38

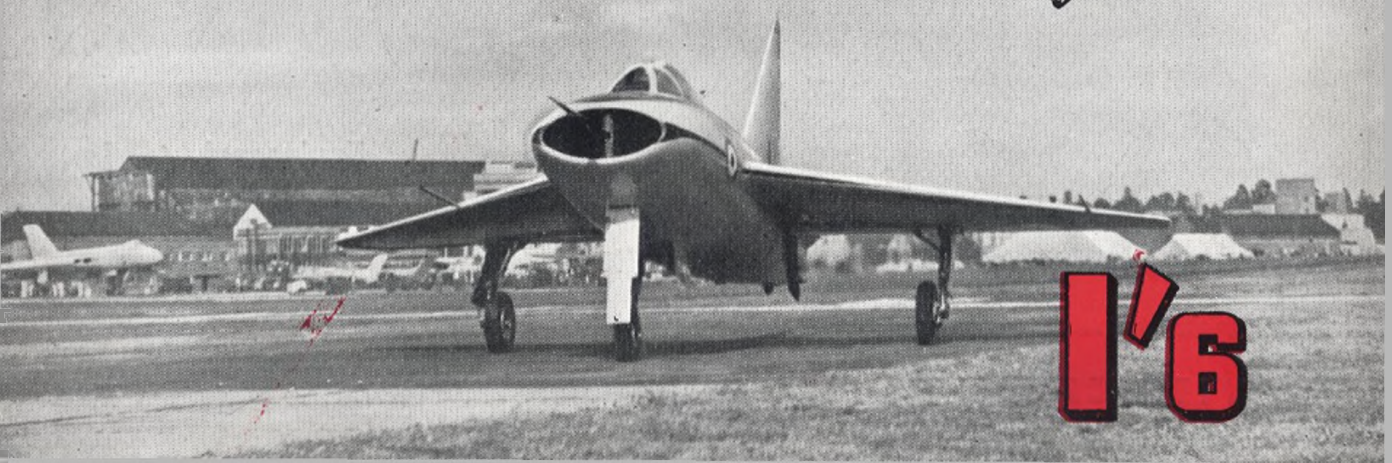
SEPTEMBER 1954

AERO MODELLER

Special

FARNBOROUGH

Issue



1'6

Digital Edition Magazines.

This issue magazine after the initial original scanning, has been digitally processing for better results and lower capacity Pdf file from me.

The plans and the articles that exist within, you can find published at full dimensions to build a model at the following websites.

All Plans and Articles can be found here:

Hlsat Blog Free Plans and Articles.

http://www.rcgroups.com/forums/member.php?u=107085

AeroFred Gallery Free Plans.

http://aerofred.com/index.php

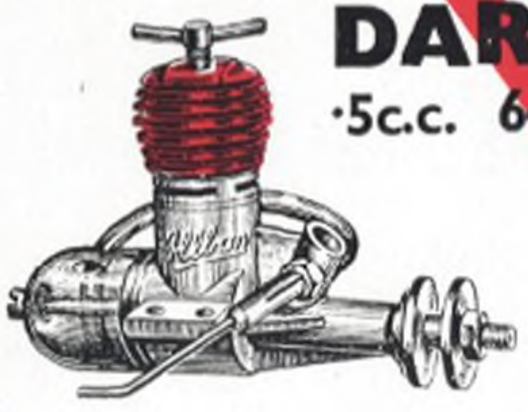
Hip Pocket Aeronautics Gallery Free Plans.

http://www.hippocketaeronautics.com/hpa_plans/index.php

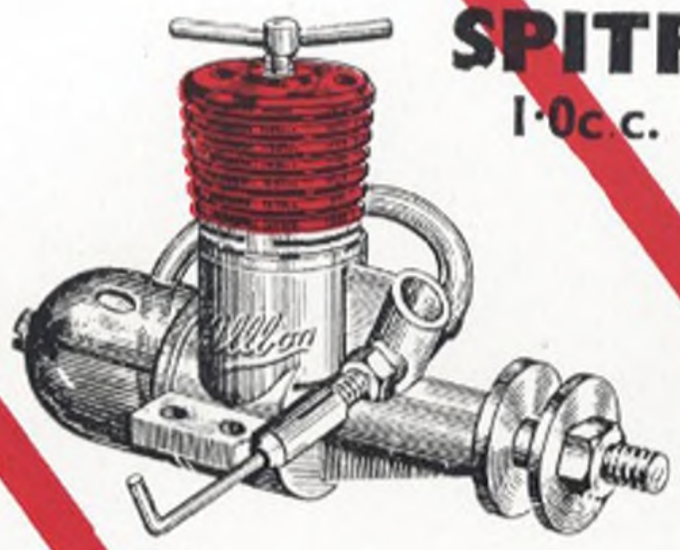
Diligence Work by Hlsat.

Stairway of Stars! or ALLBON above all!

BAMBI
·15c.c. 108/11



DART
·5c.c. 64/2

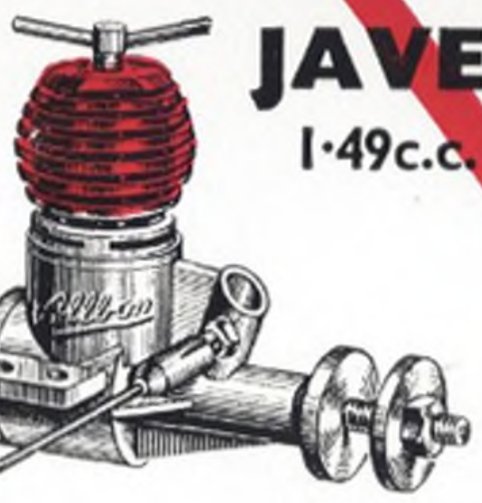


SPITFIRE
1·0c.c. 64/2

Whatever the choice of phrase it is certain that no brighter stars have shone in the modelling firmament than those of the famous Allbon range. Every engine from the diminuitive Bambi to the D.C.350 is packed with power and reliability, offering years of faithful service to modellers the world over.

Our well-known slogan "Engineered to last a modelling lifetime" is no idle boast, as thousands of satisfied users will bear witness. Quality is the prime consideration in the manufacture of Allbon engines, that is why we use the very latest in machine tool equipment operated by highly skilled engineers.

News Flash! Watch out for yet another star in our range, designed to meet the wide demand for a really low priced engine backed by the famous Allbon reputation for reliability. Capacity of this newcomer will make it particularly suitable for free flight scale and sports models.

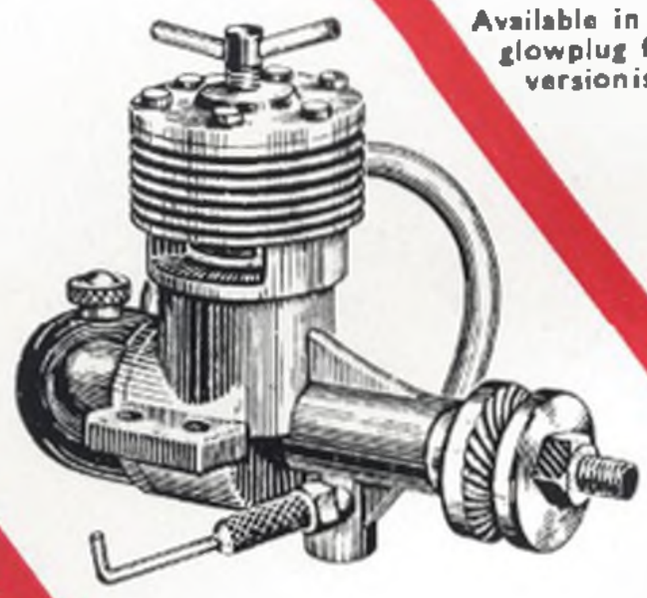


JAVELIN
1·49c.c. 65/4

Trade Distributors:—
E. KEIL & Co. Ltd.
KeilKraft Works, Russel Gardens, Wick Lane Wickford, Essex.

ALLBON SUPER FUEL

Fine engines deserve the best in fuel. Step up the performance of your Allbon motor by using this new super fuel. Carefully blended from the finest ingredients it ensures long life through friction free running. Adequate supplies are at your local model shop. **price 3/3d. per bottle.**



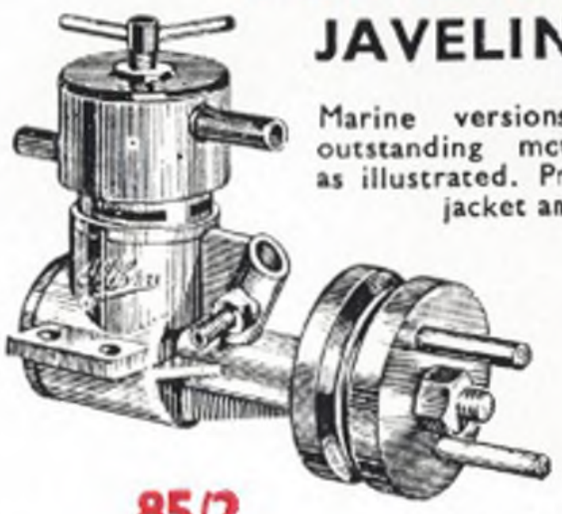
D.C. 350 & D.C. 350(G)
3·5c.c. 78/5

Available in either diesel or glowplug form. The diesel version is illustrated here.

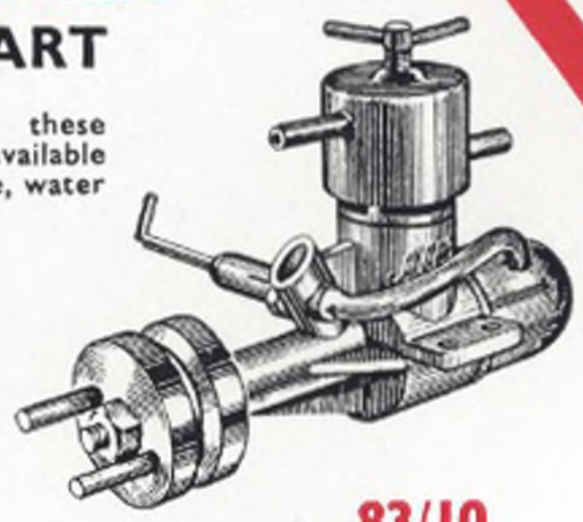
MARINE CORNER

JAVELIN & DART

Marine versions of both these outstanding motors are available as illustrated. Prices include, water jacket and flywheel.



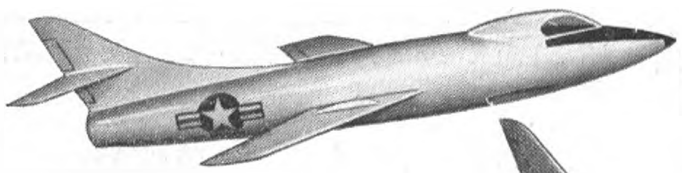
85/2



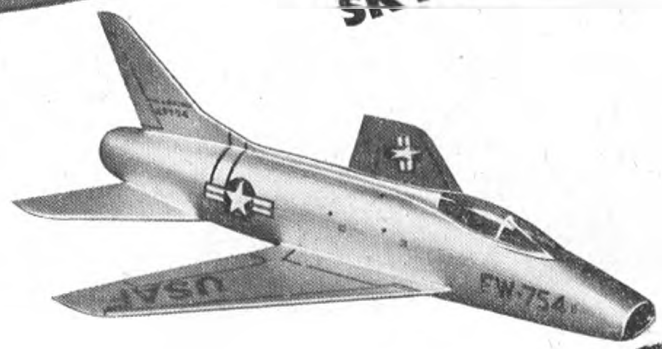
83/10

Engineered to last a Modelling Lifetime

DAVIES CHARLTON LTD. Barnoldswick via Colne Lancashire



SKYROCKET

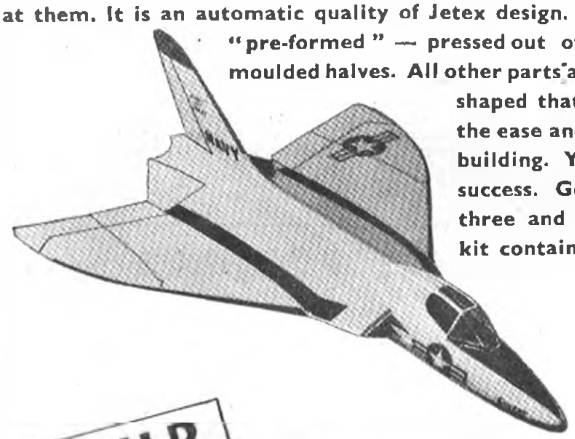


SUPER SABRE

JOIN THE

SKYRAY in new JETEX 'Tailored' Series

Jetex "Tailored" models have a satin smooth, perfect finish. Look at them. It is an automatic quality of Jetex design. The fuselage is "pre-formed" — pressed out of balsa in two moulded halves. All other parts are so accurately shaped that you have only the ease and fascination of building. You start sure of success. Get one of these three and prove it. Each kit contains the new Jetex Hatch Catches as well as fuel, insignia, instructions, etc.



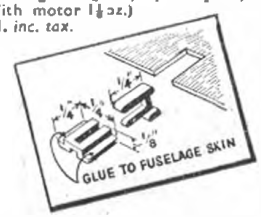
MACH 1+

SKYRAY. For 50B motor with Augmenter Tube (Thrust ¼ oz.). Length 12 in., span 9½ in., weight 1 oz. (With motor 1¼ oz.). **KIT PRICE 10/6d.** *inc. tax.*

SUPER SABRE. (Ready September.) For 50B or Atom 35, each with Augmenter Tube. Length 10 in., Span 7½ in., Weight ¾ oz. (With motor 1 oz.) **KIT PRICE 10/6d.** *inc. tax.*

SKYROCKET. (Ready September.) For 50B with Augmenter Tube. Length 11¾ in., Span 7½ in., Weight ¾ oz. (With motor 1⅛ oz.) **KIT PRICE 10/6d.** *inc. tax.*

Hatch Catches can be bought separately in pkts. of 4 sets for 1/-.



BUILD JETEX 'Tailored' KITS

the finest easily

MOTOR OUTFITS

JETEX 50B with Augmenter Tube. Loaded weight $\frac{3}{16}$ oz. Thrust with A. Tube $\frac{7}{8}$ oz. Weight of A. Tube $\frac{3}{16}$ oz. Complete with gauzes, washers, asbsetos, igniter wick, igniter stick, fuel and instructions. **OUTFIT PRICE: 12/9d.** *inc. tax.*

JETEX ATOM 35 Loaded weight less than ¼ oz. Min. thrust ⅜ oz. Complete with gauzes, washers, asbestos, igniter wick, fuel and instructions. **OUTFIT PRICE 9/4** *inc. tax.*

SPARE AUGMENTER TUBES.

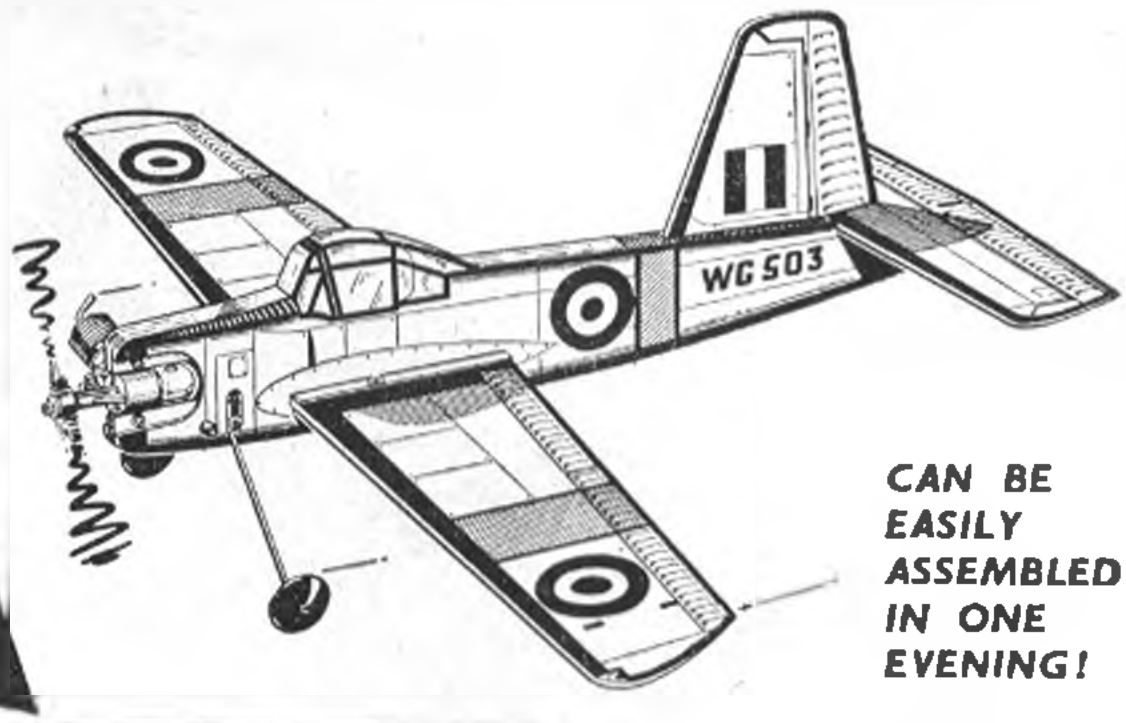
For use with 50B and ATOM 35 motors. Telescopic 3-sectional design facilitates use of varying length to suit any model. Complete with full instructions. **PRICE 2/9d.** *inc. tax.*

WILMOT, MANSOUR & CO. LTD.,
SALISBURY ROAD, TOTTON, HANTS. ENGLAND

VERON "SUPER QUICKY" ★

SOARS TO THE TOP IN POPULARITY!

THE TALK OF EVERY MODEL ENTHUSIAST



CAN BE EASILY ASSEMBLED IN ONE EVENING!

PROVOST *TRAINER*

18" SPAN CONTROL-LINE KIT

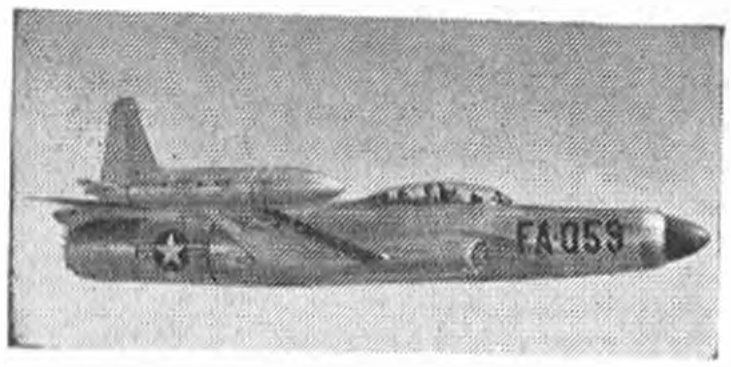
RIGHT from the start this grand little control line kit met with outstanding success and again "VERON" have proved themselves capable of meeting the popular demand for this class of model. Ideal for those who wish to make a start in powered flight and control-line, the PROVOST TRAINER is "Pre-fabbed" and pre-decorated for speedy construction.

Kit comprises:- Ready printed and cut-out Balsa panels, ready shaped ply parts, pre-shaped wire components, metal fulcrum, plastic wheels, bolts, etc.—AND A FULLY DETAILED "3-D" PLAN . . . so you just CAN'T go wrong.

KIT PRICE 8/9 *Inc. P. Tax*

FOUR OF OUR LATEST SOLIDS!

This makes TRUSCALE SOLIDS available in 24 Types!!



STARFIRE (*above*). U.S. Air Force, Radar-Rocket Interceptor with fully electronically-controlled search and firing mechanism. **2/8** *Inc. P. Tax*

THUNDERSTREAK F84F. Swept wing version of the "immortal" Thunderjet. For N.A.T.O. Forces and U.S. Army. *Inc. P. Tax* **2/8d.**

DOUGLAS X-3 Trans-sonic Experimental plane designed for speeds up to MACH-3, 1,960 m.p.h. *Inc. P. Tax* **3/7d.**

SKYRAY F4D-1 America's Bat-Wing Delta Shipboard Interceptor. Absolute world's speed record holder—753 m.p.h. **3/-.** *Inc. P. Tax*

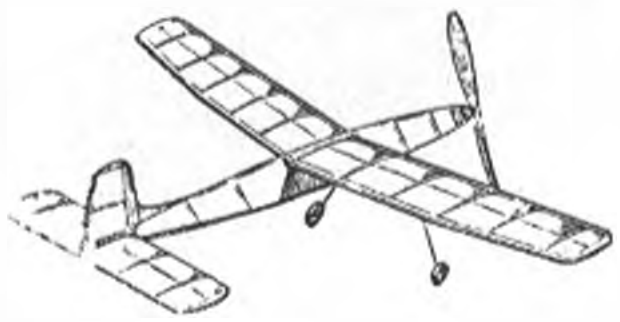
RUBBER DURATION KITS *for* THE NEWCOMER

RASCAL

24" Span Duration Model with an outstanding performance and excellent flying qualities. Kit includes ready carved propeller. KIT PRICE **6/5d.** *Inc. P. Tax*

SENTINEL

34" Span Competition model which has proved supreme against any of its class. KIT PRICE **12/3d.** *Inc. P. Tax.*



GOBLIN

20" Span Duration Model. "Just the job" for newcomers to aeromodelling. Kit contains everything to build and fly, including ready carved propeller. KIT PRICE **4/5d.** *Inc. P. Tax.*

A RANGE OF 9 "QUICKYS" . . .

