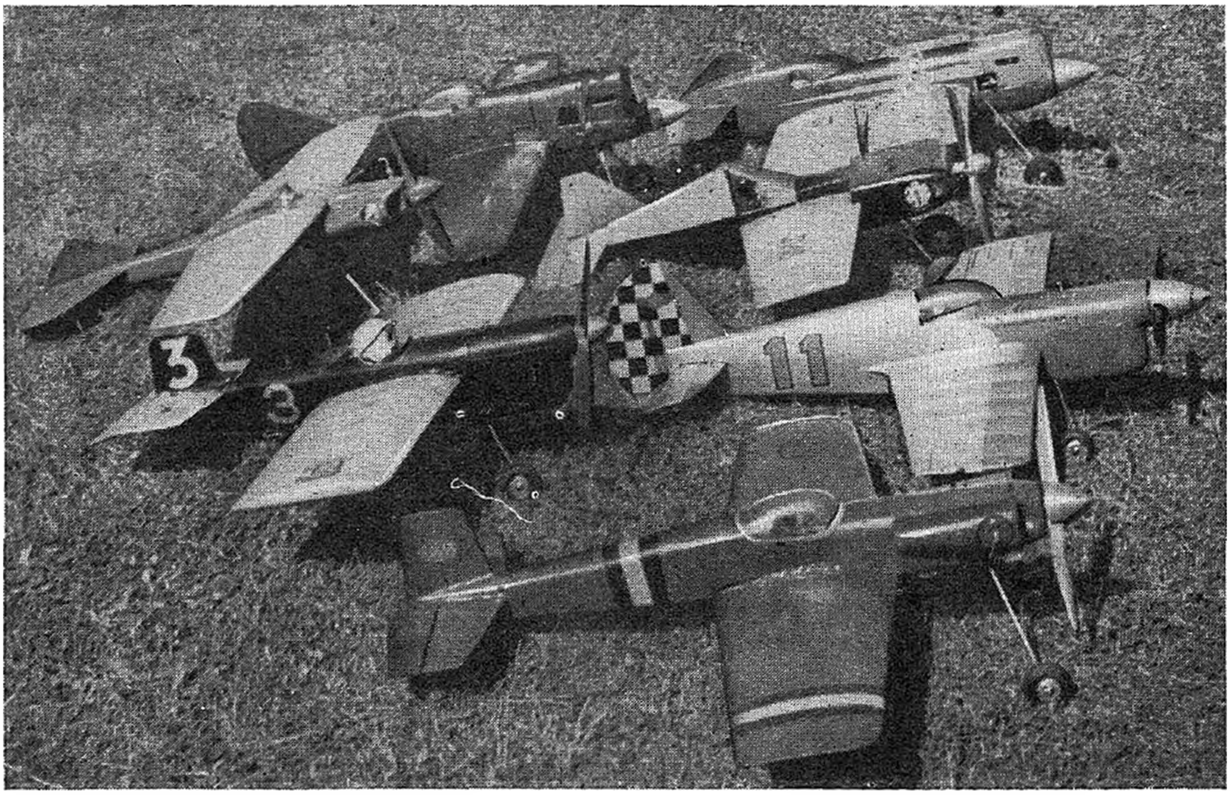


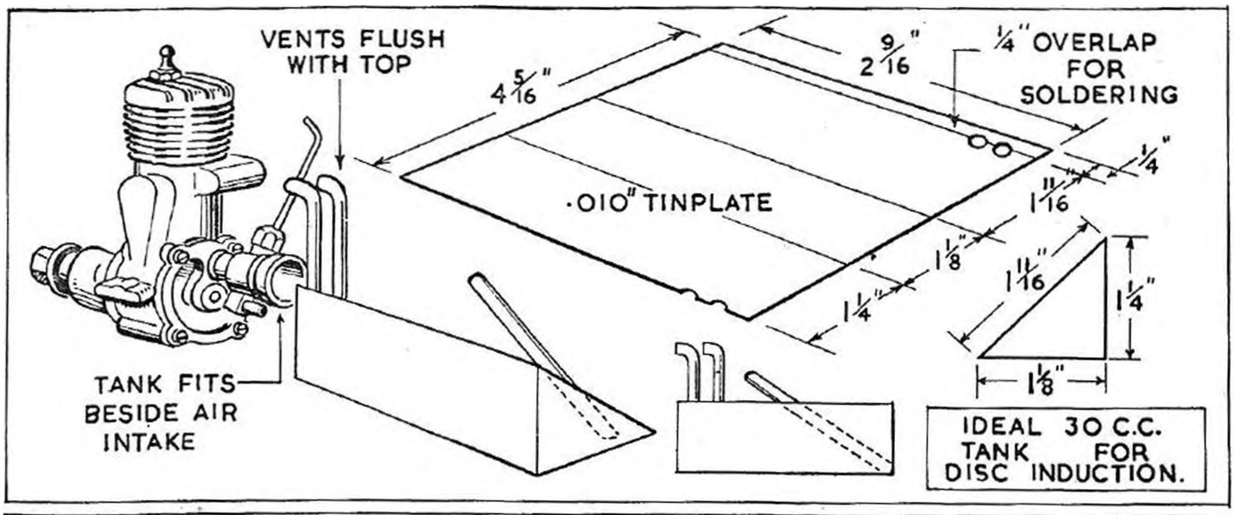
by January, 1951, one should endeavour to choose a motor capable of holding at least 65 m.p.h. for ten minutes, if one wishes to win a Class B team race.

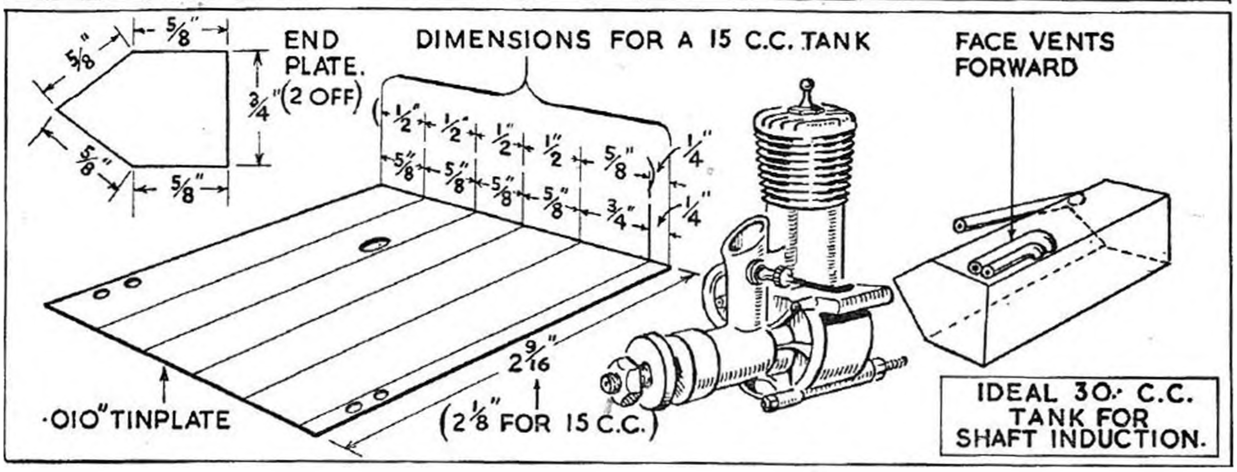
Assuming you choose a fast-running 3.5 cc. diesel of reasonably economic fuel consumption, one can expect a 70 m.p.h. airspeed over 34 laps, which means that there will be four refuelling stops. If you can manage three of these stops at a 20-second average time and the fourth at a few seconds less, it is possible to beat the theoretical 60 m.p.h. winning speed. If, by good fortune and some diligence in fuel mixture, you can increase the lappage to over 40 per tank, then that will eliminate one stop, and increase average speed by nearly two m.p.h.

A hot-stuff 5 cc. glow-plug engine can, with a streamlined airframe, maintain 85 m.p.h. airspeed, but rarely does more than 30 laps per tank

This group of racers formed part of the entry at the Southern Counties Rally, Thorney Island. Modellers with a flair for decoration and unlimited use of transfer strips and checkers will find the team racer a receptive subject for their colourful taste. Three of these models flaunt the cowling regulations by having exposed cylinder heads—it may be coincidence, but they are also the only sidewinders present !







and so requires five refuellings. However, we have frequently observed pit stops of less than 10 seconds with this type of engine and even with five stops at 20 seconds each, the final average speed will approach 70 m.h.p. which exceeds the present winning speeds by a handsome margin.

So plan to win by careful selection of the power unit, and try to get the highest speed/lappage ratio possible.

The Tank

To operate with a tank of less than maximum capacity would nullify all attempts to win. Dimensions for suitable tanks are shown in an accompanying sketch and are the result of research with winning results. The wedge has proven perfect as a means of getting that last drop (which may mean the last lap) and the shallow depth, coupled with reasonable width, offers no change in fuel setting over the period of one tankful. Check the tank MOST CAREFULLY by the measured burette or 2 mm. flat-bottomed test-tube method, shown in the sketch. Above all, ensure that the tank filling pipe and vent tube fit flush with the top surface and do not allow fuel to siphon out with the propeller slipstream.

The Airframe

Typical profiles of team racers, commercial and private, are shown with this article to aid your design. Appearance points for racers are awarded at American contests and no doubt account, together with the extra design restrictions, for the marked superiority of their looks. Inverted motors flood easily, but are often more economic on fuel, and are more popular with the Californians. Elsewhere, the sidewinder and upright mounted engines have equal support.

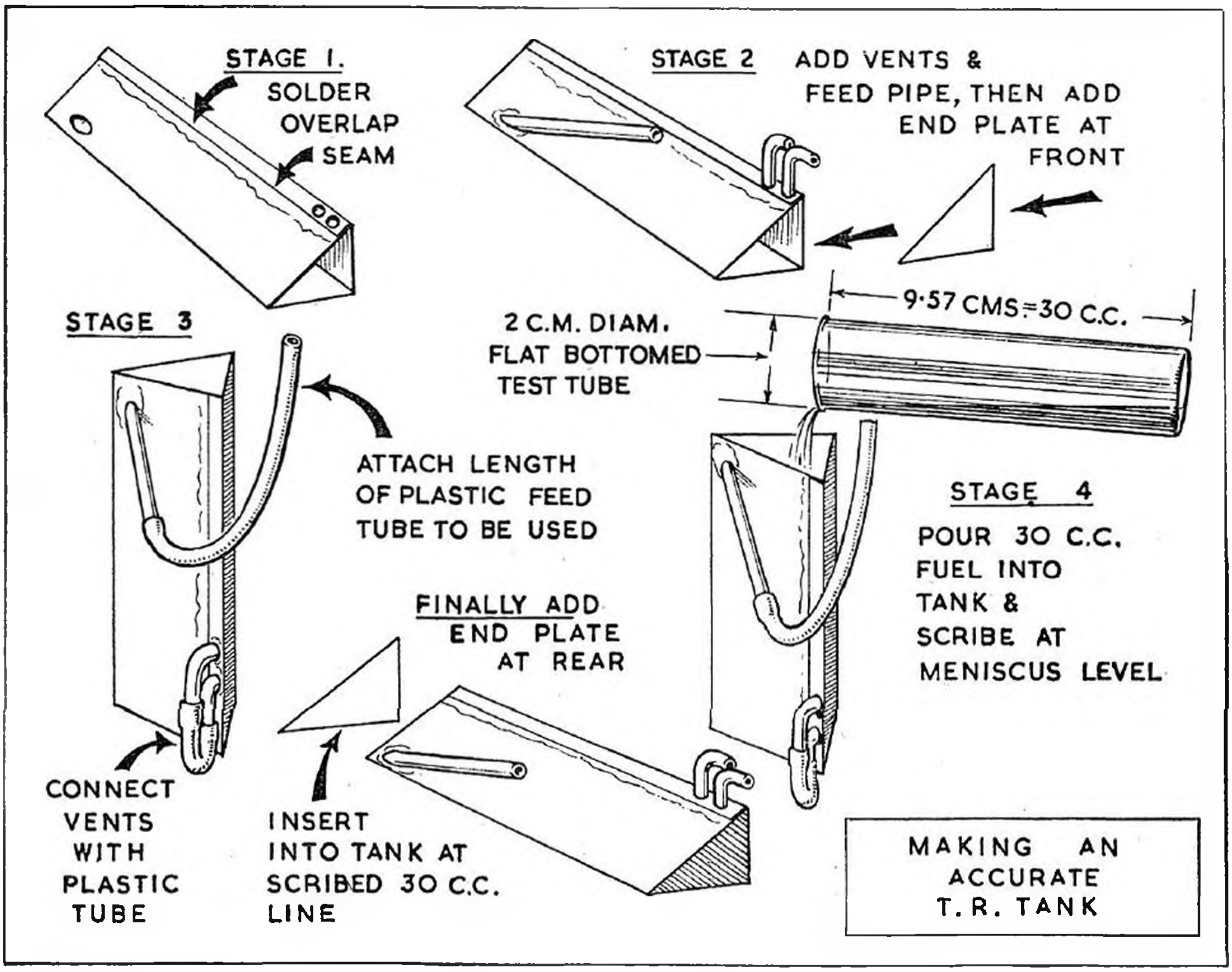
Scale enthusiasts will readily appreciate the suitability, or otherwise, of certain full-size racers, and we show three of them as examples, though each must be altered to get good team race performance.

Few British racing aircraft possess the appropriate wing area to cowling depth ratio which is required for the perfect scale team racer. A fuselage built to scale, with the closest possible engine cowling, will often provide wings which are far below the required minimum area. The best plan is to make a model of composite scale, with the fuselage to suit the engine and wings to come within the SMAE specifications. Such a suggestion will no doubt shock the diehards, but nevertheless provides an ideal solution to the problem.

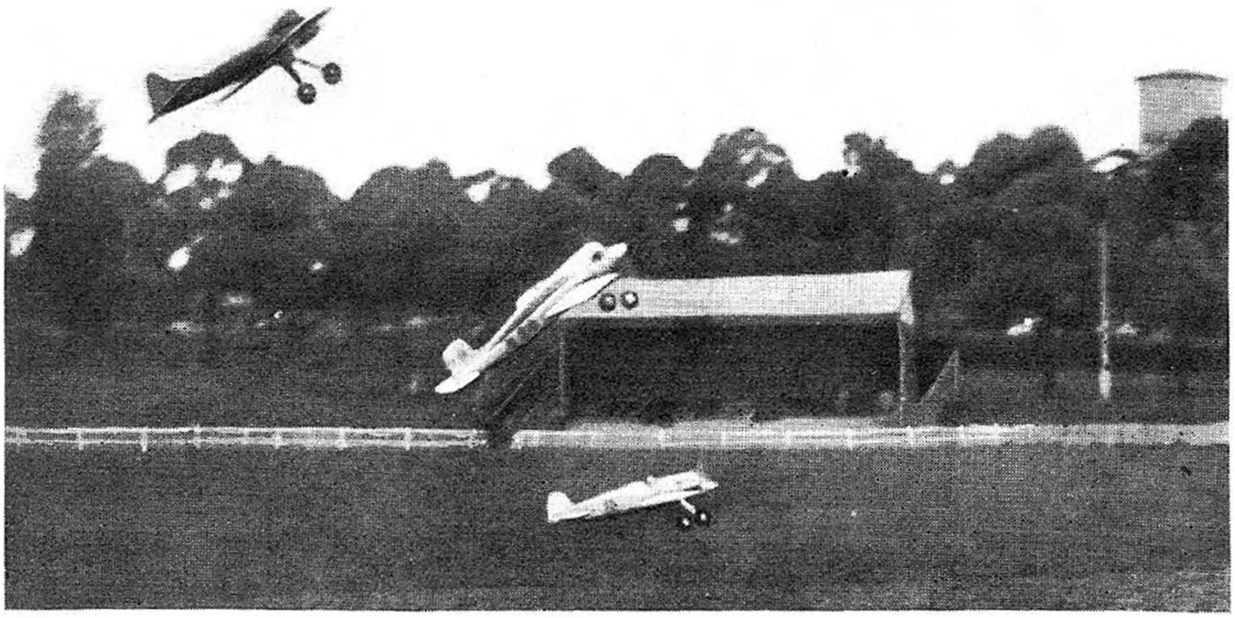
The Races

The standard British team race is run on the basis of 5 mile heats, with two or more models at a time, then a 10 mile final for the heat winners provides the final result. Thus, an unfortunate loser in the early heat may not fly again though he may be able to beat all except the one that beat him.

While this has helped to encourage many by allowing the " big name " boys to eliminate themselves and thus give the beginners a good chance of a win, the points system adopted at the Plymouth International Contests allows several flights per model and probably a more enjoyable day's flying.



MAKING AN ACCURATE T. R. TANK



This snappy start must have caused a few wrinkles in the centre of the circle ! Taken at the Australian National Model meeting, held at Surrey Park, Melbourne, each of the three models represent an Australian State. The open cockpit model which is lowest in the take-off stage is the New South Wales entry and the eventual winner.

American Points System

Race	1st Place	2nd Place	3rd Place	4th Place
½ mile dash	15 pts.	10 pts.	5 pts.	2 pts.
1½ mile dash ...	20 pts.	15 pts.	10 pts.	5 pts.
5 mile consolation ...	30 pts.	20 pts.	15 pts.	10 pts.
10 mile feature ...	50 pts.	40 pts.	30 pts.	20 pts.

in addition, up to 20 points are given for appearance.

The half-mile dash is open to all models and is run in heats of 2, 3, or 4 models.

The 1½ mile dash is open to all models and is run in heats of 2, 3, or 4 models.

The 5 mile consolation race is open to the 4, 5 or 6 highest point winners, who do not compete in the feature race.

The 10 mile feature race is for the six highest point winners of the two dash races.

Team Race Championship League.

A similar scheme to promote greater and longer team race meetings is suggested in the following guidance to S.M.A.E. areas by the advisory control line sub-committee.

When enthusiasm for this comparative new branch modelling achieves the popularity expected of it, these League meets should be the most exciting control line affairs yet held.

(1) Each area may organise a league for clubs within that area.
(2) Any club may join the league within its area.
(3) Each participating club shall be represented by a team consisting of two Class A models and two Class B models.

(4) Each club shall have two matches with each of the other clubs forming the league, i.e., one home match and one away match.

(5) A match shall consist of two races, one for Class A models, the other for Class B models.

(6) Each race shall be over a distance of 10 miles.

(7) Points will be awarded for each race as follows :

1st	...	...	...	5 points
2nd	...	...	...	3 points
3rd	...	...	...	1 point

(8) An umpire from a neutral club shall also act as starter. His decisions shall be final.

(9) Each club shall provide two persons at matches to count the opposing teams' laps.

(10) A reserve team can be in attendance if required, but no change of teams may occur after the start of a race.

(11) If a club fails to produce a team, a win (16 points) shall be awarded to the opposing team, providing a full complement of models can be produced.

(12) The general Team Racing Rules shall apply where relevent.

Take it from there aeromodellers, a new form of control-line flying already proven in the field as the successor to speed and stunt, and one in which everyone, whether amateur or reputed professional, can have an even chance of winning. In its first year in Britain, it has evoked interest from the most vociferous critics of control-line flying, why not get together and have a go at the big boys at your next meeting ?

A most important feature in the administration of any team race is the tank check. Accurate 30 c.c. measures should be used, and must also be operated by persons up to date with latest ideas on how to dodge the 30 c.c. check. Few modellers had more than the maximum during 1950 checks; most were well under the allowed capacity and averaged 28 c.c.

Age Høst-Aris—oldest Danish aeromodeller at ripe old age of 59 !—has been in Danish National team since 1946. He is seen here with his latest A2 Høst 29. DT fuse is placed in a metal channel located on fuselage just behind the wing.

DEVELOPMENT OF THE NORDIC A 2 SAILPLANE

By ING. PER WEISHAUPT,

Chief Instructor of the Danish Model Flying Union.

THE A 2 or Nordic sailplane class was proposed in 1944 and adopted from 1946 in the general model rules of Denmark, Finland, Norway and Sweden as a contest class for sailplanes on the lines of the Wakefield class for rubber-driven models, i.e., a model of a certain size within narrow limits, so that a fair comparison is possible. The class has been used and developed in the annual Nordic A 2 contests as well as in national contests, and in 1949 the possibility of making it an international class was discussed. Some people seemed to prefer a larger size, but now most agree that the A 2 class is large enough for good performance and not too large for transport.

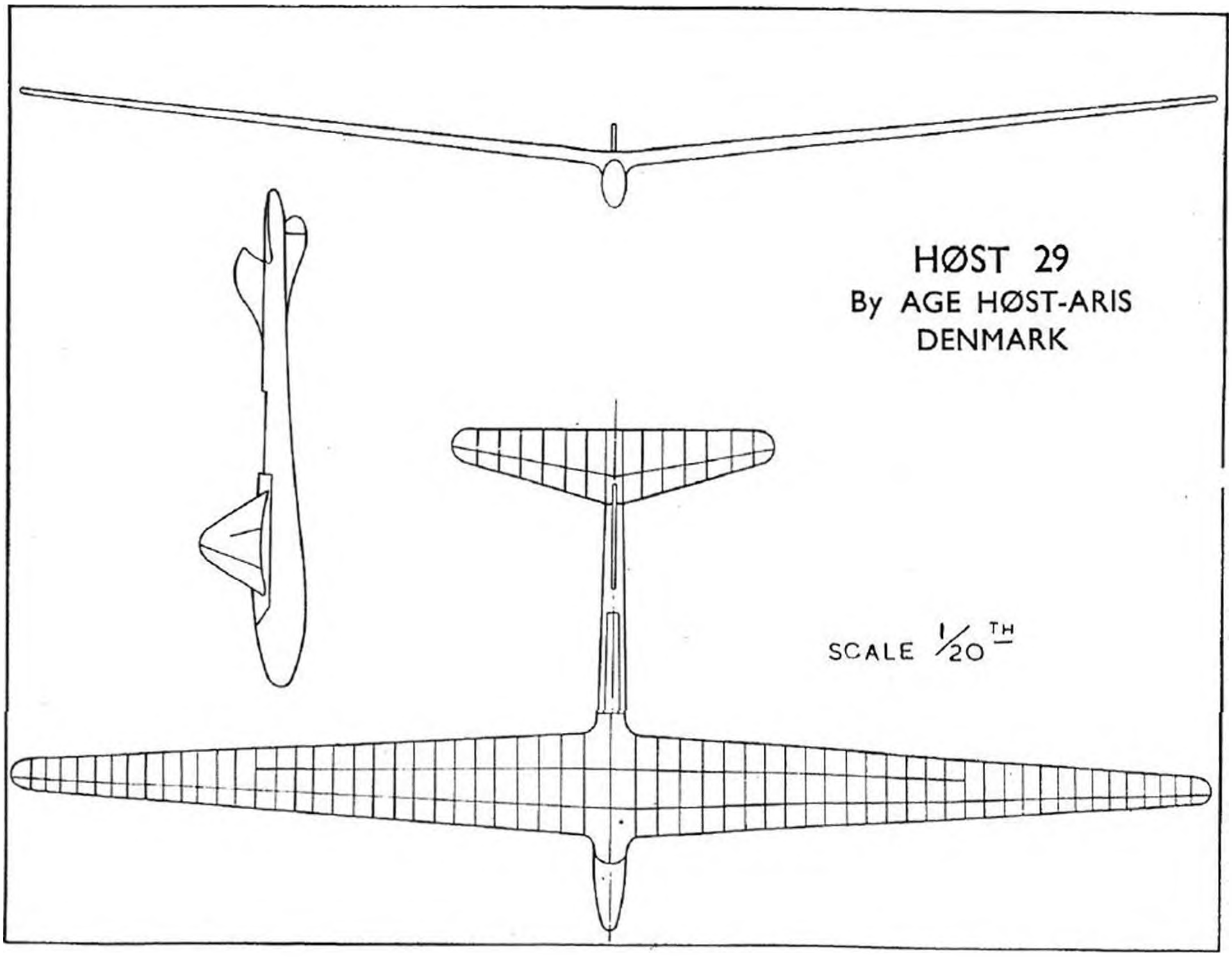
Because of the 50th anniversary of the Royal Swedish Aeroclub in 1950 the scope of the Nordic contest at Trollhättan in Sweden was widened to be international, and meantime the FAI Model Commission resolved from 1951 on to arrange world championships with the A 2 class.

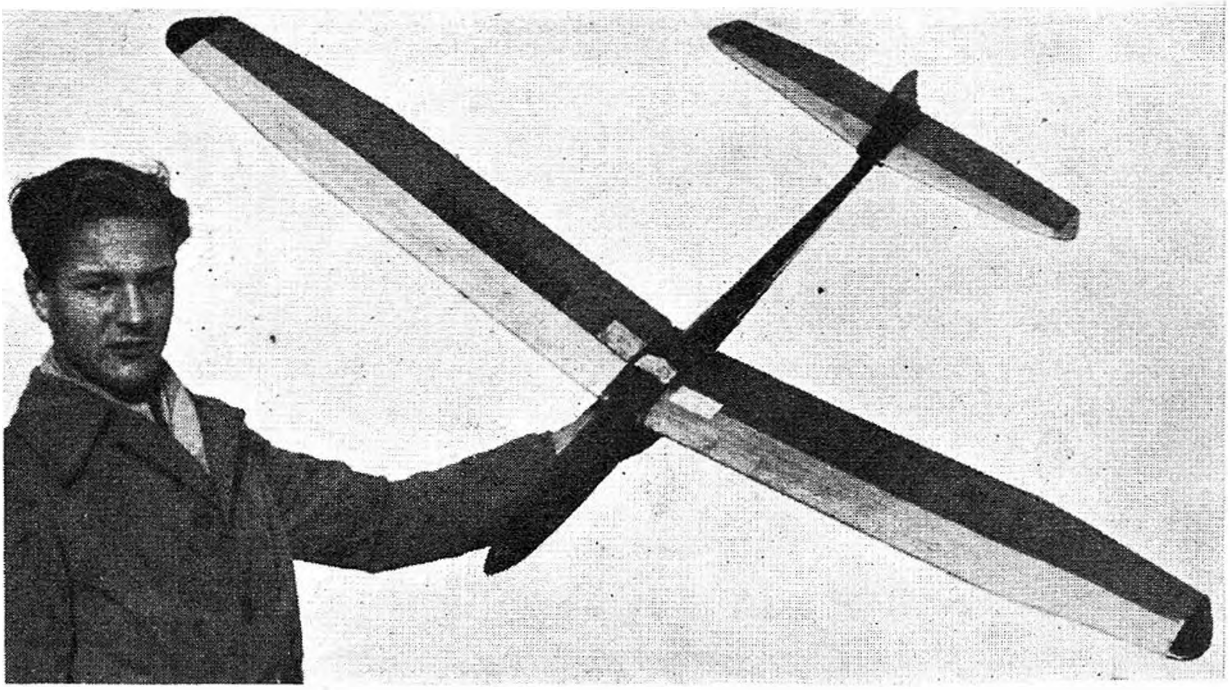
The Trollhättan meeting was the first occasion to compare the Nordic models with A 2 models of other nations, and so it was anticipated with great interest. Now, what was the lesson of Trollhättan? Well, the first lesson was the well-known fact that such a contest should not be flown in the middle of the day with strong thermals. Even the 6 (or 5) minute rule and use of dethermalisers could not prevent the up- and down-currents playing too big a role. Quite a number of the competitors had two maximum flights, so their worst flight was the decider. This would not have been too bad, had not the up- or rather down-currents—decided the duration of this too.

So—without detracting from the good performances of Bernfest, Odenmann, Hansen and the other top fellows—let us withhold individual results from consideration. There was, however, a team contest also going on, if only between the Nordic countries. According to the rules the team result is the aggregate result of the three best of the four-man team. Let us compare the team results not only of the Nordic, but also of the other participating nations :

Sweden	2,504 seconds
Finland	2,171 ,,
Denmark	2,131 ,,
Norway	1,964 ,,
Yugoslavia	1,754 ,,
Great Britain	1,703 ,,
Switzerland	1,327 ,,

This shows the four Nordic countries to be well in front of the others, which is only natural, as they have developed the A 2 model for about four years, while the others had not had a full year. It was also evident in Trollhättan (where performance itself was too much influenced by thermals to be judged) that the models of the Nordic participants generally were better launched than those of other nations (although there were good people there, too).





B.v.d. Horst with his Dutch A2 sailplane Plover, one of this season's outstanding designs in their national contests Unfortunately there were no entries in the A2 International Contest from Holland, so that its European status is still to be determined.

Considerations arising from the Rules

Now, how can you prepare yourself to be successful in international A 2 contests? First study the rules, both for the model and for the contest. The A 2 rules for 1951 are quite simple :

Total wing area	32—34 dm^2	(495—526 sq. ins.)
Minimum weight	410 grams	(14.46 ozs.)
Fuselage cross-section at least	34 $cm.^2$	(5.26 sq. ins.)

Note the slight modification to the fuselage rule. Until now it was total wing area divided by 100. Now at least 34 cm^2; that is, maximum permitted total wing area divided by 100. In practice, this is no change, only it puts the cross-section, like the weight, at a fixed size, which is simpler to control at a contest, as you need not figure out the allowed minimum. Every A 2 model fulfils the general FAI glider rules and can be used for records or for any FAI glider contest.