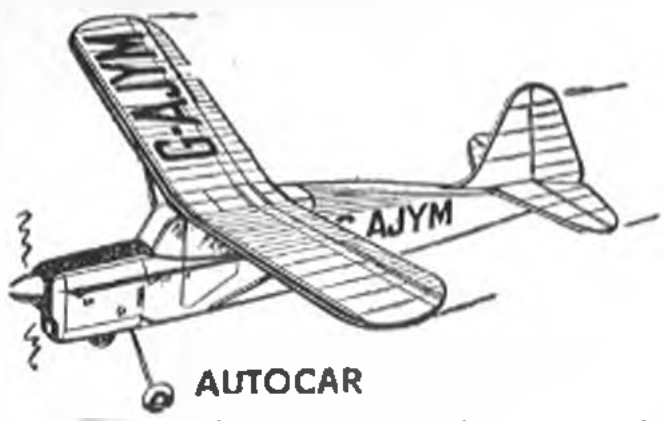
OUR THREE 11½" SPAN JETEX "QUICKYS"

THUNDERJET (illustrated) **PANTHER** and **SEA HAWK** are designed expressly for Jetex "ATOM 35" and JETEX 50 and 50B Units and are EASILY ASSEMBLED IN 15 MINUTES.

THUNDERJET

"Pre-fabbed" and pre-decorated with all parts enabling you to build and fly, these kits are extreme value at only ... ... **2/4** EACH *Inc. P. Tax*

. . . AND SIX RUBBER DURATION "QUICKYS"



AUTOCAR

11½" Span and complete with plastic propellers. Here again you have everything you require to complete your model which can be ready to fly in HALF-AN-HOUR!

And they're only EACH *Inc. P.T.* **3/6**

In addition to the **AUTOCAR** (illustrated) the range includes **WYVERN, FIREFLY, CESSNA L.19, FAIREY JUNIOR, PROVOST.**

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This is my Policy

★ It is to give modellers the best possible service and the widest possible range of goods to choose from.
★ It is to attend to the smallest order with the same care and enthusiasm that one naturally has for the big ones.
★ It is to respect the wishes of obvious experts by supplying what they ask for without bias or prejudice.
★ It is to promote goodwill amongst modellers throughout the world through friendship in business.
★ Since 1937 I have succeeded in building up the Largest Export Mail Order Service in the world.

IT'S MODELLERS who prove me right!
ARTHUR MULLETT

ALLEN MERCURY 25 57/–+9/6.

ENGINES FROM STOCK

E.D. Baby .46 c.c.	45/–+ 7/3
Mills 0.75 c.c. with cut-out	55/–+8/10
Frog 50	42/9+ 7/3
Mills P.75	50/–+ 8/–
E.D. Bee I c.c.	47/6+ 7/3
E.D. Water-cooled Bee	67/6+ 8/9
Mills 1.3 c.c.	75/–+12/6
E.D. 1.46 c.c.	52/6+ 4/6
Frog 150	42/9+ 7/3
E.D. Comp. 2 c.c.	57/6+ 4/3
E.D. 2.46 c.c. Racer	72/6+ 6/–
E.D. Hunter 3.46 c.c.	72/6+ 6/–
Amco 3.5 B.B.	92/–+17/3
Amco 3.5 P.B.	60/–+11/3
ETA 29	119/6+22/6
Webra Record 148 *	65/–
Webra Winner 15 *	70/–
Webra Mach I *	90/–

*Limited number only for home market.

COMING VERY SHORTLY !

The sensational Webra "Piccolo" 0.8 Mainly for export, a number will be available to home customers. Watch for details.

ELMER

AUTOMATIC VARIABLE PITCH PROP

For Engines up to 5 c.c. Perfect for Radio Control. *Automatically* varies pitch to suit the engine and conditions of flight. Maintains constant engine speed. Ensures better landings by self-feathering when engine cuts out. Complete with spinner and instructions. Prop diam. 9". *Spare Blades (plastic) each 2/6d.* **18/6**

FROG NYLON PROPS

6"—4"	1/3½d.+2½d.
8"—5"	2/6+ 5d.
8"—6"	
8"—8"	3/–+ 6d.
9"—6"	
10"—6"	

Frog Plastic Props also stocked.

CELSPRAY SPRAY GUN

Model No. 3. With 5 years' guarantee for 8/6

X-ACTO TOOLS AND KNIVES

offer modellers a comprehensive range of first-class equipment. Blades are of finest surgical steel in shapes to suit all needs. Tool sets are ideal for all serious builders. Full range stocked as advertised.

BONDAGLASS

To-day's miracle building material (for surfaces). Wonderfully tough and light. Can be sanded, coloured, etc. Complete kit with 72"x2" "Bondaglass" strip, Polyester, Catalyst and instructions. 7/7 (P. & P. 9d.)

"DROME" AIRWHEELS

2" wheels ¾ oz. per pr.	7/–
2½" " 1¼ oz. " "	8/9
3½" " 2½ oz. " "	10/6

SOLARBO BALSA

Full stocks of strip and sheet always carried. We despatch hundreds of poundsworth all over the world.

MODEL SPAN

All weights, sizes and colours stocked. The finest you can buy.

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IMPROVED C/L HANDLE

Made under licence

Light and comfortable to hold. Double adjustment facilities enable lines to be set exactly to suit size of model and flying distance, etc. Gives extra degree of control. Ideal for contests. (*Plus P/Tax 11d.*) **5/6**

Send 3d. in stamps for my popular 12-page Modeller's List of kits, engines, fuels, dopes, accessories, materials, etc., etc.

BRITAIN'S BEST-KNOWN & OLDEST MAIL-ORDER HOUSE FOR MODELLERS

MERCURY

GLIDERS — P.T.

Magpie 24"	4/–+ 8d.
Gnome 32"	6/–+ 1/–
Martin 40"	7/6+ 1/4
Grebe 49"	12/3+ 2/1
Marauder 65"	14/6+ 2/9

FREE-FLIGHT POWER

Jnr. Mallard 34" (0.5–0.75 diesels)	15/–+ 2/6
Mallard 48" (1.5–2.5 diesels)	18/–+ 3/4
Magna 38" Cabin (0.–0.75)	11/–+1/10
Matador 50" R/C Cabin (1.5–2.5)	21/5+ 3/7

F/F/ SCALE

Monocoupe 40"	22/10+ 3/9
Stinson 105, 42"	28/6+ 4/9
Chrislea Skyjeep, 45"	28/6+ 4/9
D.H. Tiger Moth 33"	28/6+ 4/9
Monocoupe 64"	57/–+ 9/6
Aeronca Sedan	57/–+ 9/6

CONTROL LINE

New Jnr. Monitor	19/9+ 2/9
Midge Class A Speed	5/3+ 11d.
Mk.II Class A.T. Racer	19/6+ 2/8
Texan Class T. Racer	13/4+ 2/2

SKYLEADA

Flying Scale Star Series for Jetex, each	3/–+ 6d.
Jetmaster (Jetex 100) Series each	7/5+ 1/1
Auster 27" C/L	7/5+ 1/2
Hornet 20" C/L T/R	8/11+ 1/7
3-Footer Glider	5/–+10d.
Point Five F/F	7/9+ 1/4

VERON

Control Line

Sea Fury	23/6+3/11
Wyvern	23/6+3/11
Philibuster	23/6+3/11
Panther	25/–+ 4/2

Rubber Powered

Sentinel, 34"	10/6+ 1/9
Goblin	3/9+ 8d.

Free Flight Power

Sabre Ducted Fan	25/–+ 4/2
Streaker, 32"	19/9+ 3/3
Cardinal, 37"	14/6+ 2/5
Lavochkin, 37"	25/–+ 4/2

And full range of Jetex and Quicky Models, etc.

PARAMOUNT

"Sunanvind." Record smashing world-famed sailplane ... 10/6
Moose Glider 69", designed by Jan Van Hattum 22/6

JETEX

Tailored Series

Hawker Hunter	18/–+ 3/–
Swift	18/–+ 3/–

All Motors, Fuels, Accessories, also suitable Kits by K.K., Skyleada, and Veron as advertised.

FROG

Mirage	9/–+ 1/6
Tarquin	10/4+ 1/8
Zephyr	8/7+ 1/5
Junior Racer Series	3'–+ 4d.
Senior Racer Series	4,3+ 8d

K.K. as advertised

SOLIDS

Full ranges by AVION, BATEMAN, SKYCRAFT and VERON carried.

RADIO CONTROL

		E.D.	P.T.
Mk. II	Miniature 3-valve Outfit, complete	...	£14.17.6+£2.14.6
Mk. III	Miniature Outfit, complete	...	£9.1.6+£1.14.0
Mk. IV	Transmitter, Control Box and Aerial	...	160/–+30/–
Mk. IV	Three Channel Receiver	...	240/+45/–
Mk. IV	Tuned Reed, Three Channel Outfit, complete	£20.0.0	+£3.15.0

		E.C.C.
P.100	Polarised Relay	29/6
1061	Transmitter	68/–+11/4
951A	Receiver	68/–+11/4
FENNER SPIKE	Unit	58/–+10/–
Pulse Box		58/–+10/–

PUBLICATIONS

"Radio Control" by Somerhoff 10/–; A few copies of latest "Aeromodeller Annual" still available 10/6d.; Zaic's "Year Book", few copies still available 7/6d.; "How to make Model Aircraft," by Chinn 3/6d.; Ron Warring's "Power Duration" 6/6d. *All Post Free*

ARTHUR MULLETT
16 MEETING HOUSE LANE
BRIGHTON - SUSSEX - ENG.

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Diesel Engines	Plumbing	Wireless Telegraphy
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1st. in the field and still leading the way!

THESE CONTEST RESULTS PROVE IT

BRITISH NATIONALS, RADIO CONTROLLED AIRCRAFT, June 6th and 7th, 1954

TAPLIN TROPHY
1st : S. Allen
2nd : G. Honnest-Redlich

S.M.A.E. TROPHY
1st : G. Honnest-Redlich
2nd : S. Allen

POOLE RADIO REGATTA (for Power and Sailing Yachts), June 12th and 13th, 1954

SPEED CONTEST
1st : D. Rowe
2nd : G. Honnest-Redlich
3rd : S. Allen

STEERING CONTEST
1st : W. Warne
2nd: Colonel Bowden

BRAVERY TROPHY (Sail)
1st : Colonel Bowden
2nd : G. Honnest-Redlich

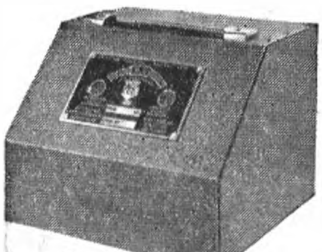
TAPLIN TROPHY (Sail)
1st : G. Honnest-Redlich
2nd : Colonel Bowden

ALL Models used E.D. Tuned Reed Radio Equipment.
ALL Engine-powered Models (except W. Warne) used E.D. Diesel Engines.

E.D. BOOMERANG A Radio Control Unit—COMPLETELY WIRED AND READY FOR USE IN YOUR MODEL PLANE OR BOAT, supplied with either soft or hard valves. The soft valve version of this revolutionary set provides five different aerial tappings which enable the aerial load to be matched to the valve. A new valve is worked on the A.1 tapping for maximum sensitivity. When the required 1.5 m.A. current becomes unobtainable the A.2 tapping will give a further period of sensitivity. This procedure is used progressively through all five stages, thus lengthening the life of the valve by five times. Simplicity itself to instal and most economical in use.

Price complete £11/12.9
Receiver and Escapement
1 Hard or Soft valve £6/5/10
As above less escapement £5/1/6
Transmitter and Aerial £5/8/8

E.D. Mk. II MINIATURE 3-VALVE
A Radio Control Unit comprising Transmitter and Receiver. A standard battery pack will give over 3 hours continuous operation with a receiver and batteries weight of only 10¼oz.



Price complete £17/2/0
Receiver ... £10/13/9
Transmitter and Aerial £6/8/3

Order through your model shop

Price complete £22/19/1
Receiver ... £14/5/0
Transmitter, Control Box and Aerial £9/5/3

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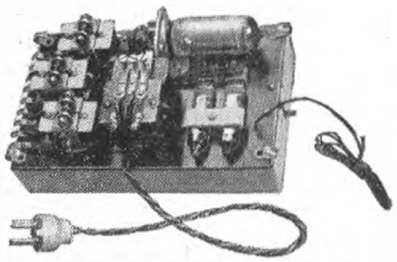

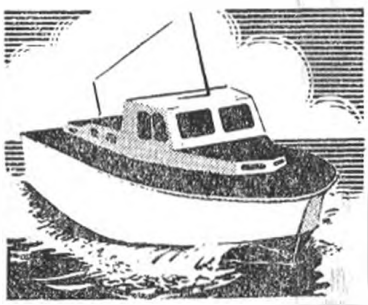

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Allbon Javelin 1.5 c.c.	55/–	+ 10/4
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D.C. 350 3.5 c.c. ...	66/–	+ 12/5
E.D. Baby .46 c.c. ...	45/–	+ 8/5
E.D. Bee 1 c.c. ...	46/4	+ 8/8
E.D. Hornet 1.46 c.c.	48/–	+ 9/–
E.D. Hunter 3.46 c.c.	66/–	+ 12/5
E.D. Hunter W/C ...	88/–	+ 16/6
E.D. 246 W/C ...	88/–	+ 16/6
Miles 5 c.c. Diesel ...	140/–	+ 26/3
Miles 5 c.c. W/C ...	168/–	+ 31/6
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Mills P.75 .75 c.c. ...	50/–	+ 8/–
Mills S.75 (cut out) ...	55/–	+ 8/10
Mills 1.3 c.c. Mk. II ...	75/–	+ 12/–
Elfin 1.49 c.c. ...	47/6	+ 8/–
Elfin 2.49 c.c. (New) ...	56/–	+ 10/6
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Amco B.B. 3.5 c.c. ...	78/8	+ 14/9

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Jetex 100	22/5	+ 3/9
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Jetex 200	31/8	+ 5/3
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Scorpion + Augmenter	39/–	+ 6/6

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All K.K. 3/6 Jet Kits
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		P.T.
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E.C.C. 5A Relay ...	25/–	—
E.C.C. 202 Escapement	14/–	+ 2/4

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E.D. Mk. II	112/–	+ 21/–
E.D. Mk. IV and Control Box	160/–	+ 30/–
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★ ★ ★ R/C KITS ★ ★ ★

Sky Skooter 48" ...	25/–	+ 4/–
Junior 60"	39/6	+ 6/7
Radio Queen 84" ...	67/–	+ 12/6
Marlin Launch ...	59/8	+ 13/3
Wavemaster Launch	56/10	+ 12/9
Spraymaster Launch ...	30/5	+ 5/7
Police Launch ...	35/6	+ 6/6
Monocoupe L7A ...	66/6	—
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Xacto 62 Knife Set, 2 knives and 12 blades ...		...	12/3
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E.D. Comp Special 2 c.c. ...	37/6
Elfin 2.49 c.c. Beam	45/–
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K.K. and VERON SOLID KITS.

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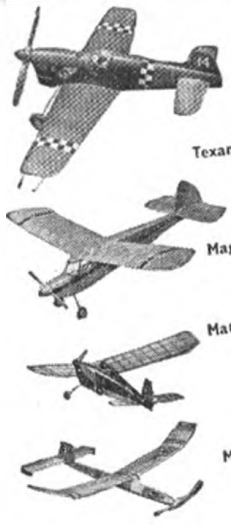

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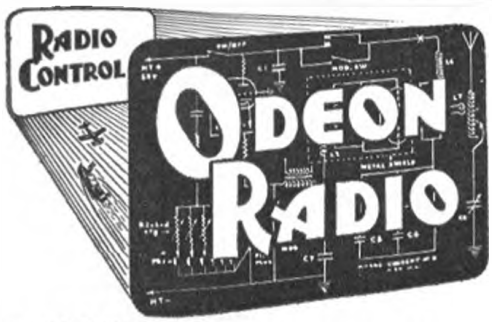

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Frog 500 R.G.	£3/4/3+10/9
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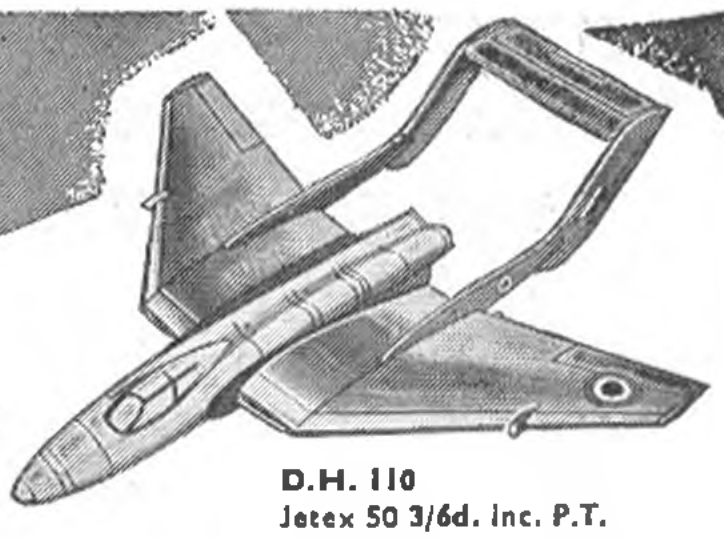

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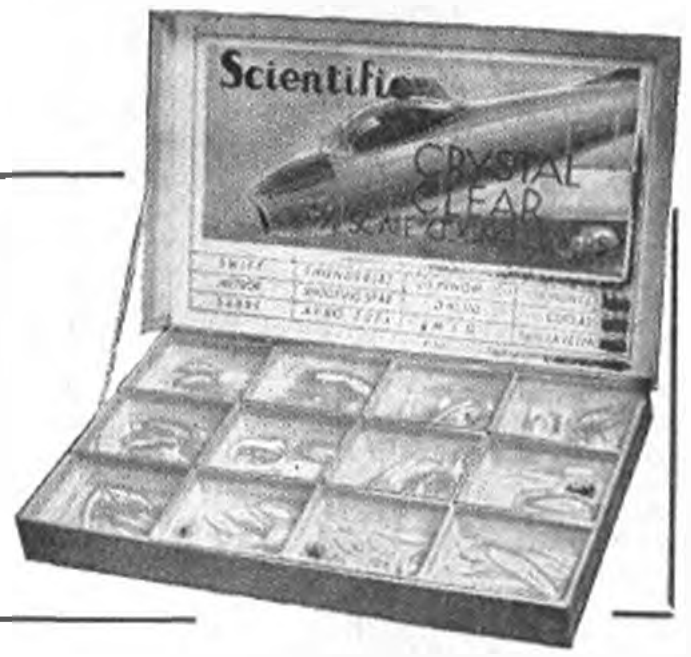

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AERO MODELLER

"Covers the world of Aeromodelling"

VOLUME XIX
NUMBER 224
SEPTEMBER 1954

Managing Editor - C. S. RUSHBROOKE
Editor - - - - H. G. HUNDLEBY
Assistant Editor - - R. G. MOULTON

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AEROMODELLER Incorporates the MODEL AEROPLANE CONSTRUCTOR and is published monthly on the 15th of the previous month by the Proprietors:

MODEL AERONAUTICAL PRESS LIMITED

SUBSCRIPTION RATE: 21/- per annum prepaid (including the special Christmas Number).

Editorial and Advertisement Offices:

38 CLARENDON ROAD, WATFORD, HERTS
TELEPHONE: WATFORD 5445 (Monday-Friday)

Catering for the beginner

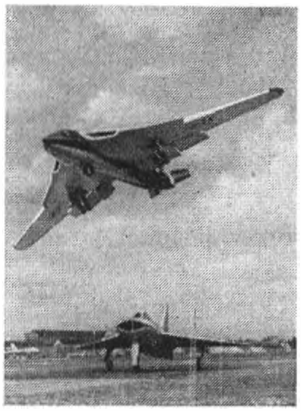
ONE OF the most provocative and constructive letters to reach us is printed on page 494. Mr. Wells of Beaconsfield is evidently a man who makes the approach to his new hobby with a certain amount of determination, and is not lightly to be deterred by what must appear at times rather exacting requirements for a sporting relaxation.

His problem is one that continually exercises our minds, for we well know that each month newcomers take up the hobby of aeromodelling, and it becomes a serious task to determine just how far we can revive and repeat information that is of real interest only to the beginner. Increasing circulation is our surest indication that a large number of these newcomers stay with the hobby, and thus the percentage of tyros versus established modellers becomes progressively less. Nevertheless, new readers may rest assured that it is the established policy of this magazine to cater for the beginner as well as the expert, and should they not find the information they want in current issues, our staff is always ready to assist them through the post.

But there is also a challenge to the trade. The day of prefabrication is truly with us, and there can be no doubt that such ready-to-fly models find a ready market, otherwise the trade—who after all cannot afford to conduct benevolent establishments—would not continue to produce more and more kits of this type. However, reader Wells indicates a field in which the trade is not doing perhaps as much as it could do, and we trust that his letter may encourage more manufacturers to produce a series of kits that are between the purely ready-made article, and the more complicated kit produced for the more experienced man.

On the cover . . .

The thrilling atmosphere of Farnborough, the World's greatest air display, is captured by our staff camera in this exceptional view of two revolutionary aircraft. Whilst the vivid yellow Boulton and Paul transonic delta research aircraft awaits its turn on the famous R.A.E. runway, the ill-fated Handley Page Victor prototype makes a slow flypast with flaps and tail air brakes extended, and in the background a Vultan and De H.110 prepare to take their turn in the air.



This fine action shot of Sid Miller with his prototype "Rohma" was taken at the Northern Heights Gala, further details of which can be found in "Round the Rallies" on page 464.

Heard at the HANGAR DOORS

New Radio Records

On the 11th of July, Geoff Pike of Nottingham made a successful attempt on the World Record for radio-controlled powered aircraft, at present held by Peter Velitchovsky of Russia with a duration of 1 hr. 31 min. 14 sec.

Using the model we described in the July "AEROMODELLER," Geoff achieved a time of 1 hr. 40 min. 35 sec. at Tollerton Aerodrome after two previous flights that day of 1 hr. 10 min. and 30 min. respectively. We gather that Geoff has acquired an almost permanent stiff neck as a result of all this record flying, and when one considers 3 hr. 20 min. flying time in one day, it is not surprising. However, we congratulate him on his persistent efforts which have finally borne fruit, subject to ratification of the record by the F.A.I.

Aeromodeller PAA-load Contest

We remind all readers who have not yet entered for this 1 c.c. payload event, that copies of the rules and model specifications can be obtained from the Editorial Offices.

Entry is free, and the event will be held at the 1954 All Britain Rally at Radlett Aerodrome on Sunday, 26th September. There are three magnificent Bulova gold watches for the top place men, and special prizes for A.P.S. designs that place in the first twelve positions.

For home-constructors

A monthly bulletin of some 22 closely typed pages that will satisfy many aspirant home-constructors of ultra-light aircraft is the "Amateur Aircraft Builders" News Letter published by A. Lee Spencer, 621 N. 9th Street, Fredonia, Kansas. Covering all subjects allied to the home-builts, Mr. Spencer's information sheets will help the many applicants we receive for further gen on types like the Luton Minor, Bebe Jodel, etc., which have been featured in George Cull's "Aircraft Described" series and also carry advertisements for sets of plans to build the famous American ultra-lights like the Irwin Meteorplane, etc.

Five Three's v Three Four's

Following representations from competitors—who after all are the ones who count in such matters—future Team Eliminators and Trials will be conducted to the same standards as met in the Finals of World Championship events. We welcome this step which calls for five flights of three minutes maximum each, as the purpose is to select the most consistent fliers to represent the country. However, it must be realised that it is a full day's work to conduct a five-round contest, and it will not be possible to run more than one Eliminator on the same day, and future programmes will be arranged to accommodate single eliminators at Area meetings. With airfield arrangements, coach bookings, etc., already made in most cases for this year, the double eliminator scheduled for October 3rd will have to stand, but from 1955 the new practice will come into force.

Five-flight trials will require a full two-day meeting instead of a Saturday afternoon/all day Sunday as took place this year, but we are of the opinion that if a competitor feels it worth while to try for a place on a British Team, he will find the time to participate in a full two-day Trials meet.

As it will require six separate days to conduct the two eliminators for three classes of event, a further application to hold both eliminators early in the year of operation was turned down, and the current practice of staging the first eliminators in the autumn of the previous year will continue.

Win yourself £100

There is still time to enter the S.M.A.E. £100 Crossword Competition and at the same time swell the International Contest Fund for sending teams abroad to represent the Old Country. Entry forms were printed in the August "AEROMODELLER" and

are also available in your local model shop, or from the Editorial Offices.

New trend in A/2 Gliders

The surprise decision of the F.A.I. to drop the old-established fuselage formula has already affected A/2 glider design, as this year's event bears witness.

A full report of the World A/2 Glider Championship held at Odense in Denmark appears on page 468 of this issue, and we publish below details of the winning model by R. Lindner of Germany.

It is significant that this winning design has a stick fuselage, and it will be no surprise to those who study contemporary design trends, that Max Hacklinger is a clubmate of Lindner's. What does surprise us, is the absence of turbulators, considering Herr Lindner comes from Munich, where Central European "still air" conditions normally prevail. All the more credit to this young German modeller, who under appalling weather conditions, and in a five-round "marathon" beat the best of Europe's glider fliers.

STOP PRESS!

World Championship Results

WAKEFIELD CONTEST

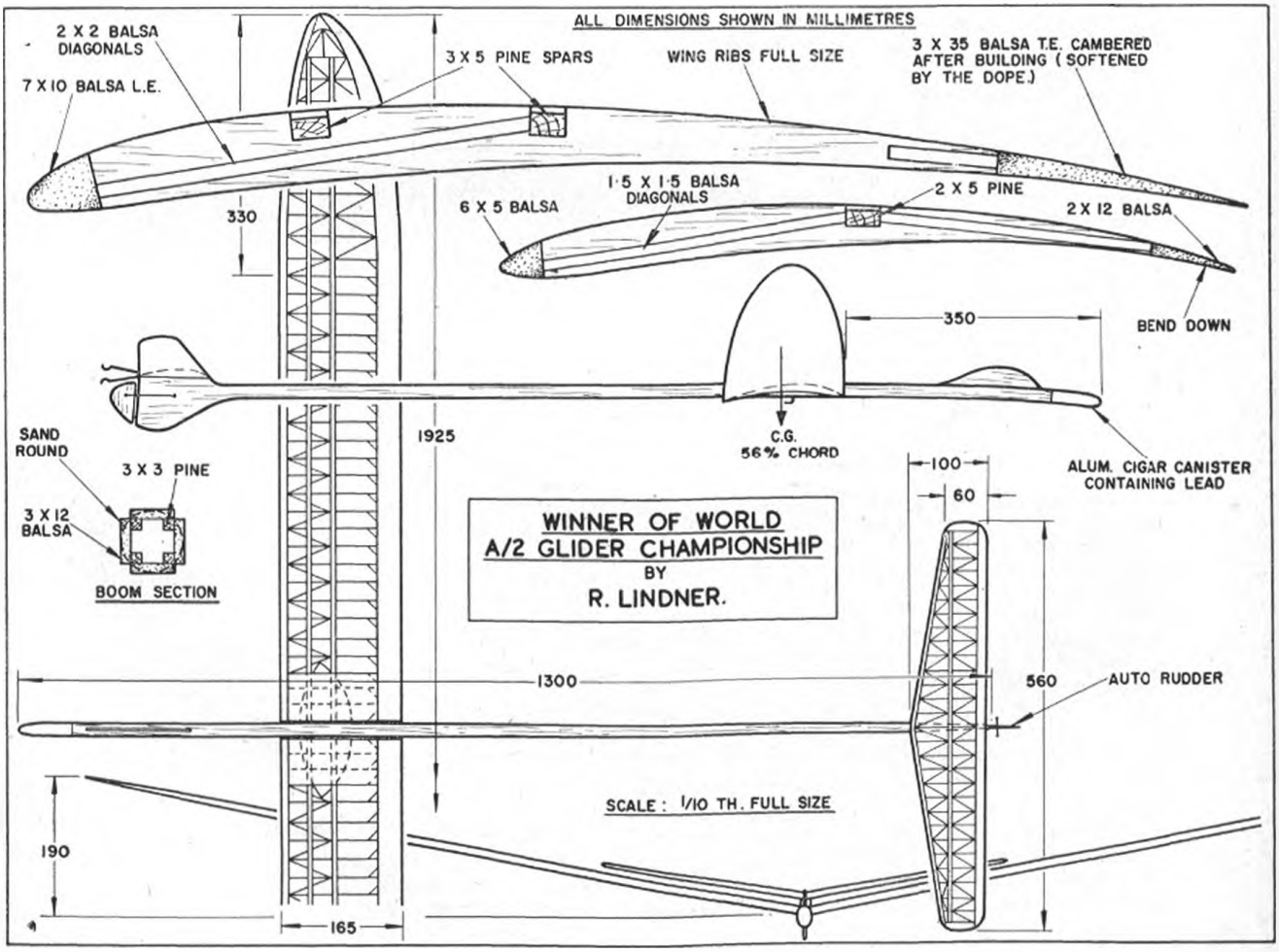
	Individual:			*Team:*	
1.	King Australia	900	1.	U.S.A.	2404
2.	Jackson G.B.	866	2.	England	2334
3.	Joon Australia	863	3.	Canada	2322

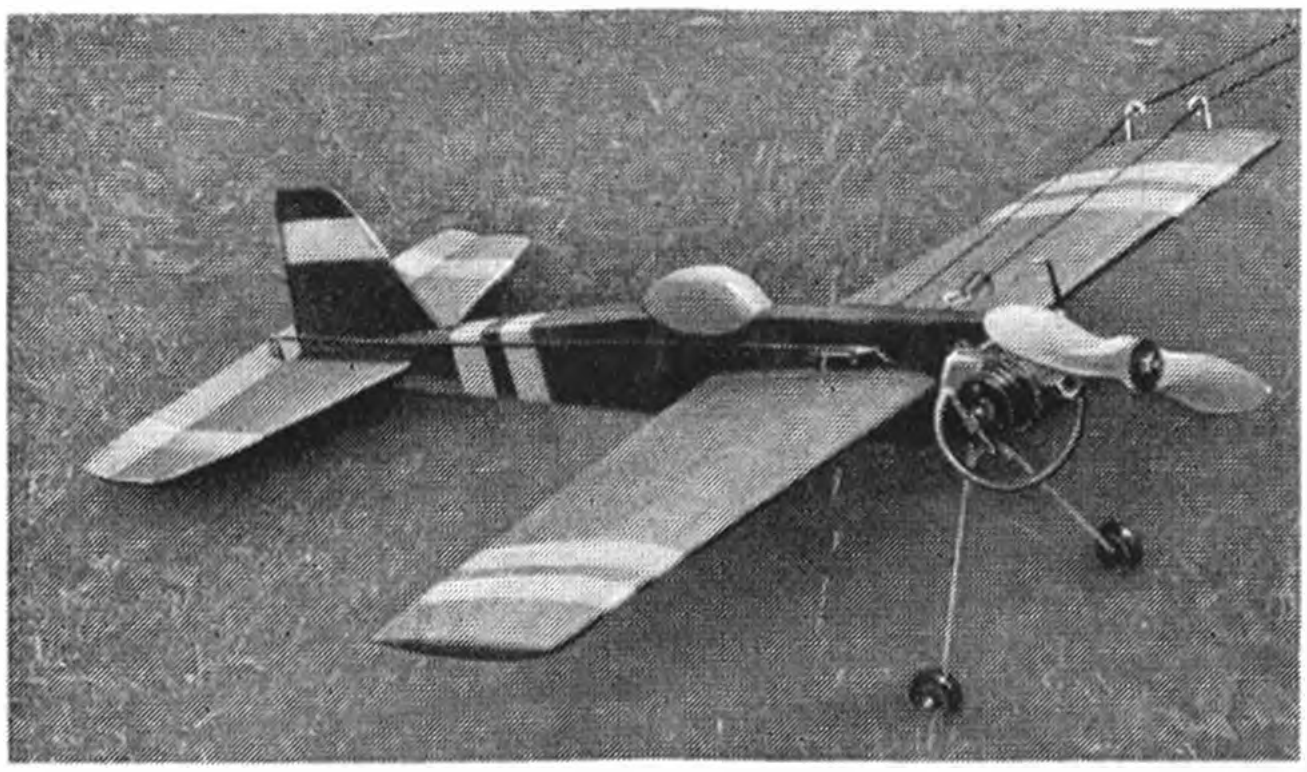
POWER CONTEST

	Individual:			*Team:*	
1.	Wheeley U.S.A.	844	1.	U.S.A.	2204
2.	Lanfranchi Switz'l'd	831	2.	Argentine	1826
3.	Kneeland U.S.A.	783	3.	Canada	1712

About the winners: **Alan King** of the Eastern Suburbs M.A.C., Victoria, Australia, is something of a legend in his country. For three years he held the honoured title "Champion of Champions" in the Australian Nats., and at the '54 Meeting he was voted to be selected Australian representative at the World Championships. Though not in the original Australian Wake. Team, he topped the Power Elims.

Carl Wheeley came to Cranfield last year in the U.S.A. Power Team and is the popular Technical Director of the Academy of Model Aeronautics. His Senator design is well known internationally, and his work in connection with the organisation of the meeting at Long Island will have been appreciated by all present.





Teach yourself how to fly Control-line with . . .

WANT to try your hand at control-line flying? Here's a three-in-one model which offers lots of scope for the beginner in this branch of modelling. If you've never flown on lines before, *Scatterbrain*, cooled down as detailed below, will give you an easy and painless introduction. If you want to try your hand at team racing with a couple of friends, all you need do is check that your tanks are reasonably standard and you're set for lots of fun and first-class experience for a minimum outlay in model and fuel. And if you have a hankering to try combat, fit the oversize elevator shown, tie a streamer to the tailskid, and you're set.

Most beginners seem to have motors of under 1·5 c.c., and *Scatterbrain* is designed to take any of those motors. If your motor is over 1 c.c. and you've never flown C/L before, make the first flights with an 8 × 4 propeller fitted; this will keep the model's flying speed down and give you a chance to get the feel of things. The undercarriage is designed to drop out after take-off, unless held in by means of a rubber band, which is advisable for early flights, but it can be omitted entirely if hand-launching is used.

Easy to build . . . low cost

Construction is very easy and light on the pocket, and commences by cutting three 18 in. × 3 in. sheets of $\frac{1}{16}$ in. balsa. Pick fairly firm tangent cut material. One of these sheets is then cut down the middle and butt-jointed to each of the other pieces to give two panels 18 × 4½. The rear edges of the wider sheets are tapered in accordance with the drawing and sanded to a "blunt knife-edge." Now bind the wingtip weight (a small strip of solder) to the $\frac{1}{4}$ in. sq. spar and cement the spar over the join in one wing panel. Add the $\frac{1}{16} \times \frac{1}{4}$ leading edge strip and the rib pieces and cement the second panel in place, pinning all round the outline. Check for truth and pin out to dry.

The fuselage starts with the bearer assembly, and the lower bearer is moved to adjust the bearer spacing to accommodate different motors. If a less than 1 c.c. motor is to be used, leave the bearers slightly longer so that the final balance point can be achieved by fitting the engine further forward. Two $\frac{3}{4}$ in. panel pins, one through each joint, will greatly strengthen the assembly. Lay in place on the plan and build up the fuselage frame; when dry, add the undercarriage tubes and sheet the starboard side with $\frac{1}{16}$. Make and fit the lead-outs to the bell-crank and instal, cutting the sheeted side to suit and soldering the nut on the pivot bolt. Sheet the port side, cutting clearances for lead-outs and bell-crank. Now carefully trace the fuselage side view and mark the wing and tailplane positions accurately on the sheeting on each side of the body. The wing can be cemented directly in or made removable by cutting the aperture $\frac{1}{16}$ in. oversize all round and sheeting (cross-grained) to make a seating. In the latter case two short dowels must be fitted and rubber bands looped round under the wing. Repair and transport are facilitated by having the wing detachable.

The tail is a straightforward $\frac{1}{8}$ in. sheet job, with tape hinges passed over and under alternately and a small ply horn cemented securely in. Cement the tail in its slot, checking line-up, and connect up the push-rod. Note that small cup-washers are soldered to the lead-outs and push-rod to retain them in place. The control system must work very freely, the weight of the elevator being sufficient to overcome any friction; any stiffness will cause trouble in the air. The $\frac{1}{8}$ sheet fin is cemented directly to the fuselage top, the offset being permanent, and the tailskid is forced into the lower side and sewn in place.

Form and fit the lead-out guides to the port wing tip (make sure the weighted tip is to starboard) and sew in place. Sand everything to finished shape and a good, smooth surface, and dope lightweight Modelspan over the entire model. Trim to desired colours and fuel-proof, then re-check for control freedom.

Takes all types of engine

Make up and fit the tank, and instal the motor. Sideport engines will have to be mounted on the starboard side to clear the tank, but shaft-valve motors should be mounted on the port side, *i.e.*,

Scatterbrain

By Vic Smeed

with the bearers on "top" of the mounting lugs. This gives the effect of a slight engine offset. The undercarriage completes the job, and is a simple wire affair with bound and soldered joints. Ensure that the pins are a free fit in the tubes.

First flight

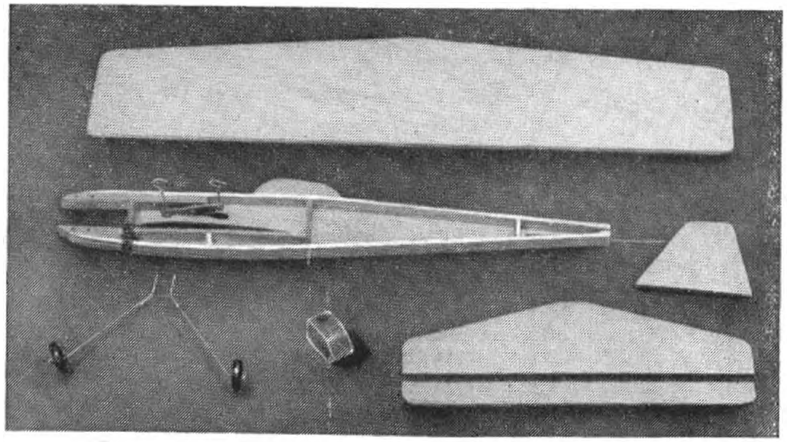
Pick a calm day for your flight, and use ordinary fishing line of about 12 lb. breaking strain until you are reasonable experienced. A simple handle can be cut from ply and the lines carefully tied to this; the other ends should be fitted with piano wire rings or paper clips made from piano wire. About 35 foot lines are the maximum for calm air, unless you are using a ·5 motor, when 25 ft. will be safer. Fix the landing gear in at first, and slow the motor a little, especially if it is a 1·5. When the motor is running satisfactorily, leave a friend holding the model and pick up the handle. Check that "up" is "up" before signalling for release—in this connection it is as well to take a tip from the experts and colour one end of the handle so that you always pick it up the same way. Upon release, give slight up elevator and then centralise when the model is off the ground; concentrate on flying level before attempting any manoeuvres. Most novices tend to overcontrol, sometimes very violently, and the way to overcome this is to hold the handle firmly in the hand and keep the wrist and elbow completely rigid. Point the clenched fist at the model and make all movements from the shoulder. Keep the hand pointed at the model and keep your head and you can't go far wrong. Later, when practised a little, relaxed movements of the wrist can be gently tried.

The important points to watch in the model are (*a*) keep all surfaces true, (*b*) make sure the control system is perfectly free, (*c*) see that the feed pipe from the tank is at the rear corner on the outside of the flight circle, (*d*) do not attempt to fly if the model balances behind the point shown—*Scatterbrain* should balance halfway between the leading edge and the mainspar or in front of this position. With a very light motor, finish the model leaving the bearers long and slide the engine forward until the balance is correct.

Materials

2⅛ × 3 × 36	1⅛ × 3 × 18
9″ ¼ × ⅜ bearer	12″ 18 s.w.g. wire
9″ 16 s.w.g. wire	6″ 20 s.w.g. wire

Scrap tube ⅛ ply, bolts, washers, etc.
1 length ⅛ × ¼ and 1⅛ × ⅜ if preferred



Simple construction is evident in this view of the partly finished components. Cost is a few pence only, and the model will take any motor of from .5 to 1.5 c.c. Easy flying and ruggedness were proved with the prototype, with which a complete beginner had no trouble—except that, in a confined area and a wind, he ran back too far and smacked the model head-on into a brick wall! Within a minute, however, "Scatterbrain" was once more circulating merrily with no damage other than a bent crankshaft!

FULL-SIZE PLANS OVERLEAF

18"

W1

W1

W1

W1

W4

NOTE: FRONT OF LINE GUIDE IS IN LINE WITH SPAR

W3

W3

W2

JOIN SHEETS ON THIS LINE

WING SHOWN HALF FULL SIZE

1/16" SHEET TOP & BOTTOM

3/8"

1/4" X 1/16"

1/4" SQ.