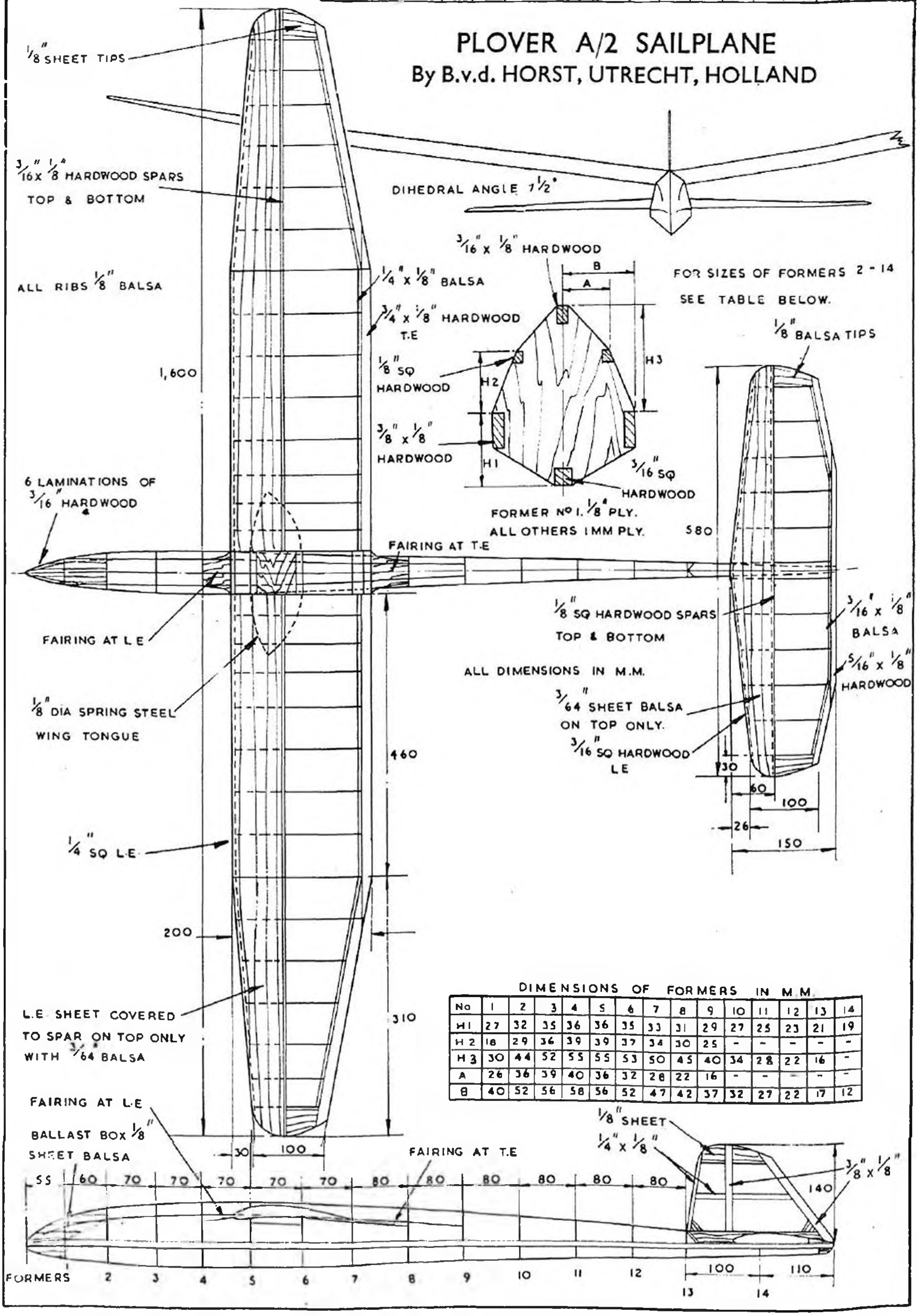
The contest rules call for three flights with a maximum of 5 minutes each. You are allowed to bring and use *two* models, which you may use as and when you like and interchange freely. Launching is done with a 100 metres (328 feet) line, which must be rewound after each start.

Now we can have two models. Shall these be two identical models or different? Two identical models are, of course, a very practical proposition, as it makes construction easier and cheaper in time and money, and as it allows a free interchange of parts. But weather is very varied at contests. You may have to fly on calm evenings or nights, in strong thermals, in heavy winds and even rain. So instead of building two identical models of medium performance and suited for any kind of weather you might construct one model best suited for calm weather (CWM) and another one best suited for rough weather (RWM). Using

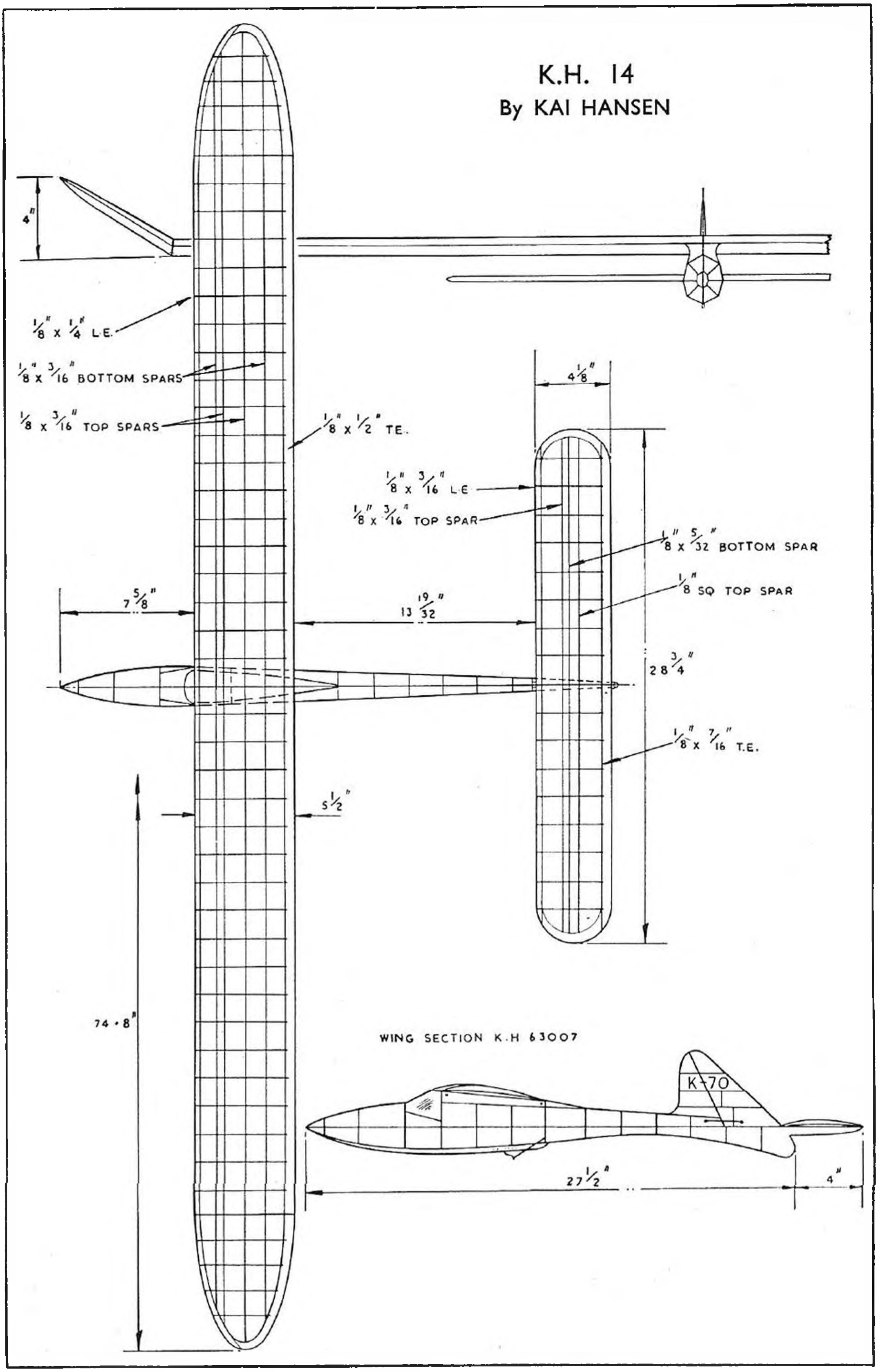
ORDINATES OF WING SECTION (D 3)																	
STATION	0	1.25	2.5	5	7.5	10	15	20	30	40	50	60	70	80	90	95	100
UPPER	1.12	3,00	3.95	5,43	6,58	7.50	8,83	9.67	10,5	10,2	9,25	7.83	6.12	4,25	2.30	1,30	0,30
LOWER	1,12	0,05	0,00	0.17	0,40	0,67	1,20	1.58	2.17	2.55	2.55	2,27	1.87	1,30	0,67	0,37	0,00
ORDINATES OF T/PLANE SECTION (0·7 D 2 V)																	
UPPER	1,09	2,63	3,43	4,59	5,43	6,13	7,11	7,77	8.09	8,23	7,98	7,18	6,20	4,50	3.00	1,35	0,30
LOWER	1,09	0.35	0.18	0,04	0.00	0,00	0,00	0.00	0,00	0.00	0,00	0,00	0.00	0,00	0,00	0,00	0.00

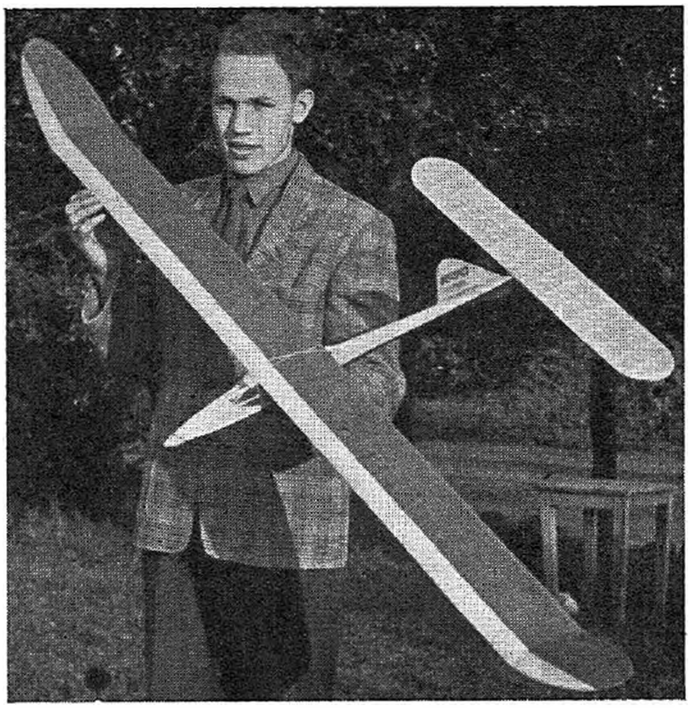
PLOVER A/2 SAILPLANE

By B.v.d. HORST, UTRECHT, HOLLAND



DIMENSIONS OF FORMERS IN M.M.														
No	1	2	3	4	5	6	7	8	9	10	11	12	13	14
H1	27	32	35	36	36	35	33	31	29	27	25	23	21	19
H2	18	29	36	39	39	37	34	30	25	-	-	-	-	-
H3	30	44	52	55	55	53	50	45	40	34	28	22	16	-
A	26	36	39	40	36	32	28	22	16	-	-	-	-	-
B	40	52	56	58	56	52	47	42	37	32	27	22	17	12


K.H. 14
By KAI HANSEN
4"
1/8" x 1/4" L.E.
1/8" x 3/16" BOTTOM SPARS
1/8 x 3/16" TOP SPARS
1/8" x 1/2" T.E.
4 1/8"
1/8" x 3/16" L.E.
1/8" x 3/16" TOP SPAR
1/8" x 5/32" BOTTOM SPAR
1/8" SQ TOP SPAR
7 5/8"
13 19/32"
28 3/4"
1/8" x 7/16" T.E.
5 1/2"
74 · 8"
WING SECTION K.H 63007
K-70
27 1/2"
4"



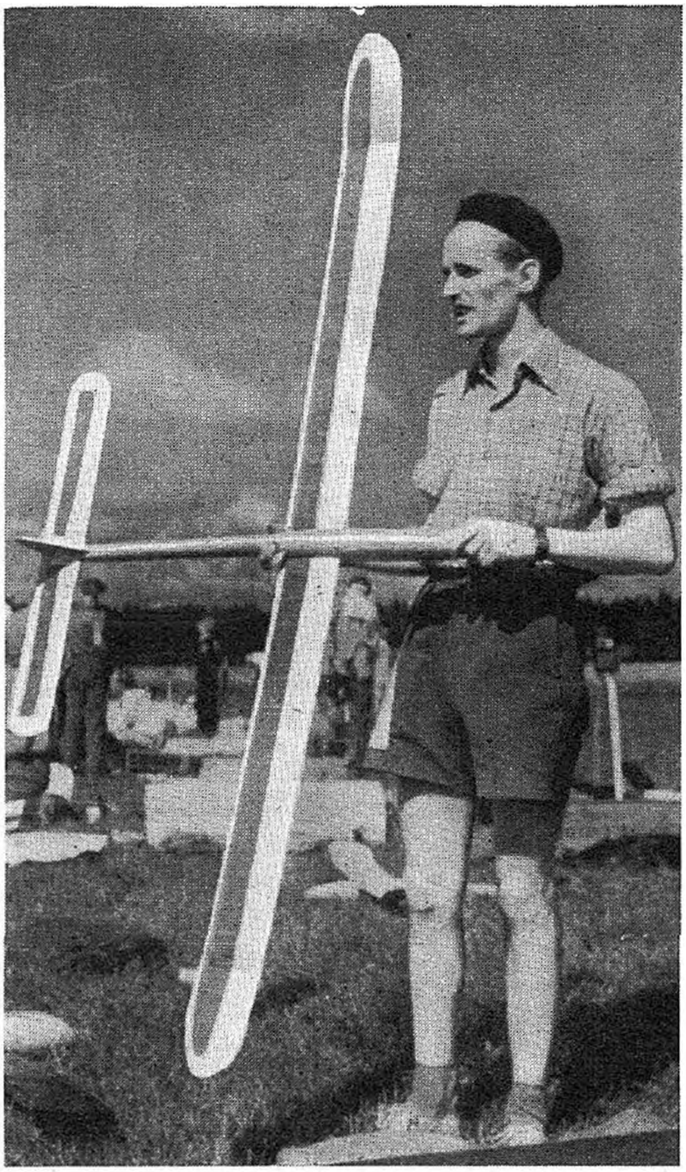
Kai Hansen, of Denmark, with his KH-14 sailplane which did well in the Danish Nationals. The Hansens, by the way, are not related !

an effective dethermaliser you need not reckon on flying models away in thermals. But a model may be impossible to find even if it does not land far away—which happened to some models at the Wakefields in Finland. They landed in the first round only a few hundred yards away, but could not be found in the woods; surely a good argument for allowing a reserve model, which is now permitted for 1951 international contests.

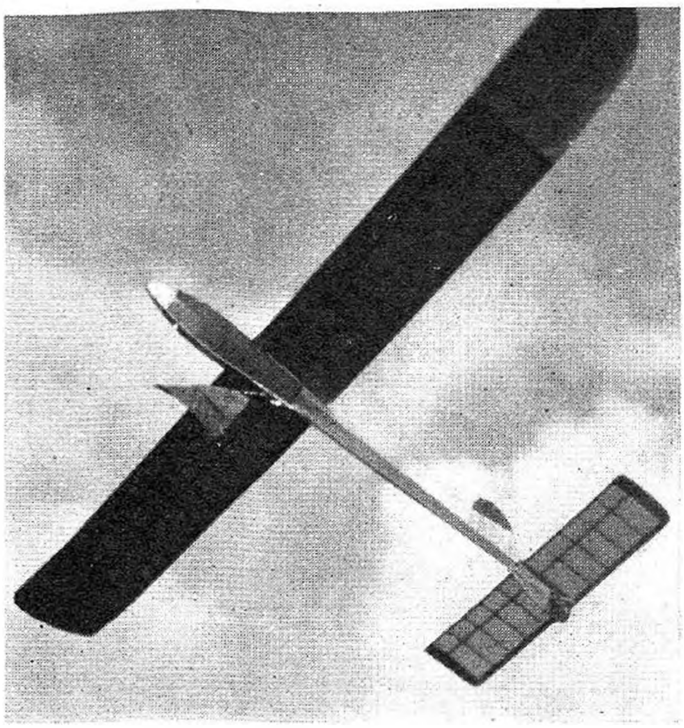
Also a model may crash beyond repair. So the other model must not be so specialised that it cannot be used as a reserve even in weather quite different from that for which it was designed.

Aerodynamic Design

The aerodynamic layout of the model is based upon the design rules and knowledge of aerodynamics and stability. The principal idea is to design models which can utilise as much as possible of the launching cable to get a good initial height and then fly with as little sinking velocity as possible. For the CWM the choice of aerofoil sections and their angles of attack is very important. The model may be trimmed for optimum performance and need not be too stable. The RWM, however, must be stable



Kurt Sandberg, of Sweden, with the A2 which he flew into seventh place at Trollhattan.



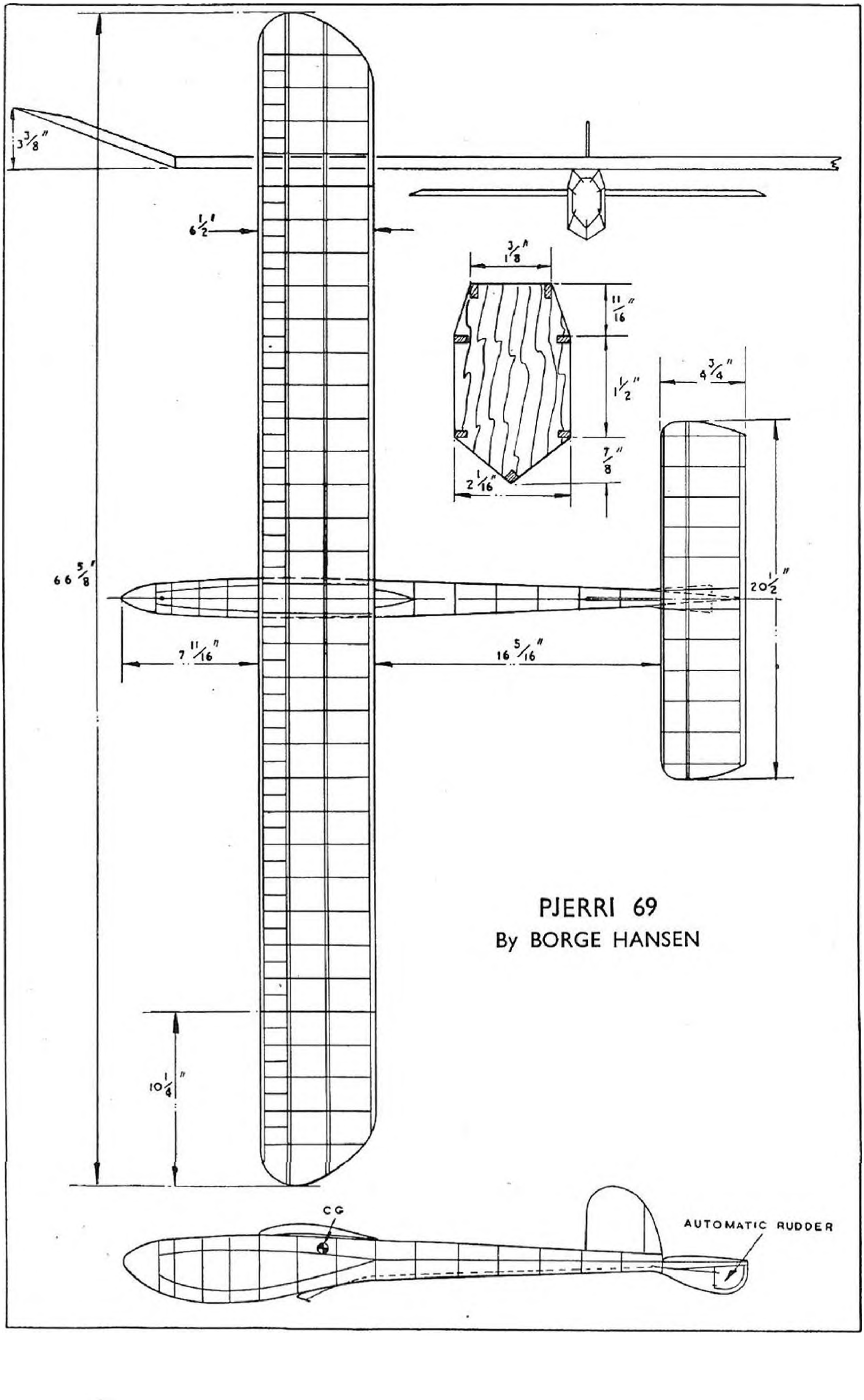
Borge Hansen's Pjerri 69 being launched. Note the popular forward tailplane, seen also in the KH-14.

Below: Another picture of Age Høst-Aris with his Høst 24 sailplane which took eleventh place in the Swedish International Meeting.

enough to maintain a controlled flight in bad weather. It cannot be trimmed too near the theoretical optimum, as it will then stall too easily and spend most of its flying time recovering at uneconomic angles of attack (if it ever will recover !).

Wing and Tailplane

Total area 32 to 34 dm^2 does not mean that you should endeavour to reach 33.999, but rather 33.0 as near as possible. Then you will get no trouble with the processing officials ; Now, how much wing and how much tailplane ? As even a lifting tail contributes little to the lift the answer must be : As much wing as possible to retain adequate stability. For the CWM this means that the tailplane may be down to about 20%



PJERRI 69
By BORGE HANSEN

Yet another of the ubiquitous Hansens' models. The AH-20 Cumulus, marketed as a plan by the Danish Model Union, designed by Arne of that ilk.

of the wing, on the RWM up to 35%, but, of course, the stability also depends upon the distance between CG and the centres of lift as well as on the aerofoil sections. The normal limits for the two types are :

RWM : wing 24.5 dm^2 (380 sq. ins.), tail 8.5 dm^2 (132 sq. ins.).
CWM : wing 27.5 dm^2 (426 sq. ins.), tail 5.5 dm^2 (85 sq. ins.).

The *plan form* of the wing is now to be decided upon. Nearly universally used is a straight wing, without sweepback, perhaps with tapered, rounded or elliptical tips. There is no reason to make a fully tapered or elliptical wing other than for the nice look of it, which makes a lot of work. Aspect ratio is normally between 8 : 1 and 14 : 1 with low a.r. on the RWM and high on the CWM.

Dihedral is an important point. You must have enough for lateral stability, but not too much, because this means less lift, and it may also make launching difficult. Too much dihedral is actually believed to be one reason for the generally poorer launching ability of some of the British and other models in comparison with the Nordic ones. Of course, the RWM must have more dihedral than the CWM. A straight wing with dihedralled tips is generally preferred, but simple dihedral works well, too.

Choice of *aerofoil section* is important, especially on the CWM. You cannot consider the wing alone, but must take the tailplane into account at the same time. The old thick round-nosed sections are out, but otherwise there are a lot to choose between. The higher the aspect ratio, the smaller the chord and the lower the Reynolds number. And so you must use a thinner and more pointed section.

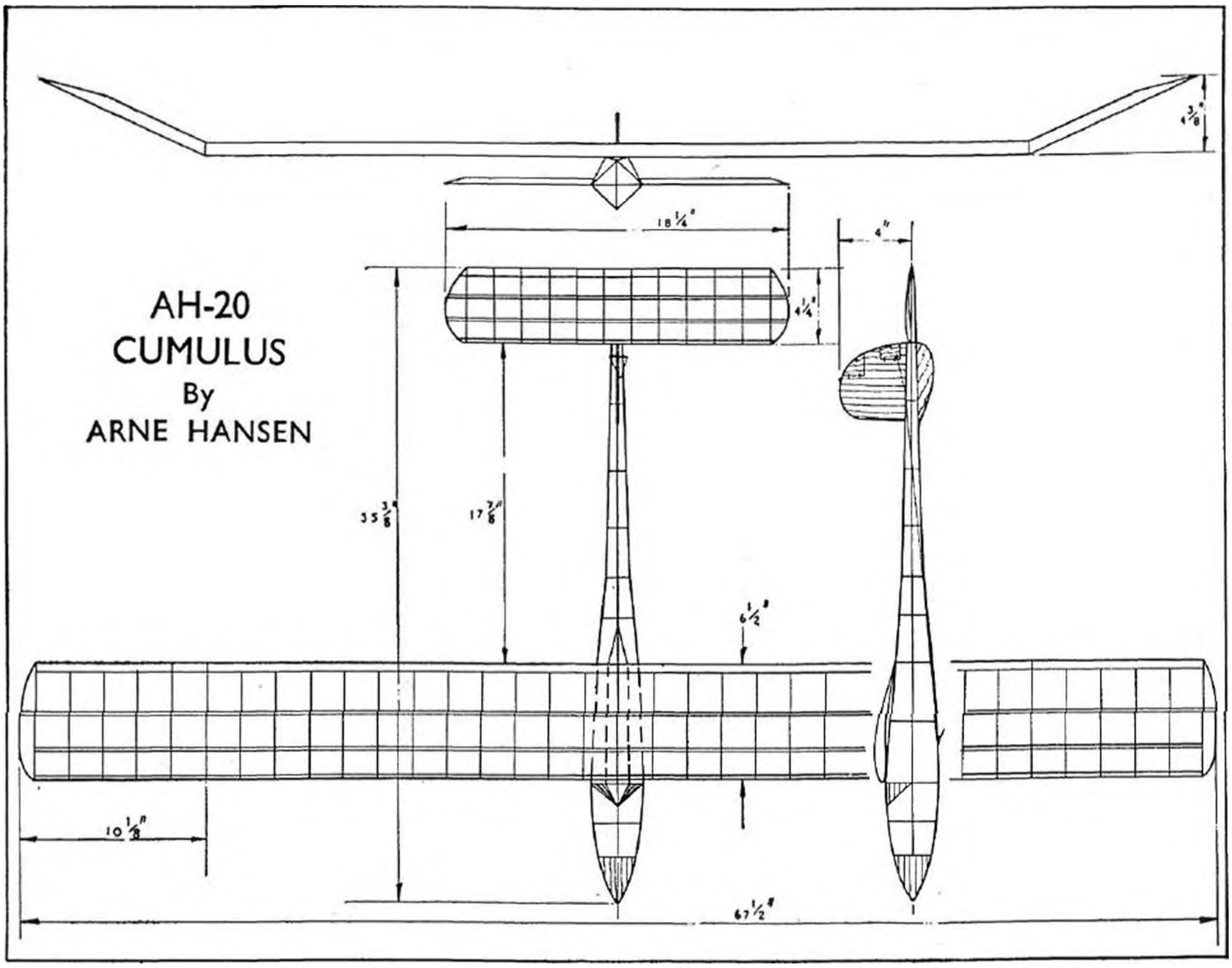
The *tailplane* section must be thinner than the wing section. The tailplane itself is designed with the same consideration as the wing, but has, of course, a much smaller aspect ratio.

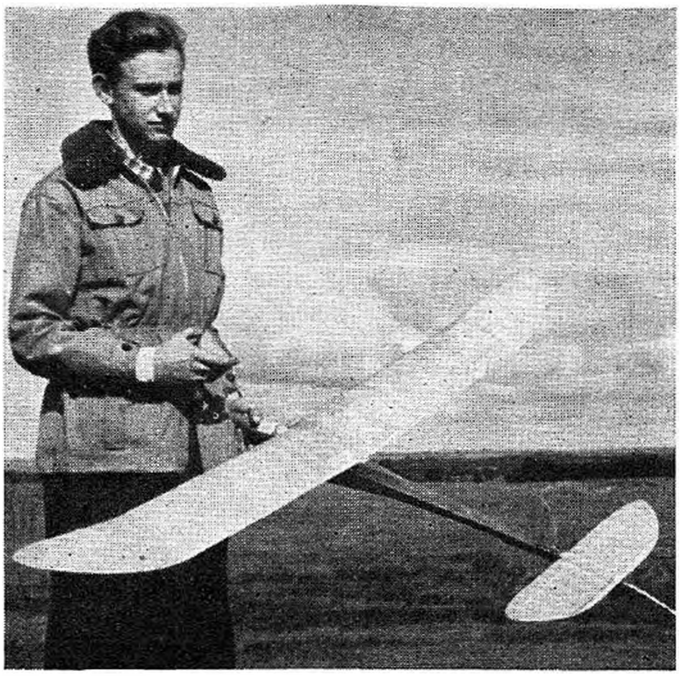
Fuselage and fin. The cross section of the fuselage is given, but do make it a little more to be sure ! Length is chosen with regard to both longitudinal and directional stability. The most difficult thing to design is the lateral area. Much has been written on this subject. Having discussed the design of the side area and fin for a good many years we have arrived at the conclusion that it is virtually impossible, using only theory, to be sure to arrive at a satisfactory result. Even in full-scale aerodynamics you often see the fin being changed on a prototype. So the only thing to do is to study successful models, adding your own experience, then design something sensible, and try it out. If it is not perfect (it seldom will be so), then enlarge or diminish the fin until you have the wanted result. It must not be difficult to launch the model straight, but in free flight it should not be too stable directionally as it will then fly too fast through thermals or fly too far away in calm weather. So it should circle and the best thing may be to have a rather stable design, which you make circle with an automatic rudder. Actually with an autorudder you are able to trim your model to fly at a greater angle of attack and so at a lower sinking speed. Also it recovers more easily from a stall. Do not use double fins, only a single one of which a part is beneath the fuselage for better towline stability.

And then a dethermaliser, preferably the tip-up-tail type, is a must !

Internal Construction

I will not use many words on the internal design of the model. The main question is balsa or hardwood. With both materials a satisfactory result can be obtained, but Nordic aeromodellers were somewhat astonished



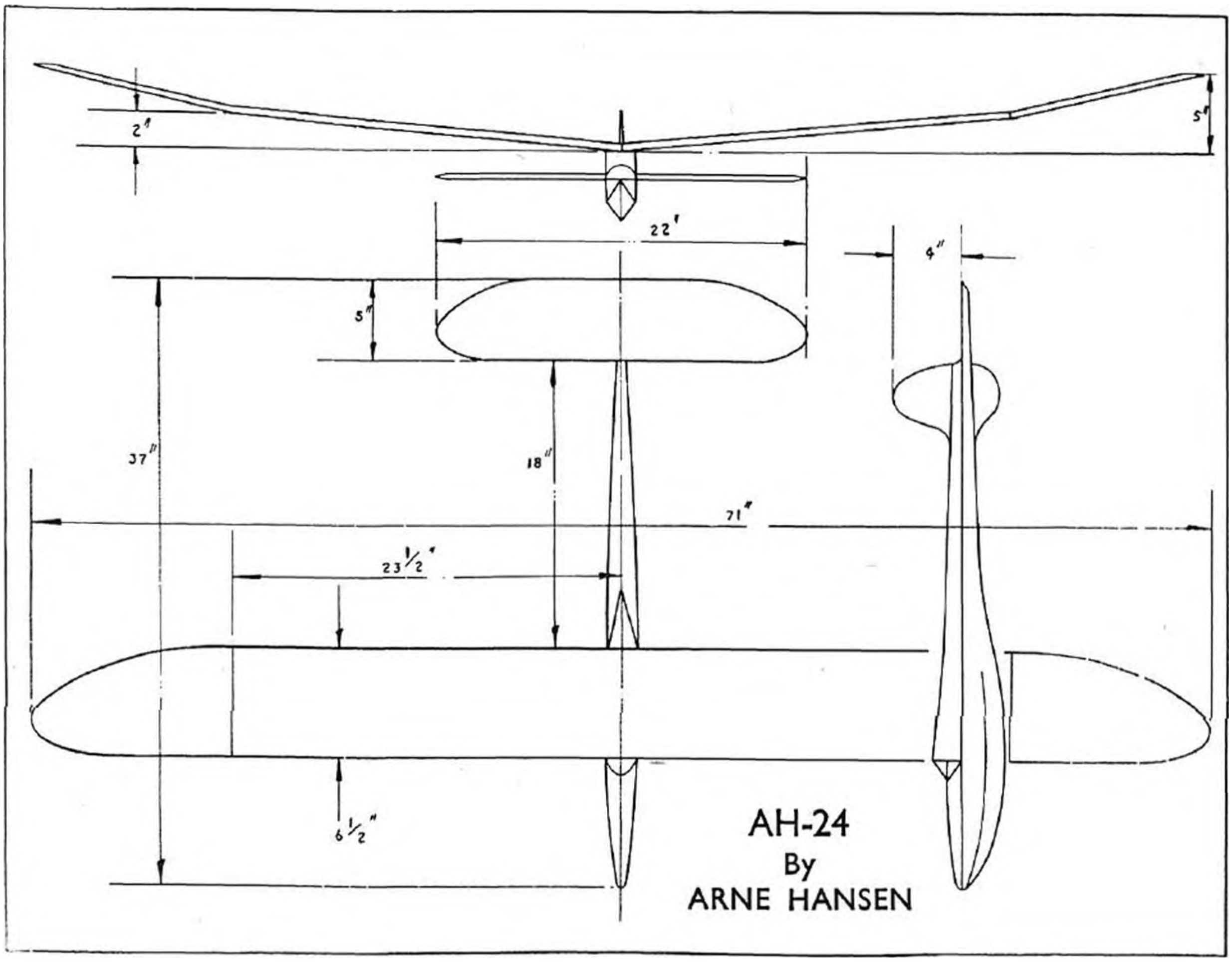


Arne Hansen with his third place winner at Trollhatten, the AH-24, plan of which appears below.

to meet all-balsa gliders at Trolhättan. This is not necessary in order to bring the weight down, as this can easily be done with hardwoods. Even if balsa can be strong enough for ordinary forces in flight, it does not stand up so well to shocks on hard landings. So we only use balsa for auxiliary purposes such as tailplane ribs, wing tips, fins, planking, etc. All spars and longerons are made of hardwood. And remember: The wing must be strong enough to withstand hard launching with a hook near the CG in high winds.