CHAMFER EDGES

W1

W2

LINE GUIDE 18 S.W.G. BIND TO W4

ALL RIBS 1/8" SHEET

3/8" SHEET

W3

ENGINE BEARERS 1/4" X 3/8"

W4

8 B.A. BOLT

18 S.W.G. LEAD OUTS. 2 OFF

BEND END DOWN

BELLCRANK 1/16" PLY

SLOT FOR BELL-CRANK

SOLDER CUP WASHERS

SOLDER NUT

WING SLIDES IN THIS SPACE

LINE WITH 1/16" SHEET

TO FIT OTHER MOTORS, ALTER POSITION OF LOWER BEARER

TANK

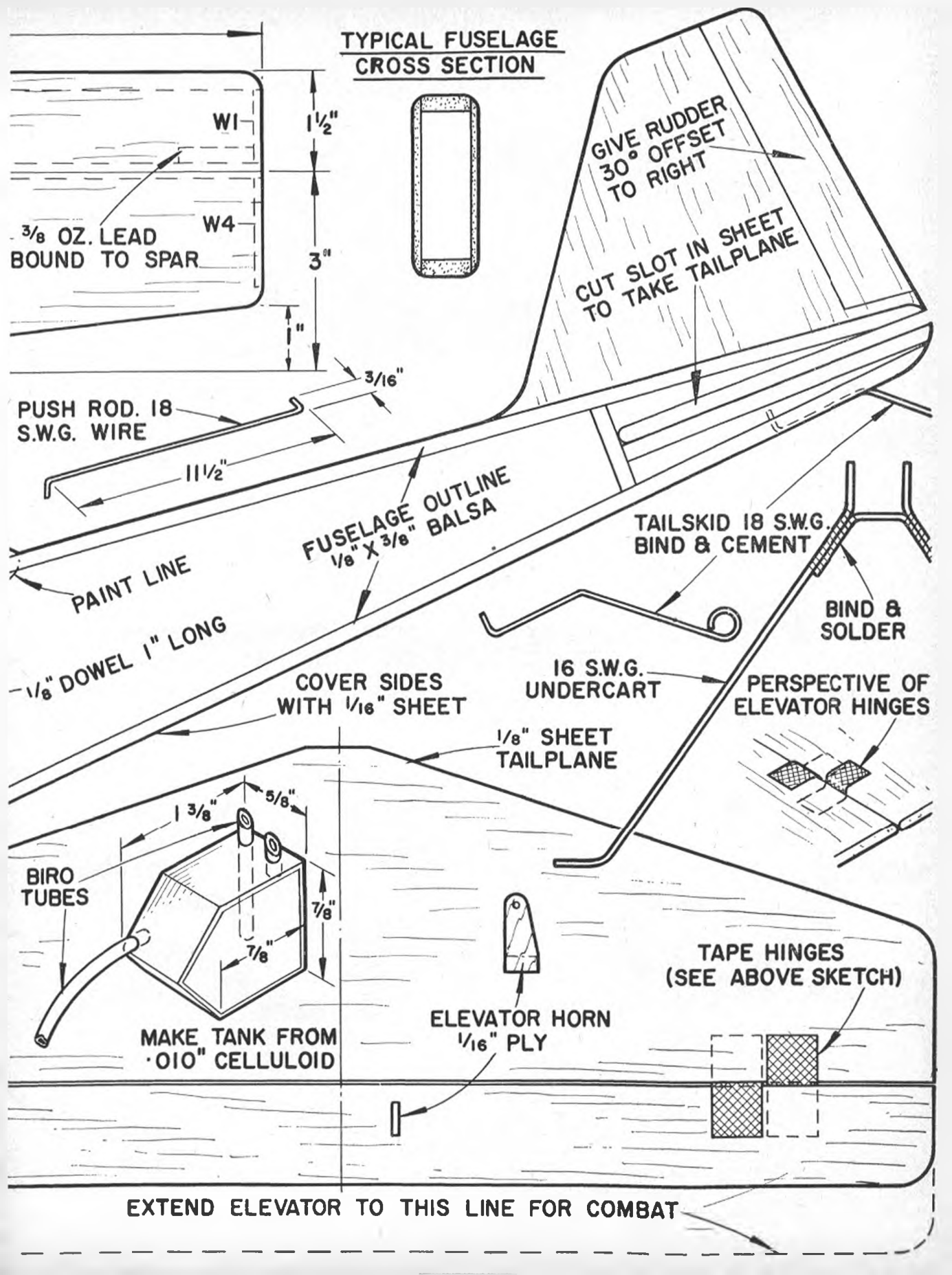
BALANCE ON OR IN FRONT OF THIS LINE

20 S.W.G. HOOKS FOR U/C RETAINING RUBBER BAND

1/2" BLOCK

16 S.W.G. BRASS TUBES BOUND TO EACH SIDE

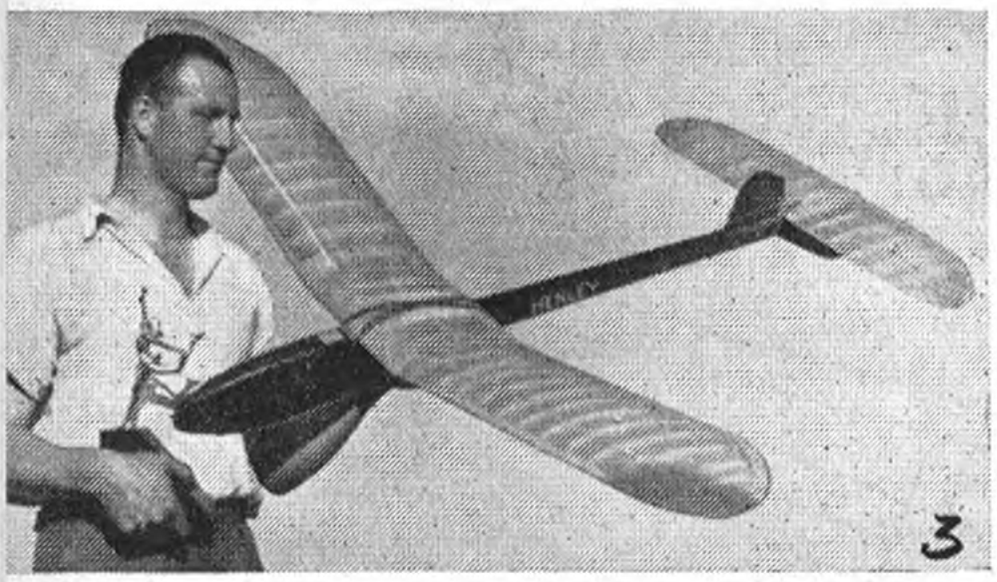
Scatterbrain

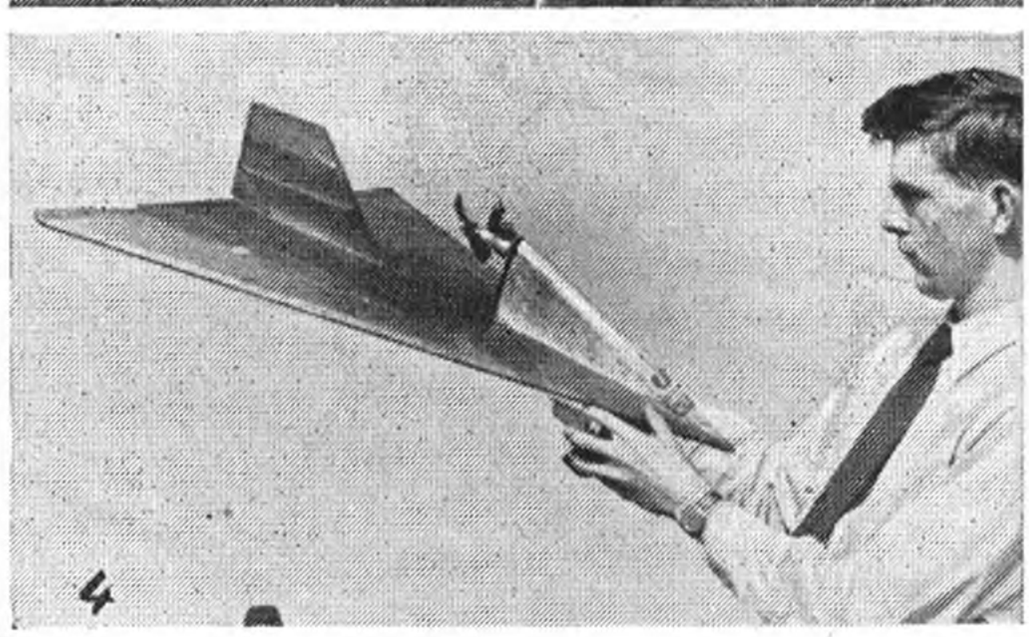

TYPICAL FUSELAGE CROSS SECTION
W1
W4
1½"
3"
1"
3/8 OZ. LEAD BOUND TO SPAR
GIVE RUDDER 30° OFFSET TO RIGHT
CUT SLOT IN SHEET TO TAKE TAILPLANE
3/16"
PUSH ROD. 18 S.W.G. WIRE
11½"
FUSELAGE OUTLINE 1/8" X 3/8" BALSA
PAINT LINE
TAILSKID 18 S.W.G. BIND & CEMENT
BIND & SOLDER
1/8" DOWEL 1" LONG
COVER SIDES WITH 1/16" SHEET
16 S.W.G. UNDERCART
PERSPECTIVE OF ELEVATOR HINGES
1/8" SHEET TAILPLANE
1 3/8"
5/8"
BIRO TUBES
7/8"
7/8"
MAKE TANK FROM .010" CELLULOID
ELEVATOR HORN 1/16" PLY
TAPE HINGES (SEE ABOVE SKETCH)
EXTEND ELEVATOR TO THIS LINE FOR COMBAT

Round the Rallies

AT NORTHERN HEIGHTS GALA

1. R. Trow of Malvern launches in the radio event at the Northern Heights Gala. Some of the huge crowd that attended Langley can be seen in the background, and we are pleased to report that the Gala has once more reverted to its customary perfect weather conditions.
2. A. Brigg's magnificent Lincoln (Four E.D. 3.46s) held by G. Youell, who entered and flew the model in the owner's absence. Silver wallpaper covering gave perfect scale metallic finish. 3. J. G. Waldron of Henley with his veteran glider, winner of the Flight Cup. 4. 36 by 36-in. delta, with high-mounted Amco 87 positioned over centre of gravity, which flew consistently and well for R. J. Bourne of Godalming. 5. Semiscale swept wing fighter powered by an unobtrusive Elfin 1.49 mounted under the tailplane; dural prop, 3-oz. ballast in nose, 48-in. span, 16-oz. all-up, by H. C. Martin, Mortlake D.M.F.S.

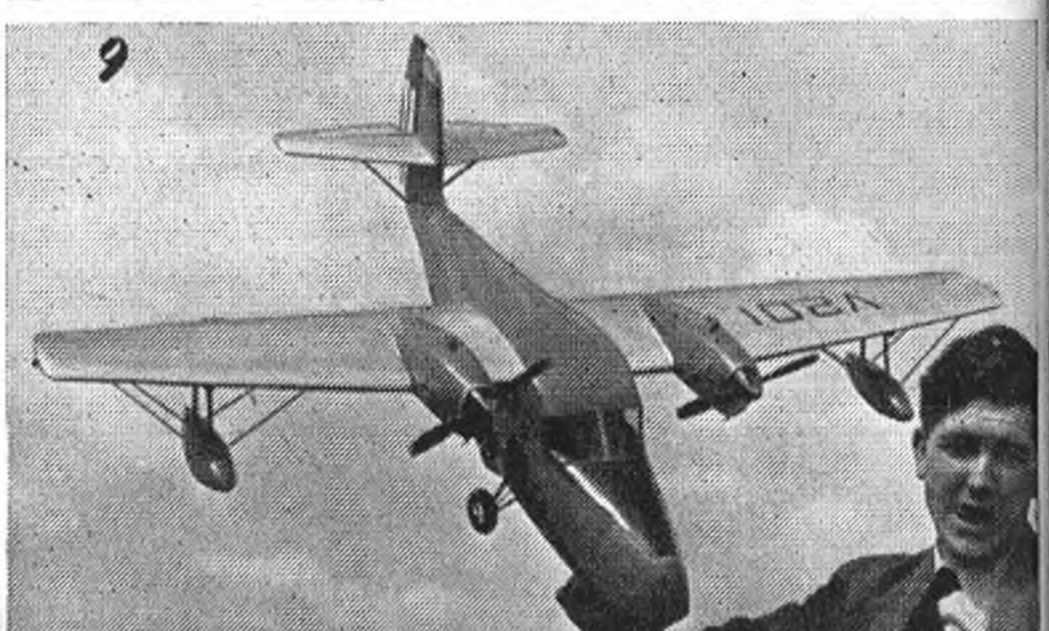




AT DAILY DESPATCH RALLY

6. Winner of the E. J. Riding Memorial Trophy at the Daily Despatch Rally at Woodford was well-known scale modeller J. Bridgewood with this superb model of the Heston Phoenix. 7. Depicts an incident during the Class "A" Team Race, which was very much a mixed event through the participation of two members of the fairer sex, who can be seen doing their stuff in the middle. 8. Combat flying provided the Woodford crowd with several exciting moments, and this action shot was taken during the battle between winner J. D. Arden of Ashton, flying a B.B. Amco job, and T. Jolly of Cheadle who had a Fox 35 up front. 9. Outstanding entry in the scale event was this beautiful Grumman Gosling built by E. A. Coates of Goole. The model, powered by two E.D. Bees, unfortunately crashed during its qualifying flight. 10. Another scale entry of somewhat unusual character was this Antoinette held by its builder Mr. Horner of the Lancs and Morecambe club.

Our roving cameras look in at recent rallies to record models and modellers of note.

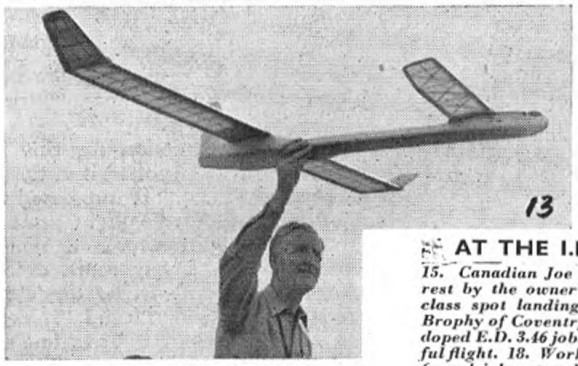


SLOPE SOARING AT CLWYD.

Organised by Chester M.F.C. and blessed with magnificent weather, the five hour slope meeting produced a remarkable crop of high flight times. 11. Tailless types were matching performance of conventional layout, this one by H. F. Wilde (Chester) putting up best time for new 9 : 51 record. Typical Clwyd scene is 12, where a tandem wing job soars out into the vast open area: an "average" flight on this day was in the region of 4 minutes! 13. Shows Bob Gosling's latest A/2, a Canard which established new British record of 3 : 47. Best time of the day was no less than 14 : 39 (closely followed by a 14 : 15) by G. M. Hutton's A/2 from Wallasey, whence came A/2 team member John Hannay with his Tailless in 16. Top junior time was 6 : 36 by young K. Simmons of the New Brighton School M.F.C. Altogether this was one of the most satisfying meetings we have ever attended, and we trust that slope soaring will spread to other areas in future.

11

12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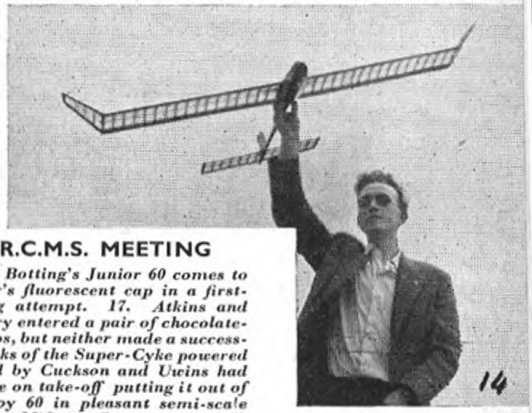
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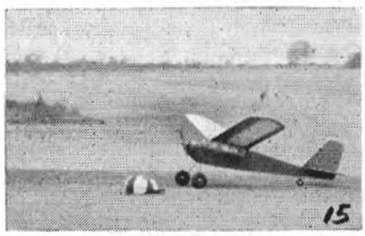
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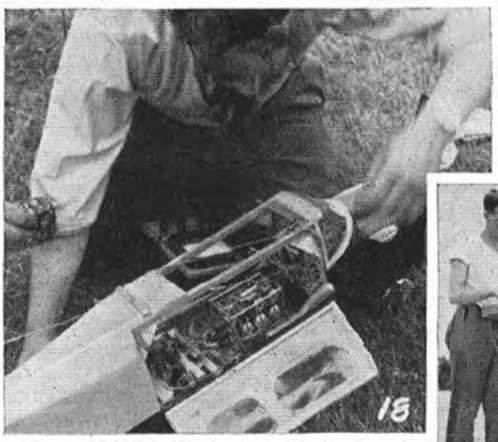
AT THE I.R.C.M.S. MEETING

15. Canadian Joe Botting's Junior 60 comes to rest by the owner's fluorescent cap in a first-class spot landing attempt. 17. Atkins and Brophy of Coventry entered a pair of chocolate-doped E.D. 3.46 jobs, but neither made a successful flight. 18. Works of the Super-Cyke powered 6 reed job entered by Cuckson and Uwins had a nosewheel failure on take-off putting it out of action. 19. McCoy 60 in pleasant semi-scale job, entered by M/Sgt. Crowe, U.S.A.F. 20. Gilbert Harding or Raymond Glendenning? Seen at the ENFIELD TEAM RACE RALLY, Len Steward adopts disguise before winning the combat. 21. Howard Boys flew his well-known tailless job, which performed extremely well. 22. Only really international competitor was George Zigic, of Yugoslavia, whose beautiful Aero 250 job shook out of adjustment on the long journey and piled in. Yugoslav motor, E.C.C. receiver, German 3-oz. relay.

16

17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Bob Linn's conversion of an old favourite for diesel power—a new two-in-one plan for the...

ABC ROBIN

FOR several seasons a steady favourite in Plans Service as a scale rubber model, the ABC Robin has also been the subject of many novel power conversions. One such successful model is that by American Bob Linn of Los Angeles, California, and in view of the more accurate detail he has provided, the existing APS design for a rubber design has been revised and the power-conversion details *added* to make it a "Two-in-One" plan.

Bob Linn's attraction for this little lightplane came when he first spotted it in the July, 1946 issue of "AEROMODELLER." It impressed him as an ideal subject as a ½ A free flight scale model for the Inglewood Flightmaster's annual contest. Bob decided to add a few more details than Eddie Riding had shown—so by digging through some back issues of "*Flight*" and "*Aeroplane*" he came upon some excellent information and photos that enabled him to convert the rubber-powered model into an Allbon-Dart powered scale contest model. By studying all the information available the Robin is as true to its big brother as possible without spoiling its chances of being a good flier.

Main structure changes are as follows: In the wing, the spar spacing was changed to come closer to the original, a heavier trailing edge used and the root ribs slanted to add the swept back to the wings that accuracy calls for. Mounting arrangement of the wing to the fuselage was changed to prevent anything showing through the cabin roof window, which is also a new addition.

In the tail surface structure the following changes were made: the shape of the elevator trailing edges were changed to conform to the orginal outline. External elevator and rudder control horns along with the control cables to the sides of the fuselage may also be added. Little points like this mean a lot when those sharp-eyed judges start giving a model the works at a scale contest.

In the fuselage the largest number of changes were made: first of all, the basic ⅜ in. sq. structure was retained. Nose shape was redesigned to allow for a good solid engine installation and to better conform to the lines of the original as found in the "*Flight*" magazine construction shots. The only landing gear change was to use heavier wire in the main strut member. To finish off the fuselage the entire structure was covered with 1/32 sheet to simulate the plywood on the real aircraft. Interior details such as seat, control column, rudder pedals and instrument panel may be added for they are a very important part to any scale model.

Complete with an Allbon Dart installation the Robin weighed around 10½ ozs., and its flight performance is quite satisfactory. Besides being a good scale contest model, it is an excellent "sport" flier and will provide many hours of entertainment for you with its realistic flight pattern.

Photos show Bob Linn's "special" Robin with opening door and interior detail. Allbon Dart is an ideal engine for this design. Full-size copies of the 1/4th scale plan opposite can be obtained price 4s. 6d. post free from Aeromodeller Plans Service.

A 36½" SPAN FLYING SCALE MODEL SUITABLE FOR RUBBER OR SMALL DIESEL

A.B.C. ROBIN

DESIGNED BY
E. J. RIDING.

4/6

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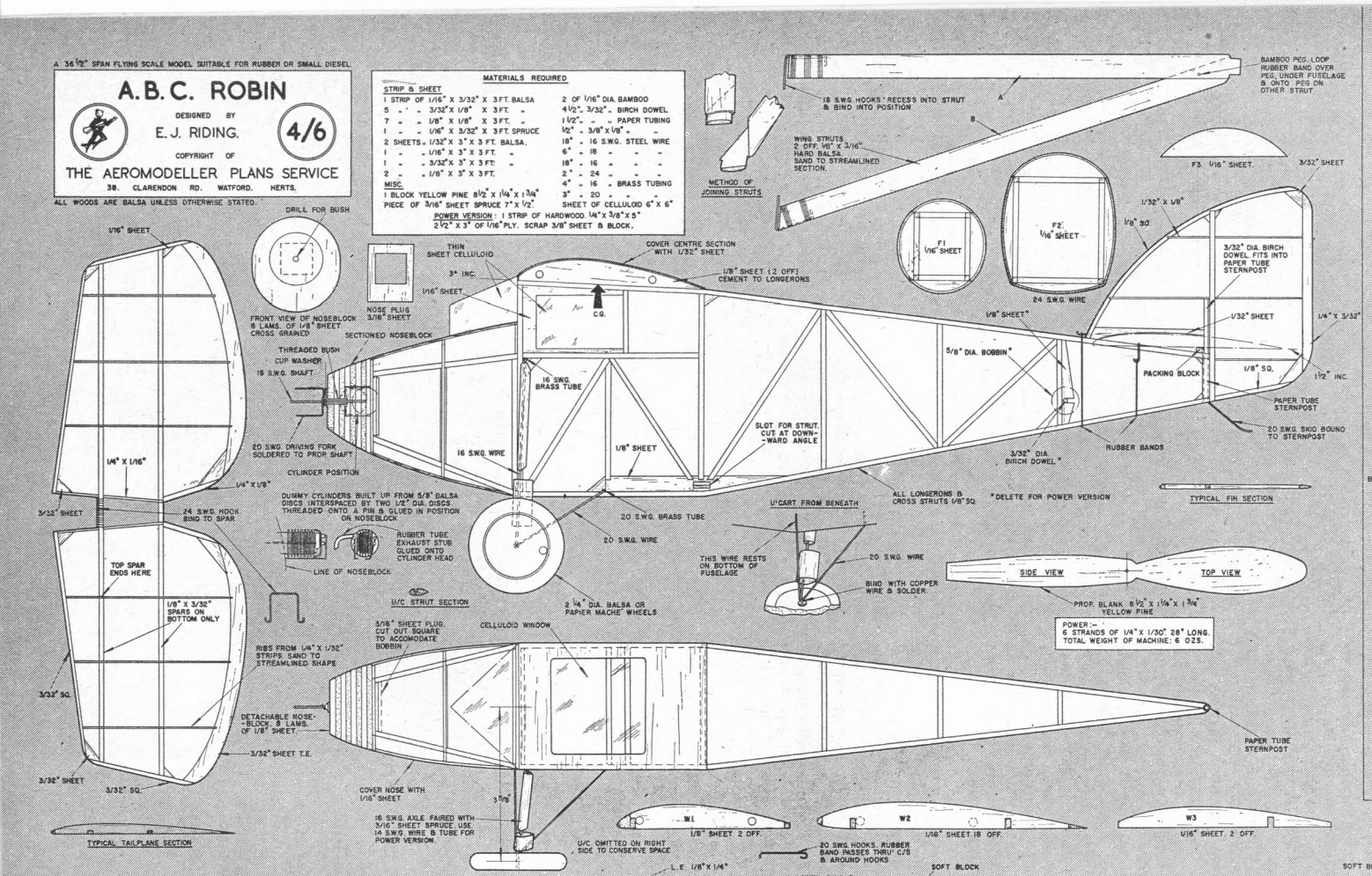
THE AEROMODELLER PLANS SERVICE
38. CLARENDON RD. WATFORD. HERTS.

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.

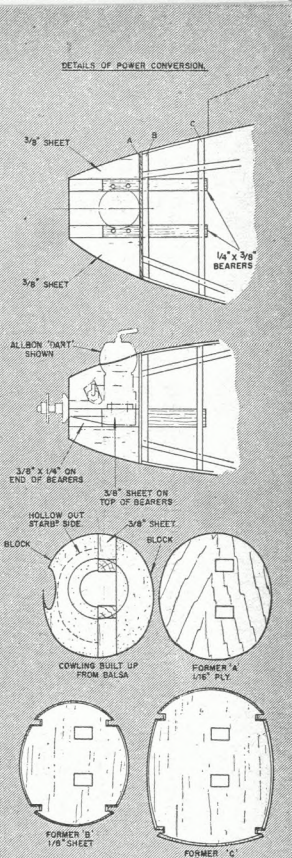
MATERIALS REQUIRED

STRIP & SHEET
1 STRIP OF 1/16" X 3/32" X 3FT. BALSA
5 " " 3/32" X 1/8" X 3FT. "
7 " " 1/8" X 1/8" X 3FT. "
1 " " 1/16" X 3/32" X 3FT. SPRUCE
2 SHEETS 1/32" X 3" X 3 FT. BALSA.
1 " " 1/16" X 3" X 3FT. "
1 " " 3/32" X 3" X 3FT. "
2 " " 1/8" X 3" X 3FT.
MISC.
1 BLOCK YELLOW PINE 8½" x 1¼" x 1¾"
PIECE OF 3/16" SHEET SPRUCE 7" x ½".
2 OF 1/16" DIA. BAMBOO
4½" " 3/32" " BIRCH DOWEL
1½" " " PAPER TUBING
½" " 3/8" x 1/8" "
18" " 16 S.W.G. STEEL WIRE
6" " 18 " " "
18" " 16 " " "
2" " 24 " " "
4" " 16 " BRASS TUBING
3" " 20 " " "
SHEET OF CELLULOID 6" X 6"

POWER VERSION: 1 STRIP OF HARDWOOD. ¼" X 3/8" X 5"
2½" X 3" OF 1/16" PLY. SCRAP 3/8" SHEET & BLOCK.



DETAILS OF POWER CONVERSION.



PUBLISHED AEROMODELLER SEPTEMBER 1954 FSR 239

1954 A/2 GLIDER CHAMPIONSHIPS

September, 1954

Germany wins both individual and team trophies at a contest marred by high wind and rain.

Reported by

C. S. Rushbrooke

ODENSE, situated on the island of Funen half-way across Denmark, is the third largest city in the country, and widely known as the birthplace of Hans Christian Andersen—the famous author of many childhood fairy stories.

However, it was the serious business of the 1954 World Championship for A/2 Gliders that took us from England on the 23rd July, and the fact that we dutifully explored the H. C. Andersen museum after the contest was purely by the way. John Hannay (Wallasey), Jimmy John (Grange) and Geoff. Wheatley (By-Pass) were met at Liverpool Street Station, and the journey via Harwich, Esbjerg, etc., was uneventful—though we greatly appreciated the big dock fire that met us on landing on Danish soil, a Customs bond store having gone up in flames just before we left the boat!

On arrival at Odense we joined up with the remainder of the British party, including Roy Yeabsley, who was to fly Jack North's model by proxy, and his holidaying friend Gilroy. Mr. and Mrs. Houlberg and Bob Gosling duly arrived by car the following morning, having travelled up via Germany, and the total British contingent of ten was probably the largest visiting party to attend the meeting.

Friday the 25th was devoted to processing and test flying, though the latter was not indulged in to any great extent in view of the turbulent conditions prevailing. Teams of slide-rule experts dealt with the teams on a strict time schedule, and we learnt of no machines rejected, though many were very near the limit as regards weight. In fact a number, including Hannay, had to add ballast to tip the official scales—though there was no need the following morning when models had collected a considerable amount of moisture from the soaking conditions!

Before returning from the aerodrome to dinner, a meeting of Team Managers and Jury took place, when Per Weishaupt told the gathering that the Met. forecast was anything but pleasant. High winds and rain were the fare he had to offer, and as the forecast for the following day was no better, it was decided to proceed according to programme.

"According to programme" meant a 3 a.m. call on Saturday morning, and a bus journey out to the airfield in pouring rain. Gloom was written on all faces, but the lot of the British Team was enlivened by the production of cheese rolls and sticky buns—a happy forethought on the part of Mrs. Editor.

This enabled us to await the official start to Round 1 with a certain amount of well-being, but a glance across the long, narrow airfield was anything but encouraging. Five take-off points were staked out in the long grass covering the area, a weight-check point was placed near the official buses, and promptly at 5 a.m. the contest started.

Procedure was to queue up for weight check, then await the runner appointed to each take-off site, who conducted competitors to the timekeepers waiting by their posts. Here, one timekeeper accompanied the assistant downwind with the end of the towline, whilst the competitor remained at the upwind post with the second official. In this way lines were checked on each flight—sometimes with remarkable results! Either lines stretched in use and the wet conditions, or some extra string found its way onto some reels. Nevertheless a number of competitors had to remove a little excess during the latter rounds.

With eighteen nations competing, a total of 71 competitors wended their ways to the starting points during the 1¼ hours alloted for each round, and there the "fun" started. The intermittent rain was bad enough, but it was the high, gusty wind that took greatest toll of the models—and tempers—for the vast majority of machines whipped off the lines before any reasonable altitude had been reached, and great was the prangery.

Definitely it was inexperience with such conditions that caused a disastrous start to British hopes. 79, 49, 45 and 00 seconds was the doleful score we recorded in the initial round, Jimmy John making the best show, and John Hannay collecting the wooden spoon. However, Hannay cannot be blamed for a peculiar sequence of events. Owing to a misunderstanding, his model was launched prematurely, and with little height the line snapped. Technically he should have been awarded a "no-flight" and taken a second attempt, but immediately afterwards a portion of the model became detached and the timekeepers awarded a disqualification! By the time this was brought to attention and sorted out, the time limit for the round had passed, and that was that.

Round 2 was even worse, for this time scores of only 58, 40, 21 and 00 were scored, John getting zero with two "no-flights". No wonder Great Britain was way down at the bottom of the team results at the breakfast break between Rounds 2 and 3.

However, we were not the only country with troubles! Luthersson (Sweden) and Thomann (Switzerland) who has scored remarkable maximums in the first round recorded only 28 and 68 seconds in Round 2, the Swiss boy following with a further max. and 20 and 40 seconds in the remaining rounds to drop well down the list.

And what of the champions? Gunic of Yugoslavia, the 1952 winner, had pranged his best model in pre-contest testing, and broke up his second string right at the start, thus returning a nil score. Hansen (Denmark), last year's winner, could only score 72, 34, 54, 58 and

90 seconds to get 42nd place, so it proved that skill was at a definite discount under the existing conditions.

The Danish proxy fliers representing America and Canada were doing a fine job, and Fritz Neumann performed marvels to bring Bill Etherington's model into 23rd position. The ever popular George (Professor) Perryman had again got himself to the contest from the Southern States, using stick type fuselages probably as a result of the "Last Straw" efforts of last year's British team.

Round 3, commencing at 08 : 45 saw a slight improvement in conditions, and the air started to warm up a bit. This was evidenced by the fact that no less than 6 maximums were recorded in this round, as against 2 in the first and 1 in the second rounds, and the fortunes of the contest began to sway in all directions. There is no denying that a five-flight contest can prove far and away more interesting than the more familiar three-flight affair, and to watch the changing pattern of the extremely efficient scoreboard was fascinating.

With both Lindner and Hacklinger scoring max's, Germany came up onto the leader list with a bang, accompanied by Rechenberg, who was scoring most consistently. Undoubtedly the German team seemed most at home under the rough conditions, and it was an education to witness the efficient way they launched in the gusty wind. With only about half the line unreeled, the competitor ran like blazes downwind as the model was released, running out the line as he went. This combination obviously eased the strain on the model, and it is true to say that the improvement in British times came as a result of learning as we went along from a study of the German technique.

Templier and Lefort clocked max's in the 3rd round to bring French hopes higher, whilst Girak (Austria), Delhalle (Belgium) and van Loo (Holland) all recorded high scores to change the leader board considerably. Wheatley now came into the picture with a 135 second flight to put G.B. onto the leader board for the first time, though the other members still could not manage to get above the minute mark. Hannay however was improving, having substituted dural tubes for the wooden dowels he had been using to connect his wings, this factor alone having given him more confidence in launching.

The contest had now settled into an easy swing, with competitors (and team managers) resigned to the slight delays between check point and take-off. With a quarter hour break between rounds to relax(!) stock was taken of one's wounds, and the state of the opposition—for there was no time to check on things whilst a round was in progress. To get four men through the preliminaries, out to the field, launched, and time checked was a full-time job, and I—as British Team manager—was more than thankful for the assistance of Gilroy and Gosling, who played a major part in assisting the lads under such difficult conditions.

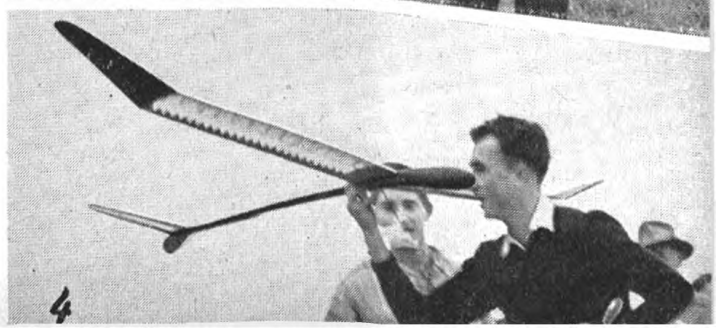
Round 4 produced the biggest crop of thermal flights of the contest, no less than seven maximums going to the scores of Saar, Switzerland, Norway, Denmark, Canada, U.S.A. and—yes, at long last, Great Britain. Wheatley, who had broken the wing of his number one model, repaired the damage during the breakfast break, and, his reserve proving unequal to the fight, now brought his first string back into the contest and recorded the first British max. Hannay d/t'd a few seconds too early to miss a max. by only 7 seconds, and Yeabsley (proxying for North) got his best flight of the day with a 97 sec. flight. (Roy was definitely handicapped with a model to which he was not used, plus the fact that the job was badly under-doped and became a sodden mass as the day wore on.)

(1) George (Professor) Perryman was sponsored to the meeting by the Lockheed Aircraft firm, for whom he works as an engineer. He retained the distinctive Perryman polyhedral/swept-back tail.

(2) Gilroy hangs on tight to Jack North's model, whilst Roy Yeabsley endeavors to light the d/t.

(3) J. Lock of the French team had a beautifully constructed model, again using the inevitable stick "fuselage".

(4) Max Hacklinger (Germany) demonstrated how easy it is to launch an International class model single-handed. Model is kited up from the winch, the launcher running as the line is paid out.



(5) Tannesen of Norway exhibits his fairly short moment arm model of first-class construction. (6) L. Delhalle (Belgium) featured a striking colour scheme on his somewhat unusual model. Madame Delhalle acted as manager to the Belgian equipe. (7) The victorious German team, W. Reimer, R. Lindner, Carl Denzin (team manager), I. Rechenberg, and Max Hacklinger. (8) Danish team members take it easy after the efforts of flying. (1953 winner Hansen second from right.) The weather conditions did not suit the Danes, who were very aggrieved as they had enjoyed some perfect conditions shortly before the contest. (9) Unlucky Bora Gunic (Yugoslavia) casts a critical eye on team-mate Pelikan's model featuring large end plates, described in the August issue (page 413).

(10) Zidek of Austria has to hold on tight whilst showing off the high aspect/ratio wing of his new type glider. Of all-balsa construction, the wing vibrates alarmingly when under line tension, but seems to cope quite well with stall control whilst on tow.

(11) Jimmy John (Grange) had probably his worst day out at a contest! Nothing went right for him, and probably accounts for his rather despondent look.

11 : 45 and the final round got under way. By this time it felt like teatime, and it became a shock to look at a wrist instead of a stopwatch, and to realise just how early in the day it was!

Many fancied entries were by now well out of the running, though all were still battling it out in the hope that a high 5th round score would retrieve the fortunes of their teams, if not their individual records. The keen chaps from Israel, again led by Naftali Kadman, were plugging away with consistent if not high scores, and everyone applauded the way they buckled down to it having only arrived in Denmark in the very late hours the night before—so late in fact that their models had to be processed in the last few minutes before the contest started.

By this time, though the sky had cleared considerably, the wind had got even stronger, and it was an extremely difficult task to hold a model ready for launching. Some Austrian entries were using a new type of high aspect/ratio all-balsa wing that flexed alarmingly on the line, producing a vibrating effect that cured a stall on launching, but it is a matter of opinion whether these experiments were successful. The contest results certainly show no advantage.

A scoreboard check showed that at least 15 competitors had a chance at top place if a good flight could be recorded, and even at this stage it was anybodys race. The following list of the top dozen at the end of round 4 will illustrate this:—

1.	Thomann	Switzerland	448
2.	Hacklinger	Germany	434
3.	Knoll	Saar	419
4.	Pederson	Denmark	399
5.	Lindner	Germany	386
6.	Nesic	Yugoslavia	385
7.	Wheatley	G.B.	381
8.	Weintraud	Saar	378
9.	van Loo	Holland	376
10.	Nironi	Italy	375
11.	Rechenberg	Germany	364
12.	Niemela	Finland	349

A maximum by some of the lower placings, with always the possibility of one of the leaders recording a low score made the closing minutes of the contest as exciting as any meeting yet witnessed.

Hannay had at last coped with the conditions, and scored a fine maximum, losing his model in the process though seen to d/t well within sight. (Another case of harvesting of both corn and models, for there were numerous fields of grain downwind.) Bad luck still dogged Jimmy John, and Yeabsley could not repeat his 4th round effort.

British hopes now depended on Wheatley, and he got away to a fine overhead launch. However, it was not to be our lucky day, and the model failed to connect with the odd patches of lift that were definitely about, and his score of 86 seconds brought his total to 467 and a placing of 12th. After such a disastrous start this was most encouraging, and says much for the never-say-die spirit that exemplified the team.

Thomann failed to get more than 40 seconds and dropped from the lead; Rudi Knoll found the same conditions as Wheatley and dropped to a final 9th place; Pederson did likewise to finish 16th and many others fell from grace.

Lindner, Luthersson and Nironi now came well into the picture with high last flights, but for some time attention was on Max Hacklinger. With his 4th round total of 434 he was confidently expected to win—but a poor flight of only 40 seconds put him way down the list at 11th place, and that was that. By this time no one could alter the leader position, and Lindner was duly

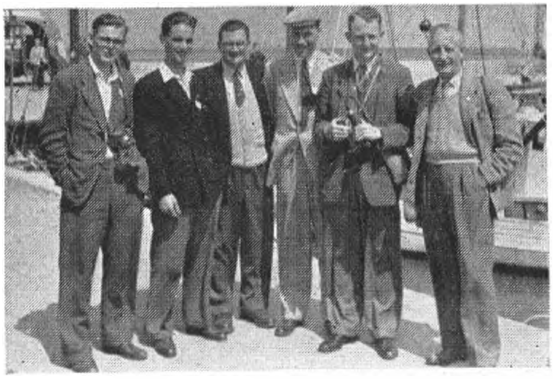
acknowledged the winner for 1954.

It is interesting to consider the winner's times, for his win was in effect made on three flights. One of the purposes of a five-flight contest is to produce consistency, and on this score the second man, Rechenberg, was the better performer with higher general standard.

With three men so high on the list, Germany was an easy winner of the Team prize, and the 1955 event will therefore take place in that country, near—so we learn—the Brunswick district.

Events were rounded off with a most enjoyable dinner at an out-of-town garden restaurant where the main prizes were distributed, and each competitor got a souvenir of the meeting. Early morning rising was forgotten, and we know of more than one flier who got home at the same time he had got up the previous day, and many mouths were likened to the bottom of bird-cages!

To sum up, here was a contest staged in conditions that were entirely unexpected, and many were caught out with "still-air" machines that proved entirely unsuitable for the event. Whether in future it will pay to haive second strings of a different type to those which qualify for team honours is debatable, but as far as British hopes are concerned it was the unanimous opinion that we have a lot to learn regarding launching technique—and we won't do that by keeping the models in the box when conditions are gusty!



R. Lindner, the 1954 A/2 glider champion is a clubmate of Max Hacklinger and it is not unnatural that the general shape of his model bears similarity with Max's designs. Main differences lie in the slim pogo-stick fuselage, to which a forward fin is added instead of the characteristic Hacklinger "droop-snoot," and also in the fact that turbulator devices are not used. Close relationship of towhook and C.G. do not appear to have created any towing difficulties. A scale drawing appears on p. 459. At left: British Team, Jeff Wheatley, Jimmy John, Team Manager Rushy, John Hannay, proxy flier Roy Yeabsley and valuable assistant Bob Gosling.