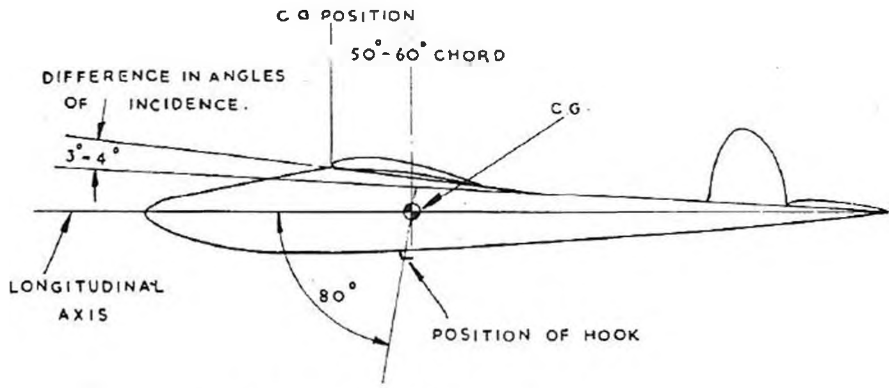
Flying

The proof of the pudding is in the eating—and the proof of the design in the flying. To be successful at a contest it is not enough to



design and construct two excellent models. This is only half the job. It is equally important to get to know these models intimately. Therefore, the model must be finished weeks, or better months, before the contest and then be flown intensively. The correct rigging of the model is most decisive and must be arrived at by knowledge and experiment. Actually sailplanes are very simple to trim compared with powered models. If you have got a reasonable model you only need to watch three points :

(1) The difference in angle of incidence of wing and tailplane;
(2) The position of the centre of gravity ;
(3) The position of the towline hook.



RIGGING OF AN A-2 MODEL.

But these points are of the utmost importance in order to obtain good results. Let us consider each of them.

(1) When I talk about the *difference in angle of incidence* it is because this is the only thing which we can measure. You may put the wing at +2 degrees and the tail at —1 degree incidence to some basis line on the fuselage, but whether the actual angles of attack to the air stream will be these or +4 and +1 respectively or anything else depends upon the CG, and you are unable to measure them. The only thing you know is that their difference in angle of attack is the same as the difference in angle of incidence (disregarding the downsweep from the wing which may influence the angle of attack of the tailplane). Some designers want to reach as big an angle of attack as possible for the main wing in order to obtain a low sinking velocity. This is right theoretically, but it seldom works in practice. Even for calm weather Nordic experts seldom use more than 4 degrees difference.

(2) The *position of the CG* governs the actual angle of attack. Of course, it should be as far back as possible, but you cannot expect even a lifting tail to give much lift, as it must fly under a low angle of attack to be useful as a stabiliser, which is its most important function. The CG is seldom farther aft than 50 to 60% of the mainplane chord from the leading edge.

(3) The *towline hook*, too, must be as far backwards as possible in relation to the CG. Several English designs have the hook too far forward to obtain good heights on the line. The angle between the longitudinal axis and a line between CG and hook should be about 80 degrees. The model must be directionally stable enough to allow this. As you know, the position of neither the CG nor the hook in advance, use a hook the

DESIGN DATA OF 10 NORDIC A2 MODELS (9 DANISH, 1 FINNISH)

TYPE	DESIGNER	YEAR	MAIN-PLANE AREA DM²/SQ INS.	SPAN MM/INS	ASPECT RATIO	AEROFOIL SECTION	TAIL PLANE AREA DM²/SQ INS	SPAN MM./INS	ASPECT RATIO	AEROFOIL SECTION	% OF MAIN-PLANE AREA	OVERALL LENGTH MM/INS	FUSELAGE SECTION DM²/SQ INS	WEIGHT GRAMS/OZS.	TOTAL AREA DM²/SQ. INS.	REMARKS
SUOMI	MOGENS ERDRUP	46	25.0 389	1400 55.0	7.8	GO 450	8.0 124	590 23.3	4.3	SI 52507	32	1000 39.5	0.39 6.0	410 14.5	33.0 510	STANDARD DANISH A2 MODEL SINCE 1947. 1951 PLAN WILL HAVE AR AND DT. PLAN ISSUED BY ROYAL DANISH AEROCLUB.
VASAMA 7	E. TORO-PAINEN (FINLAND)	47	25.1 390	1800 71.0	12.8		5.0 78	500 19.7	5.0		20	800 31.5	0.22 3.4	405 14.3	30.1 467	INDIVIDUAL WINNER NORDIC CONTEST, 1947
CALLE 10	C. J. PETER-SEN	48	25.0 389	1410 55.5	8.0	CALLE 33810	8.0 124	560 22.1	3.9	CALLE 43208	32	850 33.5	0.32 4.9		33.0 510	PLAN OBTAINABLE.
JAL-52	J. A. LAU-RIDSEN	49	25.9 401	2002 78.8	14.5		7.3 104	730 28.8	8.2		22.5	800 31.5	0.45 6.5	420 14.8	33.2 514	INDIVIDUAL WINNER NORDIC CONTEST, 1949. (AEROMODELLER ANNUAL, 1949, PAGE 61) BUT NOT BUILT IN BALSA
AH-20 CUMULUS	ARNE HANSEN	49	28.3 439	1720 67.6	10.5	OWN	5.5 85	490 19.3	4.3	OWN	19.5	900 35.4	0.34 5.25	450 15.9	33.8 526	PLAN OBTAINABLE. AR.
HØST-24	ÅGE HØST-ÅRIS	49	27.8 431	1880 74.0	12.2	OWN	5.85 91	610 24.0	6.4	OWN	21	970 38.1	0.40 6.15	415 14.6	33.6 523	MODEL USED BY HOST-ARIS AT TROLLHATTAN. AR, DT (PNEUMATIC).
HØST-29	ÅGE HØST-ÅRIS	50	28.0 435	2270 89.0	18.3	OWN	5.9 92	610 24.0	6.3	OWN	21	950 37.4	0.38 5.85	470 16.6	33.9 525	LATEST DESIGN. AR, DT (FUSE)
PJERRI 69	BORGE HANSEN	50	27.3 424	1660 65.3	10.1	OWN	6.2 96	520 20.5	4.2	OWN	22.7	900 35.4	0.34 5.24		33.5 521	SECOND AT DANISH CHAMPIONSHIP, 1950, IN SPITE OF ONLY TWO FLIGHTS! PERHAPS BEST DANISH MODEL IN 1950 IN SPITE OF BAD LUCK AT SOME CONTESTS. AR, DT (FUSE)
KH-14	KAI HANSEN	50	25.5 395	1900 74.9	14.2	KH 63007	7.6 117	730 28.8	7.0	OWN	29.6	815 32.1	0.35 5.4	420 14.8	33.0 510	RESERVE FOR DANISH TROLLHOTTAN TEAM AR.
AH-24	ARNE HANSEN	50	26.9 419	1810 71.2	12.1		6.2 95	560 22.0	5.0		23.0	930 36.6	0.362 5.58		33.1 512	THIRD AT TROLLHATTAN. AR, DT (FUSE).

AR — AUTORUDDER
DT — DETHERMALISER

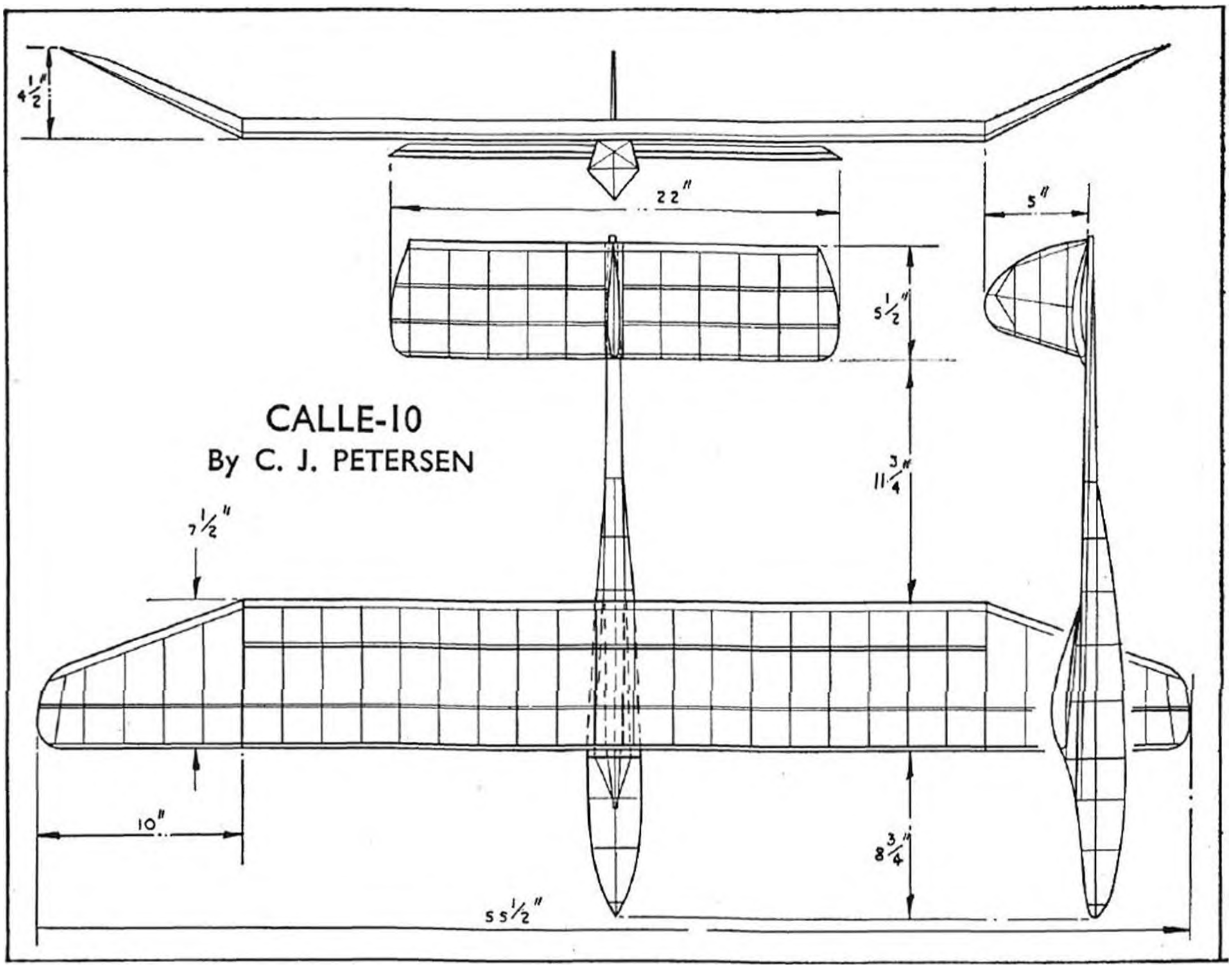
position of which can be varied, until you have found the optimum position (which is the same for every kind of wind and weather).

By varying these three factors on an otherwise soundly designed and carefully constructed model you will—with patience and intelligence—be able to get good results.

It is neither possible nor wise to give you too many figures for the design of your model. History shows that almost anything will fly if flown by a clever aeromodeller. But do study some of the successful designs illustrated in this article as well as in the design table.

And now we are looking forward to a stiffer competition at the next A2 contests. May the best man and the best model win—not the weather!

Another A2 sailplane on the towline—this time typical of the British trend, as opposed to the Scandinavian style.



TREND IN RUBBER

By C. S. Rushbrooke

Rubber as a material is a most amazing commodity, its most useful property being the ability to be stretched and knocked about and still return to its original shape with no loss of strength. The phase of aeromodelling which embodies the rubber-driven model can be likened to this remarkable substance from which its motive power is derived.

It is not so many years ago that the rubber-driven model was the only type known, as it was not until 1938 that much interest was taken in Great Britain in Glider models, and few indeed were those lucky enough to possess engines with which to power the apple of every aeromodeller's eye—a power model!

The advent of World War II brought about a great shortage of the essential materials used in the construction of rubber-driven models, the chief of these being the motive power itself. Modellers hoarded what strip they had and many were the old and battered motors resuscitated from the " bits box " in an effort to prolong the flying hours of a favourite model. It was undoubtedly this shortage of rubber which brought about a great stimulus in the model glider field, and gliding advanced in this country during the war years at a rate that would never have been matched under normal peace-time progress.

With the cessation of hostilities and the ability of manufacturers to produce at least a certain amount for the home market, the miniature engine (particularly the diesel) swept the field, and for a time at least ninety per cent of the British aeromodelling movement went power crazy.

These two factors produced a decline in the popularity of the rubber-driven models, and there was in fact a short period when it was difficult to obtain a worthwhile entry in a rubber-driven competition. Naturally, the small band of enthusiastic specialists still maintained their undying interest in this type of model, but they were indeed few and far between.

This past twelve months, however, have seen a gradual, but steadily increasing swing over in favour of the rubber-powered model, and in particular the Wakefield class of machine. The International Wakefield Contest has, of course, always been the goal of the rubber model enthusiast, and it is unquestioned that Chesterton's success in America in 1948 did a great deal to elevate the neglected rubber model to its old standard of importance. This swing over was confirmed in 1949, at Cranfield, where modellers from nineteen countries battled it out for top honours under conditions which were anything but conducive to good flying, and Aarne Elila's win on that occasion gave a further boost to the Wakefield model competition in this country.

As is only natural, the prospects of a paid trip abroad as a member of the 1950 British team proved a great incentive, and in spite of the fact that preliminary qualifying contests had been increased from one in 1949 to two in 1950 (in addition to the final selection Trials) the average entry for the preliminaries was in advance of that for the previous year and competition was hotter than ever. In spite of poor weather throughout the country during both preliminary rounds, exceptionally good times were put up and competition was dead keen.

It may be considered that the Wakefield Contest and its type of machine is too specialised on which to base an opinion regarding the rubber-powered model, but fortunately I have other factors on which to base my statement that the rubber model is making a comeback, the first of these being a study of the many hundreds of club reports I receive in the course of a year. Of recent months it has been noticeable that many clubs report a falling off in interest in power flying (particularly control-lining) and a renewed interest in rubber-powered models. In addition to this I have had many interesting talks with model leaders throughout the country, having had the opportunity of meeting many of these knowledgable enthusiasts in my travels during the contest season. Here again the general opinion is that whilst gliding is holding its own, power flying is tending to ease off and the rubber-driven model is on the upgrade.

What are the reasons for this? One is given above, for there is no doubt that international competition, with its attendant chances of travel, is a big incentive to any form of sport, and the attractions of a trip to Finland in 1950 must have proved quite an incentive to a number of modellers who in the ordinary way would not give much attention to the Wakefield class of model.

I am sure, however, that there is a broader reason for this change, and in my opinion it is more closely allied with general world conditions than would appear on the surface. In many industries overtime has ceased and with it that little extra in the pay packet which made all the difference between a normal and a fairly lavish expenditure on hobbies. As is natural, the first things to feel any effects of the tightening of purse-strings are the more expensive items, and it is in this category that engines and the larger type of model (and more expensive kits) fall. Nowadays fathers think twice before buying their sons an engine, and with this general tightening in spending power the accent naturally favours the cheaper type of model.

Personally, I am pleased to see this return to a more normal approach to aeromodelling, for it is undoubtedly true that many would-be good aeromodellers have been lost to the hobby by biting off more than they could chew, *i.e.*, building power models as a first approach to the hobby. There is no doubt that the novice should commence with gliders and then graduate on to power model flying through the medium of the rubber-driven model, but it is an unfortunate fact that the average youngster's enthusiasm steers his fancy into the most advanced type of model with its attendant difficulties.

Apart from this, there is a great deal to be learned from the ordinary rubber-powered machine, and much of this knowledge can be used to good purpose when graduating on to powered models, and a fair saving in cash effected by reason of this fore-knowledge.

There is room for every type of aeromodelling in the present conception of the game, and it is good to see the rubber-driven model coming back to its old place of eminence after having suffered what has, fortunately, proved to be only a temporary eclipse.

TOWLINE TECHNIQUE

By Ing. Per Weishaupt

At the A2 meeting in Trollhättan the English participants were quite astonished of the way in which some of the Scandinavian aeromodellers got their models up on the line, releasing not much below the 328 feet. This was not only due to suitable models, but also to the launching technique and launching line. The models have their towline hook very far back, not much in front of the CG of the model. And the models are stable and strong enough to utilise this rear positioning of the hook. But let us consider the launching material, i.e., the line and the winch.

While normal thread line (fishing line) has mostly been used, two other materials have been used more and more in the Scandinavian countries for high performance. These are piano wire and nylon line.

Piano Wire is no doubt theoretically the best material. Owing to its great strength you can use a very small diameter and this, coupled with a perfect surface, that gives little drag, means that a maximum of height can be attained.

For this reason, piano wire was much used some years ago, but has since been superseded by nylon line, owing to the draw backs of the piano wire. These are :

1. A perfect winch is necessary.
2. The line must be rewinched while in the air. A parachute at the other end is necessary.

3. You cannot throw away the winch in an emergency without spoiling the wire.
4. Corrosion takes place easily.
5. It is difficult to repair.
6. Electrical conductivity makes piano wire extremely dangerous near high-tension wires.

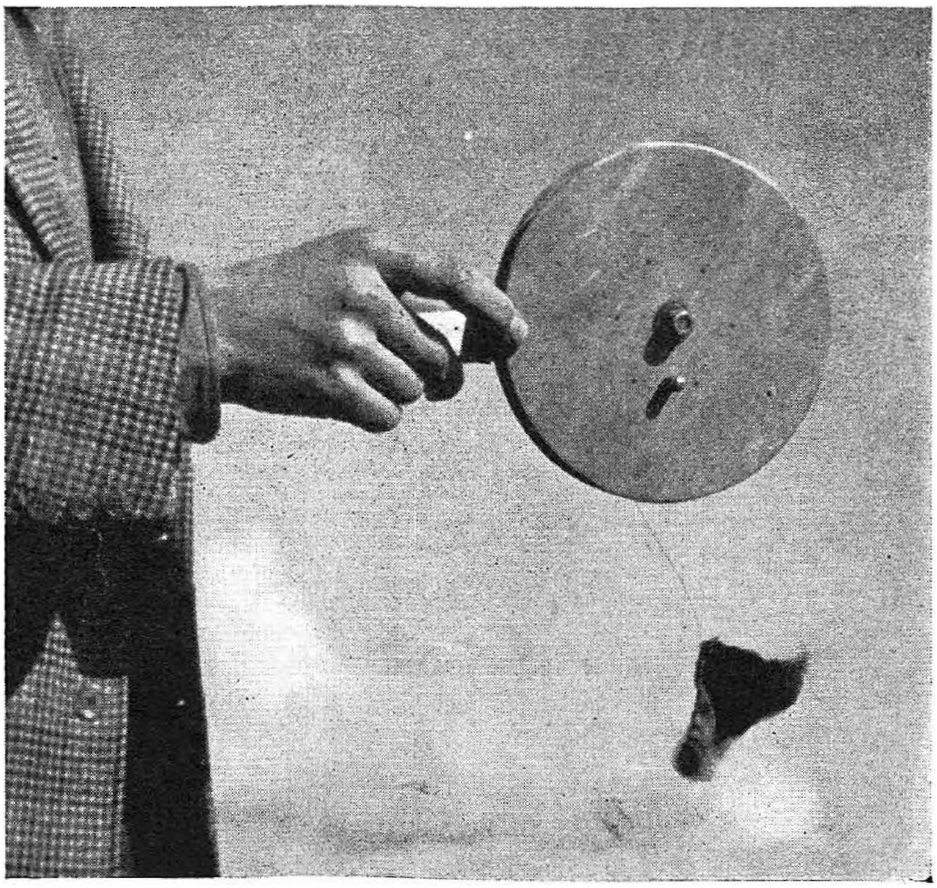
Let us consider each of these points.

1. *Winch.* You must have some kind of a winch whichever type of line you are using, because the rules demand you to rewind your line immediately after the launch, i.e., before you run away to retrieve your model. But the winch for piano wire must be perfect, so that it will never give you any trouble. Such a winch is however, rare. The entrance of the line on to the drum must always be guided so that the line cannot go outside the drum. If this should happen, nevertheless, it is worse with piano wire than with other types.

2. *Rewinding.* The winch must be able to rewind the wire before it falls to the ground. For this reason, you must employ a small parachute, two or three feet from the end of the line, which holds the line stretched out while in the air. Piano wire is strong, but only if there are no " kinks " in it.

3. *Throwing away.* In very strong winds or if something is wrong with the model, you may have to throw the whole winch into the air in order to release the model. Even if the winch is strong enough for this rude treatment, you will run the risk with piano wire of it getting tangled, because nothing keeps it stretched out. The same may happen if the wire breaks.

On opposite page: Winch with Nylon line. The pennant need not be quite so vivid—though it does help timekeepers' eyes !



On right: A simpler form of winch for Nylon line. Note the substantial handle in both examples.

4. *Corrosion.* Piano wire should not get wet, as it will corrode easily, and on the small diameter used, this may reduce the strength a good deal.

5. *Repair.* When it breaks (and it does !) piano wire is not easy to repair without a reduction in strength.

6. *Conductivity.* Of course, it is foolish with any sort of line to launch a model near electrical wires, especially high-tension wires, but it is most dangerous with piano wire. That it is no theoretical danger may be seen from the fact that at least two aeromodellers in Sweden have been killed when their piano wire fell on to high tension wires.

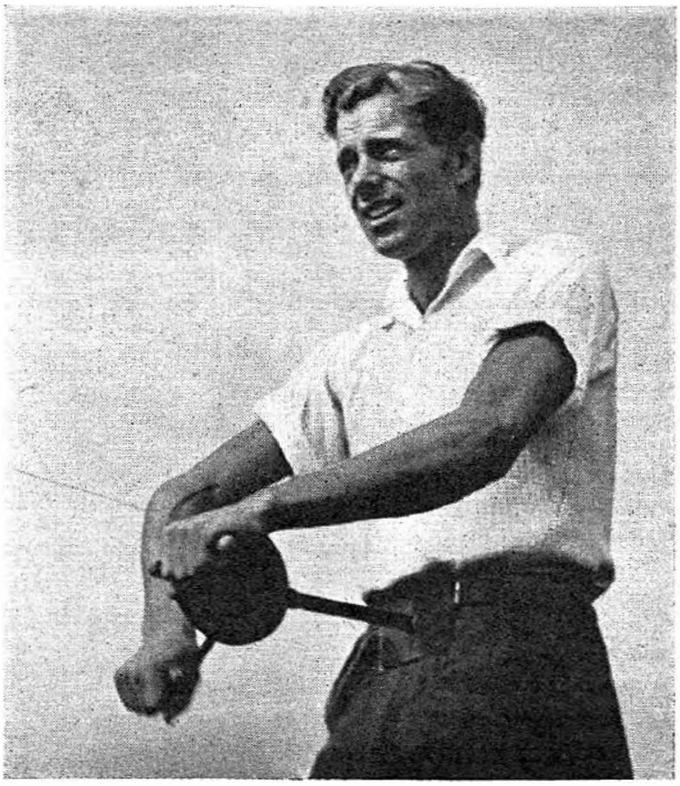
Well, if you are not frightened of all these difficulties, then get hold of a 0.2 to 0.3 mm. (36 to 30 SWG.) piano wire, a good winch and a perfect model. After some bitter experience, you will either leave piano wire in favour of something else or you will be able to get maximum releasing altitudes !

Experienced contest aeromodellers, however, have come to the conclusion that the few extra feet obtainable do not outweigh the disadvantages. They have found that a *nylon line* is nearly as good. The diameter is only slightly greater (0.4 to 0.5 mm. or 27 to 25 SWG.), so that there is not much difference either in drag or in weight. Nylon line is not so critical with regard to the winch and it is not influenced by moisture. It has one drawback, namely, its elasticity. It may stretch a good deal, and this may make the critical release of the model more difficult. However, it is only a brand-new line that is very elastic. After a few flying days, this does not matter much.

With regard to the *launching technique* itself, a few words may be said. The rules allow you a running start, a winch start, use of pulleys, etc. The simplest and most efficient start is the running start. The speed with which you can run is sufficient to attain a good height even in calm weather, provided your model is right. But it is important that you know both your model and the launching material very well. Practice, practice and even more practice is the most important "secret" of sucessful launching.

The winch is only used for rewinding the line, not to get the model up. Of course, there are lazy people preferring to stand still instead of running and there is, of course, something in favour of standing and being able to observe the model all the time. But experience shows that running is the best method.

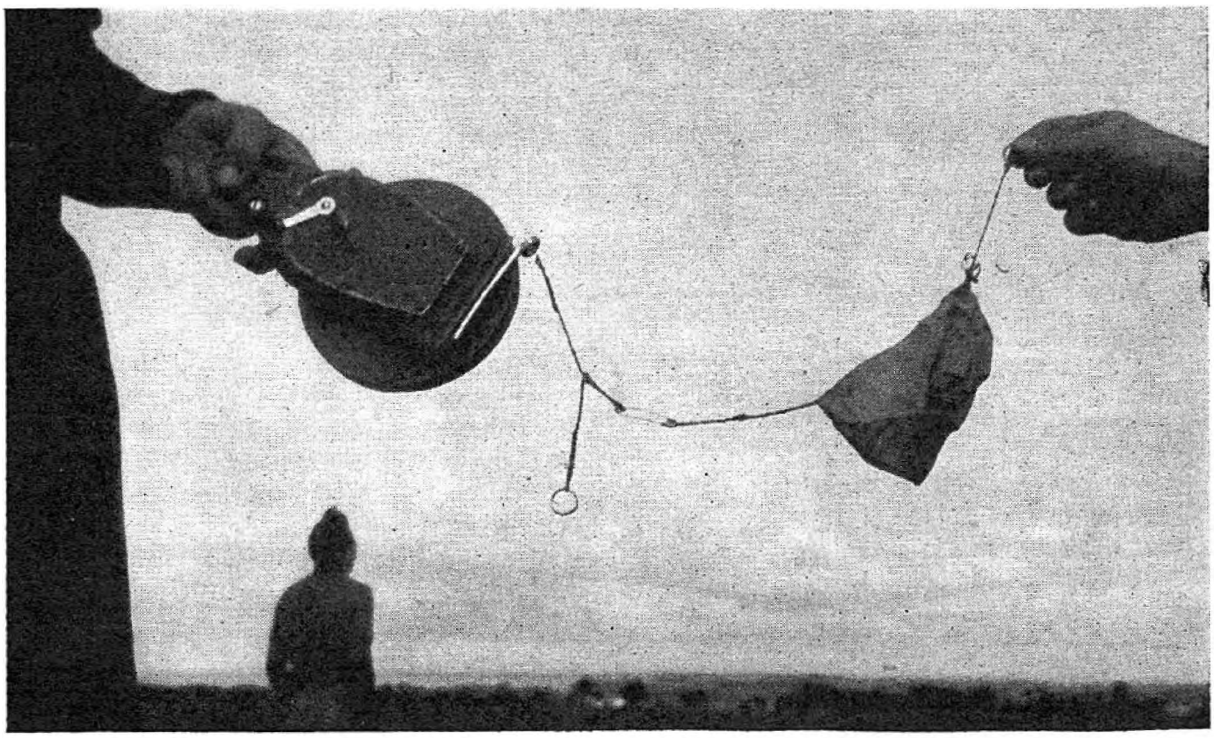
Left: Gunnar Persson, of Sweden, demonstrates launching technique. Thermals can be "felt" with wire lines ! *On right:* Another winch and Nylon line with parachute release.



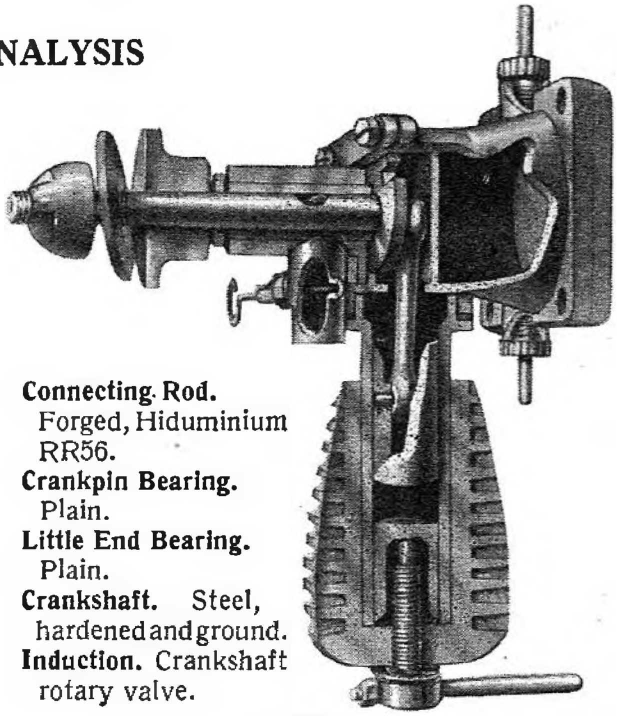
Winch launching from a static position makes it possible to watch the model all the time.

Only in very strong winds may you have to use the winch for the launch itself. This is the case when the wind is so strong, that even if you are running at full speed downwind the pressure on the model is still too high. In this case, you must begin the launch with only a few feet of line outside the winch and let the model itself pull out the line while you are running downwind. You must be able to brake the drum and use the last part of the line to help you to release. But perhaps you will have to be brutal and sling the winch suddenly upwards to get the model released In that case, it is good to have a reserve winch and a reserve line as well as a very stable model that does not lose too much height after a bad release!

But, once again, experience, trimming, is most important in order to master the launching technique of the model in all kinds of weather. The experienced aeromodeller, who exactly knows his model and its normal pull on the line, can actually feel during the launch whether the model is in a thermal or not and in some cases, he just waits for the thermal, before he releases. But you must have been doing a formidable number of towline launches to be able to judge that.



ENGINE ANALYSIS



FROG "100" MARK II.

Manufacturers. International Model Aircraft Ltd., Morden Road, Merton, London, S.W.19.

Retail Price. 48s. including Purchase Tax.

Delivery. Immediate.

Spares. Immediate.