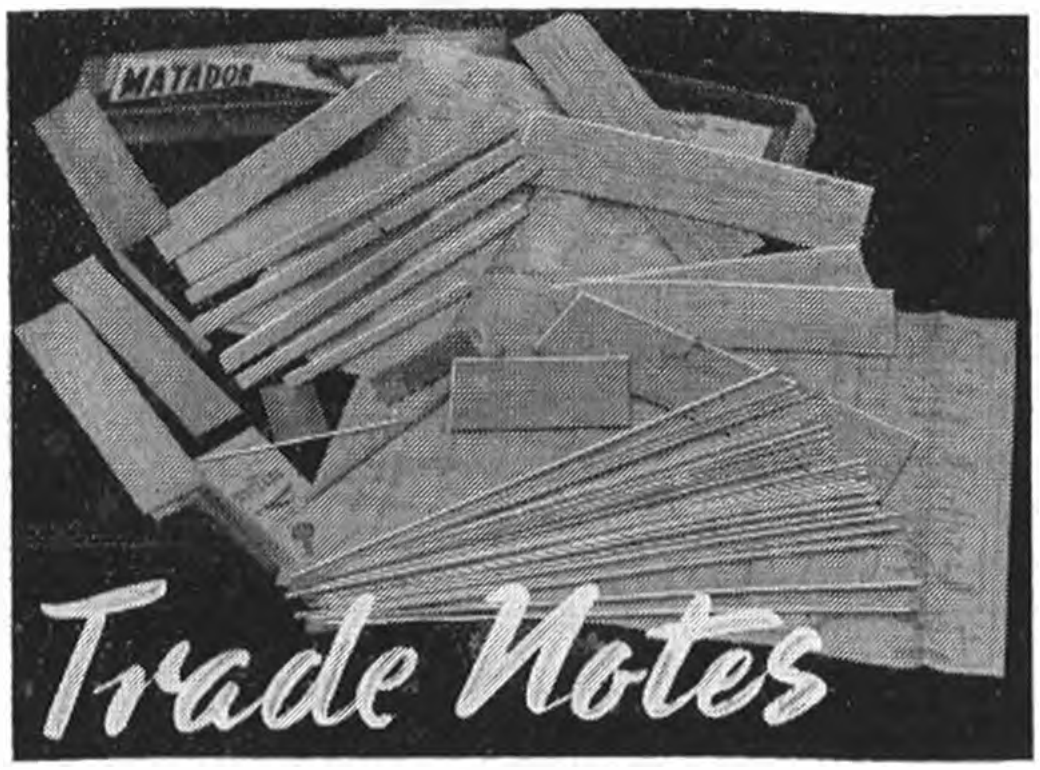
1954 A/2 Glider results

1.	Lindner, R.	Germany	145	31	180	30	180	566
2.	Rechenberg, I.	Germany	87	105	106	66	180	544
3.	Luthersson, N.	Sweden	180	28	104	35	180	527
4.	Nironi, P.	Italy	46	180	90	59	140	515
5.	Weintraud, H.	Saar	88	63	47	180	128	506
6.	Niemela, S.	Finland	94	43	88	124	149	498
7.	Bartschi, W.	Switzerland	72	116	45	77	180	490
8.	Thomann, H.	Switzerland	180	68	20	180	40	488
9.	Knoll, R.	Saar	106	74	99	140	67	486
10.	Nesic, L.	Yugoslavia	55	61	133	136	90	475
11.	Hacklinger, M.	Germany	69	105	180	80	40	474
12.	Wheatley, J. J.	G.B.	45	21	135	180	86	467

13.	van Loo, E. J.	Holland	462	32.	Jarvi, J.	Finland	367	52.	Aubertin, C.	Monaco	246
14.	Molbach, T.	Norway	453	33.	Delhalle, L.	Belgium	364	53.	Overlaet, G.	Belgium	245
15.	Hannay, J. B.	G.B.	448	34.	Neilsen, H. F.	Denmark	348	54.	Riemer, W.	Germany	243
16.	Pederson, S.	Denmark	446	35.	Maes, H.	Belgium	340	55.	Tonnesen, U.	Norway	242
17.	Templier, J. P.	France	434	36.	Schonborn, W.	Saar	319	56.	Hahn, C.	U.S.A.	240
18.	Ben-Shahar, Z.	Israel	427	37.	Lock, J.	France	316	57.	Bausch, L.	Holland	231
19.	Lefort, P.	France	427	38.	Iotti, S.	Italy	312	58.	Urbanekm, F.	Austria	226
20.	de Graaf, J. G.	Holland	426	39.	Haug, E.	Norway	312	59.	Dupuits, P. F.	Monaco	209
21.	Persson, L.	Sweden	425	40.	Bodmer, M.	Switzerland	312	60.	Pelikan, Z.	Yugoslavia	196
22.	Hansen, B.	Denmark	423	41.	Kadmon, N.	Israel	309	61.	John, E. J.	G.B.	192
23.	Etherington, W.	Canada	411	42.	Hansen, H.	Denmark	308	62.	Maringer, M.	Yugoslavia	186
24.	Gordon, R.	Canada	400	43.	Boscarol, C.	Italy	307	63.	Harris, J.	U.S.A.	177
25.	Dore, H. A.	U.S.A.	397	44.	Fererici, G.	Italy	304	64.	Levi, R.	Israel	111
26.	Hauenstein, W.	Switzerland	396	45.	Nilsson, P. F.	Sweden	296	65.	Rantala, U.	Finland	110
27.	Ericsson, K.	Sweden	395	46.	North, R. J.	G.B.	281	66.	Aubertin, R.	Monaco	109
28.	Girak, H.	Austria	390	47.	Klaasesz, R.	Holland	281	67.	Feron, L.	Belgium	100
29.	Zidek, F.	Austria	387	48.	Huhtinen, P.	Finland	255	68.	Saeter, P. E.	Norway	25
30.	Pouliquen, J.	France	384	49.	Crawford, J.	Canada	253	69.	Novaro, H.	Monaco	0
31.	Juen, A.	Saar	371	50.	Perryman, G.	U.S.A.	252	70.	Gunic, B.	Yugoslavia	0
				51.	Glavitsch, J.	Austria	249	71.	Adamski, V.	Belgium	0

TEAM PLACINGS

1.	Germany	1584	7.	G.B.	1196	13.	Norway	1007
2.	Switzerland	1374	8.	Holland	1169	14.	Belgium	949
3.	Saar	1363	9.	Italy	1134	15.	U.S.A.	889
4.	Sweden	1347	10.	Finland	1120	16.	Yugoslavia	857
5.	France	1245	11.	Canada	1064	17.	Israel	847
6.	Denmark	1217	12.	Austria	1026	18.	Monaco	564



LATEST kit from the **Mercury** stable is that for the "Matador," a 50 in. high wing cabin job that should fill the bill perfectly for all modellers looking for a radio model using 1.5 c.c. diesels. Designed weight for R/C is 2 lb., and when you open the kit box, it seems you have that much in balsa, etc., before you start construction. Our "Matador" is not yet complete for flight tests; but the kit is spilled for display in the heading photo. Price is a very reasonable 25s. which includes P.T.

What could be new in tanks? **A. A. Hales** have introduced a new line in colour-coded tanks for control-line work with four varied sizes in wedge sections and a pair of T.R. tanks for classes A and B. Checked capacity of the brown coloured "A" tank was 14.5 c.c., which is just right, allowing for vent volume, and for "B," 29.75 c.c., again as near as one dare go to 30 c.c. Colouring is fuel proof, and a point we like is the use of stout-walled brass tube, which is a perfect force fit in neoprene.

Glass Fibre Plastic, otherwise now being known as **Bondaglass** is coming on by leaps and bounds, the model yacht and car boys calling for bigger and better kits of cloth and resin. Peter Smith, the enterprising proprietor of Bondaglass, now announces packs of tape, 5 yds. by 2 in., 12 thou. cloth, 36 in. by 12 in. or 36 in. by 24 in. and separate resin and catalyst to suit. Thus we may yet see *whole* fuselages in Fibre . . . sorry!

. . . Bondaglass in future for R/C—this being quite the latest thing at American contests.

Messrs. **E.C.C. (Telecommander) Ltd.,** sent one of their new **P.100 Subminiature Relays** for inspection, and we hastened to incorporate it in our well-used bench rig, to find the claim that it would operate on a current change of .2 milliamps, to be quite correct.

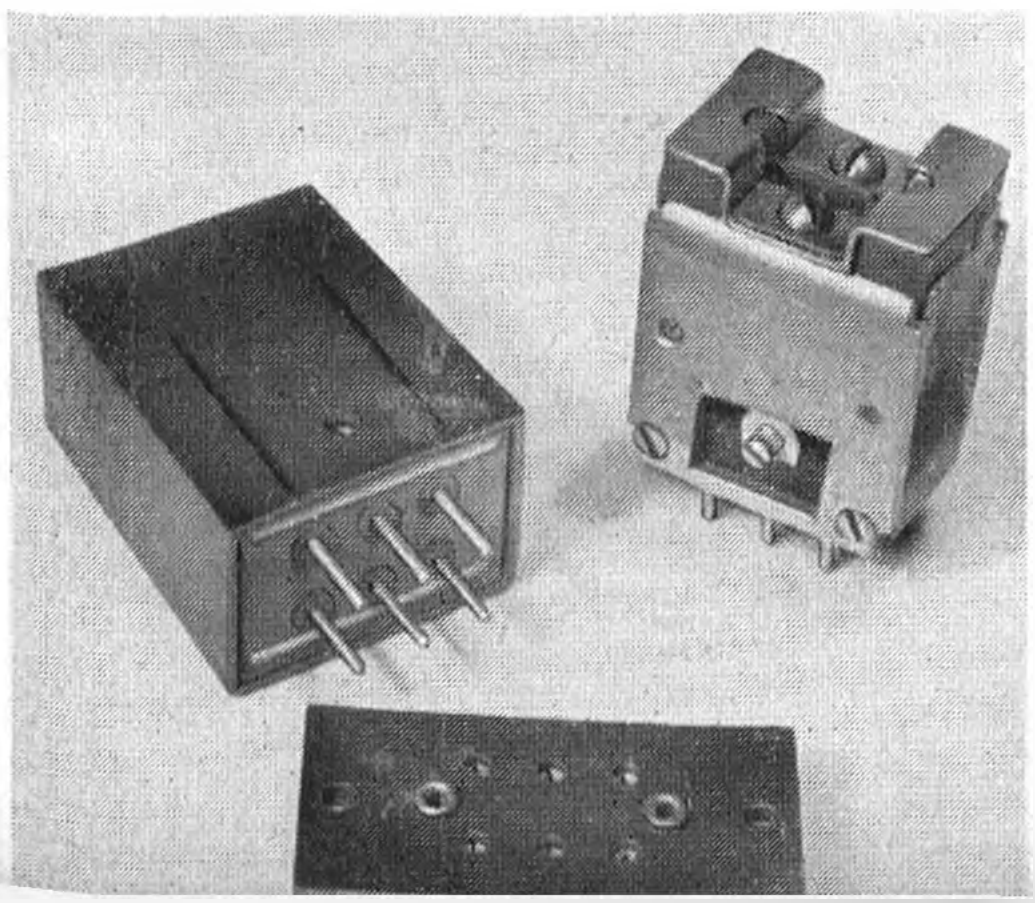
The relay is of the polarised type with a coil resistance of 3,500 ohms, weighs exactly one ounce, and is neatly enclosed in a sealed plastic case. Small holes each side of the case permit access for contact screw adjustment. A six pin socket is supplied with each relay, and will shortly be available as a separate item complete with six pin plug. The polarity of the relay can be reversed by simply reversing it in relation to the socket.

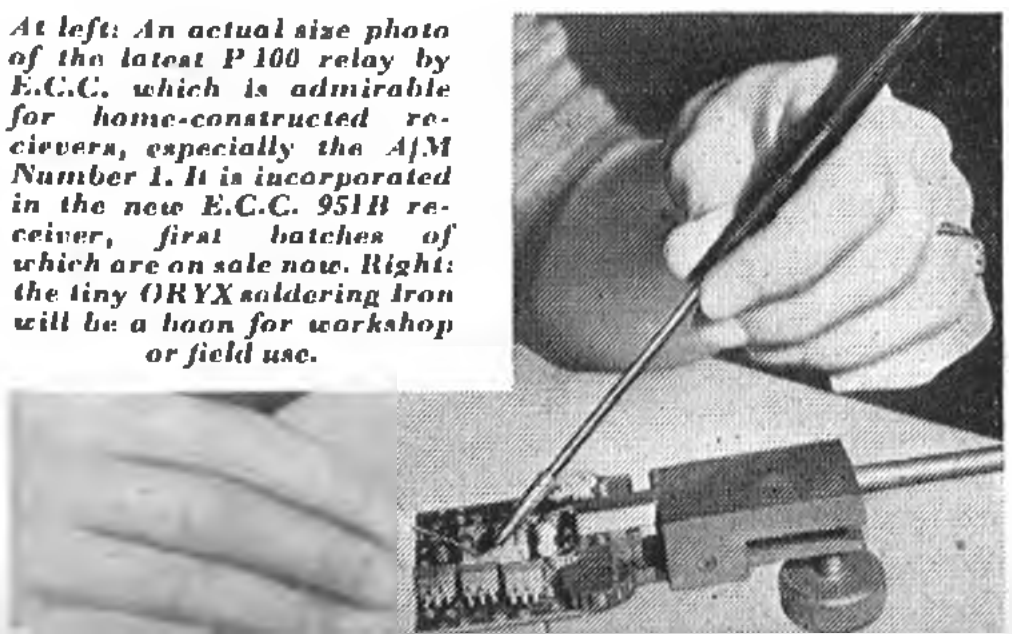
Undoubtedly, this is the neatest relay we have yet seen, and at 29s. 6d. should be a boon to home constructors of radio equipment.

Another useful instrument for the radio-control flier, and any other kind of aeromodeller come to that, is the **Oryx Miniature Soldering Iron.** The particular model we were sent was a mere 6 inches in length, weighed only ¼ ounce, and operated off a 12 volt car battery. It heated very rapidly, melting the standard Multicore Solder in 30 seconds. Several models are available, ranging from 6 to 50 volts, and from 6 to 12 watts. The bit on our 12 volt, 8.3 watt model was 5/32 inches in diameter, and like all models removable for replacement.

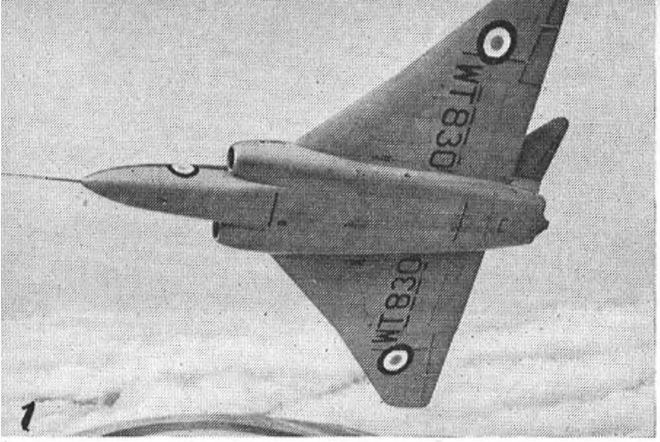
A more ideal iron for radio-control work would be hard to find. Pin-point heat application minimises the risk of damage to delicate components, and on the flying field it can be in action from one's car battery in a jiffy. Enquiries regarding the iron, which retails at 25s., should be sent to R. M. Firmin, 11 Lansdowne Court, The Avenue, Worcester Park, Surrey.

As we close for press we learn that the **Allbon Davies-Charlton** design team have produced another small capacity diesel for their already extensive range. First batch of motors is due for export as the designed capacity of .049 cu. in. (.8 c.c.) was specially requested for the American Market. We have been fortunate in securing advance production samples of this **Merlin** for test purposes, and first impressions are extremely favourable. Weight is a mere 1¾ ounces and many requested features are incorporated. Front rotary crankshaft induction goes well with an angled needle valve and combination beam or radial mount to make it an easy motor to handle. Easy starting and clean running—the usual D.C. characteristics—are evident from the first flick start, and at the price of 47/6d. including Tax, we do not feel at all unsafe in stating that this will be a diesel with a future.





At left: An actual size photo of the latest P.100 relay by E.C.C. which is admirable for home-constructed recievers, especially the A.M. Number 1. It is incorporated in the new E.C.C. 951B receiver, first batches of which are on sale now. Right: the tiny ORYX soldering iron will be a boon for workshop or field use.



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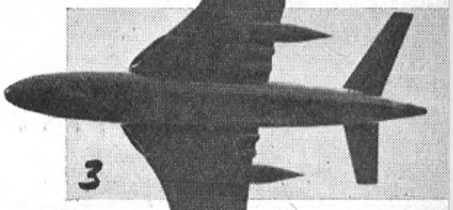
See them at...

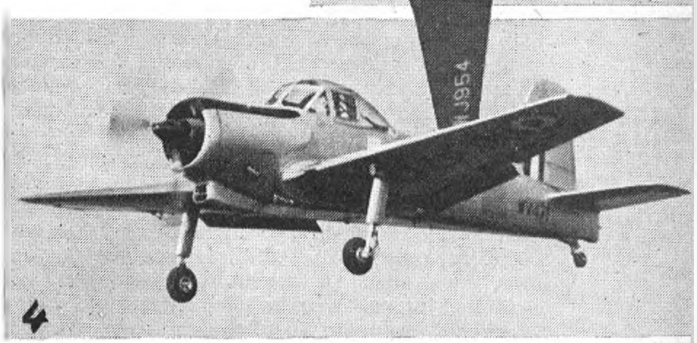
FARNBOROUGH



3

ESTABLISHED in fame as "the World's greatest air show," the annual September event at the Royal Aeronautical Establishment, Farnborough, will once more be the magnet of attraction for many thousands of aeromodellers this year. Organised by the Society of British Aircraft Constructors, and fully supported by all of its members throughout the aircraft industry, it is a display not to be missed, where all the skill and finesse of pilotage is demonstrated to the last degree of efficiency and showmanship, each factory trying to outdo the other with some especial manoeuvre.

New types, some only a bare ten flying hours old, and others the latest variants of established shapes, are shown to public view for the first time. What better place could there be for the aviation enthusiast to take his camera and personally record a pageant of 1954 flying achievement? All photos on this page save the view of the latest Javelin above, were taken by AERO-MODELLER staff at the '53 show, mostly on Ilford H.P.3 film, 1/200th shutter speed and aperture f9, depending of course on the speed of the aircraft and brilliance of the sun. Why not take your camera this year on September 11th or 12th?



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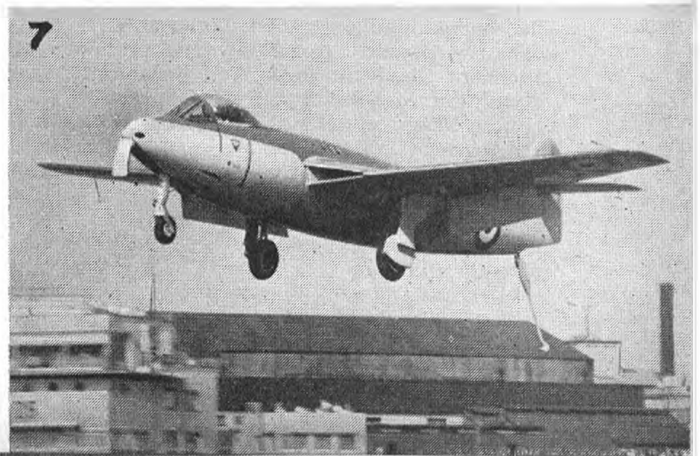
5

1. Gloster's production type Javelin with broader tips, kinked leading edge and two Sapphires, to be an all-weather fighter for the R.A.F. 2. The famous D.H.110 with two Rolls-Royce Avons and now modified for naval use with deck landing equipment. 3. Sleek Vickers-Armstrongs Valiant B.2, has four Avon RA.14's and a longer nose, plus special undercarriage fairings to distinguish it from the Valiant B.1. 4. Percival's Provost T.1, the trainer without a vice, look for the jet version at Farnborough. 5. The Westland Wyvern S.4, strike fighter for the Navy with a turbo-prop A. S. Python. 6. Seen with high mounted tail, the Short S.B.5 now has the tail below the fuselage and wing sweep of more than 60°. 7. Hawker's Sea Hawk F.1 production fighter for the Navy and a popular mount with its pilots.

6



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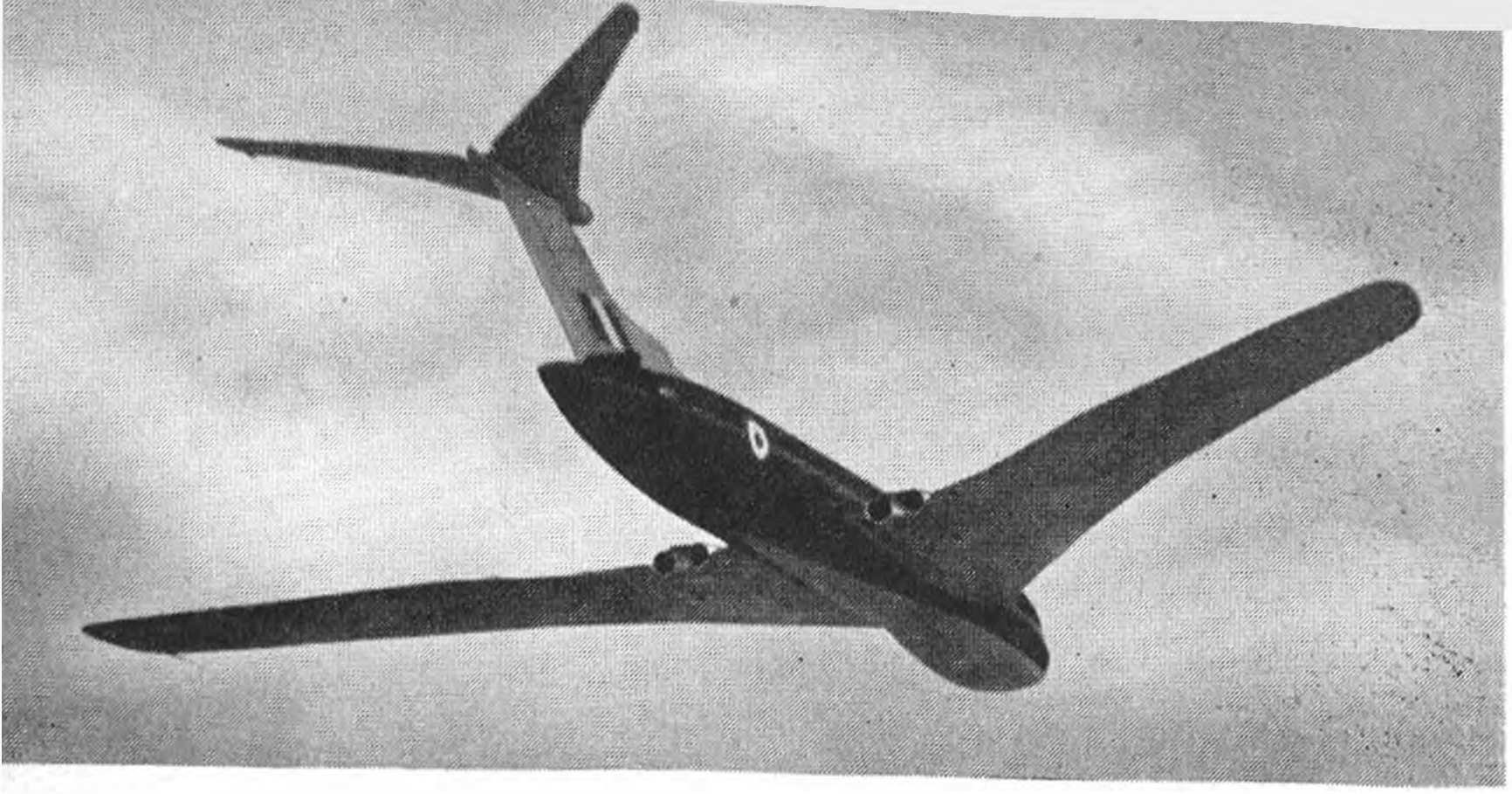


AEROPLANES IN OUTLINE NUMBER 15

by J. R. ENOCH

The HANDLEY PAGE **VICTOR**

DESIGNED to meet a very exacting specification which called for high-altitude long-range flight at high sub-sonic speeds, with a great bomb load and good control over the whole speed range, particularly on approach and landing, the Handley Page Victor, B. Mk. 1 (H.P. 80), was produced after exhaustive study of these requirements.

Under the direction of Mr. R. S. Stafford, the then Chief Designer, the Handley Page design team determined that no one-wing layout, *i.e.*, the high aspect ratio, thin, swept wing, or the delta planform, possessed all the qualities necessary to meet such stringent demands, consequently, as a result of interest in progressive reduction of sweep which had begun in 1946, the crescent wing was adopted.

Most of the crescent wing theory existing at that time, had been formulated in Germany by the Arado company during the war, but whilst high speed wind tunnel tests were being carried out by the Royal Aircraft Establishment at Farnborough, it was decided to build a flying model. Small scale crescent wings were fitted to the fuselage of a Supermarine Attacker. The conversion of this aircraft, known as the Handley Page 88 (Serial No. VX.330), was carried out by Blackburn and General Aircraft in 1948, and also necessitated the fitting of a new tail unit. Unfortunately, at Stanstead Airport in 1951, this aircraft crashed, the test pilot, D. J. P. Broomfield, losing his life.

With sweep-back and thickness progressively reduced towards the wing-tip, the advantages of this type of wing are such that it successfully combines the operational and aerodynamic merits of the delta, swept and razor thin wings without their attendant disadvantages. Aerodynamically, drag is reduced to a minimum which enables a high critical Mach. number to be attained, [the high aspect ratio characteristics confer good high altitude and range performance. The thick inboard section is sharply swept to delay compressibility trouble, whilst the thin, moderately swept outer section results in improved aileron effectiveness and wing-tip efficiency near the stall. Large wing area ensures substantial weight lifting ability, and relatively low wing loading for efficient performance over the wide speed range, manoeuvrability being particularly impressive.

Structurally, the wing has added advantages. The position of the load-bearing main members being well forward, permits an almost completely unobstructed fuselage bomb-bay. The thick wing root provides generous space for the installation of the power plants, and being virtually unrestricted, affords excellent accessibility for the maintenance of these units, which, being behind the main spars, considerably reduce the possibility of major structural failure in the event of an engine-bay fire. Also within this section of the wings are mounted the 8-wheel bogie type main undercarriage units. These units, of E.H. manufacture, have a pronounced trail angle, when extended and on landing when the four rear wheels make contact with the runway initial loads are taken by the oil-air shock absorber before the weight is taken by the main oleo leg. On retraction the bogie unit is rotated through 180° to an horizontal position in the wing, the whole unit being contained within single inward retracting doors. The mid-section of the wings allows adequate fuel storage capacity. From the point of view of manufacture, the wings are readily "broken-down" into sub-assemblies, which would facilitate construction and transport, and the manufacture of these being sub-contracted.

In addition to conventional ailerons and the high-lift extension flaps, which extend from the root, including the rear lower surface of the tail-pipe fairing to approximately half span, the wing has leading edge flaps. The function of these surfaces, which in two sections form the leading edge of the mid and outer panels of the wing, is to smooth the airflow and preserve control at low speeds by increasing the effective camber of the outer wing.

The fuselage, with the exception of the "double-bubble," is of circular section, and differs from the two other "V-Bombers" in having transparent panels in the nose and no external radar fairing.

Heading photos show the Victor prototype "clean," and with everything extended. Note leading edge flaps not likely to be used on future versions and angled bogie undercarriage units (Aeromodeller photos).

At Right: Victor in original silver finish. Is approximately 110 ft. span and length with fuselage diameter of near to 10 ft. (Handley Page photo).

It is, however, probable that "blind-bombing" radar is contained within the lower front fuselage. Small flush air intakes are situated just aft of the flat transparent side panels, and between these on the port side is an external "phone" linked to the cabin, used when ground testing and engine running is in progress. The twin-wheel nose undercarriage unit is fitted in the aft end of this ventral bulge, retracting backwards between double inward folding doors. Immediately behind the undercarriage doors is the lengthy bomb-bay, and on either side of the rear fuselage are large air-brakes, finned on their top and bottom edges to provide substantial decelleration both in the air and on landing. The unstepped cabin canopy combines aerodynamic cleanliness with good vision for the pilots in the fully pressurised crew compartment. With side by side ejector seats, the cabin is topped by detachable hatches to which extra transparent panels have been added since early flights. The crew entry door hinges upwards, and fitted with side shields, is on the port side of the fuselage in line with and forward of the engine air-intakes, an emergency "break-in" panel being between them.

The high-mounted tailplane has large mass balanced elevators, providing excellent trimming qualities at high speed. Like the other control surfaces they are power-assisted with built-in "feel simulation." The inter-section of the fin is formed by a large "bullet" fairing, the nose cone of which, like the fin leading edge below the air intake, has a dielectric fairing which presumably accommodates some radio or radar aerial.

The first prototype Victor, serial number W.B. 771, powered by four Armstrong Siddeley Sapphire turbo-jets (total thrust over 33,000 lb.) was assembled at Boscombe Down, having been towed there by road, disguised for security reasons as a marine craft. From there it was first flown in the evening of December 24, 1952, by Sqdn. Leader Hazeldon, accompanied by J. K. Bennett, the company's Chief Flight Test Observer. On this flight the undercarriage remained extended and the nose flaps were fixed down. It is reported that the second prototype will have a redesigned nose and tail unit and may not have leading edge flaps.

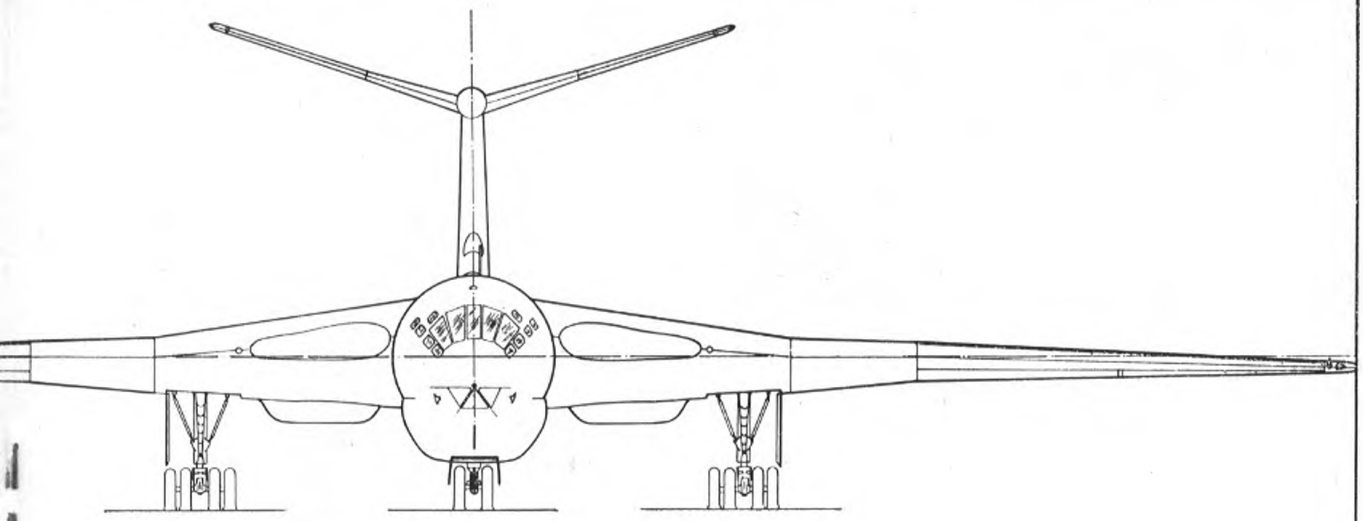
A unique feature of the Victor design is the fact that it can be landed "hands off." Briefly, this quality is due to the changing airflow and air forces as the aircraft approaches the ground, being brought about by the reduction of downwash, resulting in a modified angle at which the airflow meets the wing, and, the lift of the wing. This results in an increase of lift which, with swept wings, causes a nose-up tendency, but the reduction of down-wash also changes the angle of attack of the tail-plane, producing a nose-down tendency to balance the nose-high effect.

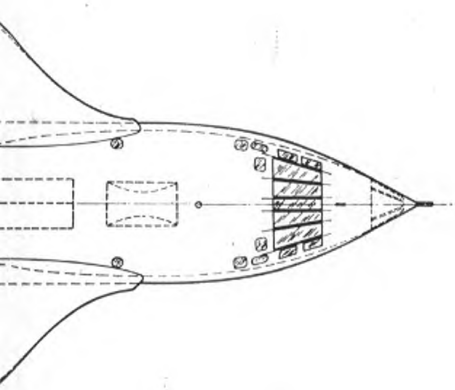
With the aircraft trimmed for landing, this ground effect is encountered at from 20 ft. to 40 ft. above the ground, and as the lift increases with a corresponding decreasing speed, the round-out is achieved just above stalling speed and the aircraft settles on to the ground.

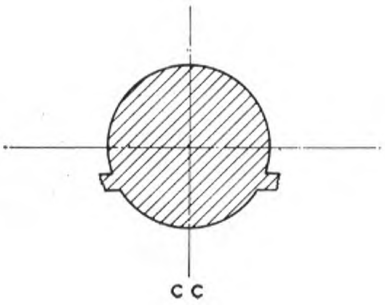
In parallel with the super priority production of the Victor, ordered in quantity at the drawing board stage, the Handley Page Company have under development a crescent wing airliner, the H.P. 97, which closely resembles the Victor. This low-winged aircraft, having a complete "double bubble" fuselage, will have accommodation for 150 tourist or 96 first class passengers and will operate at high speed with great economy.

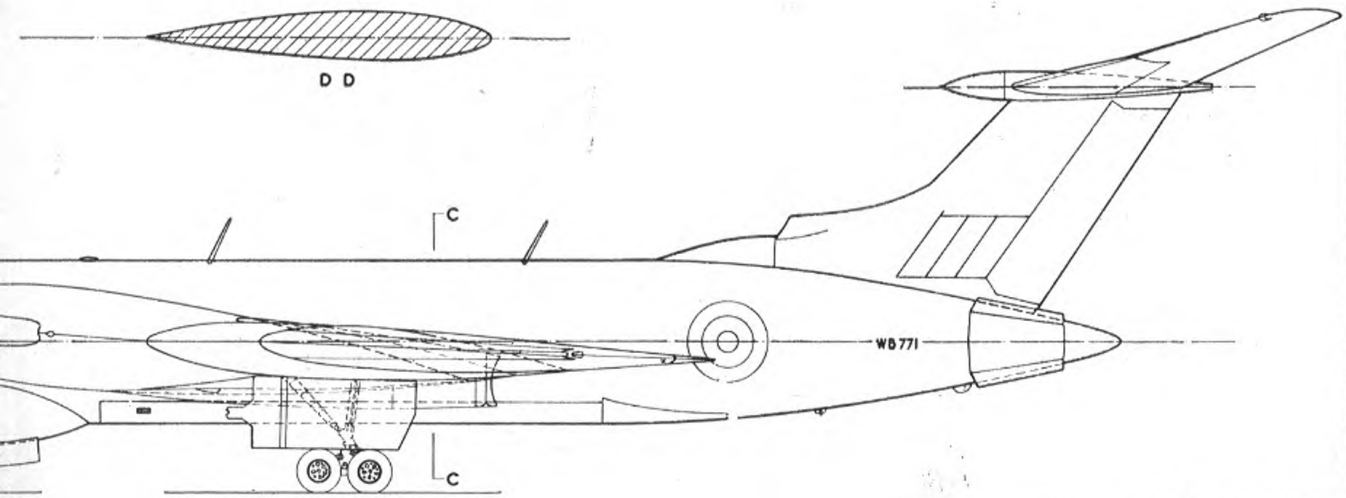
HANDLEY PAGE VICTOR B1. (PROT)

1/144th scale "N" type reprints and 1/72nd scale "M" type die-line prints of this drawing









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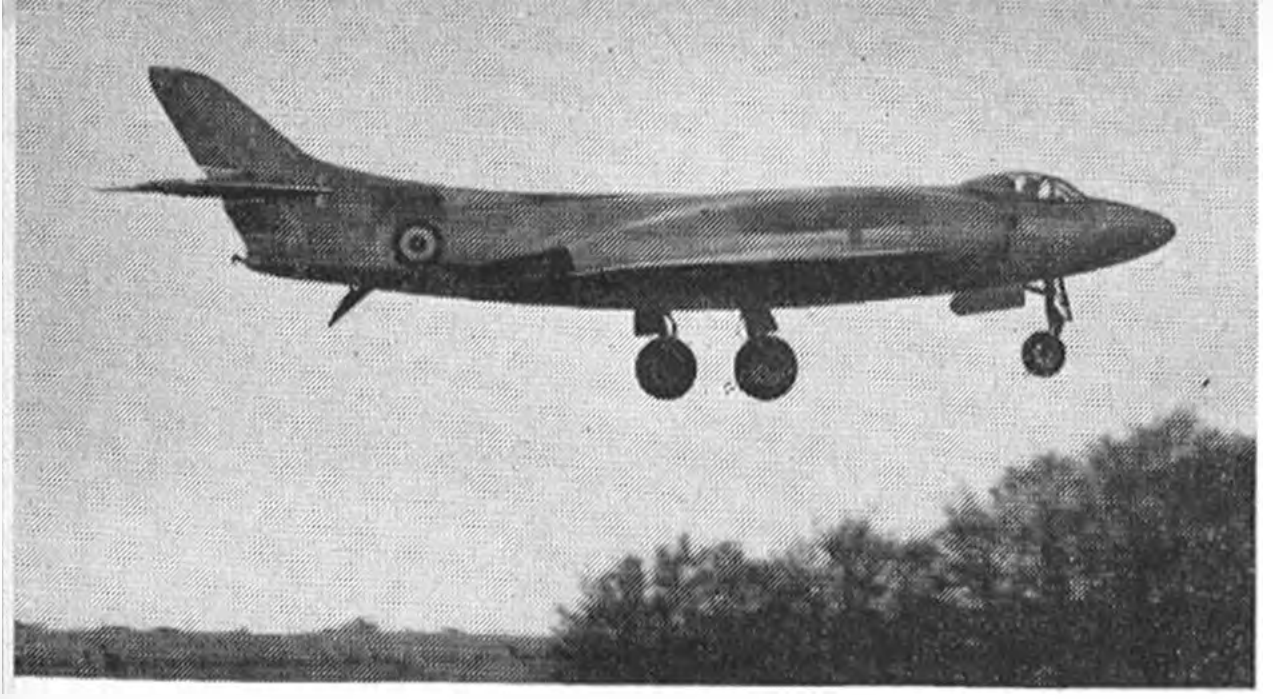


. . . Latest from Vickers-Armstrongs for the Farnborough display is the new naval fighter

Supermarine 525

DESCRIBED BY J. R. ENOCH

In 1947 the Admiralty issued a specification for a large, high-speed twin-jet attack fighter for carrier-borne operation, and as a result, a contract was gained by Vickers Supermarine for their Type 508 design.

The first of the 508 series of single seat, naval prototypes, Serial VX 133, made its first flight on August 31, 1951. This aircraft, powered by two Rolls Royce Avon axial flow turbo-jet engines of over 12,000 lb. total thrust, was, at that time, the most powerful and fastest aircraft designed for carrier operations, being extremely manoeuvrable with a phenomenal rate of climb. It was the first high-powered military aircraft to have the unconventional "Butterfly" tail-plane.

The thin unswept wings of 340 square feet area had leading edge and large area trailing edge flaps fitted, folding upwards for carrier stowage. Landing gear of the nosewheel type, hydraulically operated, being of wide track (13 ft. 0¼ in.) conferred good ground stability, essential for deck landings. A skid, located in the rear fuselage, is provided and is situated between the V-shaped arrestor hook. Though specific details of the armament have not been released, provision was made for four 30 mm. cannon to be housed in the underside of the fuselage, aft of the air intakes.

Almost exactly one year after the Type 508 was first flown, the second prototype 508, later designated Type 529, made its first flight on August 29, 1952. Though basically the same as its predecessor, the 529, Serial VX 136, differs in several respects. Most noticeable of the modifications is the redesigned and slightly longer rear fuselage, with the adjustable tail cone and small dorsal fins extending forward of the tailplane. The fuselage, forward of the pilot's cockpit, which houses radar equipment has a white plastic nose-cap.

Latest of the series, the Type 525, Serial VX 138, was first flown on the evening of April 28, 1954, from Boscombe Down, piloted by Lieut.-Cmmdr. M. J. Lithgow, the flight lasting twenty minutes.

Major design changes have resulted in this aircraft having a conventional swept tail unit and swept wings.

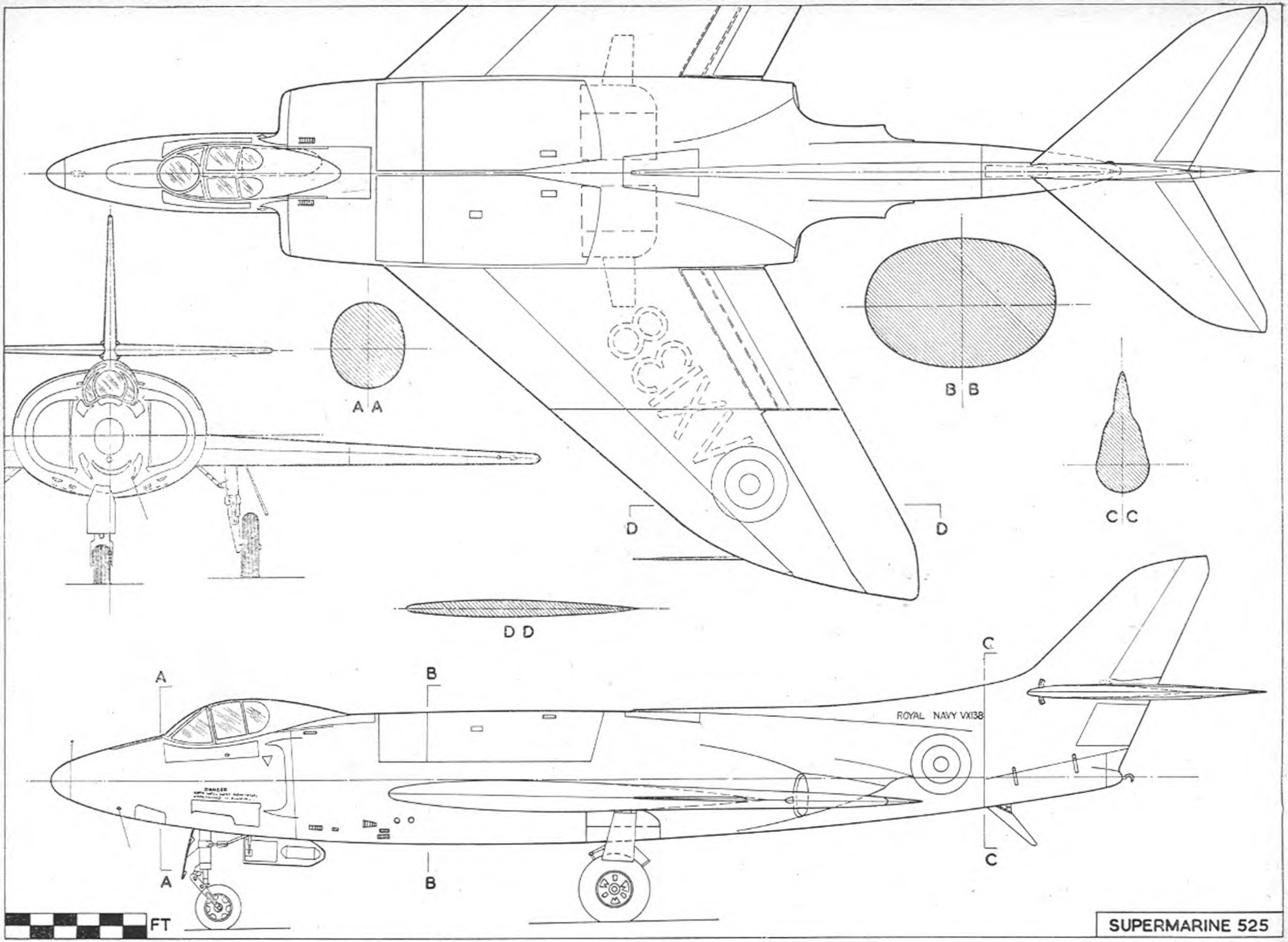
The fuselage extending as far back as the short tail-pipe outlets is identical with those of the types 508 and 529, being similarly fitted with a backward sliding jettisonable cockpit canopy and ejector seat. In common with the first and second aircraft of the series, the 525 has the "Level bead" used to give the pilot an indication of the aircraft's attitude, projecting forward of the windscreen. The nose-wheel, off-set to starboard, has a forward door attached to the leg, and a small door hinged on its starboard side to contain the unit when retracted. Main wheel legs of long stroke type, retract inwards into the fuselage, the fairing doors of which are closed when the aircraft is off the ground. A tail skid is fitted. Direct entry air intakes are used, boundary layer bleeds being situated within the aperture.

In common with other modern high speed aircraft, an "all flying" tail plane has been adopted, this having elevators of small area. At the trailing edge juncture of the fin and tail plane is a long slim "bullet" fairing which contains the unusual tail-chute. Brought into action to assist landing deceleration, the brake is formed by three small diameter parachutes which extend some distance aft of the machine. Unlike that of its predecessors, the 525 has an arrestor hook which is extended from the tail cone before being lowered into position for deck landings.