Type. Compression Ignition.

Specified Fuel. Frog "Powa-Mix."

Bore. .375 inch.

Stroke. .55 inch.

Capacity. .99 c.c., .06 cu. in.

Weight (Bare). 3.75 ozs.

Compression Ratio. 8 : 1 to 16 : 1.

Mounting. Radial, upright, inverted, or sidewinder.

Recommended Airscrews. Free Flight, 8×5 inches; Control Line, 8×5 inches, or 8×6 inches.

Recommended Flywheel. $2\frac{1}{2}$ oz.

Cylinder. Steel, hardened, ground and honed

Cylinder Head and Fins. Aluminium alloy Die-cast, attached by 2 8BA holding-down bolts to Crankcase.

Piston and Contra Piston. Meehanite ground and lapped.

Crankcase. Aluminium alloy. Die-cast. Integral Fuel Tank.

Front End. Aluminium alloy. Die-cast attached to crankcase by four 10BA screws.

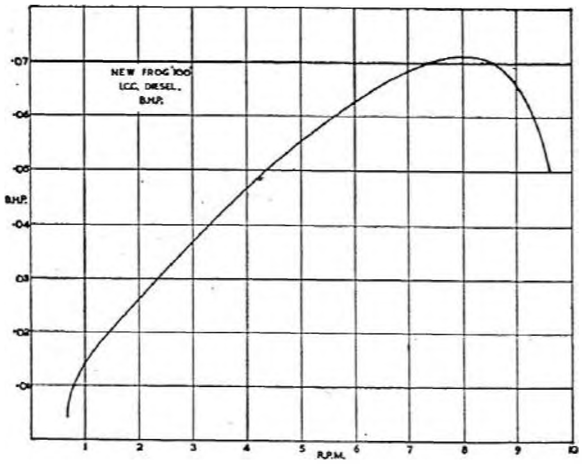
Connecting Rod. Forged, Hiduminium RR56.

Crankpin Bearing. Plain.

Little End Bearing. Plain.

Crankshaft. Steel, hardened and ground.

Induction. Crankshaft rotary valve.



TEST

Engine. Frog "100" Mk. II Diesel.

Fuel. Frog "Powa-Mix."

Starting. Extremely good under all conditions.

Running. Shows great flexibility, and ran well at all speeds between about 1,000 and 9,000 r.p.m. It was not found possible to exceed 9,600 r.p.m.

B.H.P. The curve shows a flat characteristic between 7,000 and 8,800 r.p.m., with a maximum output of .071 b.h.p. at around the 8,000 mark. (The Frog "100" engine tested in 1948 gave .0575 b.h.p. at 8,100 r.p.m.) Output declines fairly steadily down to about 1,000 r.p.m., below which a steep drop is indicated, so that at 700 r.p.m. the output is only .0094 b.h.p. At 9,600 r.p.m. the output is down to .05 b.h.p.

Checked Weight. 3.75 ozs. (with tank)—Maker's weight, 4 ozs.

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

Remarks. This new Frog engine displays all the characteristics of easy starting, flexibility, and reliability, associated with the range.

ALLBON ARROW.

Manufacturers. Allbon Engineering Co. (Sunbury) Ltd., 51A, Thames Street, Sunbury-on-Thames, Middlesex.

Retail Price. 55s.*

Delivery. Approximately 8 weeks.

Spares. Ex. Stock.

Type. Glowplug motor.

Specified Fuel. Mercury No. 5 or No. 7, or 3 parts Methanol to 1 part Castrol R.

Capacity. 1.49 c.c.

Weight. 2 ozs.

Compression Ratio. 10 : 1.

Mounting. Beam, upright or inverted.

Recommended Airscrews. Free Flight 7×3 or 7×4 ins. Control line 6×6 or 6×8 ins. Flywheel $1\frac{1}{2}$ in. diameter, $2\frac{1}{2}$ ozs. approximately.

Tank. Not fitted.

Bore. .526 in.

Stroke. .420 in.

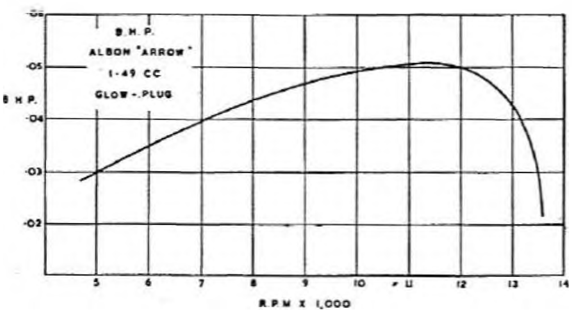
Cylinder. Meehanite. Screwed into crankcase. 6 ports, 3 exhaust, 3 transfer.

Cylinder Head. Dural. Screwed on to cylinder.

Crankcase. Aluminium Pressure die-casting.
Piston. Meehanite with Dural Gudgeon Pin Carrier. Conical top. No rings.
Connecting Road. Hiduminium R.R. 56. Forging.
Crankpin Bearing. Plain.
Crankshaft. Heat treated alloy steel, ground and polished on bearings.
Main Bearing. Plain—no bush.
Little End Bearing. Plain.
Plug. ¼×32 T.P.I., K.L.G. Short reach.
Special Features. Gudgeon being inside piston prevents scoring of cylinder bore. Pistons honed individually.

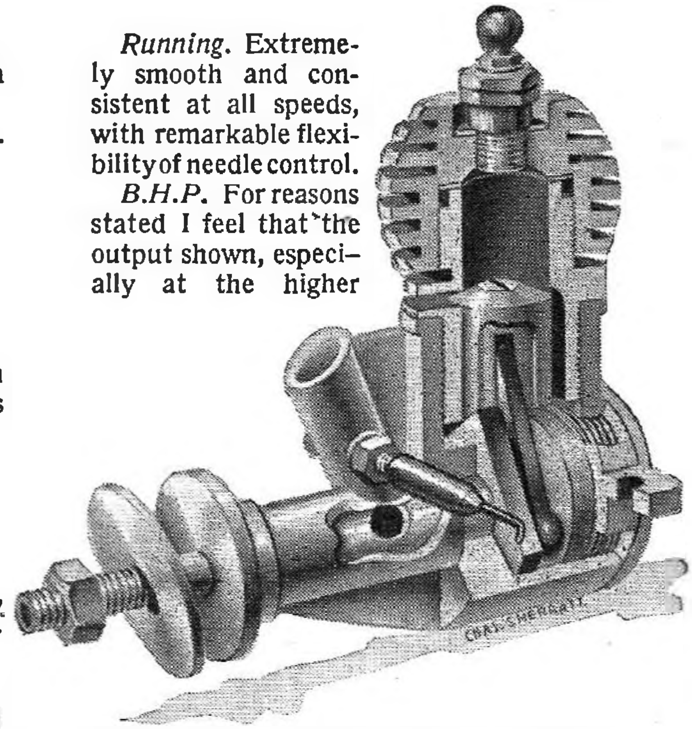
TEST

Engine. Allbon " Arrow " 1.49 c.c.
Fuel. Mercury No. 7.
Starting. Exceptional under all conditions, using both hand or cord-and-pulley methods.



Running. Extremely smooth and consistent at all speeds, with remarkable flexibility of needle control.

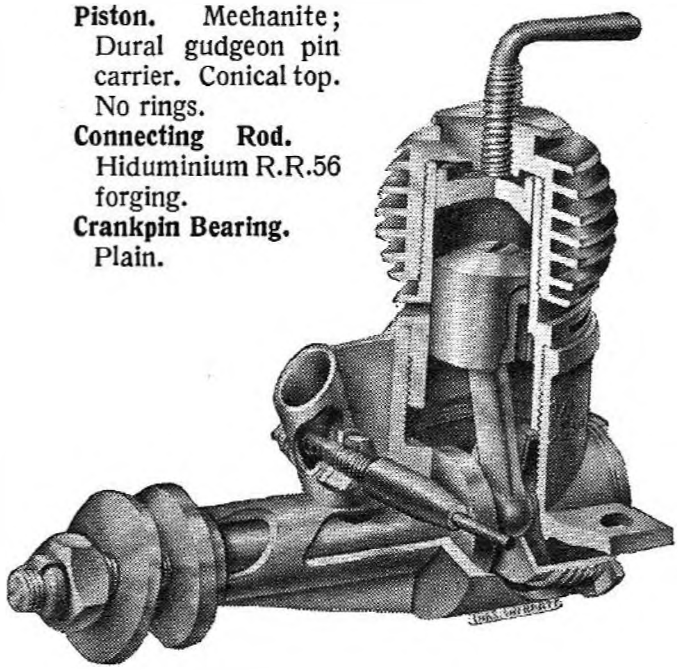
B.H.P. For reasons stated I feel that the output shown, especially at the higher



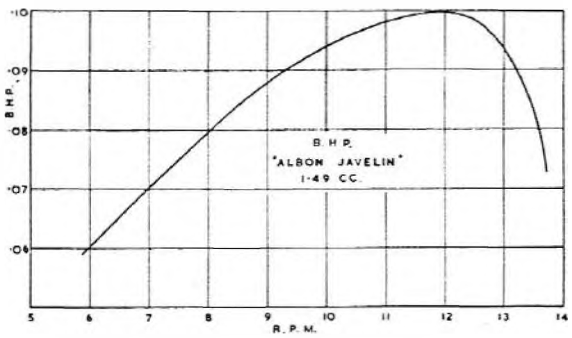
speeds, is low, as frictional losses must have been great. Above 8,000 r.p.m. readings were inclined to be inconsistent, and considerable " smoothing " of the curve was necessary above this figure. In spite of this, a maximum b.h.p. of .051 was obtained at around 11,500 r.p.m.

Checked Weight. ·2.2 ozs. less tank.
Power/Weight Ratio. .370 b.h.p. lb.

ALLBON " JAVELIN."
Manufacturers. Allbon Engineering Co. (Sunbury) Ltd., 51A, Thames Street, Sunbury-on-Thames.
Retail Price. 55s. *
Delivery. Ex stock.
Spares. Full spares and repair service available.
Type. Compression ignition (Diesel).
Specified Fuel. Mercury No. 3 and No. 8.
Capacity. 1.49 c.c., .091 cu. in.
Weight (bare). 2¼ ozs.
Compression Ratio. Adjustable.
Mounting. Beam, upright or inverted.
Recommended Airscrews. Free Flight: 9×4 ins., 8×5 ins.; Control Line Stunt: 7×6 ins.; Speed: 6×10 ins.
Flywheel. 1½ in. diam., approx. 2½ ozs. weight.
Bore. .525. in.
Stroke. .420 in.
Cylinder. Meehanite. Radial ports: 3 exhaust, 3 transfer. Cylinder screws into crankcase.
Cylinder Head. Dural. Screwed on to cylinder.
Crankcase. Aluminium alloy; adjusting screw in cylinder head.
Piston. Meehanite; Dural gudgeon pin carrier. Conical top. No rings.
Connecting Rod. Hiduminium R.R.56 forging.
Crankpin Bearing. Plain.



Crankshaft. Heat treated alloy steel, ground and polished.
Main Bearing. Plain, no bush.
Little End Bearing. Plain.



Crankshaft Valve. Rotary shaft inlet valve.
Special Features. Gudgeon pin being retained inside piston prevents scoring of cylinder bore.

TEST

Engine. Allbon, Javelin, 1.49 c.c. Diesel.

Fuel. Mercury No. 3 and Mercury Special Ether, 1-1.

Starting. Pulley-and-cord for convenience of test; experimentally hand-started from time to time. Starting excellent under all conditions.

Running. This engine was exceptionally flexible for one of this type. Ran well and evenly at all speeds from 5,000 to 14,000 r.p.m. Throttle control not extremely sensitive, and this simplified starting. When cold, engine started more easily with compressing lever set for higher compression than was required for actual best running performance. As engine warmed up the speed increased as compression was lowered to correct amount.

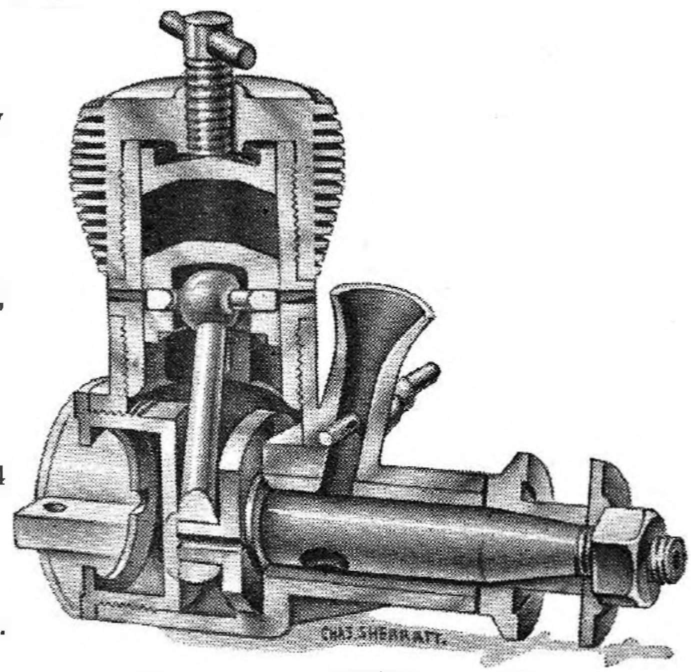
B.H.P. The maximum output seems to lie in the region of 12,000 r.p.m., but very little variation appears between 11,000 and 12,500 r.p.m.; while for all practical purposes this range could be extended to include any speed between 10,000 and 13,000, as the loss between these points is only .005 b.h.p. A maximum output of .099 b.h.p. was recorded at around 12,000 r.p.m. Power dropped steeply after the 13,000 mark, but the fall was more gradual in the lower speed ranges.

Checked Weight. 2.4 ozs. (less tank).

Power/Weight Ratio. .665 b.h.p./lb.

Remarks. Engine performed well throughout tests: in particular, speed was extremely steady in the high ranges. In view of the small power loss over a fairly large speed range this engine should make a good control line unit. Engine was run-in for 1 hour at 4,000 r.p.m.

ELFIN 1.49 c.c.
Manufacturers. Aerol Engineering, Henry Street, Edge Lane, Liverpool 13.
Retail Price. £2 19s. 6d.*
Delivery. Immediate.
Spares. Immediate.
Type. Compression Ignition.
Specified Fuel. Castor oil 1/3, paraffin 1/3, ether 1/3.
Capacity. 1.49 c.c., .091 cu. in.
Weight (bare). 2½ ozs.
Compression Ratio. 14 : 1 to 10 : 1.
Mounting. Beam, upright or inverted.
Recommended Airscrews. Free Flight, 8×4 ins.; Control Line, 7×6 ins.
Recommended Flywheel. 3 ozs.
Bore. .503 in.
Stroke. .460 in.
Cylinder. One piece, attached by 40 T.P.I. thread.
Cylinder Head. 40 T.P.I. thread.
Crankcase. Pressure die-cast.
Piston. Angular deflector, no rings.
Connecting Rod. Duralumin.
Crankpin Bearing. Plain.
Crankshaft. Nickel chrome.
Main Bearing. Cast iron.
Little End Bearing. Plain.
Crankshaft Valve. Rotary valve.
Cylinder Liner. Nickel chrome steel.

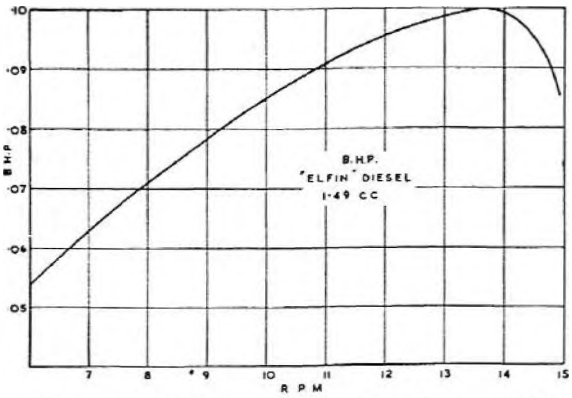


TEST

Engine. "Elfin" 1.49 c.c. Diesel.

Fuel. Mercury No. 3 and Mercury Special Ether: 1-1.

Starting. The engine was experimentally hand-started from time to time, with engine both hot and cold, and response was immediate in all cases. For convenience, pulley and cord starting was employed for the main tests. The starting position of the needle



valve, as marked on the test card, was fairly accurate, and should enable the novice to obtain a quick start.

Running. Extremely consistent at all speeds above about 5,000 r.p.m., but was inclined to be "lumpy" at speeds below this figure. Considering that this unit is definitely in the "hot" class, it was remarkably free from temperament.

B.H.P. A maximum output of exactly .10 b.h.p. was recorded at the high figure of 13,700 r.p.m. The peak of the curve is not exceptionally flat, as between 12,000 and 14,000 r.p.m. the rather large drop of .005 b.h.p. is encountered. At 10,000 r.p.m. the output is reduced to .085 b.h.p., and at the lowest tested speed of 6,000 r.p.m. the output was only .053 b.h.p. At the other end of the scale it will be seen that power drops steeply once the 14,000 r.p.m. mark has been reached. It seems desirable that this engine be run between 13,000 and 14,000 r.p.m. for maximum efficiency.

Checked Weight. 2.7 ozs. less tank.

Power/Weight Ratio. .549 b.h.p./lb.

Remarks. The engine was run-in for one hour at 5,000 r.p.m., and no mechanical trouble was experienced throughout the tests. An interesting feature of this engine lies in the use of cast iron for the piston and main bearings.

AMCO 3.5.

Manufacturers. Anchor Motors, Model Engineering Division, The Newgate, Chester.

Retail Price. £4 17s. 6d.*

Delivery. 14 days.

Spares. Ex. stock.

Type. Compression ignition (Diesel), G.P. when run in. Designed exclusively for Control Line.

Specified Fuel. C.I., Mercury No. 3, G.P., Mercury No. 5.

Capacity. 3.43 c.c.

Weight. 3.75 ozs. bare, 4.12 ozs. with extension.

Compression Ratio. Variable.

Mounting. Beam or radial, upright or inverted.

Recommended Airscrews. Depends on type of model.

Tank. Not fitted.

Bore. .6875 in. Stroke : .5625 in.

Cylinder. S.14, hardened, ground, honed, round and parallel to .00005 in. 10 ports : 5 transfer, 5 exhaust. Screws in crankcase.

Cylinder Head. Dural, black anodised. Screws to cylinder.

Crankcase. L.A.C. 112A. Pressure diecast.

Piston. Centri-cast iron. Conical Crown. Ground and honed to .00005 in.

Connecting Rod. 24 St. alum. alloy. Drop forged.

Crankpin Bearing. Plain, honed.

Crankshaft. S.11. Hardened, tempered, ground.

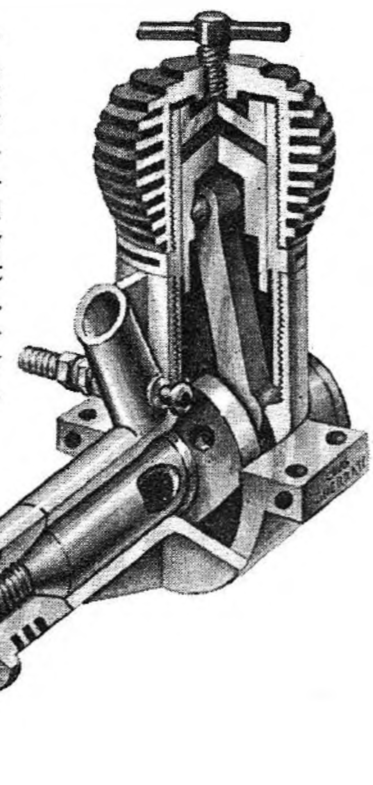
Main Bearing. Plain, honed.

Little End Bearing. Plain, reamed.

Crankshaft Valve. Shaft rotary.

Plug. K.L.G. Mini-Glow, short reach.

Special Features. High power, high r.p.m., light weight. Very flexible carburation. Adaptability. Good Finish. Easily attached exhaust manifold, 2s. 6d. Glowplug Conversion (for fully run-in engines), 10s.



TEST

Engine. Amco 3.5 c.c. Diesel.

Fuel. Mercury No. 3.

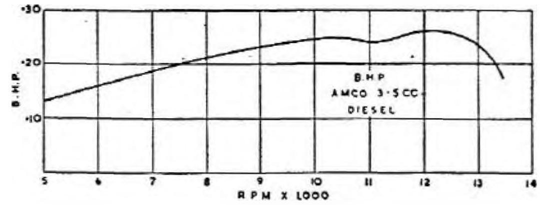
Starting. Pulley and cord used for convenience, but the engine was experimentally hand-started from time to time. No difficulty was experienced with engine either hot or cold.

Running. Runs well and evenly at all speeds from 5,000 to 14,000 r.p.m. and accommodates itself well to various loadings. Below 5,000 r.p.m. signs of erratic running became evident, probably due to the quick cut-off of ports. Cylinder started to unscrew from the crankcase at speeds in excess of 11,000 r.p.m., but the trouble was not repeated when the cylinder was screwed down really tight when hot.

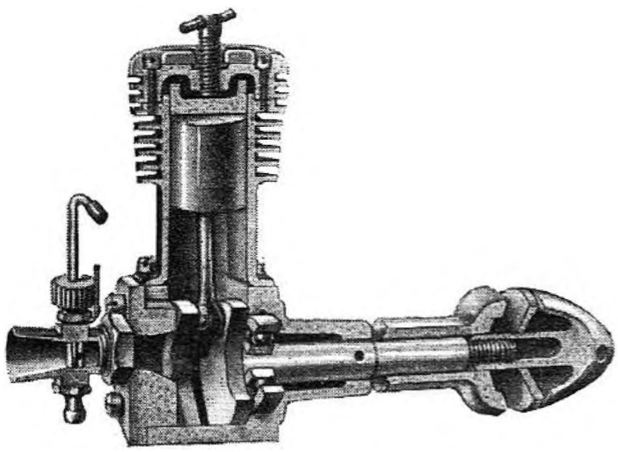
B.H.P. The Amco 3.5 diesel is definitely in the " super " class, as the peak output was .260 b.h.p., at 11,600 r.p.m. This figure remains almost constant up to about 12,000 r.p.m., when the output falls very gradually. At 13,000 r.p.m. a distinct drop commences, showing a loss of about .001 b.h.p. for every 100 r.p.m. increase. The curve is remarkably flat, yet the most interesting part is that lying between 10,500 and 11,500 r.p.m. Here, a distinct drop in power is to be noted; a loss of .002 b.h.p. from maximum, occurring at 11,000 r.p.m.

Checked Weight. 4.07 oz. (less tank).

Power/Weight Ratio. 1.022 b.h.p./lb.



Remarks. Readers will note the extraordinary high power/weight ratio of the Amco 3.5 c.c. engine, which is the first of any miniature engines yet tested to reach a figure of 1 b.h.p. per lb. weight. In view of this extreme figure one might have expected some mechanical failure due to excessive lightening of the parts, but, in fact, no trouble of this kind was experienced. The test on the first engine, some months ago, revealed excessive wear on the con-rod bearings, but the present use of new materials seems to have overcome his.



E.D. MARK IV.

Manufacturers. Electronic Developments (Surrey), Ltd., Kingston-on-Thames.

Retail Price. £4 12s. 6d.*

Delivery. Immediate.

Spares. Immediate.

Type. C.L. Diesel.

Specified Fuel. E.D. Standard Fuel.

Capacity. 3.46 c.c., .21 cu. in.

Weight (bare). 6½ ozs.

Compression Ratio. 18 : 1.

Mounting. Beam, upright or inverted.

Recommended Airscrews. 9½×6 ins. to 11×5 ins.

Flywheel. 2½ ins. diameter, 4½ ozs.

Tank. Separate.

Bore. .656.

Stroke. .625.

Cylinder. Hardened steel, flange fitting, attached to crank-case by 4 screws.

Cylinder Head. Dural. Finned. Attached by 6 holding-down screws.

Crankcase. Die-cast aluminium alloy.

Piston. Cast iron. Flat top. No rings. Contra Piston: hardened steel. Adjustment by Vernier screw.

Connecting Rod. Hardened steel. Floating bronze bush big end.

Crankpin Bearing. Floating bronze bush.

Crankshaft. Hardened steel.

Main Bearing. Single ball-race inner, plain outer.

Little End Bearing. Plain.

Crankshaft Valve. Disc induction.

Special Features. Big end designed to prevent scouring of crankpin, easily replaceable when worn. Transfer ports machined in cylinder skirt. Outside cylinder skirt is cam-turned to maintain even section. Ball-race crankshaft.

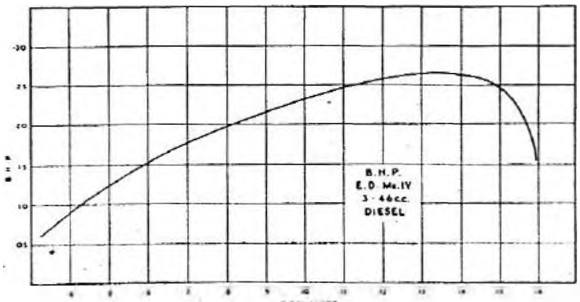
TEST

Engine. E.D. Mark IV 3.46 c.c. capacity Diesel.

Fuel. E.D. " Competition."

Starting. Pulley-and-cord used for convenience of test, but engine started without trouble when experimentally hand-started from time to time.

Running. Extremely consistent at all speeds, but especially so at the higher ranges. Behaviour under various loads was charac-



teristic more of a 4-stroke than a 2-stroke. At no speed range was fluctuation and hunting evident. There seems to be a slight vibrationary period at around 9,000 r.p.m.

B.H.P. A maximum output of .265 b.h.p. was found at 13,300 r.p.m., although but slight output variation was evident between about 11,400 and 14,900 r.p.m. Between these speeds a drop from maximum of only .015 b.h.p. was noted. Output is exceptionally consistent at the higher speed range, and .t may be said that the engine is running efficiently at any speed between 10,000 and 15,000 r.p.m. Beyond this speed power falls rapidly, while at the other end of the scale a marked decrease is noted below about 7,000 r.p.m.

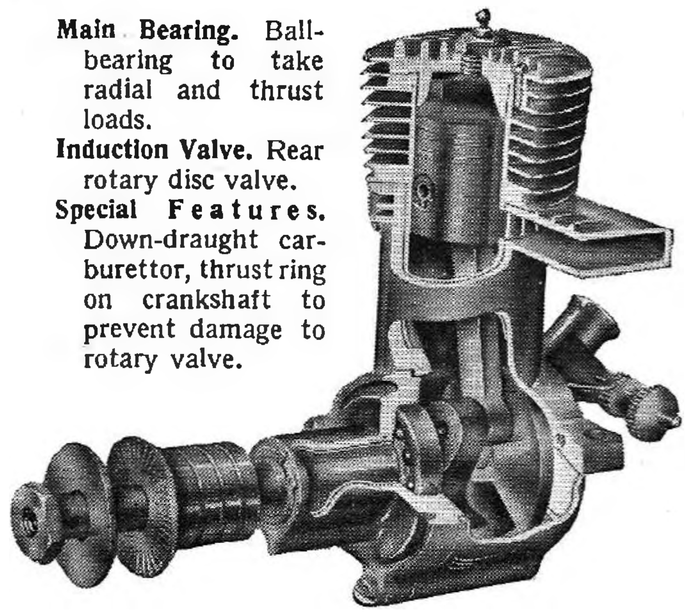
Checked Weight. 6.5 ozs. less tank.

Power/Weight Ratio. .650 b.h.p./lb.

Remarks. Engine was run-in for 1½ hours continuous running at 4,000 r.p.m. No mechanical trouble experienced throughout test. The engine is noteworthy for its high power output, easy handling, and consistent running qualities. Also for the fact that the measured b.h.p. is in excess of that claimed by the manufacturers whose figure is .25 b.h.p.

" FORSTER G-29."

Manufacturers. Forster Bros., Lanark, Illinois, U.S.A.
Retail Price. $11.75.
Type. Glowplug.
Specified Fuel. 37½% Methanol, 37½% Nitro Methane, 25% Castor Oil.
Capacity. 4.86 c.c., .297 cu. in.
Weight (Bare). 6½ ozs.
Compression Ratio. 10 : 1.
Mounting. Beam or radial.
Recommended Airscrew. 10×6 to break in, 9×6 for stunt, 7×9 narrrow blade type for speed.
Bore. .750 in.
Stroke. .6718 in.
Cylinder. One piece with fins, attached by 4 screws.
Cylinder Head. Aluminium alloy, attached by 6 screws.
Crankcase. Aluminium alloy pressure die-casting.
Piston. Aluminium, high baffle, two rings.
Connecting Rod. Aluminium alloy, Oilite big end bearing.
Crankshaft. Alloy steel, hardened and ground.
Main Bearing. Ball-bearing to take radial and thrust loads.
Induction Valve. Rear rotary disc valve.
Special Features. Down-draught carburettor, thrust ring on crankshaft to prevent damage to rotary valve.

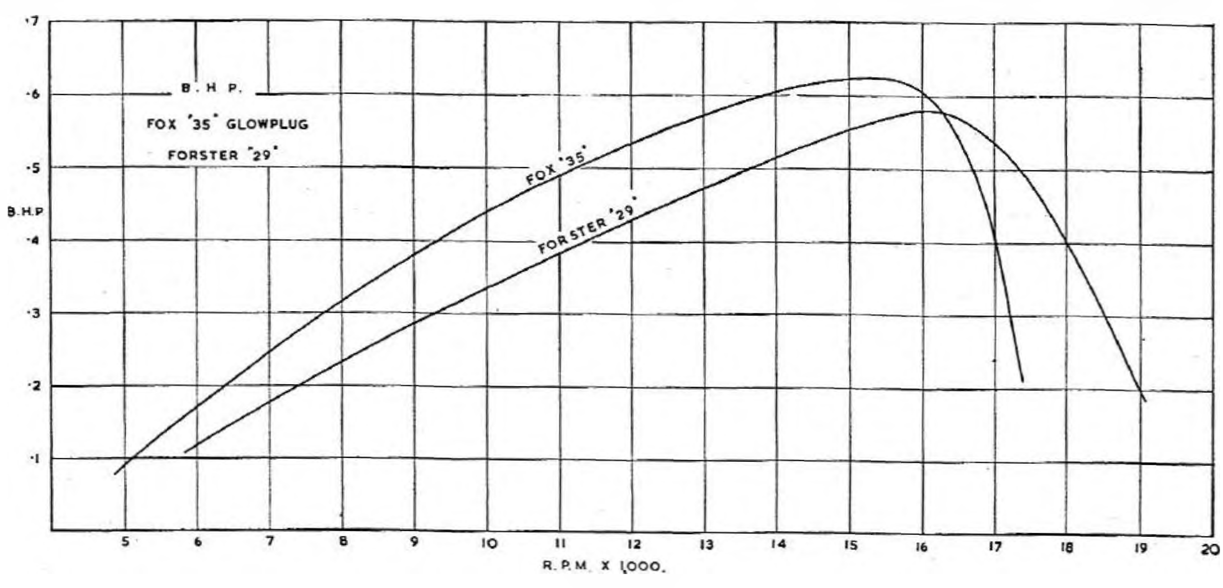


TEST

Engine. Forster " 29 " Glowplug.

Fuel. " Mercury Super Racing Glowplug."

Starting. Remarkably good at all times. When used with gravity feed tank, crankcase flooding was evident; no trouble when



changed to suction feed. Throttle control apt to be sensitive.

Running. There is nothing but praise for the running qualities of this engine at all useful speeds.

B.H.P. This engine corresponds to the usual 5 c.c. type, and the remarkable figure of .580 b.h.p. at 16,200 r.p.m. speaks for itself. The most useful speeds lie between about 15,000 and 16,600, as the drop from maximum between these points is only .02 b.h.p. Output drops fairly steeply each side of these speeds.

Checked Weight. 6½ ozs. (less tank).

Power/Weight Ratio. 1.43 b.h.p./lb.

Remarks. Here, again, the high power/weight ratio will be noted, and although not so high as that of the previous engine it must be remembered that the Fox "35" is of somewhat larger capacity, and that power/weight ratio usually favours the larger engines. Most notable features of the Forster are the high power-output, the phenomenally high rate of revolution, and large power/weight ratio. The engine was run-in for one hour at 6,000 r.p.m.

FROG 500.

Manufacturers. International Model Aircraft Ltd., Morden Road, Merton, London, S.W.19.

Retail Price. 75s. Including Purchase Tax.

Delivery. Ex stock.

Spares. Ex stock.

Type. Gloplug.

Specified Fuel. Frog "Redglow."

Capacity. 4.92 c.c., .30 cu. in.

Weight. 7.75 ozs. including tank.

Compression Ratio. 8 : 1.

Mounting. Beam or radial, upright or inverted.

Recommended Airscrews. Free Flight: 10×6 ins., 11×5 ins., 11×6 ins.; Control Line: 9×6 ins., 10×6 ins.

Flywheel. 2×7/16 ins., 5 ozs. weight.

Tank. Detachable, universal mounting.

Bore. .750 in.

Stroke. .680 in.

Cylinder. Hardened steel. Retained by 4 6B.A. screws deep spiggoted to crankcase. 1 transfer port, 1 exhaust port.

Cylinder Head. Diecast aluminium. Retained by 4 screws to cylinder.

Crankcase. Diecast aluminium.

Piston. Meehanite. Deflector type. No rings.

Connecting Rod. Forged Hyduminium, R.R.56.

Crankpin Bearing. Plain. Drilled for con. rod retaining pin.

Crankshaft. Hardened steel, ground and honed.

Main Bearing. Phosphor bronze honed.

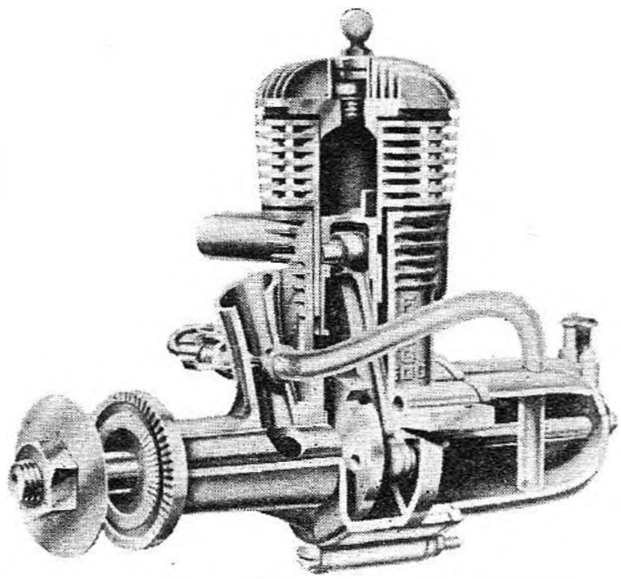
Little End Bearing. Plain.

Gloplug. ¼ in. short reach, K.L.G. "Miniglow."

Special Features. Flexibility, with high power output. All parts machined to fine limits to ensure interchangeability. Contact breaker assembly available shortly for spark ignition.

TEST

Engine. Frog "500" "Red Glow": 4.92 c.c. Glowplug.

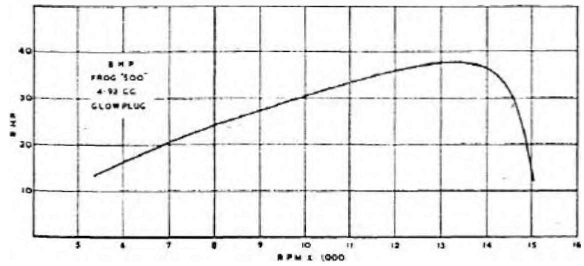


Fuel. Frog "Red Glow" Glowplug fuel.

Starting. Pulley and cord for convenience of test, but experimentally hand-started from time to time. Excellent at all times and in all conditions.

Running. This engine is remarkable for its extreme flexibility, as it ran smoothly and evenly at all speeds from 4,500 to 15,000 r.p.m.

B.H.P. The engine shows an extremely good performance as it will be noted that a maximum b.h.p. of almost .400 was attained. Actual figure was .381 b.h.p. at the very useful speed of 13,300 r.p.m. Further increase in speed lowers the output, until at 14,300 it is down to .340 b.h.p. Beyond this the output falls rapidly, so that at 15,000 r.p.m. the b.h.p. is only .130. The graph shows that the efficient range of speeds lies between



12,000 and 14,000 r.p.m.; a drop from maximum of only .020 b.h.p. is experienced between these points.

Checked Weight. 7.5 ozs. with tank.

Power/Weight Ratio. .320 b.h.p./lb.

Remarks. The engine was purchased at random from a retail shop, and was run-in for ¾ hour at 4,000 r.p.m. No trouble or mechanical failure was experienced throughout the tests. It should be noted that the manufacturers state that the weight of the engine is 7.75 ozs.

"WILDCAT" Mk. III 5 c.c. DIESEL.

Manufacturers. Davies Charlton & Co. 13, Rainhall Road, Barnoldswick.
Retail Price. £3 17s. 6d.*
Delivery. Ex stock.
Spares. All spares by return of post.
Type. Diesel.
Specified Fuel. 10% Castor Oil, 40% Diesel Oil, 50% Ether.
Capacity. 5.24 c.c., .32 cu. ins.
Weight (bare). 7¾ ozs. (excluding ext. hub and Spinner).
Compression Ratio. 18 : 1.
Mounting. Beam, upright and inverted.
Recommended Airscrew. 13 ins. × 6 ins.
Flywheel. 2¼ ins. dia. × ½ in. width. Brass or cast iron.
Bore. .6875 in.
Stroke. .875.
Cylinder. Aluminium with Meehanite liner. Attached to crankcase by 4 screws.
Cylinder Head. Finned aluminium. Attached to cylinder by 4 screws.
Crankcase. Die-cast. D.T.D. 424.
Piston. Flat top. No rings.
Connecting Rod. Duralumin.
Crankpin Bearing. Plain.
Crankshaft. One piece, hardened ground and lapped in high tensile steel.
Main Bearing. Meehanite bush.
Little End Bearing. Plain.
Cylinder Liner. Meehanite.
Special Features. Designed to give easy starting and easy handling characteristics, under all conditions.

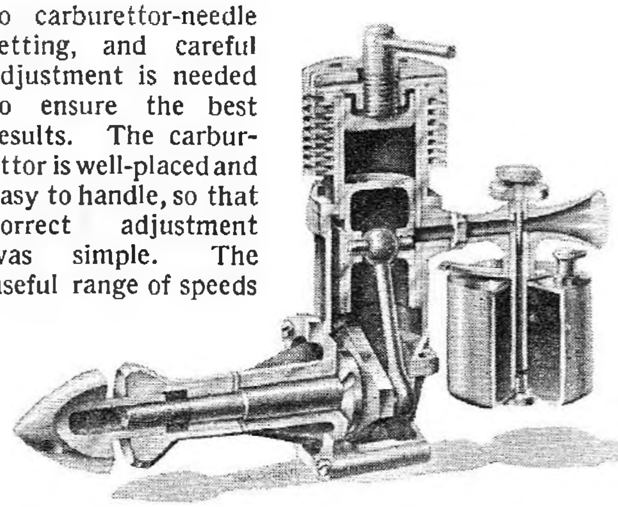
TEST

Engine. Wildcat Mk. III 5 c.c. Diesel.

Fuel. As recommended by the manufacturers.

Starting. Exceptionally good at all times. Pulley and cord used for convenience of tests, but experimental hand-starting used from time to time.

Running. Consistent at all speeds within the test range. The engine is rather sensitive to carburettor-needle setting, and careful adjustment is needed to ensure the best results. The carburettor is well-placed and easy to handle, so that correct adjustment was simple. The useful range of speeds



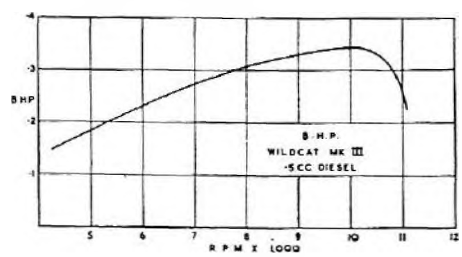
seemed to lie between about 4,000 and 10,000 r.p.m.

B.H.P. The power curve flattens considerably at the peak, so that maximum b.h.p. output of approx. .340 was found to lie at about 10,000 to 10,300 r.p.m. Actual maximum figure was .341 b.h.p. at 10,050 r.p.m., but an increase of only 400 r.p.m. reduced the output figure to .330 b.h.p. Further speed increase lowered the figures rapidly, until, at 11,100 r.p.m., output was down by about .120 b.h.p. Peak output was obtained without fuss or bother, and may be considered to be excellent.

Checked Weight. 9.2 ozs. including tank.

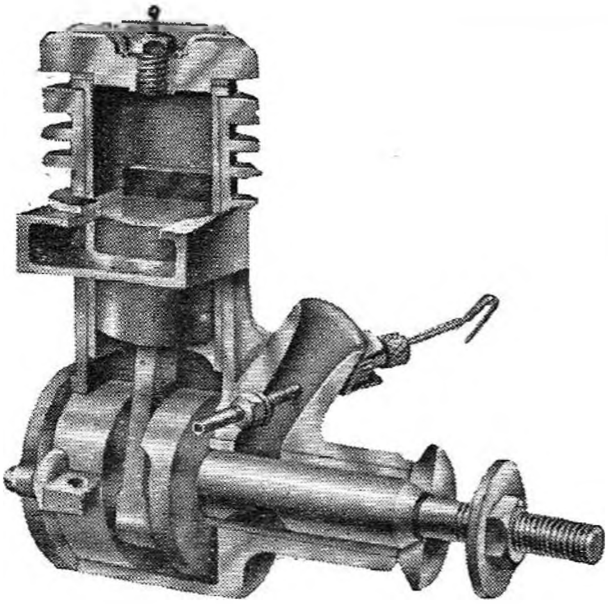
Power/Weight Ratio. .592 b.h.p./lb.

Remarks. This engine was run-in for 1½ hours at 4,000 r.p.m. and no trouble was encountered throughout the tests. The engine is well made and well finished, and should provide a reliable general purpose unit.



FOX "35."

Manufacturers. Arnold & Fox Engineering Co., 7401 Varna Ave., North Hollywood, California, U.S.A.
Retail Price. $11.95.
Type. Glowplug.
Specified Fuel. Castor Oil 33%, Methanol 25%, Nitro Methane 42%.
Capacity. 5.75 c.c., .35 cu. in.



Weight (Bare). 5.75 ozs.
Compression Ratio. 6 : 1.
Mounting. Beam.
Bore. .800 in.
Stroke. .700 in.
Cylinder. One piece steel liner in alloy barrel.
Cylinder Head. Alloy, attached by 4 screws.
Crankcase. Gravity alloy casting.
Piston. Meehanite, plain, "Straight fence" "baffle."
Connecting Rod. 17 S.T. Aluminium alloy.
Crankpin Bearing. Plain.
Crankshaft. Steel.
Main Bearing. Bronze.
Crankshaft Valve. Rotary shaft.

TEST

Engine. Fox "35" Glowplug.

Fuel. "Mercury Super Racing Glowplug."

Starting. Extremely good at all times, both by hand and pulley-and-cord.

Running. Exceptionally smooth and flexible at all speeds from 4,000 to 18,000, but happier above 10,000 r.p.m. than below it.

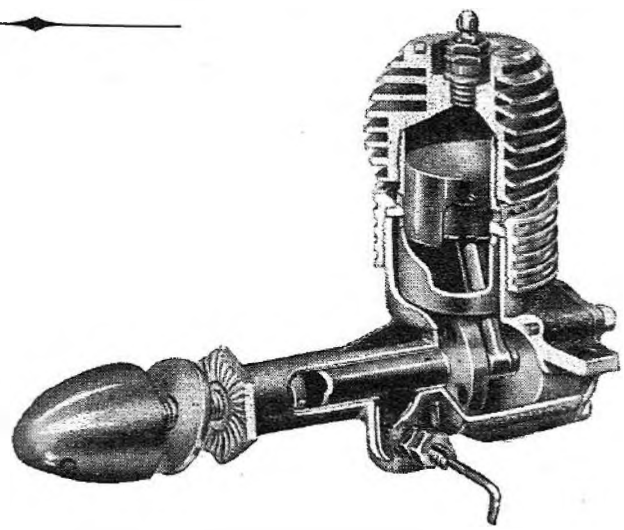
B.H.P. A maximum output of .623 b.h.p. was recorded at around 15,000 to 15,800 r.p.m., but the curve at this point is so flat that the exact point was difficult to determine. B.H.P. drops steeply after 16,000 r.p.m. It is interesting to note that at 5,000 r.p.m. the output is only one-sixth of maximum.

Checked Weight. 5.75 ozs. (less tank). For some remarkable reason the maker's leaflet gives 7 ozs. as the weight.

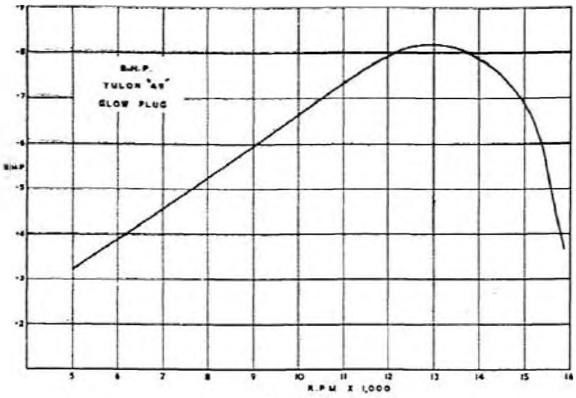
Power/Weight Ratio. 1.735 b.h.p./lb.

Remarks. The astounding power/weight ratio of this engine will be noted. Engine was run-in for one hour at 4,000 r.p.m., but there were signs of frictional losses at the highest speeds, due, probably, to the use of plain bearings.

YULON "49."
Manufacturers. Yulon Engineering Co., 53, Woodland Road, Northfield, Birmingham 31.
Retail Price. 99s. 6d.*
Type. Glowplug.
Delivery. Ex stock.
Spares. Full spares and repair service at works.
Specified Fuel. 37½% Dry Methanol, 37½% Nitro Methane, 25% Castor oil. Mercury No. 7 or Record Powerplus.
Capacity. 8.2 c.c., .49 cu. in.
Weight (bare). 6¼ ozs.
Compression Ratio. 8 : 1.
Mounting. Beam or Radial.
Recommended Airscrews. Free Flight, 11×5 ins.; Control Line, Stunt, 10×6 ins. or 9×8 ins.; Speed, 8×12 ins. or 9×12 ins.
Bore. 0.960 in.
Stroke. 0.687 in.
Cylinder. Meehanite, Alloy retaining ring 40 T.P.I.
Cylinder Head. Low expansion alloy, screwed 40 T.P.I.
Crankcase. Die Cast, Anodised black crackle finish.



Piston. Plain Meehanite, flat top.
Con-rod. Light Alloy, no bushings.
Crankshaft. 55 ton tensile, finished with Hard Chrome deposit.
Main Bearing. Plain.
Crankshaft Valve. Rotary shaft inlet valve.
Special Features. Duralumin crankshaft extension shaft is replaceable in the event of damage, has left hand thread. Threaded needle valve gives fine adjustment. Carburettor throat insert to improve carburration.



TEST

Engine. Yulon " 49 " (approx. 8 c.c.) Glowplug.

Fuel. Mercury No. 7 Glowplug.

Starting. Good under all conditions.

Running. Good at all tested speeds, especially around region of maximum b.h.p. output. Carburettor control was excellent and responsive, due to the needle valve giving a positive fuel cut-off when tightened down, and a gradual jet opening. This gradual opening made it necessary to act quickly at times when adjusting for correct running.

B.H.P. As the graph shows, a very fine performance was obtained, with a maximum of .820 b.h.p. at 12,900 r.p.m. While the top of the curve is fairly flat—between 12,100 and 13,750 r.p.m.—a rather steep drop in output is seen on each side of these figures. Maximum output lies at a reasonable and convenient speed. The lowest figure recorded was .320 b.h.p. at around 5,000 r.p.m. From the curve it would seem that this would also be about the figure at 16,000 r.p.m.

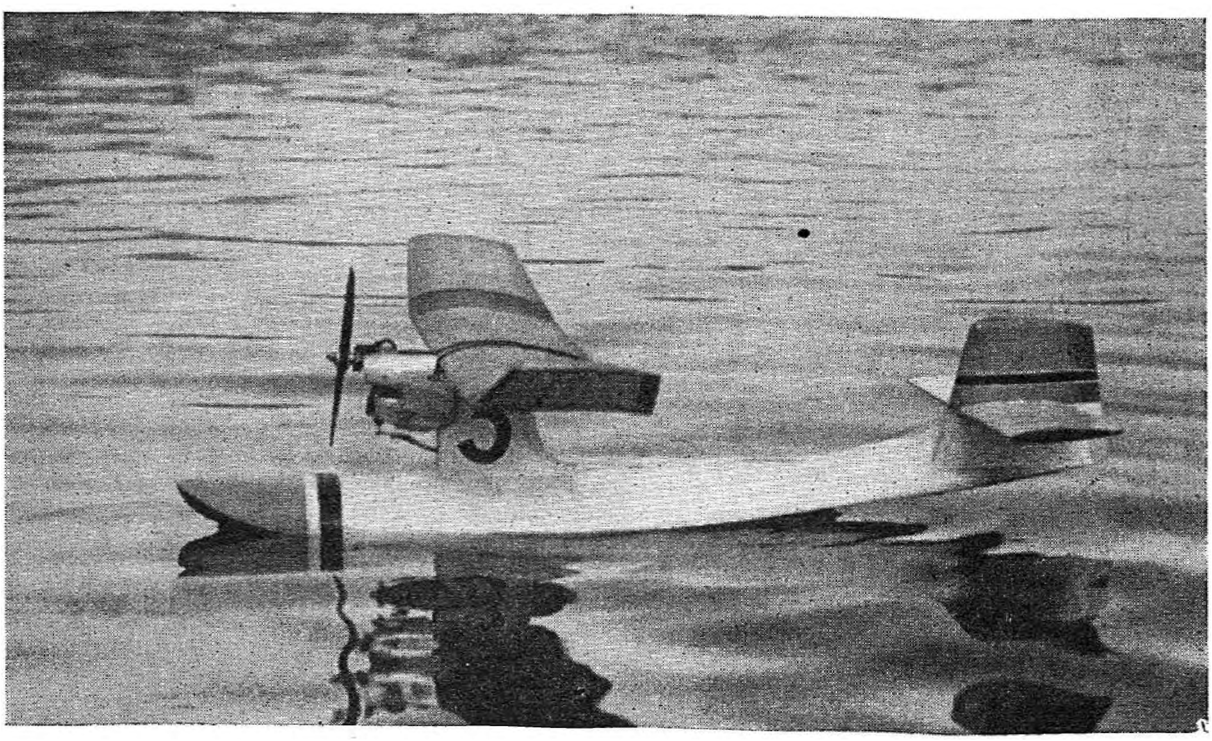
Checked Weight. 6.5 ozs. (less tank).

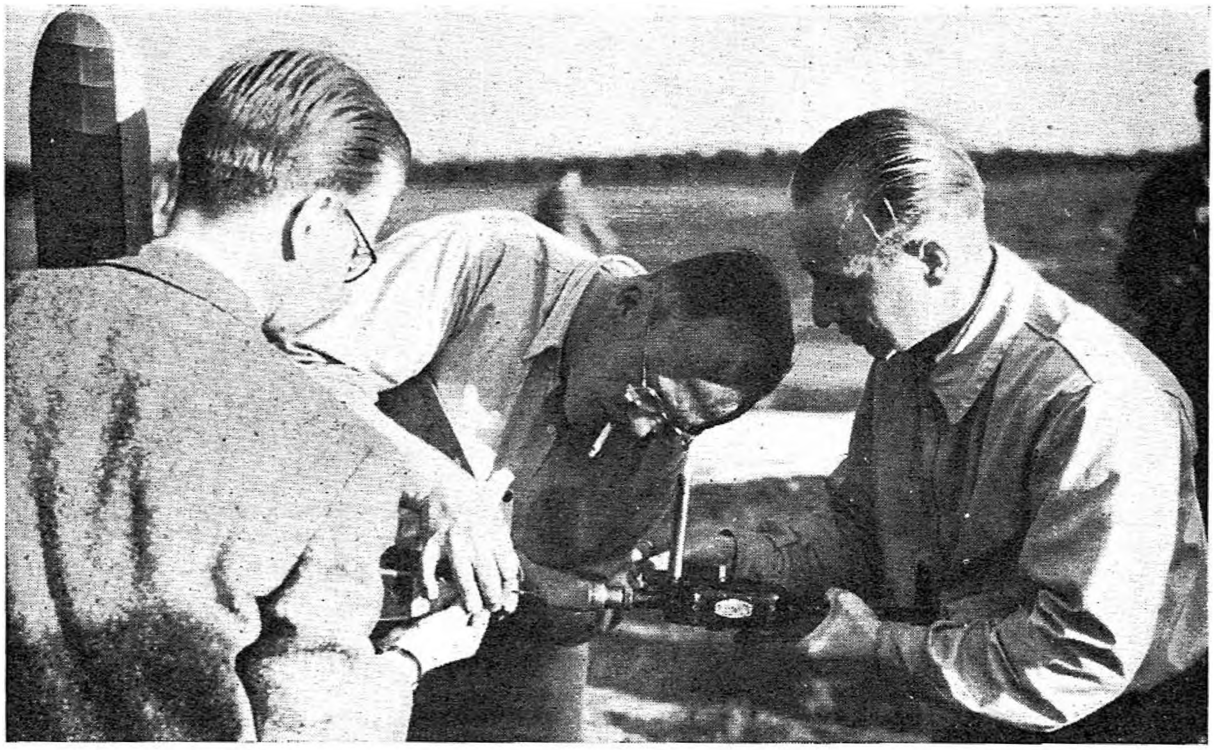
Power/Weight Ratio. 2.2 b.h.p./lb.

Remarks. The Yulon is a typical modern, high-performance engine, with the highest power/weight ratio yet recorded in these pages. It has been pointed out before that power/weight ratio is always in the favour of large engines and the high ratios which have been recorded for some smaller, high-efficiency units would lead one to expect very high figures for large engines of the same type. In addition, particular attention has been given in the Yulon design to weight-saving, resulting in a particularly clean and business-like appearance. The black crackle-finish enamel of the crankcase contrasts pleasingly with the polished alloy parts.

** Prices marked thus may now be subject to the addition of Purchase Tax, following a recent test case.*

This unusual flying boat hails from Japan. Designed and built by Sato of the Tokyo " Sky Friends M.A.C." it is named Miss Yamanaka, after the Japanese lake in the shadow of Mt. Fujiyama, where it is usually flown. A drawing appears on page 18.





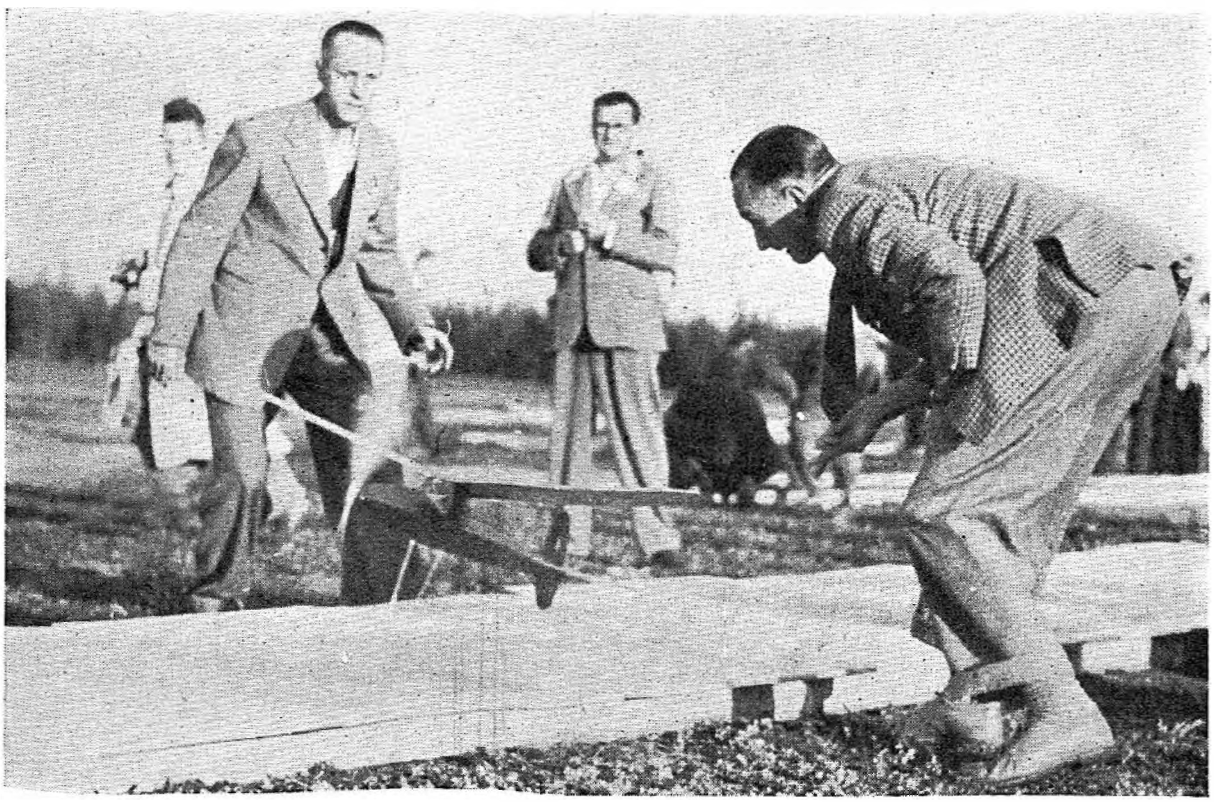
Second time lucky, Arne Ellila, winds up for his third round flight in the first ever Wakefield Contest held in Finland. Once more this unassuming expert was able to defeat the world's best and prove that his first win at Cranfield in 1949, was no chance effort—but a case of honest-to-goodness "best man winning."

1950 INTERNATIONAL WAKEFIELD TROPHY CONTEST

Placing	Contestant	Country	First Flight	Second Flight	Third Flight	Total
1 (1) (1) ...	Ellila, A.	Finland	238	271.5	222.6	732.1
2 (3) (2) ...	Evans, F. W.	Great Britain ...	209.6	232.8	217.6	660
3 (2) (3) ...	Leardi, A.	Italy	224	192.1	228.7	644.8
4 (4) (4) ...	Seton, P. W.	Holland	208.5	200.7	210.4	619.6
5 (13) (7)...	Stevens, H. R.	Great Britain ...	177.6	214.1	226.7	618.4
6 (5) (5) ...	Salisbury, L. (Johansson)	U.S.A.	207	199.2	199.8	606
7 (7) (9) ...	Lustrati, S....	Italy	193	196.5	208.2	597.7
8 (9) (8) ...	Bachli, B.	Switzerland ...	184.1	207	206	597.1
9 (14) (10)	Sadorin, E.	Italy	176.8	192.6	204	573.4
10 (10) (12)	Warring, R. H.	Great Britain ...	182	174.8	196.9	553.7
11 (6) (6) ...	Blomgren, A.	Sweden	197.5	196	155.1	548.6
12 (11) (11)	Stark, S.	Sweden	180.4	181.2	169.6	531.2
13 (29) (15)	Dijkstra, G.	Holland	131	186.3	177	494.3
14 (26) (20)	Knight, J. B.	Great Britain ...	135.8	154.2	201.2	491.2
15 (16) (16)	Follet, P.	Belgium	169.6	146	168.5	434.1
16 (18) (14)	Morisset, J.	France	158.2	167.3	141.2	466.7
17	Deschepper, P.	Belgium	188.5	108	166.5	463
18	Dijkstra, A.	Holland	135.9	124.5	159.8	420.2
19	Schmitt, R. G. (Hokkanen)	U.S.A.	110	142.8	167	419
20	Fresl, E.	Jugoslavia ...	100.1	137.5	180	417.6
21	Bernard, A.	France	139	152.1	124.4	415.5

Placing	Contestant	Country	First Flight	Second Flight	Third Flight	Total
22	Lippens, G.	Belgium	101.5	144.1	160.4	406
23	Eliasson, H.	Sweden	114.2	169.5	115.8	399.5
24	Haslach, T.	Switzerland ...	94.9	173	115.1	383
25	Fea, G.	Italy	179.6	161	—	340.6
26	Wood, J. H. (Anderson) ...	Canada	136.1	100.4	103.1	339.6
27	Siimunen, T.	Finland	78.1	120.1	132.7	330.9
28	Butler, A. (Vuoripalo) ...	Australia... ...	114.5	116.3	99.3	330.1
29	Takagi, F. (Spring) ...	U.S.A.	101.1	114	112.7	328.6
30	Kapic, D. (Fresl)	Jugoslavia ...	113.9	105	104.5	323.4
31	Walter, L. J. (Kalervo) ...	Canada	103.5	133	82.9	319.4
32	Breznikar, R.	Jugoslavia ...	90	99	129.8	318.8
33	Blomberg, S.	Sweden ...	102.3	79	135.5	316.8
34	Wannberg, H.	Sweden	118.6	101.8	96	316.4
35	Kennedy, D. (Segerfeldt)...	New Zealand ...	174.5	165.2	—	312.7
36	Johanson, A.	Finland	127	149.6	11.5	288.1
37	Adams, I. J.	Great Britain ...	140	6.6	134.2	280.8
38	Pitcher, J. L.	Great Britain ...	61.3	71	148	280.3
39	Bethwaite, F. (Savolainen)	New Zealand ...	97.1	85.9	82.5	265.5
40	Bickel, A.	Switzerland ...	134	40	86.6	260
41	Bouche, J.	France	137.3	4.4	111	252.7
42	Marsh, B. (Sandberg) ...	New Zealand ...	163.5	6.8	73.9	244.2
43	Bernfest, S.	Jugoslavia ...	105.2	79.5	58	242.7
44	Kivikataja, A.	Finland	78	66.3	91.8	236.1
45	Mickelsen, W. (Lumes) ...	U.S.A.	125.7	53	56.2	234.9

Ted Evans, second place man, speeds his " Vansteed " on its way. He was the only British entrant to stay within striking distance of the phenomenal Ellila on his home ground.



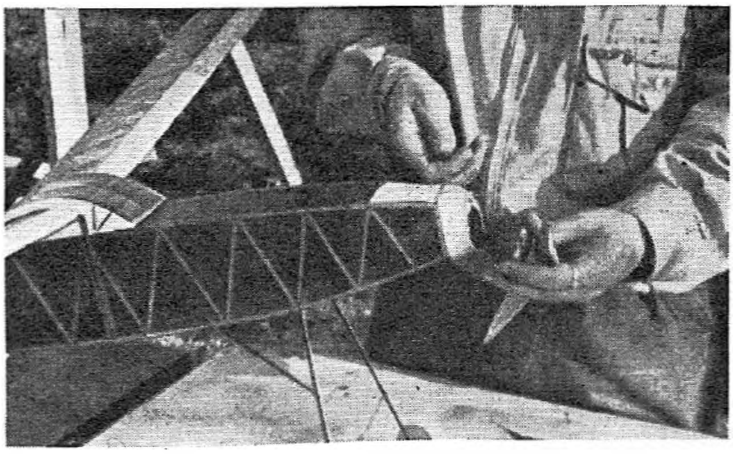
Placing	Contestant	Country	First Flight	Second Flight	Third Flight	Total
46	Gerland, E.	France	5.7	93	134.2	232.9
47	Aubertin, R. (Huhtinen) ...	Monaco	91.9	87.4	28.7	208
48	Prhavc, J.	Jugoslavia ...	134.3	8.4	52	194.7
49	Petersen, J.	Denmark ...	173	—	—	173
50	Santala, L.	Finland	35.5	117	11.8	164.3
51	Orvin, H.	Norway	10	42	111.2	163.2
52	Leitwich, A. (Deurell) ...	U.S.A.	78.5	11.5	72.5	162.5
53	Hakanson, A.	Sweden	33.4	11.2	112	156.6
54	Joostens, Y. (Joostens, G.)	Belgium	142	9.6	—	151.6
55	Ford, C. A. (Relander) ...	Canada	49.1	57.7	17.4	124.2
56	Beaujean, M.	Belgium	113	3	3.8	119.8
57	Ferber, M.	Belgium	3	101.5	12.5	117
58	Petersen, C. (Pulkkinen) ...	Denmark ...	108.6	—	—	108.6
59	Meader, A. (Salonen) ...	Australia... ...	56.4	—	—	56.4
60	Kanneworff, L.	Italy	2.8	—	—	2.8
61	Hansen, R. (Lindh) ...	New Zealand ...	.3	—	—	.3
62	Wallenius, R.	Finland	—	—	—	—
	Maret, R.	Switzerland ...	—	—	—	—

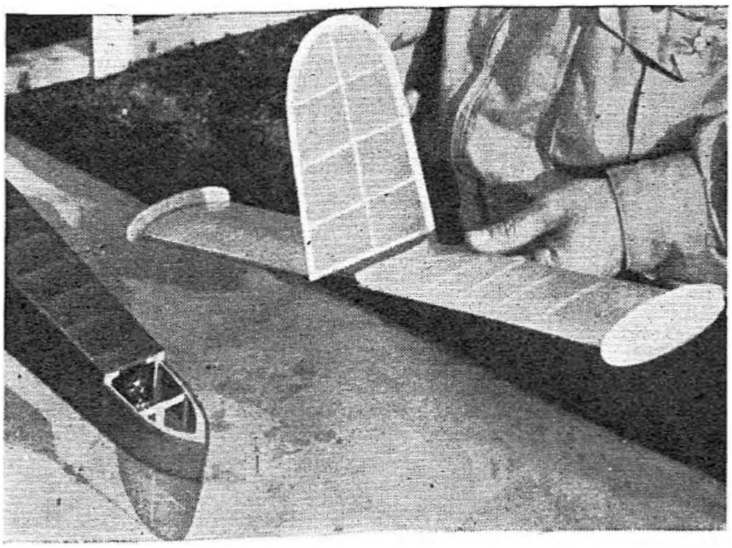
Position of leaders at ends of First and Second Flights indicated in parentheses after final placing figure. Proxy flyers shown in parentheses after name of contestant.

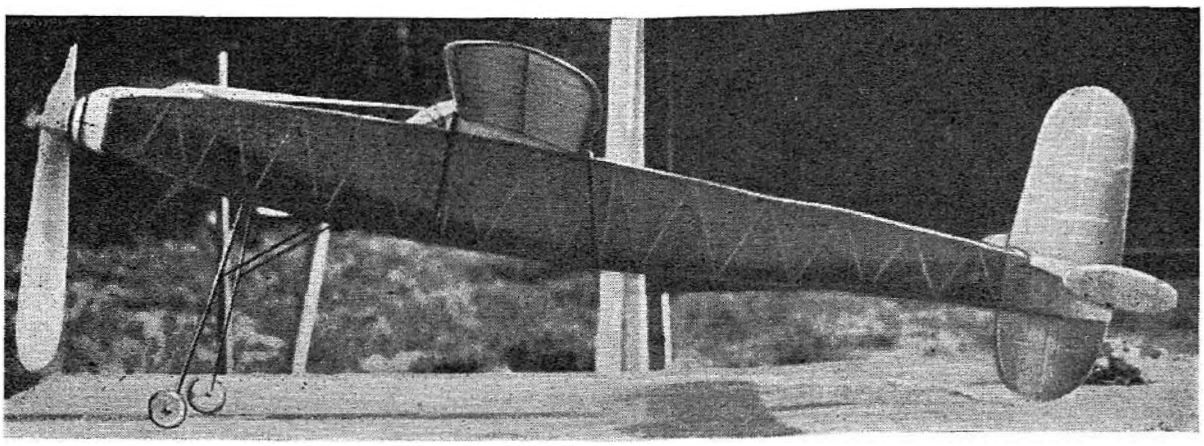
Leardi of Italy, who took third place, sees his model getting well up off the board. Smartly turned out in their blue and white uniforms, the Italian team were always dangerous, with three men in the first ten places.

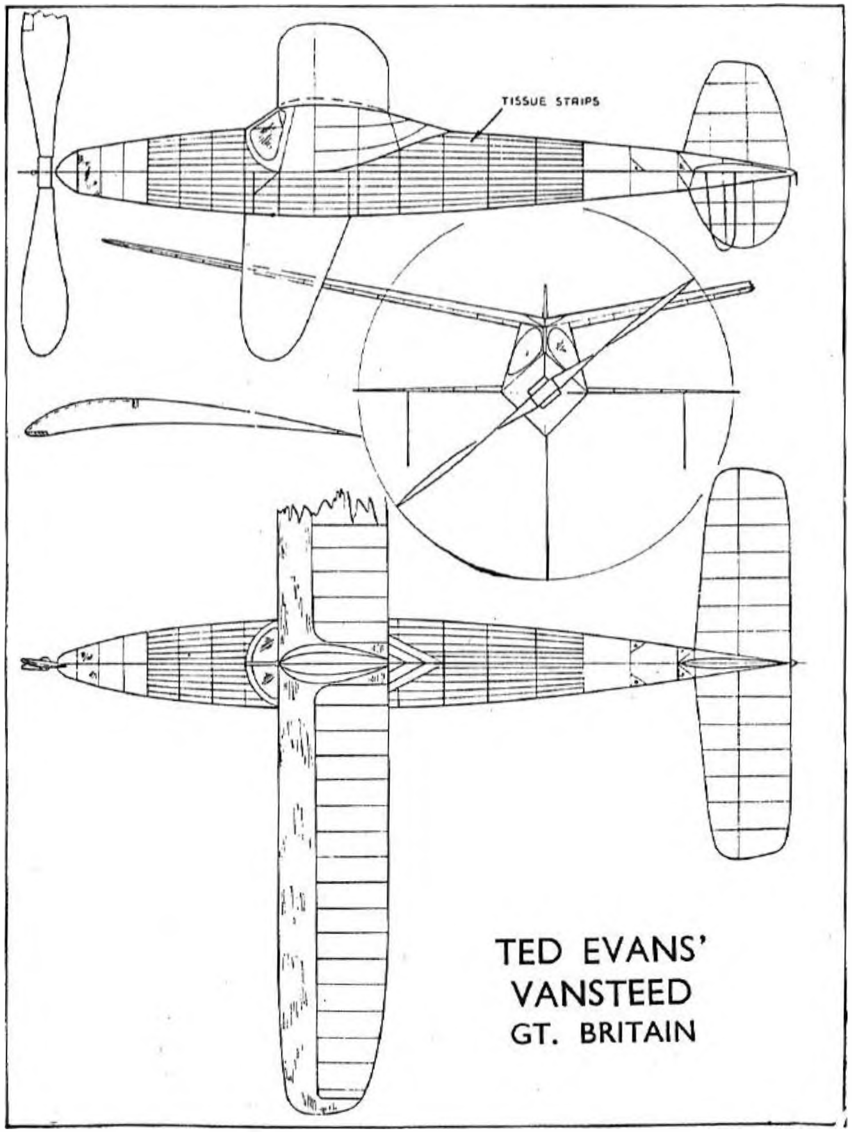
1950 Wakefield Winner by Arne Ellila, Finland.

DESCRIPTION.—At first glance similar to his 1949 winner, it has in fact a number of improvements. A 1 mm. square turbulator strip has been fitted to leading edge of mainplane—for which improved stability is claimed. Wing is further back than 1949 version, and angle of incidence increased, whilst centre section is faired in following a U.S.A. design seen at Cranfield. Greater internal space is provided at rear for the twin skeins and stronger by reason of Warren bracing. With twin gears rear-located Ellila is able to get 120 second motor run, as against, for example Ted Evans' 75 seconds! The motor takes 1,200 turns, and is made up of fourteen strands of ¼ in. Dunlop. Designer-flyer claims nothing remarkable for the model, but attributes success to careful preparation and accurate trimming under conditions similar to those experienced at the Contest—in other words he generously concedes the tremendous advantage of flying on his "home" ground. Another interesting "gen" item is rather a knock for the aerodynamic experts. Ellila declares that his wing-section was obtained by cutting a piece of ply *by eye* until a visually attractive shape was obtained; Nevertheless we feel some credit must go to the SI series, for it bears a strong resemblance to their typical shape.

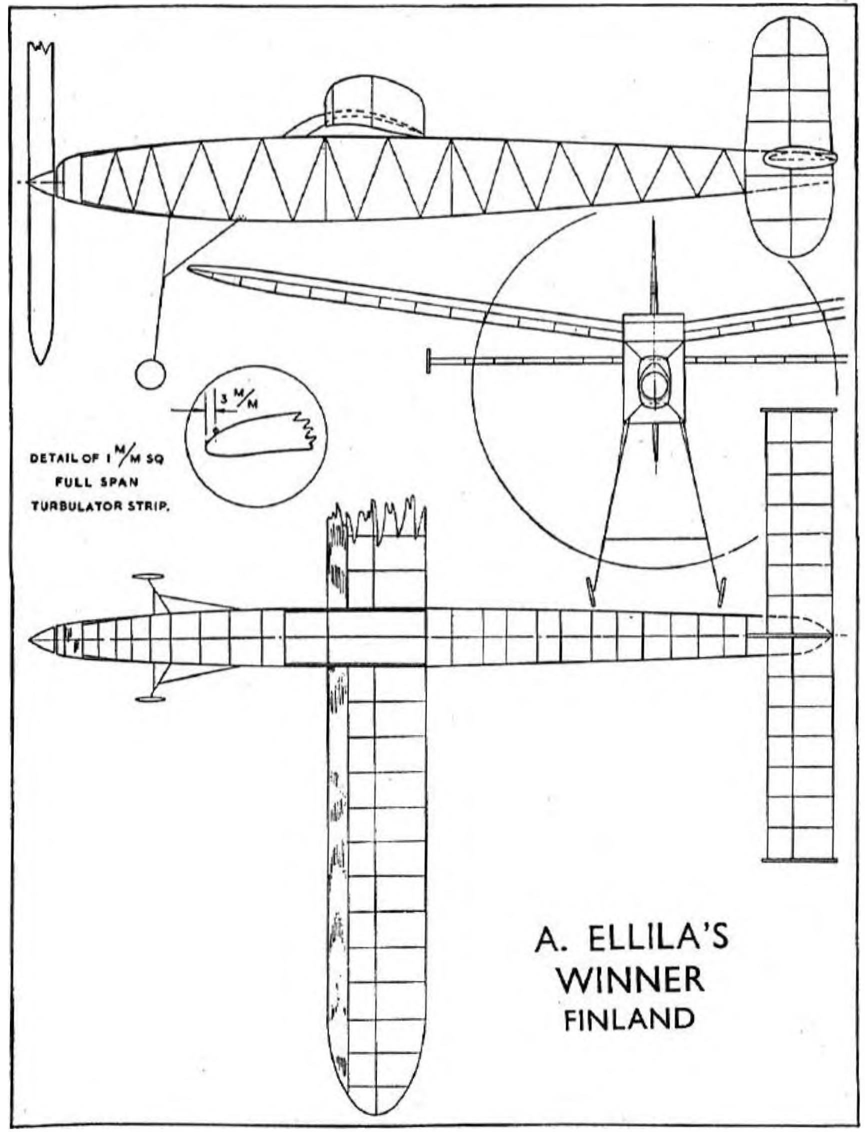








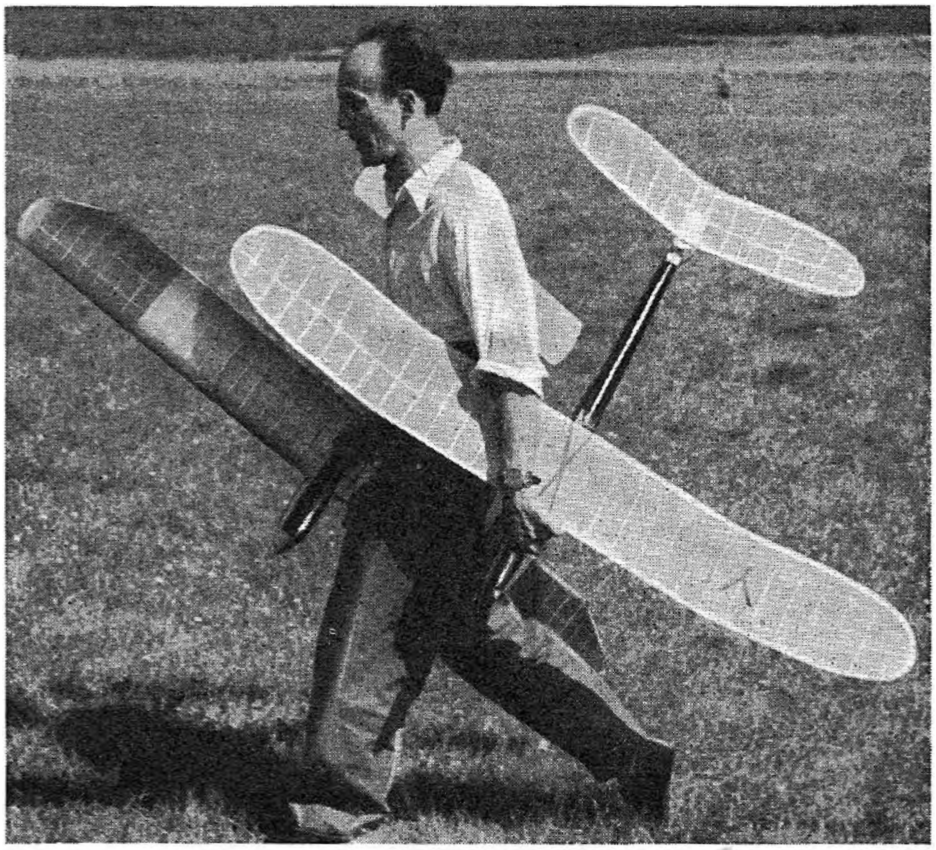
TED EVANS'
VANSTEED
GT. BRITAIN



A. ELLILA'S
WINNER
FINLAND

SWEDISH GLIDER CUP FOR A/2 (NORDIC) CLASS SAILPLANES

S. Bernfest of Jugoslavia, winner of the International Nordic A/2 Sailplane Contest held in Sweden. We are pleased to welcome back into international contests these old friends and rivals, and congratulate them on so pleasant a start !

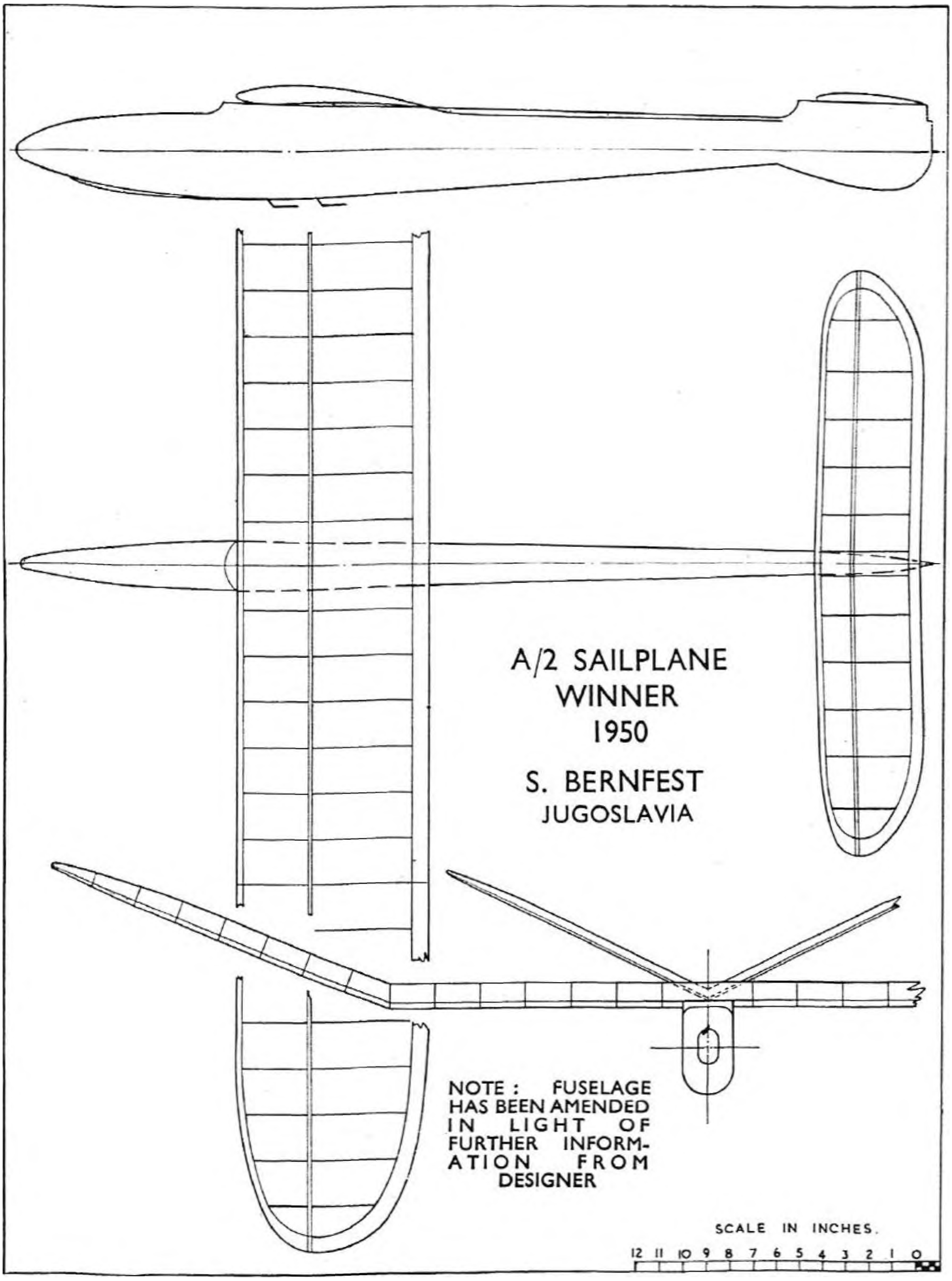


Placing	Name	Country	First Flight	Second Flight	Third Flight	Total Time
1 (1) (2) ...	Bernfest, S.	Jugoslavia ...	717*	200	508*	920
2 (1) (1) ...	Odenman, R.	Sweden	560*	370*	183	903
3 (1) (1) ...	Hansen, A.	Denmark ...	486*	637*	147	867
4 (2) (3) ...	Hagen, K.	Norway	323	226	301	850
5 (1) (6) ...	Persson, L.	Sweden	610*	113	857*	833
6 (1) (1) ...	Bennett, J. M.	Great Britain ...	457*	408*	62	782
7 (1) (10)...	Sandberg, K.	Sweden	387*	48	378*	768
8 (1) (5) ...	Santala, L.	Finland	707*	125	268	753
9 (1) (8) ...	Silmunen, T.	Finland	1,083*	91	301	752
10 (3) (7) ...	Schioll, S.	Norway	295	165	244	704
11 (8) (9) ...	Host-Aris, A.	Denmark ...	165	256	264	685
12 (1) (4) ...	Wallenius, R.	Finland	637*	180	126	666
13	Lauridsen, J.	Denmark ...	160	59	795*	579
14	Bickel, A.	Switzerland ...	158	66	300	524
15	Bootland, T.	Great Britain ...	122	98	256	476
16	Sandberg, S.	Sweden	138	190	138	466
17	Prhavc, J.	Jugoslavia ...	283	14	166	463
18	Maret, G.	Switzerland ...	87	244	117	448
19	Hinks, R.	Great Britain ...	166	110	169	445
20	Hansen, B.	Denmark ...	131	158	143	432
21	Davis, S.	Monaco	290	71	67	428
22	Molbach, T.	Norway	81	162	167	410
23	Spring, H.	Finland	203	111	95	409
24	Hanson, M. L.	Great Britain ...	65	155	179	399
25	Fresl, E.	Jugoslavia ...	135	91	145	371

Placing	Contestant	Country	First Flight	Second Flight	Third Flight	Total
26	Haslach, T.	Switzerland ...	71	214	70	355
27	Antonsen, S.	Norway	75	60	56	161
28	Bachli, B.	Switzerland ...	97	—	—	97

* *Indicates flights counted as 360 seconds (6 minutes) only : note* **six**, *not five minutes maximum. Figures in parentheses indicate positions at ends of first and second rounds.*

Note also that by Scandinavian scoring no fractions of a second are counted, but nearest second only.



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.
Australia	The Model Aeronautical Association of Australia, Sec.: M. G. McSpedden (A.C.A. Aust.), 195 Elizabeth Street, Sydney, New South Wales.
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.
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.

J. A. Gorham of Ipswich, S.M.A.E. Senior Champion for 1950, shown here starting his engine in the Sir John Shelley Contest at the Nationals, one of the many events in which he figured prominently

1950 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 9th—GAMAGE CUP (45 entries).
Open Rubber. Decentralised.

1	Smith, E.	Icarians	413.2
2	Richmond, J. S.	Wolves	382.2
3	Warring, R. H.	Zombies	253.3
4	Hope, B. G.	Men of Kent	233
5	Allen, S.	Evesham	220.8
6	Tangey, J.	Croydon	212.5
7	Bennett, E.	Croydon	203.9
8	Dubery, V. R.	Leeds	200.5
9	Yeabsley, R.	Croydon	200.1
10	Guard, J.	Southampton	167.5
11	Gorham, J. A.	Ipswich	153
12	Johnson, V.	Southampton	151.4

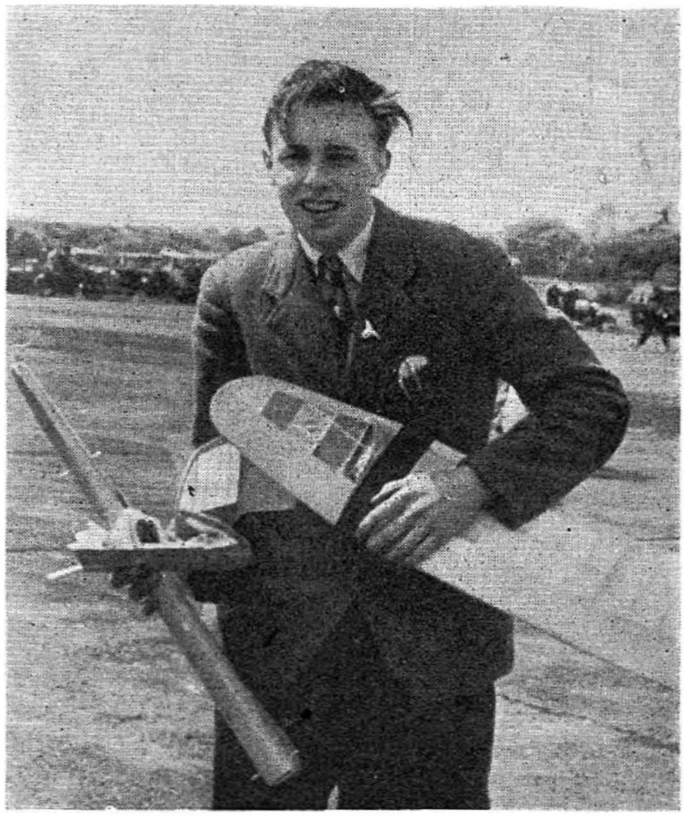
April 9th—PILCHER CUP (50 entries).
Open Glider. Decentralised.

1	Monks, R.	Birmingham	260
2	Holt, J.	Upton	232.8
3	Whittall, L. W.	Birmingham	195
4	Turner, H. R.	Northern Heights	168
5	North, P.	Cardiff	160
6	Lawrence, D. A.	Wayfarers	144
7	Grew M. J.	Chelmsford	138
8	Jones, R.	Wayfarers	128.5
9	Middleton, C. H.	Bristol and West	125
10	Gorham, J. A.	Ipswich	119
11	Fox, L.	Leeds	118
12	Saunders, L.	Chelmsford	102.1

April 10th—SOUTH EASTERN AREA CONTROL LINE CHAMPIONSHIPS
Held at Preston Park, Brighton

Speed :				m.p.h.
Cl. I	1	Shaw, C.	Zombies	72
	2	Allbon, A.	Bushy Park	66.66
Cl. II	1	Free, D.	Surbiton	90
	2	Wilson, T.	Malden	89.95
Cl. III		No results		
Cl. IV	1	Salter, D.	East London	66.66
Cl. V	1	Shaw, C.	Zombies	108.45
	2	Kelsey, P.	Cheam	106.51
Cl. VI	1	Taylor, N.	Wimbledon	132.35
	2	Evans, P.	Weston	112.5
	3	Taylor, N.	Wimbledon	110.4
Cl. VII	1	Stovold, R.	Guildford	143.95
	2	Foskett, D.	Guildford	125
Open Stunt :				Pts.
	1	Taylor, W. H. / Steward, L.	W. Essex / W. Essex	132 (poss. 140)
	3	Muscatt, K.	W. Essex	115
Scale Stunt :				
	1	Butcher, N. J.	Croydon	98 (poss. 140)
	2	Pallmer, D.	Basingstoke	94
	3	Smith, P. O.	Chingford	86
Scale Speed :				m.p.h.
	1	Smith, P.	Bournemouth	72
	2	Wilson, K.	Malden	48.63
Team Race :				
	1	Bournemouth	44.44 m.p.h. for 10 mls.	
	2	Guildford		
	3	St. Albans		

Typical Nationals' weather ! Kicks of Bushey Park remains cheerful in spite of what the wind at York managed to do to his entry.



(**Note** :—*In the eliminators (5 miles) the speeds were* :—

Bournemouth	22.02 *m.p.h.*
Guildford	26.57 *m.p.h.*
St. Albans	17.57 *m.p.h.*

In the finals only Bournemouth completed the 10 miles.

April 16th—GUTTERIDGE TROPHY (417 entries).

Wakefield Trials. Area Semi-centralised

1	Parham R. T.	Worcester	824.5
2	Woolls, G.	Bristol and West	793
3	Copland, R.	Northern Heights	767.9
4	Spratley, R.	Hayes	760.5
5	Pitcher, J. L.	Croydon	759
6	Gilbert, P.	Pharos	748.3
7	Mayes, C.	West Essex	725
8	Russell, A. G.	Kentish Nomads	722
9	Woodfine, G. W.	Plymouth	713
10	Casswell, R.	Hatfield	696
11	Collins, R. A.	West Essex	695
12	Dobson, F.	Zombies	681.5

April 16th—HALFAX TROPHY (455 entries)

Open Power Duration. Area Semi-centralised.

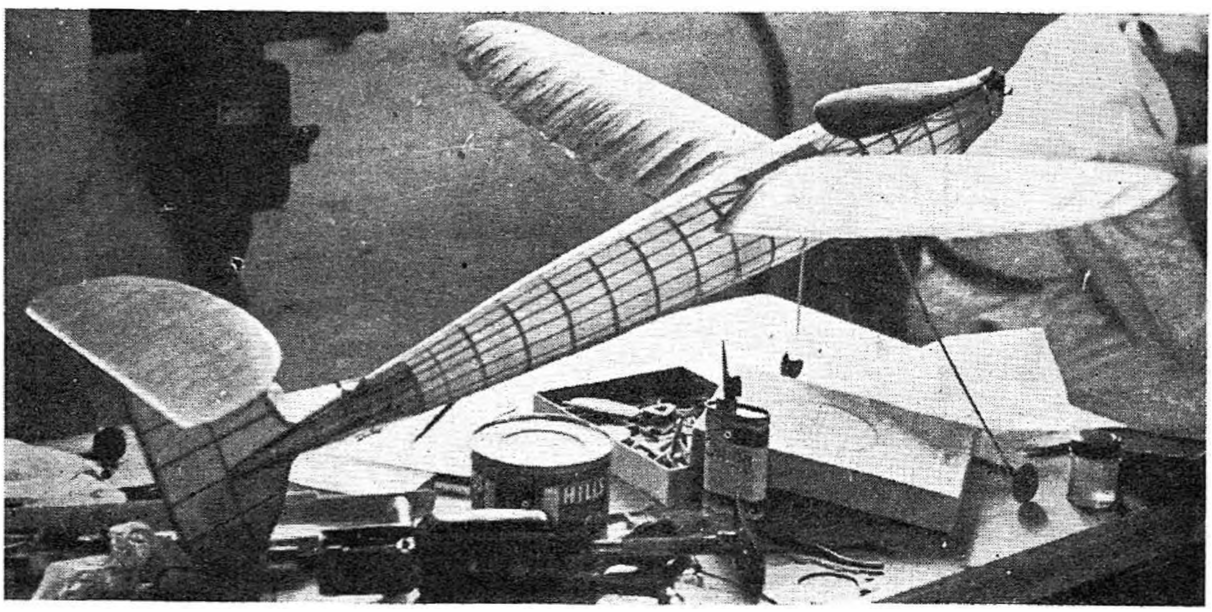
1	Marcus, N. G.	Croydon	639.9
2	Lord, E.	Accrington	622
3	Grasmeder, R.	West Essex	603.2
4	Davey, C. J.	Blackpool	587
5	Amor, R.	Ilford	578
6	Wyatt, P.	Ipswich	570
7	Knight, J. B.	Kentish Nomads	551.7)
8	Clarke, P.	Lincoln	536
9	Eifflander, J.	Macclesfield	522.6
10	Gorham, J. A.	Ipswich	517.7
11	Stubbs, A.	Crewe	492.5
12	Hurst, J.	Preston	492.1

April 16th—RIPMAX TROPHY (31 entries).

Radio Control. Area Semi-centralised.

			Pts.
1	Ashdowne, F. H.	Southend Senior	300
	Honnest-Redlich, K.	Isle of Thanet	(maxi-
	Birkhead, R. W.	St. Georges Heights	mum)
2	Allen, S.	Battersea	210
3	Gorham, J. A.	Ipswich	
	Hemsley, O.	Bushy Park	
	Hook Bros.	Zombies	
	Taylor, W.	West Essex	200
	Wallace, P.	Battersea	
	Knowles, F.	Redhill	
4	Ayers, M. A.	High Wycombe	165
5	Howard, J.	Kentish Nomads	125

Dutch treat ! The beautiful streamlined Wakefield flown into fourth place at Jamijarvi by P. W. Seton of Holland, would have been an almost certain winner of a Wakefield Concours d'Elegance : and it could fly too as results showed.



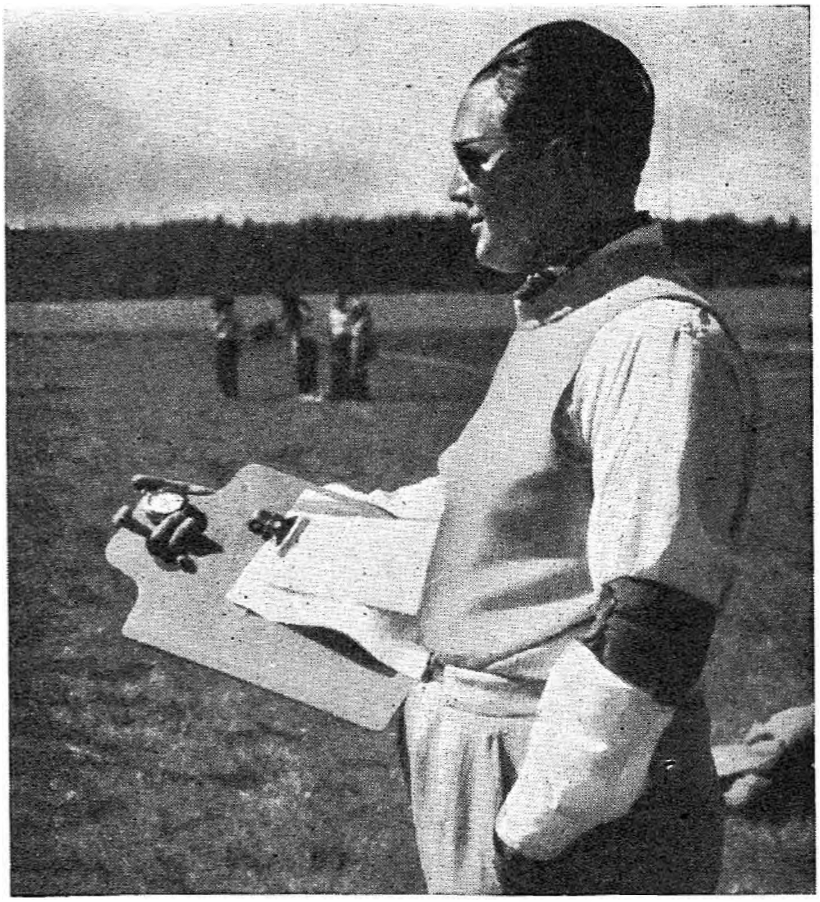
International incident ! Roger Aubertin of Monaco, has trouble at the take-off during the Eaton Bray International Week. Attractive Mlle. Pin, of the 1949 Wakefield team, registers appropriate Gallic concern and encouragement.

May 14th—K. & M. A. A. CUP (316 entries).
A/2 Glider. Area Semi-centralised.

1	Yeabsley, R.	Croydon	736.6
2	Teasell, R.	Northern Heights	698.3
3	Brain, J.	Park M.A.L.	631.2
4	Barr, L.	Pharos	614.1
5	Moore, H. E.	West Coventry	598.1
6	King, M. A.	Belfairs	592.7
7	Geesing, T.	Croydon	583.2
8	Marshall, J.	Hayes	577.6
9	Smith, D. C.	Loughborough Coll.	572.4
10	Wheeler, B.	Birmingham	568.6
11	Ward, R. A.	Croydon	557.8
12	Exley, C.	Sheffield	549.6

May 14th—WESTON CUP (290 entries).
Wakefield 2nd Trials. Area Semi-centralised.

1	Holland, F.	Swansea	753.4
2	Smith, E.	Icarians	742
3	Taylor, P. T.	Thames Valley	673.5
4	Warring, R. H.	Zombies	667
5	McKenna, J.	Park M.A.L.	656.2
6	Cole, R.	Swansea	652
7	Ryde, L.	Northern Heights	647.2
8	Montgomery, P.	Kirkcaldy	629.5
9	Du'ery, V.	Leeds	615
10	Copland, R.	Northern Heights	609.2
11	Yale, A. A.	Bournemouth	608.8
12	Knight, J. B.	Kentish Nomads	596.5



A good time was had by all! Efficient "artist's palette" type of timers' board, with built-in stopwatch seen at the A/2 Contests in Sweden.

May 27th-29th—THE NATIONALS
Held at York Aerodrome and York Rugby Football Ground

GOLD TROPHY (49 entries).
Aerobatic Control Line

			Pts.
1	Hewitt, B. G.	Sth. Birmingham	332.7
2	Eifflander, J. G.	Macclesfield	281
3	Taylor, W. H. B.	West Essex	273.7
4	Cook, R.	Rotherham	262.3
5	Buck, A. R.	Five Towns	261·3
6	Russell, P. G.	Worksop	259
7	Steward, W. E.	West Essex	254
8	Butcher, N. J.	Croydon	219.7
9	Swift, J.	Sheffield	140.7

THURSTON CUP (234 entries)
F.A.I. Glider.

			Pts.
1	Nicoll, K.	Blackpool	407.3
2	Howkins, F. E.	Birmingham	394.9
3	North, R. J.	Croydon	375
4	Barr, L.	Pharos	349.8
5	Yeabsley, R. N.	Croydon	335.9
6	Geesing, T. A.	Croydon	333.7
7	Firth, R.	York	309.7
8	Wrigley, R.	Bury	300
9	Stringer, P. A.	Huddersfield	273.7
10	Ward, R. A.	Croydon	272
11	Lawrence, D. A.	Wayfarers	269
12	Rumfitt, D.	Leeds	263.9

MODEL AIRCRAFT TROPHY (118 entries)
F.A.I. Rubber Duration.

			Pts.
1	Copland, R.	Northern Heights	378
2	Hartley, R.	Seaham	352.9
3	Rumley, D. H.	Kentish Nomads	339.6
4	Lindsay, P. C.	Wolves	336.3
5	Miller, C. P.	Bradford	307.3
6	Muxlow, E. C.	Sheffield	281.4
7	Monks, R. C.	Birmingham	273.5
8	Kendal, R.	Thames Valley	229.6
9	Warring, R. H.	Zombies	225.5
10	Marcus, N. G.	Croydon	223.1
11	Dallaway, W.	Birmingham	212.9
12	Dubery, V. R.	Leeds	210.25

WOMEN'S CHALLENGE CUP (7 entries)
Open Rubber or Glider

			Pts.
1	Knight, Miss D. J.	Kentish Nomads	167.2
2	Joyce, Miss B. H.	Leeds	126
3	Stevens, Miss M.	North Shields	100
4	Bell, Miss S. N.	Huddersfield	90.6
5	Grimes, Miss P.	Burnley	60
6	Gunter, Mrs. D. A.	Bushy Park	26

SIR JOHN SHELLEY CUP (268 entries)
Open Power Duration.

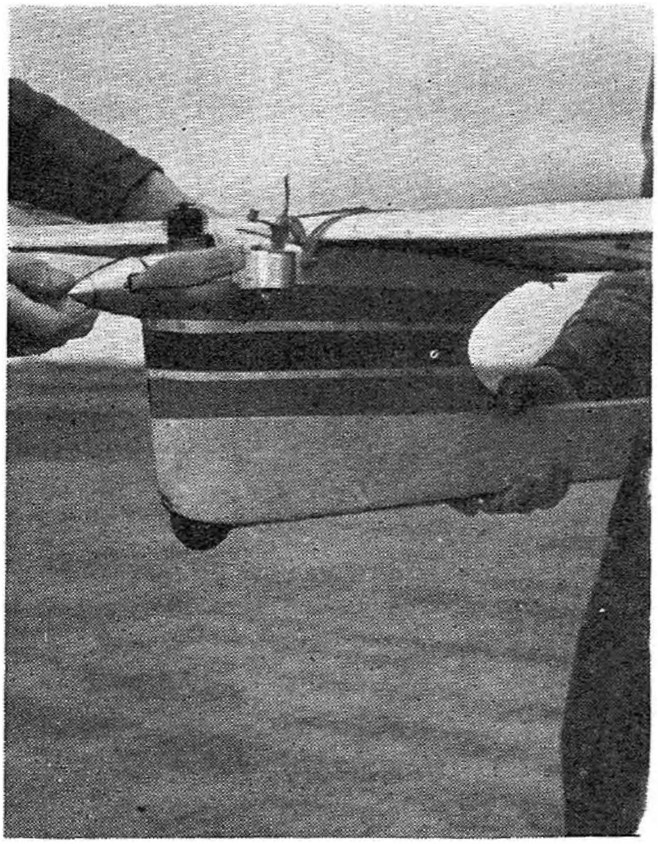
			Pts.
1	Gorham, J. A.	Ipswich	356.9
2	Fairey, B.	Knowle	336.5
3	Davey, C. J.	Blackpool	244.5
4	Goodman, R.	Northampton	241.2
5	Reynolds, A. E.	Flying Saddlers	210.4
6	Lord, E.	Accrington	201.3
7	Clark, N. A.	Bishop Auckland	197.4
8	Green, M. H.	Men of Kent	192
9	Meanwell, R.	Northampton	187.8
10	Eifflander, J. G.	Macclesfield	186.8
11	Bennett, D.	Prestwich	185.8
12	Farmer, R. A.	Ipswich	185

S M A.E. RADIO CONTROL TROPHY (49 entries —41 returned no score).
Radio Control Power.

			Pts.
1	Doughty, P. C.	Birmingham	60
2	Gorham, J. A.	Ipswich	40
2	Sutherland, W. S.	West Essex	40
3	Hounest-Redlich, G.	Bushy Park	25
4	Coates, A.	Huddersfield	10
4	Ingham, A. S.	Blackburn	10
4	Allen, D. J.	West Essex	10
5	Williams, W.	Seaham	5

June 11th—PREMIER SHIELD
Final Wakefield Trials. Centralised.

1	Knight, J. B.	Kentish Nomads				
		306.1	205.6	271.3	776.9	
2	Evans, E. W.	Northampton				
		323.6	263.5	166.5	730	
3	Pitcher, J. L.	Croydon				
		191	250	282	723	
4	Warring, R. H.	Zombies				
		329.9	233.6	151.1	684.7	



The popular hatchet-type glider layout adapted for power flight. This appropriately named "Battle-axe" was seen at the Nationals.

5	Stevens, H. R.	Hatfield	350.1 231.2 140.6	671.8
6	Adams, F.	Northampton	243.5 312.6 125.1	668.6
7	Ryde, L.	Northern Heights		652.9
8	Copland, R.	Northern Heights		649.4
9	Chesterton, R. B.	Loughborough Coll.		646.7
10	North, R. J.	Croydon		593.3
11	Montgomery, P.	Kirkcaldy		565.8
12	Collins, R.	West Essex		547.8

June 11th—A/2 NORDIC TRIALS
A/2 Glider. Centralised.

1	Hanson, M. L.	Solihull	287.5 202 276	765.5
2	Hinks, R.	Luton	359.6 253 98.2	651.2
3	Bennett, J.	Yeovil	238 138 269	645
4	Bootland, T.	Scunthorpe	234 194.5 207	635.5
5	Richmond, J. S.	Wolves		557.8
6	Robins, J.	Bushy Park		518
7	Barr, L.	Pharos		512
8	Knight, J. B.	Kentish Nomads		507
9	Marshall, J.	Hayes		501.1
10	Taig	Bristol & West		496
11	Poole, T.	Sheffield		492.2
12	Nelson, W.	Sheffield		466.1

June 25th—HAMLEY TROPHY (88 entries)
Power Duration. Decentralised.

1	Cole, G.	Upton	835
2	Pepperell, D. F.	N-West M'sex.	815.4
3	Farrance, W.	West Yorks	783.5
4	Field, P.	Belfairs	477.6
5	Hollobon, G. V.	N-West M'sex.	655.2
6	Tasker, R.	Blackpool	634.5
7	Atkinson, R. H.	Ipswich	620.2
8	Knight, H. J.	Kentish Nomads	615
9	Marcus, N. G.	Croydon	610.8
10	Eifflander, J. G.	Macclesfield	580.3
11	Noll, T.	Wayfarers	578.5
12	Munday, P.	Grimsby	513

July 23rd—ALL HERTS RALLY
Held at Radlett Aerodrome.

Open Rubber.

			Sec
1	Marcus, N.	Croydon	300
2	Eastwell, D.	St. Albans	259
3	Revell, N.	Northampton	251.7

Free-Flight Power.

			agg. ratio
1	Gorham, J.	Ipswich	19.2
2	Kicks, S.	Bushey Park	19.01
3	Lloyd, K.	Solihull	16.8

Open Glider.

			Secs.
1	Harris, R.	Regent's Park	267
2	Eastwell, D.	St. Albans	263
3	Wilmot, G.	Belfairs	257

Control-Line Stunt.

			Pts.
1	Hewitt, A.	Sth. Birmingham	322
2	Treadaway, P.	Belfairs	321
3	Muscutt, K.	W.E.A.	316

Control-Line Speed.

			m.p.h.
Cl. II	Gorham J.	Ipswich	84
Cl. III	Claydon, J.	E. London	80.5
Cl. IV	Guest, F.	Country Member	113
Cl. VI	Evans, D.	Weston-S-Mare	100.5

No returns in Classes I, V and VII

Team Race

1 Butcher, N. (Croydon) 10 miles at 51 m.p.h. (E D. Mk. IV "Lil' Lulu")
2 Moulton, R. (W.E.A.) (Elfin 2.49 "Yadeno Wonder").
3 Rowe, D. (Country Member) (Amco 3.5 "Red Lightning").

All-Herts Champion
Eastwell, D. (St. Albans) for 3rd successive year.

Concours d'Elegance

Rubber/Glider
Nachtman, T. (Polish M.A.C.) with tail-less Glider.

F. F. Power
Newton, J. (Blackheath) with Reeves 3.5 Biplane.

Control-Line
Donavour-Hickie, P. (Zombies) with Long Midget.

Trophy for the Most Outstanding Model
Nunn, J. (Barking) with Vampire.

July 2nd—NORTHERN HEIGHTS GALA
Held at Langley Aerodrome

HALTON PRIZE
P. Stanning

AEROMODELLER CHAMPIONSHIP CUP
Barr, L. Pharos

FAIREY (RUBBER) CUP

			Secs.
1	Glennie, A. G.	Streatham	600
2	Tangney, J.	Croydon	540
3	Barr, L.	Pharos	533

QUEEN'S CUP

1	Howard, J. A.	Kentish Nomads	1040.4
2	Copland, R.	Northern Heights	1013
3	West, B.	Yeovil (3 flights)	701

MODEL ENGINEER CUP (Control line Stunt)

			Pts.
1	Piacentini, A.	Salisbury	335
2	Butcher, N. J.	Croydon	328
3	Prentice, R.	Chingford	326

CORONATION (POWER) CUP

1	Setchfield, A.	Willesden	487.2
2	Hill, R.	Hillingdon	366.6
3	Buskell, P.	Surbiton	298.4

FLIGHT (GLIDER) CUP

			Secs.
1	Gardner, B.	Fulham	900
2	Barr, L	Pharos	696.75
3	Ward, P. A.	Wayfarers	691.75

THURSTON (HELICOPTER) TROPHY

			Pts.
1	Tangney, J.	Croydon	364.75
2	Dowsett, —.	Brentford & Chiswick	118.2

Concours d'Elegance

Section 1—(Power)
Newton, J. Blackheath
Section 2—(General Flying Models)
Gregory, N. Harrow
Section 3, 4—(Scale)
Nunn, J. Barking
Special Award to H. J. Towner, Eastbourne

August 17th - 22nd — AEROMODELLER 4th INTERNATIONAL RALLY. Held at Eaton Bray Sportsdrome.

F.A.I. Sailplane Contest—

1	Jones, D. E.	Watford	538.7
2	Bennett, D.	Salford	511.1
3	Bates, Clive	Icarians	444

Stunt Control Line—

1	Russell, P. G.	Worksop	309
2	Eifflaender, I. G.	Macclesfield	306.3
3	Glover, L. P.	Portsmouth	289.3

Scale Stunt Control Line—

1	Richmond, P. J.	—	269 3

Speed Control Line—

Class II—			
1	Eifflaender, I. G.	Macclesfield	80.35 m.p.h.
Class III—			
1	Eifflaender, I. G.	Macclesfield	70.03 m.p.h.
Class IV—			
1	Deudney, F. E.	W. Essex	102.27 m.p.h.
Class V—			
1	Glover, L. F.	Portsmouth	65.93 m.p.h.
Class VII—			
1	Russell, P. G.	Worksop	125 m.p.h.

Handicap Speed Control Line—

1	Russell, P. G. (Class VII)	83.32%
2	Eifflaender, I. G. (Class II)	80.35%
3	Deudney, F. E. (Class IV)	78.6 %

Power Ratio/Duration—

1	Wyatt, P.	Ipswich	11.083
2	Green, M.	Men of Kent	10.806
3	Marcus, N. G.	Croydon	10.441

A/2 (Nordic) Sailplane—

1	Yeabsley, R.	Croydon	821.8
2	Russell, A. G.	Kentish Nomads	761.5
3	Noel, T.	Herts	740

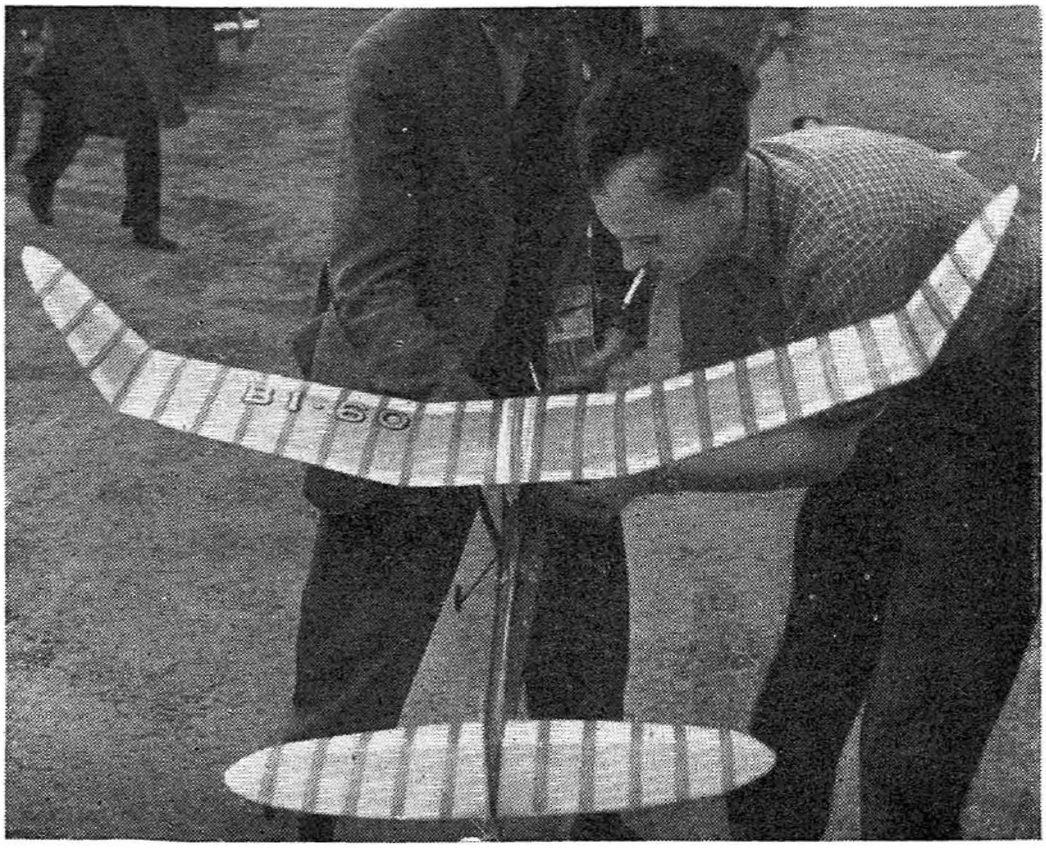
F.A.I. Rubber—

1	Morisset, J.	France	602.75
2	Smith, E.	Icarians	479
3	Royle, P. J.	Derby	426.2

"Aeromodeller" Trophy Results—

1	Yeabsley, R.	Croydon	30
2	Russell, A. G.	Kentish Nomads	27
3	Gilbert, P.	Greenford	25
4	Morisset, J.	France	24
5	Neumann, F.	Denmark	23
6	Bateman, D.	Dunstable	22

Timer's nightmare ! The zebra influence—or decorations by a gentleman with adequate supplies of trim-strip.



On left :
F. E. Deudney of West Essex with one of his winning control line speed models. This enthusiast is a regular winner wherever speed fans foregather

On opposite page :
J. Bridgewood of the Woodlands Club, with his Dornier D.O.24, three engined scale model, with which he became first holder of the Eddie Riding Memorial Trophy at the *Daily Despatch* Rally.

June 18th—WEST ESSEX GALA
Held at Fairlop

Rubber Duration—			
1	North, J.	Croydon	577.2 secs.
2	Brown, L.	Solihull	460.1 ,,
3	Bushell, D.	Surbiton	402.2 ,,
Power Ratio—			
1	Allbon, A. L.	Bushy Park	43.7
2	Jays, V.	Manor House	31.77
3	Russell, A. G.	Kent Nomads	31.6
Team Race (10 miles)—			
1	Rowe, D. W.	Country Member	
2	Butcher, N.	Croydon	
3	Nunn, J.	Barking	
Aerobatics—			
1	Russell, P.	Worksop	172 pts.
2	Prentice, R.	Chingford	146 ,,
3	Butcher, N.	Croydon	109½ ,,
Radio Control—			
1	Allen, S.	Battersea	115 pts.
2	Wallis, P.	Barnes	105 ,,
3	Higlett, E.	Eastleigh	70 ,,
Speed Contest—			
Class I (Zombies)—			
	Shaw, C.	(one entry)	75.4 m.p.h.
Class II—			
	Clarke, J.	Ruislip (one entry)	
Class IV—			
1	Wright, L.	St. Albans	103.2 m.p.h. (Eta 29)
2	Powell, D.	East London	92.9 m.p.h.
3	Chinery, D.	Surbiton	82.9 ,,
Class VI (Dooling)—			
1	Guest, F.	Country Mem.	121.5 m.p.h.
2	Taylor, N. G.	Wimbledon	115.2 ,,
3	Billington –	Brixton	109.0 ,,
Prizes were awarded on handicap as follows—			
1	Shaw, C.	Zombies	83.8%
2	Clarke, J.	Ruislip	82%
3	Guest, F.	Country Member	81%

April 30th—KEIL TROPHY (94 entries)
Open Power/Ratio. Decentralised.

1	Pepperill, D. F.	Edgware	15.26 ratio
2	Wyatt, P.	Ipswich	14.56 ,,
3	Goorwitch, G.	Manor House	12.64 ,,
4	Pilgrim, N.	Birmingham	12.17 ,,
5	Leader, J. E.	Chorley Wood	11.31 ,,
6	Knight, J. B.	Kentish Nomads	10.12 ,,
7	Knight, N. J.	,,	9.92 ,,
8	Crabbe, D.	Park M.A.L.	9.8 ,,
9	Roberts, R.	Upton	9.4 ,,
10	Wilson, P.	Knutsford	8.94 ,,
11	Noel, P.	Wayfarers	8.3 ,,
12	Dudley, D. J.	Satyrs	8.25 ,,

April 30th—LADY SHELLEY CUP (17 entries)
Tailless. Decentralised.

1	Lucas, A. R.	Port Talbot	512 secs.
2	Manuel, W. L.		473.8 ,,
3	Marshall, J.	Hayes	422 ,,
4	Hughes, D. R.	Merseyside	357 ,,
5	Pope, C.	Upton	286 ,,
6	John, E. J.		278.5 ,,
7	Haskayne, C.	Merseyside	270.5 ,,
8	Andrews, A.	Whittlesey	223 ,,
9	Bennison, H.	Ipswich	173.6 ,,
10	Wyatt, P.	,,	161.8 ,,
11	Draxton, K. R.		153.2 ,,
12	Johnson, K.	Hayes	149.5 ,,

August 6th—BOWDEN TROPHY (25 entries)
Precision Power. Centralised.

1	Yeaxlee, B. A.	Portsmouth	90 error
2	Brooks, B.	Country Mem.	121 ,,
3	Allen, S.	Battersea	123 ,,
4	Edwards, C.	R.A.F. Binbrook	151 ,,
5	Body, B. F.	Portsmouth	155 ,,
6	Treadaway, P.	Belfairs	156 ,,
7	Miller, S. A.	Luton	162 ,,
8	Reasell, R.	Northern Heights	164 ,,
9	Emm, D. S.	Battersea	172 ,,
10	Young, E. L.	Portsmouth	177 ,,
11	Cavanagh, E. D.	Blackheath	178 ,,
12	Parker, A. R.	Kentish Nomads	181 ,,

August 7th—TAPLIN TROPHY (30 entries)
Radio Control Centralised.

1	Allen, D. J.	West Essex	345 pts.
2	Sutherland, S. G.	,,	339.6 ,,
3	Gorham, J. A.	Ipswich	319.6 ,,
4	Hemsley, O. E.	Bushy Park	314.5 ,,
5	Tickner, W. H.	West Essex	270 ,,
6	White, C. A.	Eastleigh	242.2 ,,
7	Setchfield, A.	Willesden	231.6 ,,
8	Collins, S.	Northern Heights	214.3 ,,
9	Knowles, F.	Redhill	182.2 ,,
10	Harding, L.	Birmingham	177.3 ,,
11	Wallis, P.	Barnes	145 ,,
12	Dyne, S. C.	Battersea	137.6 ,,

August 6-7th—CONTROL LINE SPEED (26 entries—14 no score)
Control Line Speed. Decentralised.

Class I—		
Deudney, F. E.	West Essex	72.57 m.p.h.
Class II—		
Free, D. W.	Surbiton	83.3 ,,

Class III—			
Claydon, J. W.	East London	76.5	„
Bergman, C.	Surbiton	72.57	„
Class IV—			
Deudney, F. E.	West Essex	107.2	„
Wright, P.	St. Albans	104.6	„
Wallis, E.	Surbiton	98.91	„
Class V—			
Kelsey, P.	Croydon	88.25	„
Class VI—			
Dunn, B.	East London	101.5	„

August 13th—" DAILY DISPATCH " RALLY Held at Woodford, Manchester

Open Glider—				
1	Hill, D.	Wolves	480.4	
2	Monks, R.	Birmingham	442.3	
3	Thomas, H. R.	Whitefield	393.8	
Open Power—				
1	Monks, R.	Birmingham	475.4	
2	Marshall, J. K.	Sheffield	370.2	
3	Lloyd, K. L.	Solihull	365.5	
Open Rubber—				
1	Muxlow, E. C.	Sheffield	461.2	
2	Royle, P.	Sale	425.75	
3	Woodhouse, R.	Whitefield	404	
Jetex—				
1	O'Donnell, H.	Whitefield	5.8	ratio
2	Taylor, E.	Manchester	3.9	„
3	James, D.	Flying Saddlers	3.159	„
Flying Scale—				
1	Bridgewood, J.	Woodlands	57	pts.
2	Ward, F. D.	Ashton	52	„
3	Brown, L.	Leeds	51	„
Control Line Stunt—				
1	Eifflaender, I. G.	Macclesfield	143	pts.
2	Holbrook, M.	Sale	63	„
3	Vickers	N. Manchester	58	„
Radio Control—				
1	Dyne, S. C.	Battersea	74	pts.
2	Walters, E.		62	„
3	Tootell, W.	Chorley	55	„

September 3rd—MODEL ENGINEER CUP (91 clubs competed, 360 entries).

Open Glider (Team). Area Semi-centralised.

1	Croydon M.A.C.	2,623	pts.
2	Pharos M.A.C.	2,397.5	„
3	Streatham M.A.C.	2,032	„
4	Wayfarers M.A.C.	1,896.8	„
5	West Middlesex M.A.C. ...	1,846.1	„
6	Park M.A.L.	1,734.4	„
7	Sheffield M.A.S.	1,694	„
8	Ipswich M.A.C.	1,675	„
9	West Yorks M.A.C.	1,601	„
10	Northern Heights M.F.C. ...	1,521.9	„
11	Birmingham M.A.C.	1,508.2	„
12	Scarborough M.A.C.	1,335	„

September 3rd—FARROW SHIELD (63 clubs competed, 210 entries)

Open Rubber (Team). Area Semi-centralised.

1	Kentish Nomads M.A.C. ...	2,158 ...	pts.
2	Croydon M.A.C.	1,992.3	„
3	Northampton M.A.C.	1,856.4	„
4	Littleover M.A.C.	1,785.9	„
5	Leeds M.F.C.	1,344	„
6	Pharos M.A.C.	1,271.9	„
7	Icarians M.A.C.	1,224.25	„
8	Birmingham M.A.C.	1,146.5	„
9	Ipswich M.A.C.	1,066.6	„
10	Thames Valley M.A.C.	1,060.5	„
11	Luton M.A.S.	1,039.05	„
12	Plymouth M.A.C.	1,031.15	„

September 3rd—ASTRAL TROPHY (220 entries).

Open Power Ratio. Area Semi-centralised.

1	Marcus, N. G.	Croydon	Ratio 16.38
2	Ladd, R.	Croydon	14.04
3	Lowe, G.	Colchester	11.4
4	Gorham, J. A.	Ipswich	10.77
5	Cross, P. N.	Scarborough	10.25
6	Wingate, J.	Streatham	9.99

7	Barr, L.	Pharos	9.6
8	Jacobs, P. S.	Ipswich	9.47
9	Wright, L.	St. Albans	8.82
10	Pepperell, D.	West Middlesex	8.78
11	Wickes, P.	Northampton	8.71
12	Preston, —.	West Yorks	8.58

September 17th—FLIGHT CUP (19 entries)

	Open Rubber.	*Decentralised.*	
1	Copland, R.	Northern Heights	449
2	Rumley, D. H.	Kentish Nomads	337
3	Knight, J. B.	Kentish Nomads	308.5
4	Roper, R.	Icarians	247.7
5	Richmond, J. S.	Wolves	235
6	Fuller, G.	Luton	231
7	Blake, M.	Thames Valley	212
8	Pitcher, J. L.	Croydon	197
9	Lawrence, D. A.	Wayfarers	191
10	Clarke, T.	Luton	167.5
11	Longstaffe, A.	Belfairs	167.5
12	Munday, P.	Cleethorpes	153

September 17th—S.M.A.E. CUP (22 entries).

	Open Glider.	*Decentralised.*	
1	Yeabsley, R.	Croydon	499.4
2	Beeson, E.	Reading	311
3	Jones, R.	Wayfarers	217
4	Hanson, M. L.	Solihull	196.8
5	Gorham, J. A.	Ipswich	196
	Balding, T.	Cleethorpes	196
6	Osborne, J.	Ipswich	187
7	O'Donnell, J.	Whitefield	184.9
8	Longstaffe, A.	Belfairs	150.2
9	Hudman, J.	Prestwich	143.4
10	Bennett, A. D.	Birmingham	146.2
11	Bawley, N.	Leeds	138
12	Wheeler, B.	Birmingham	120.4

September 17th—FROG JUNIOR CUP (6 entries).

	Junior Open Rubber.	*Decentralised.*	
1	Rumley, D. H.	Kentish Nomads	337
2	Roper, R.	Icarians	247.7
3	Richmond, J. S.	Wolves	235
4	Machlachan, D.	Wayfarers	110
5	Pizzey, C.	Ipswich	85.2
6	O'Donnell, H.	Whitefield	26.8

PLUGGE CUP PLACINGS
(172 clubs participated)

1	Croydon D.M.A.C.	1,424.21 pts.
2	Pharos M.A.C.	1,300.5189 ,,
3	Sheffield M.A.S.	1,139.3847 ,,
4	Leeds M.F.C.	1,082.5938 ,,
5	Park M.A.L.	1,045.3 ,,
6	Northern Heights M.F.C.	1,013.4587 ,,
7	Ipswich M.A.C.	983.4078 ,,
8	Birmingham M.A.C.	982.8357 ,,
9	Luton M.A.S.	913.1331 ,,
10	Northampton M.A.C.	881.0855 ,,
11	Loughborough College M.A.C.	841.9375 ,,
12	Kentish Nomads M.A.C.	805.8981 ,,

CATON TROPHY

R. Copland	Northern Heights M.F.C.	2,638.1 pts

1950 NATIONALS CHAMPIONS

SENIOR	Gorham, J. A.	Ipswich M.A.C.
JUNIOR	Rumley, D. H.	Kentish Nomads
C/L STUNT	Hewitt, B. G.	South Birmingham

This Russian power model earned a prize of over £20 for its flier at a contest held in the Soviet Zone of Germany, and is typical of the usual power record-holding model now being developed.

INTERNATIONAL MODEL AIRCRAFT RECORDS

Issued by the F.A.I. 1st September, 1950

Rubber Driven Class I A-1

Duration	Nassonov, V. (Russia)	1 : 1 : 60 10/ 8/1949
Distance	Benedek, G. (Hungary)	50.26 km. 20/ 8/1947
Height	Poich, R. (Hungary)	1,442 m. 31/ 8/1948
Speed	Davidov, V. (Russia)	107.08 km/h. 11 : 7 : 40

Power Driven, Class I B-1

Duration	Lioubouchkine, G. (Russia)	3 : 48 : 45 12/ 7/1947
Distance	Malik, S. (Russia)	210.62 km. 19/ 9/1947
Height	Lioubouchkine, G. (Russia)	4,152 m. 13/ 8/1947
Speed (straight course)	Stiles, E. (U.S.A.)	129.768 km/h. 20/ 7/1949

Control Line Speed, Class I B-2

Class I (0-2.5 cc.)	Vassiltchenko, M. (Russia)	89.938 km/h 14/ 5/1950
Class II (2.51-5 cc.)	Devillers, A. (France)	172.116 km/h 15/ 6/1950
Class III (5.01-10cc.)	Laniot, G. (France)	201.117 km/h 15/ 6/1950
Jet	Vassiltchenko, M. (Russia)	144.025 km/h 14/ 5/9150

Hydroplanes—Rubber Driven, Class II A-1

Duration	Vassiliev, A. I. (Russia)	41 min. 19/ 8/1948
Distance	Horvath, E. (Hungary)	45.150 km. 10/ 9/1949
Height	Gasko, M. (Hungary)	939 m. 18/ 8/1949
Speed	Abramov, B. (Russia)	76.896 km/h 6/ 8/1940

Hydroplanes—Power Driven, Class II B-1

Duration	Lioubouchkine, G. (Russia)	1 : 18 : 40 19/10/1949
Distance	Vassiltchenko, M. (Russia)	58.843 km. 3/ 8/1948
Height	Kavsadze, I. (Russia)	4,110 m. 8/ 8/40
Speed	Khaborov, R. (Russia)	50.05 km/h 18/ 8/1948

Unorthodox—Rubber Driven, Class III A-1

Duration	Musgrove, R. (Gt. Britain)	1 : 6 : 8 28/11/1948

Helicopter twin-rotors

Unorthodox—Power Driven, Class III B-2
Control Line Autogyro

Class I	Tvorogov, N. (Russia)	51.876 km/h 17/ 4/1950
Class II	Tvorogov, N. (Russia)	43.7 km/h 28/ 4/1950
Class III	Mouritchev, L. (Russia)	41.234 km/h 14/ 8/1849

Sailplanes, Class IV 1

Duration	Haslach, T. (Switzerland)	2 : 21 : 6 4/ 6/1944
Distance	Varache, H. (France)	98.72 km. 21/ 7/1946
Height	Benedek, G. (Hungary)	2,364 m. 23/ 5/1948

Flying Wings, Rubber Driven, Class I A-1

Duration	Poich, I. (Hungary)	5 : 47 25/ 9/49
Distance	Gall, T. (Hungary)	0.72 km. 17/ 4/1949

Flying Wings, Power Driven, Class I B-1

Duration	Babaiane, K. (Hungary)	17 : 36 14/ 8/1949
Distance	King, M. A. (Gt. Britain)	2.6 km. 29/10/1949

Flying Wings—Control Line, Class I B-2

Class I	Khoukhra, I. (Russia)	66.8888 km/h 28/ 4/1950
Class II	Gaevsky, O. (Russia)	86.868 km/h 25/ 4/1950
Class III	Gaevsky, O. (Russia)	163.447 km/h 23/ 5/1950

Flying Wings—Rubber Driven Hydroplanes, Class II A-1

Duration	Aszalay, L. (Hungary)	1 : 5 31/ 7/1949
Distance	Abaffy, E. (Hungary)	435 m. 10/ 7/1949

Flying Wings—Sailplanes, Class IV 1

Duration(*)	Kiraly, M. (Hungary)	9 : 55 17/ 7/1949
Distance	Hodi, L. (Hungary)	2,560 m. 16/10/1949

(*) Application is being made for new world record on behalf of Lucas, A. R. (Gt. Britain) 22 : 33.5 21/ 8/1950)

Absolute World Records

Duration	Lioubouchkine, G. (Russia)	3 : 48 : 45 12/ 7/1947
Distance	Malik, S. (Russia)	210.62 km. 19/ 9/1947
Height	Lioubouchkine, G. (Russia)	4,152 m. 13/ 8/1947
Speed (C/L)	Laniot, G. (France)	201.117 km/h 22/ 4/1950

BRITISH NATIONAL MODEL AIRCRAFT RECORDS

as at 31st October 1950

OUTDOOR (Minimum F.A.I. Loading)

Rubber Driven

Monoplane	Boxall, F. H. (Brighton)	35 : 00	15/ 5/1949
Biplane	Young, J. O. (Harrow)	31 : 05.125	9/ 6/1940
Wakefield	Boxall, F. H. (Brighton)	35 : 00	15/ 5/1949
Canard	Woodhouse, R. (Whitefield)	2 : 13.1	29/ 7/1950
Scale	Marcus, N. G. (Croydon)	5 : 21.75	18/ 8/1946
Tailless	Boys, H. (Rugby)	1 : 24.5	1939
Helicopter	Tangney, J. (U.S.A.)	2 : 43.75	2/ 7/1950
Rotorplane	Crow, S. R. (Blackheath)	0 : 39.5	23/ 3/1936
Floatplane	Parham, R. T. (Worcester)	8 : 55.4	27/ 7/1947
Flying Boat	Rainer, M. (North Kent)	1 : 09	28/ 6/1947

Sailplane

Tow Launch	Best, F. (Leeds)	63 : 46	20/ 7/1948
Hand launch	Field, P. E. (Belfairs)	7 : 05.2	7/ 5/1950
Tailless (H.L.)	Wilde, H. F. (Chester)	3 : 17	4/ 9/1949
Tailless (T.L.)	Lucas, A. R. (Port Talbot)	22 : 33.5	21/ 8/1950
Nordic (T.L.)	Whittall, L. (Birmingham)	29 : 51.7	2/ 7/1950
Nordic (H.L.)	Joyce, J. G. (Leeds)	3 : 40	10/ 9/1950

Power Driven

A (0-2.5 c.c.)	Springham, H. E. (Saffron Waldren)	25 : 01	12/ 6/1949
B (2.51-5 cc.)	Dallaway, W. E. (Birmingham)	20 : 28	17/ 4/1949
C (5.01-15 cc.)	Lund, D. S. (Wakefield)	6 : 46	26/ 3/1950
Tailless	Poile, W. (C/Member)	2 : 09.6	23/ 8/1950
Scale	Tinker, W. T. (Ewell)	1 : 36.5	1/ 1/1950
Floatplane	Stainer, J. R. (Canterbury)	2 : 59.4	14/ 8/1949
Flying Boat	Gregory, N. (Harrow)	2 : 08.5	18/10/1947

Control Line Speed

		m.p.h.	
Class I	Scott, R. (St. Helens)	80.00	9/ 7/1950
Class II	Free, D. W. (Surbiton)	80.35	19/ 6/1949
Class III	Carter, J. G. (Croydon)	89.10	25/ 9/1949
Class IV	Guest, F. (C/Member)	116.90	22/10/1950
Class V	Shaw, C. A. (Zombies)	118.42	19/ 6/1949
Class VI	Taylor, N. G. (Wimbledon)	132.60	10/ 4/1950
Class VII (Jet)	Stovold, R. V. (Guildford)	133.30	25/ 9/1949

OUTDOOR (Lightweight)

Rubber Driven

Monoplane	O'Donnell, J. (Whitefield)	7 : 12	21/ 8/1950
Biplane	O'Donnell, J. (Whitefield)	2 : 53	22/10/1950

Sailplane

Tow launch	Mace, J. A. (Upton)	28 : 17.2	16/ 4/1950
Hand launch	O'Donnell, J. (Whitefield)	3 : 01	19/ 7/1950

Sailplane (cont.)

Tailless (T.L.)	Johnson, H. G. (York)	10 : 44	25/ 6/1950
Tailless (H.L.)	Faulkner, R. A. (Whitefield)	1 : 08.5	20/ 7/1950

Power Driven

Class A	Archer, W. (Cheadle)	31 : 05	2/ 7/1950
Class C	Ward, R. A. (Croydon)	5 : 33	25/ 6/1950
Tailless	Wyatt, P. (Ipswich)	2 : 15	15/10/1950

INDOOR

Free Flight

Stick (H.L.)	Copland, R. (Northern Heights)	18 : 52	22/ 1/1937
Stick (ROG)	Mackenzie, R. (Blackheath)	8 : 42	
Fuselage (H.L.)	Parham, R. T. (Worcester)	6 : 55	19/ 2/1950
Fuselage (ROG)	Parham, R. T. (Worcester)	6 : 42	19/ 2/1950
Tailless (H.L.)	Thomas, M. R. (Oldham)	1 : 25.8	23/12/1949

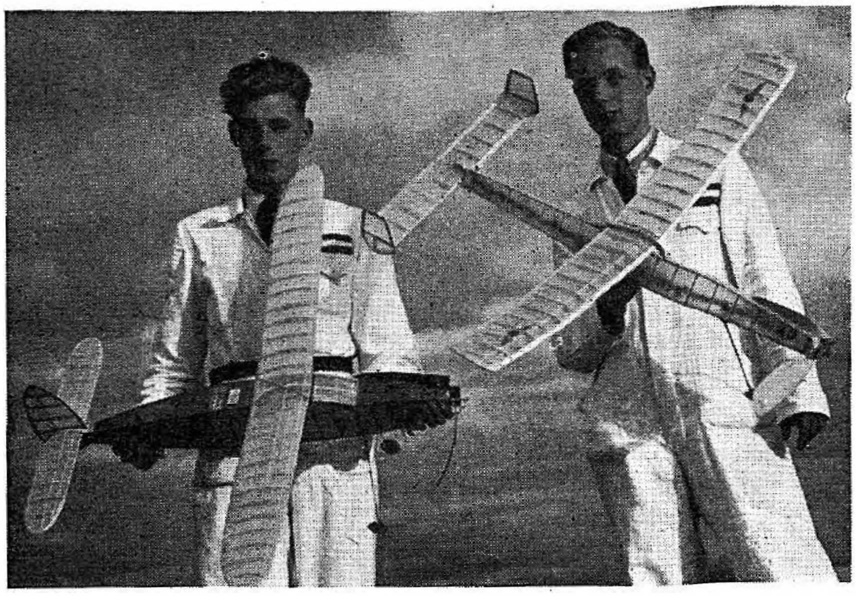
Free Flight (cont.)

Tailless (ROG)	Thomas, M. R. (Oldham)	1 : 46.2	20/ 1/1950
Rotorplane	Mawby, L. (Ealing)	0 : 32.2	

Round the Pole

Class A	Muxlow, E. C. (Sheffield)	6 : 05	10/12/1948
Class B	Parham, R. T. (Worcester)	4 : 26	20/ 3/1948
Speed	Jolley, A. T. (Warrington)	42.83 m.p.h	19/ 2/1950

Winners! Young aeromodellers, De Jong and Dykstra who contributed to the Dutch victory in the International Meeting at Cormeilles en Vexin, France, with their successful Wakefields. Needless to say, Just Van Hattum had his team briefed to the minute on contest procedure and requirements.



1951 WAKEFIELDS

By Just Van Hattum

Secretary F.A.I. Models Commission and Chairman Models Technical Committee of the Royal Netherland Aero Club.

We may assume the new Wakefield specification recommended by the C.I.M.R. (the International Model Committee of the F.A.I.) will come into force in 1951. This had been adapted to the modern ideas that are laid down in the F.A.I. Rules. The old and the new Wakefield specifications are given below :

1950

Wing area : 200 sq. ins. plus or minus 10 sq. ins., area measured on actual span and chord without allowing for dihedral. In other words, the actual " visible " area of the wing.

Tailplane area : not more than 33% of the wing area. Same method as used for finding wing area.

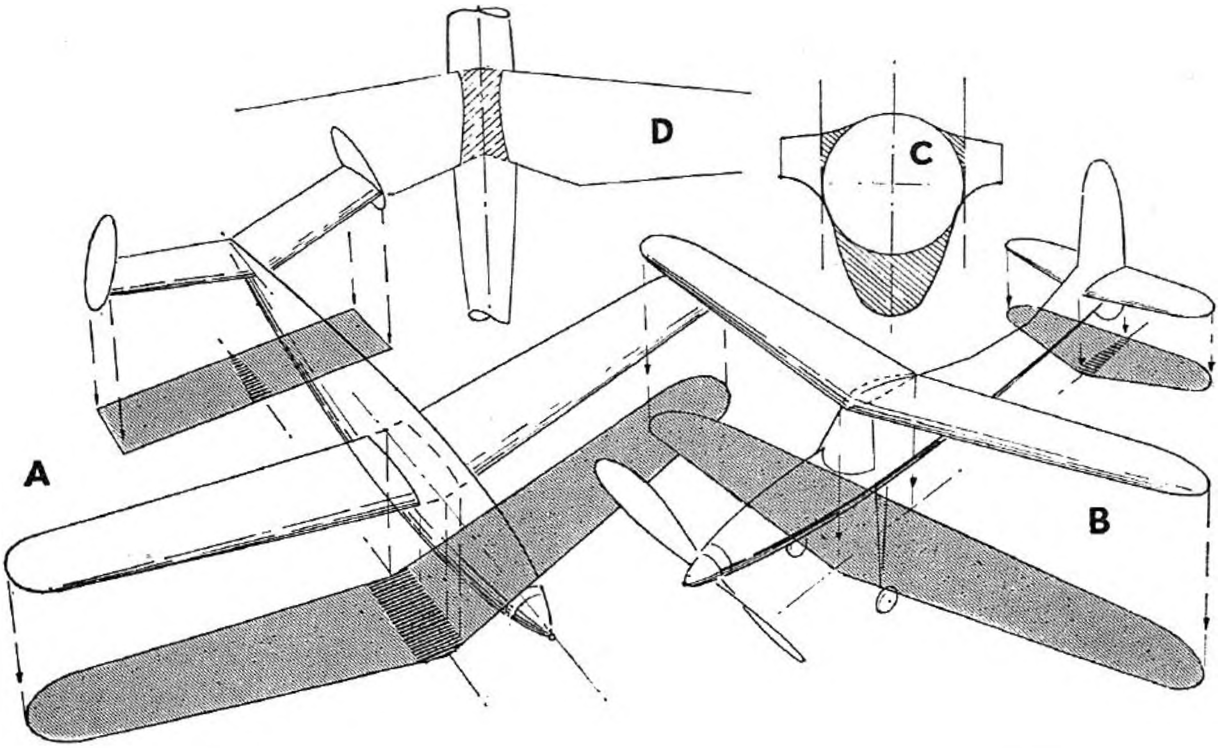
Fuselage cross-section : area not less than the figure given by the fraction. Total length of completely rigged model, squared, the result divided by 100. Area in sq. ins. Weight : not less than 8 ozs.

1951

Total area : 17-19 sq. decimeters, that is very nearly 263.5-294.5 sq. ins. Areas measured as the areas of the orthogonal projections of wing and tailplane in flying attitude on a horizontal plane. (This is the F.A.I. method explained in the S.M.A.E. handbook.) The centre-section of wing and tailplane are included in the area. To determine this, the contour-lines of wing—or tailplane—are continued until they meet the plane of symmetry. See sketch D.

Fuselage cross-section : area of greatest cross-section not less than 65 sq. cms.—a little over 10 sq. ins., namely, 10.075 sq. ins.

Weight : not less than 230 grammes, that is, a shade over 8 ounces, say 8 and one-seventh of an ounce to be safe.



Note. The above is the author's free interpretation of the text and the figures given as near the equivalent values as he can calculate. Readers are warned, however, that the only official test will be that issued by the S.M.A.E. and the same applies to the figures.

A Comparison

It is well worth the trouble to compare the old and new specification point by point. First let us take the area. The method of calculation is the same as that in the F.A.I. Rules, which we have been using since 1947. Both are given in the accompanying sketches. Applying the old rule in A, we would take as the wing area only the lightly shaded portions of wing and tailplane. We now have to add the black portions to these. The area beyond these centre-sections will now be slightly smaller, as we are taking the areas of the projections and not the actual areas. The difference, however, is small : using a normal dihedral angle, it will be more than 2 to 3 %, and it is not wise to work so near to the upper and lower limits.

In sketch B we see a model where the wing area hardly changes when we apply the new ruling. We used to be able to decrease the area of such a wing by mounting a fairing over the centre-section, but such clevet dodges will not serve us any more !

Tail plane Area off the Ration !

One of the most welcome changes is the disappearance of the 33% rule. The tailplane can now be just as large, relative to the wing, as the designer wants it, provided he keeps within the limits for total area. In my opinion, this will very probably lead to the use of larger tailplanes, which will improve longitudinal stability and ease of trimming, even at the price of valuable wing-area. One can now shift the C.G. further back.

Too Small and Too Large

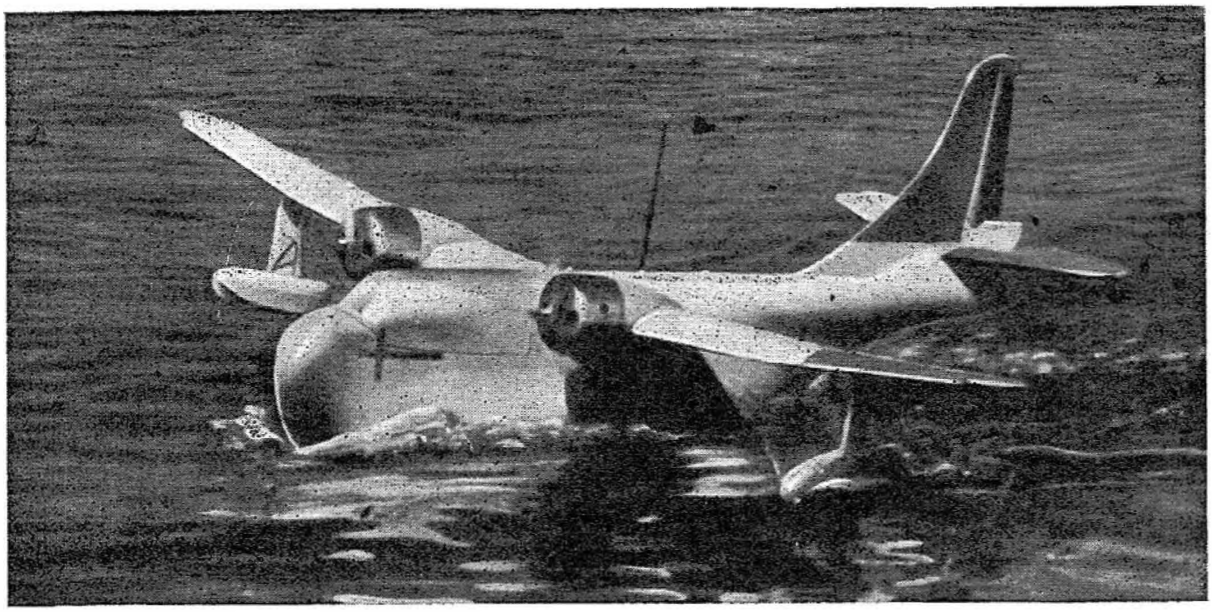
A simple calculation along the new lines may show that an existing Wakefield model proves to lie either below or above the new limits. The cause can be found in the inclusion of the areas of the centre-sections. If one has allowed for this, the upper and lower limits would have embraced such a large gap that one could no more speak of a competition " class." In such cases, the best thing to do would be to increase the relative size of the tailplane. When the total area proves too small, one can mount a larger tail ; when it is too large one can clip the wing. It seems to me, however, that for successful competition an entirely new design is essential.

Fuselage Cross-Section

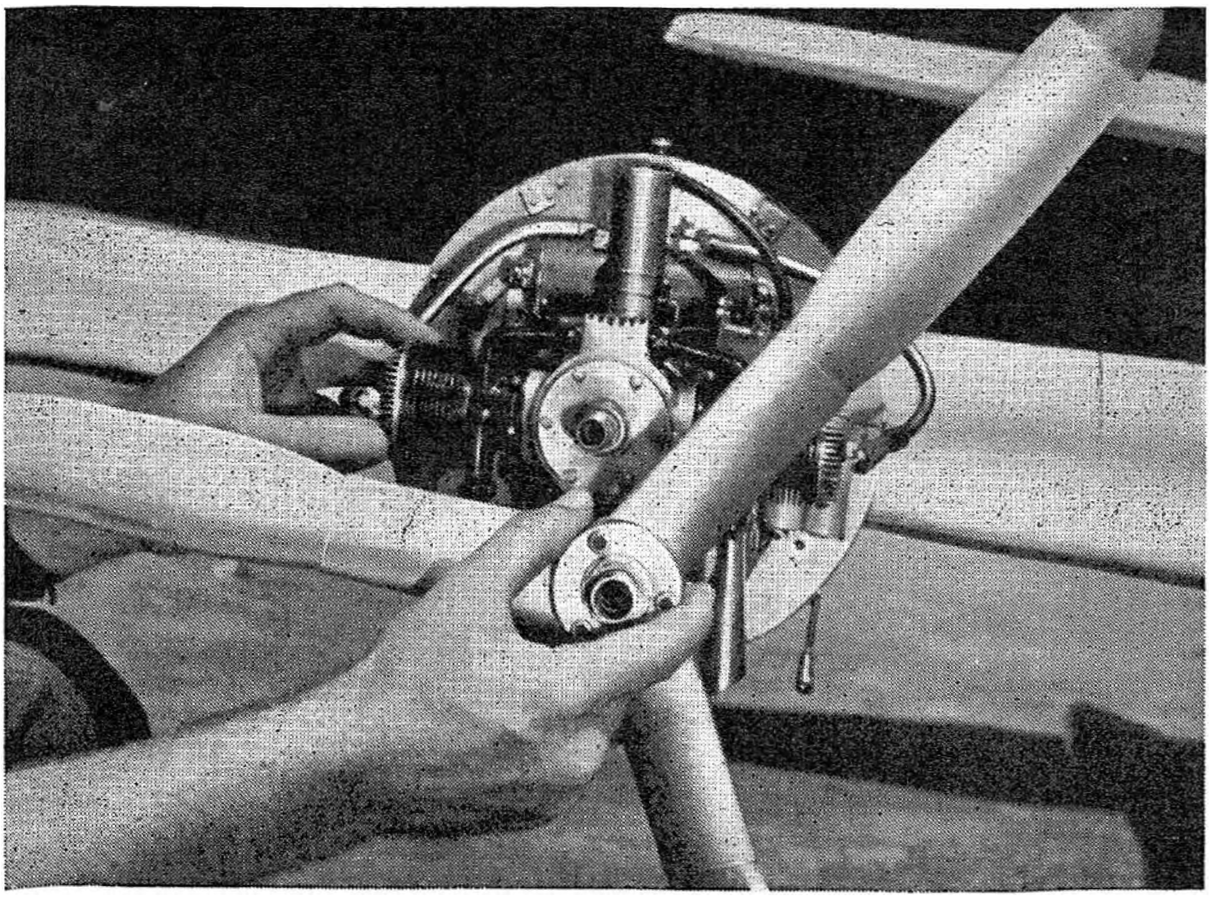
Most of us will also be cheered by the introduction of a smaller minimum cross-section. The Wakefield model was just a bit on the bulky side and this process of slimming will not do any harm to either its appearance or its vitality.

The F.A.I. method is adopted for determining the cross-sectional area in difficult cases. A circle is inscribed in the greatest cross-section and tangential planes are taken as containing between them the actual cross-sectional area. It will be up to the designer to prove, by means of templates, that his model is up to specification, as the hard-worked processing staff cannot be expected to solve juicy little problems in plane geometry under contest-stress ! Now that the area of the cross-section is fixed for all Wakefield-class models, one is not penalised by using a long fuselage.

This year, next year, sometime . . . ? Scene at the Russian Nationals—the dais from which awards were made. When shall we see the Hammer and Sickle boys at a Wakefield contest ?



Radio Control at Work for fullsize industry ! This Consolidated Vultee project shows how radio-controlled models are being used to test new designs under actual flying conditions without risk of life and at a fraction of the fullsize cost. The flying boat has a wing span of 13¾ ft., beam of 13¾ in., overall length of 9½ ft., and a gross weight of nearly 90 lb. A special engine, see below, was developed by Ohlsson and Riee, weighing 3 lb. and producing 2 h.p. at 5,000 r.p.m. Enthusiasts flying for fun can take comfort from the thought that a quarter this wing span suffices them with but a fiftieth the weight, or even less !



INDEX

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

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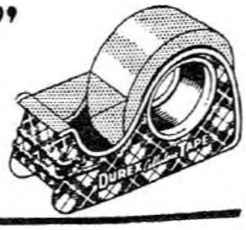

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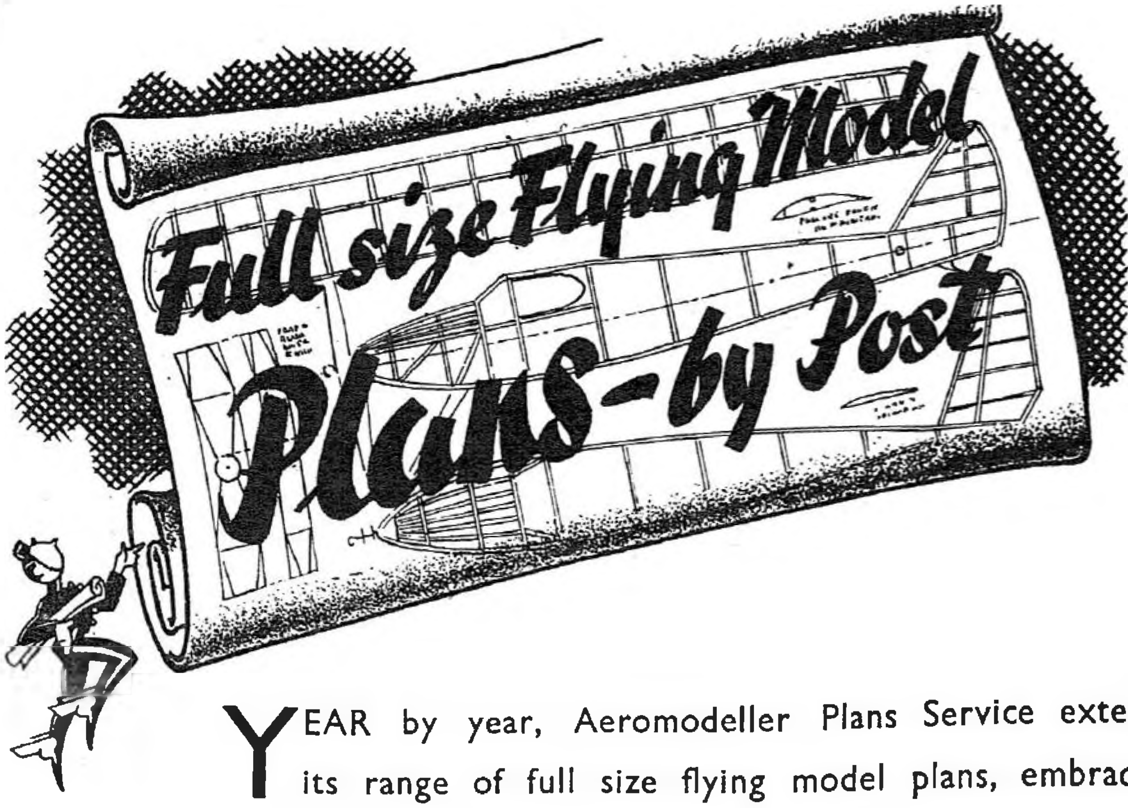

YEAR by year, Aeromodeller Plans Service extends its range of full size flying model plans, embracing all that is best from amongst the most successful designs in the country. Contest winning models, national and world record-holding aircraft, successful scale models are all added to the list when they have demonstrated their flying qualities. All types are represented including control line team, stunt and speed models, Nordic A2, high performance and tailless sailplanes, power models in all sizes, radio controlled designs, Wakefields and free flight rubber, scale, semi-scale and unorthodox models—a selection of nearly three hundred for you!

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