Of straight taper, the 525 wings also have leading edge and trailing edge flaps which, with broad chord ailerons, provide for exceptional manoeuvrability, and maintain good control at low speeds. Clear of the airflow on the starboard tip, is mounted the pressure head, and in a similar position on the port side are fitted accelerometers. Wing tip navigation lights are accommodated, but the tail light position is not evident. If the braking parachute is only experimentally used, presumably the light will occupy this position.

Not intended for production, the 525 is the forerunner of a Naval attack fighter, for which a super priority order was placed in April of this year. It has been unofficially announced that this aircraft will be able to carry an atomic weapon over a long range, and armament will include air-to-air missiles.

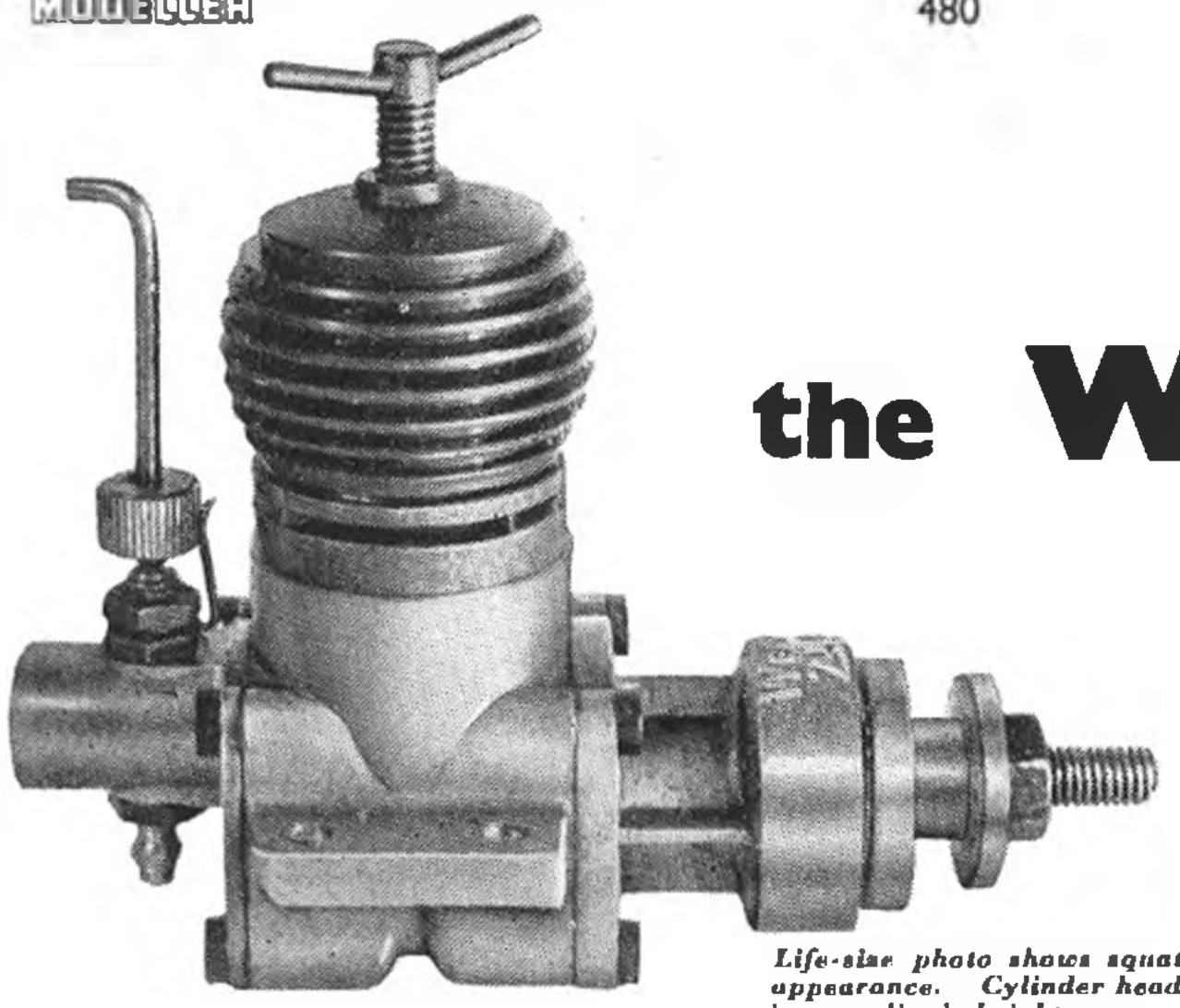
As will be appreciated from study of the plan opposite, the 525 is a large fighter; in fact it has the same power units as some marks of the Canberra Bomber. Its development design will probably introduce a new form of tactical fighter/missile carrier capable of carrying atomic weapons.



1/72nd scale "J" type reprints and 1/48th "A" type die-line prints of the above are obtainable price 6d. & 1/- respectively from A.P.S.

Engine Analysis

the Webra 2·5's



Life-size photo shows squat appearance. Cylinder head is anodised bright green.

RON WARRING REVIEWS THE LATEST F.A.I. INTERNATIONAL CLASS DIESELS FROM GERMANY

LOCATED in the American zone of Germany, **Fein - und Modelltechnik** have now become one of the largest manufacturers of model engines in Continental Europe. Their present range includes three 2·5 c.c. engines, two of 1·5 c.c. and one of 0·8 c.c.—all diesels and all basically similar in design and construction. In chronological order, the **"Winner"** was the first engine in the series (1951), followed by the 1·5 c.c. **"Record"** (1952) and **Mach 1** (June, 1953). The ·8 c.c. **"Piccolo"** went into production in May of this year. A high proportion of the production is exported from Germany; British agents are Arthur Mullett of Brighton.

The three 2·5 c.c. engines comprise, actually, two basic models—the **"Winner"** for sports use and the **Mach 1** designed for contest performance. The former is available in two forms, one with standard beam mounting lugs and the other with a three-point radial mount. Both are shaft-valve engines and essentially similar both as regards design and performance, except for the use of different crankcase castings. In the case of the beam-mounted version an angled needle valve assembly is standard.

Large bore—short stroke

The Mach 1 of similar capacity is an entirely different design with a racing-type "square" crankcase casting with bolted on front (crankcase bearing) and backplate assemblies. Induction is by rotary disc valve via the top centre of the backplate. Bore is increased and stroke reduced, as compared with the "Winner", twin ball bearings support the crankshaft and the complete engine is one ounce heavier. It is, in fact, essentially a high-speed racing engine designed on orthodox "racing" lines, about the only unusual feature in this respect being that a screwed in cylinder-crankcase assembly is retained. Most engines of this type employ a bolted down assembly, which is generally considered superior from the point of view of eliminating possible leakages and loosening of the cylinder jacket when running. No trouble of this type was experienced during the test runs after the head had been tightened down really hard. No provision is made for getting a grip on the light alloy cylinder jacket and so this means marring the anodised finish with the wrench used for the purpose. A key formed in the top of the jacket to take a thin spanner would have overcome this objection—and there is ample room for such a modification to be incorporated.

All three models were tested, both on propeller loads and on the eddy-current dynamometer. Prominence is given to the Mach 1 on account of its greater power potential and abridged reports only are given for the two versions of the "Winner."

High B.H.P.—at high R.P.M.

On test the Mach 1 recorded the amazingly high value of ·2175 B.H.P. (maximum), equivalent to ·088 B.H.P. per c.c.—an improvement of something like fifty per cent. on the output of a sports type motor of the same capacity. This was due largely to the fact that the torque output was sustained at a substantially constant level over a very large range of r.p.m. and peak power was realised at just under 17,000 r.p.m.—a quite exceptional figure.

This performance curve is also an interesting example of how quotation of maximum B.H.P. alone can be quite misleading and how a knowledge of the *shape* of the B.H.P. is essential for operating an engine with a view to obtaining maximum performance. At around 10,000 r.p.m., for instance, B.H.P. performance of the Mach 1 is ·16 (·064 B.H.P. per c.c.)—typical, in fact, of a good sports-type motor. It will therefore only swing a "sports size" propeller at similar speeds—illustrated by the fact that the Mach 1 and the "Winners" gave almost identical r.p.m. figures with similar propellers

No. 3 with the eddy-current dynamometer

up to about 9 × 4 size. Whereas the "Winners" reached their peak power output shortly afterwards, the Mach 1 still had another 6–7,000 r.p.m. in hand, realisable by using smaller and smaller propellers.

In practical language, this means that the Mach 1 appears to give a very "ordinary" performance until you get down to really small propeller sizes. Then, and only then, is it apparent that it has a real "racing" performance. It is essential therefore to use high-speed propellers on the Mach 1 to turn it into a "contest" motor.

Best with small props.

The manufacturers recommend a 10 × 4 or 9 × 4 propeller for free flight which, in the light of the tests, appears somewhat oversize. An 8 × 3½, 9 × 2½, or at the most 9 × 3, would appear the largest size for free-flight power duration. With commercial (British) 9 × 4 propellers, speeds were only of the order of 9,500 to 10,000 r.p.m. Remarkable speed increases were possible by decreasing the diameter—a 7 × 5 Whirlwind propeller gave just over 13,000 r.p.m. and a 6 × 6 constant geometric pitch propeller over 14,000 r.p.m. This was the highest r.p.m. figure obtained with propeller tests. On the dynamometer runs, speeds were taken up past 17,000 r.p.m.

From the point of view of the control line user, the Mach 1 appears readily capable of developing high r.p.m. (and thus high power) with high pitch propellers, provided the diameter is reduced accordingly. The manufacturers quote 16,000 r.p.m. plus with a 6 × 9 propeller, which appears quite feasible with thin blades. A 5 or 6 inch pitch propeller would seem correct for control-line stunt, with diameter 9 or 8 inches, respectively. These should load the engine to around the 12,000 r.p.m. mark in the air.

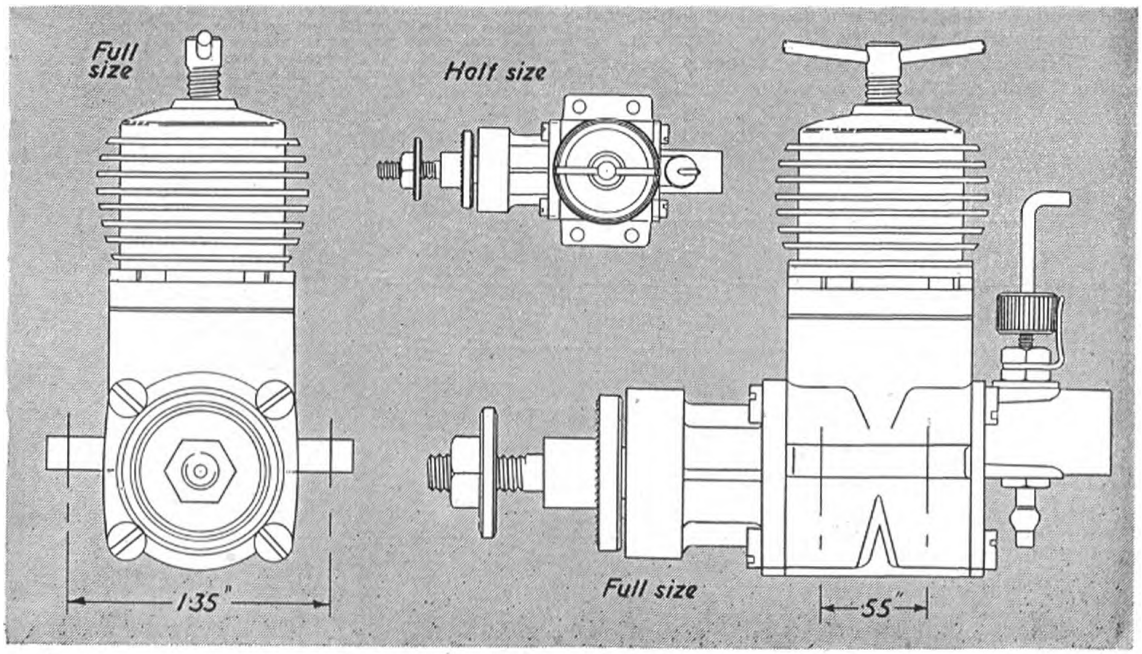
Large ports and a hefty thirst

The Mach 1 has quite enormous port areas—a ⅜ inch venturi form air intake, 360 degree transfer porting machined around the base of the steel cylinder and 360 degree exhaust. It appears to be exceptionally greedy on fuel, which may be a serious objection to its adoption for team racing.

Starting, running and adjusting characteristics are all excellent. Finger choking is generally sufficient to obtain a start within three or four flicks. Both compression and needle valve controls have considerable latitude as regards adjustment although in the higher speed range considerable increase in compression, accompanied by leaning out the mixture, is necessary for smooth running.

The test engine had already had some hours running-in time before being received and there was a tendency for the compression setting to creep off at certain speeds. Other than this there were no apparent signs of wear or leakage or troublesome running characteristics.

The Mach 1 is, however, one of those engines which "explode" into life when starting with small propellers. Hence it is necessary to set the propeller



at a "ten-to-four" position and hit it smartly—otherwise the following blade of the propeller will catch your fingers when the engine fires. This is usually regarded as an acceptable hazard in a racing engine, but unfortunately the same starting characteristics are retained in the sports-type "Winners."

The main—and, in fact, about the only criticism to be advanced regarding running characteristics is a marked tendency towards excessive vibration, due undoubtedly to the use of quite a heavy piston. In practice this may mean that certain propeller sizes are to be avoided on specific models due to a harmonic of this vibration being transmitted through out the airframe. All single cylinder two-stroke model engines must be regarded as "vibration generators" for it is quite impossible to achieve a true balance with such a mechanical system, but the Mach 1 appears something of an offender in this respect.

Hot running

Another rather uncomfortable feature is that the cylinder jacket gets extremely hot after a minute or so running time. Re-starting a hot engine may mean burnt fingers when re-adjusting the compression lever and a satisfactory method of quick cooling was found to be to pour fuel over the head. As this sizzled down the fins it was found that surplus fuel inevitably entered the exhaust ports, serving the additional purpose of priming. For subsequent "hot starts" this became the standard procedure for the Mach 1 and the two "Winners." Priming direct through the exhaust on the Mach 1 was not easy due to the narrowness of the ports.

Apart from the different induction systems (shaft valve on the "Winner" and rotary disc valve on the Mach 1) the degree of sub-piston induction varies on the two designs. In the case of the "Winner" the bottom of the piston passes the exhaust ports and thus provides direct air induction into the crankcase for an appreciable time on each stroke. Whilst sub-piston induction is retained on the Mach 1, opening time is cut to a few degrees of crankshaft rotation. Otherwise the transfer and exhaust porting systems are similar.

A high speed diesel

Up to about 11,000 r.p.m. there is very little difference in the performance of the two designs, but above that the Mach 1 really comes into its own—carrying on, in fact, quite happily from the point where the "Winner" design reaches its peak. But whilst essentially a high-speed engine the Mach 1 was still capable of consistent, steady running down to figures as low as 6,400 r.p.m. with an 11×6 propeller. With this particular load, however, the "Winners" were actually some 400 to 500 r.p.m. up on the Mach 1.

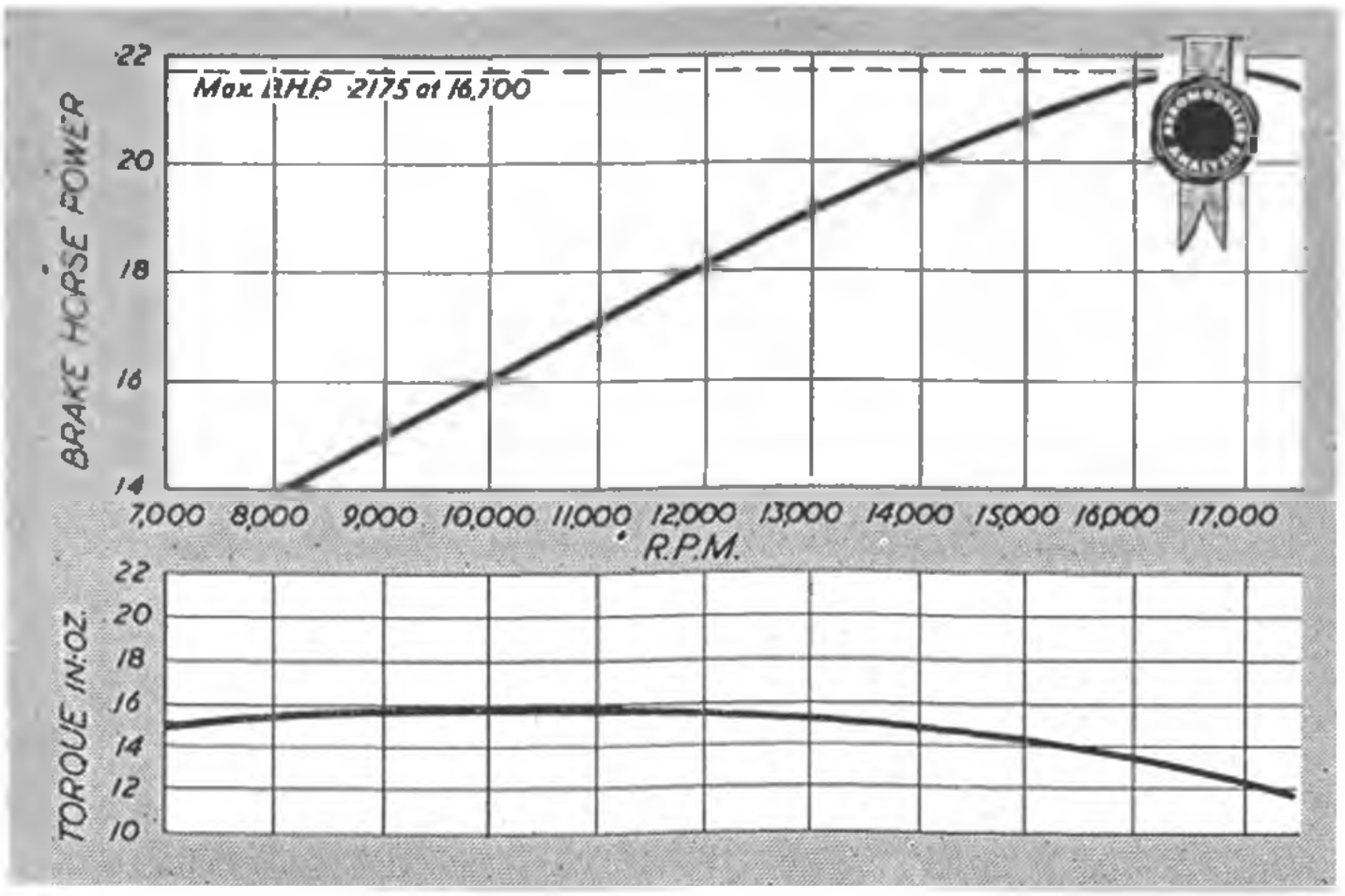
Priced at 90s. in this country, the Mach 1 is undoubtedly an outstanding contest engine, provided it is used properly, *i.e.* operated at very high r.p.m. It will probably be a disappointing engine for sports use or if used with propellers which load it down to 11,000 r.p.m. or less. Within this speed region, in fact, it will appear inferior to most other racing type engines of similar size and a plain bearing sports type engine will give the same power output at lower cost.

Propeller—r.p.m. figures.

Stant 9 × 4	9,550 r.p.m.
Keilkraft Truflo 9 × 4	9,500 r.p.m.
Whirlwind 7 × 5	13,250 r.p.m.

Fuel used in all tests: Mercury No. 8.

SPECIAL NOTE: In comparing these and other 2.5 c.c. performance curves with that previously published for the K & B "15" it must be borne in mind that the K & B engine was tested on non-nitrated fuel for technical reasons. The manufacturers of the K & B specify a nitrated fuel for best performance and therefore higher figures than those recorded on test are to be anticipated with the use of such a fuel. The propeller r.p.m. figures (10,400 r.p.m. on KK Truflo 9 × 4) quoted for the K & B do, in fact, refer to the use of a nitrated fuel.



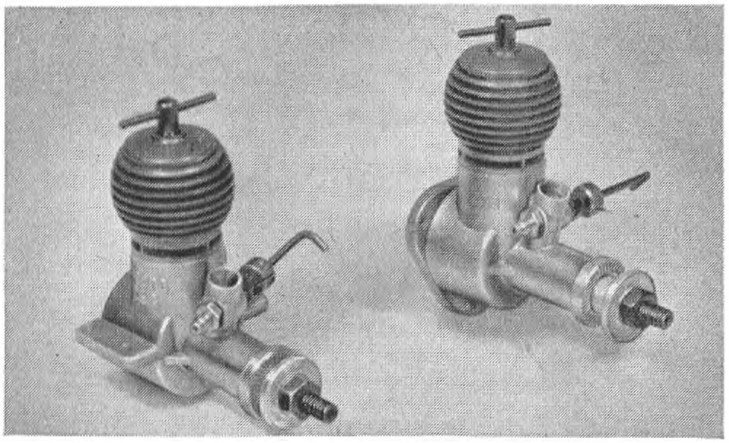
WEBRA MACH I

Data.
Displacement: 2.47 c.c. (.15 cu. in.).
Bore: 15.5 mm. (.61 in.).
Stroke: 13 mm. (.51 in.).
Bore/stroke ratio: 1.2.
Bare weight: 4½ ounces.
Power rating: .088 B.H.P. per c.c.

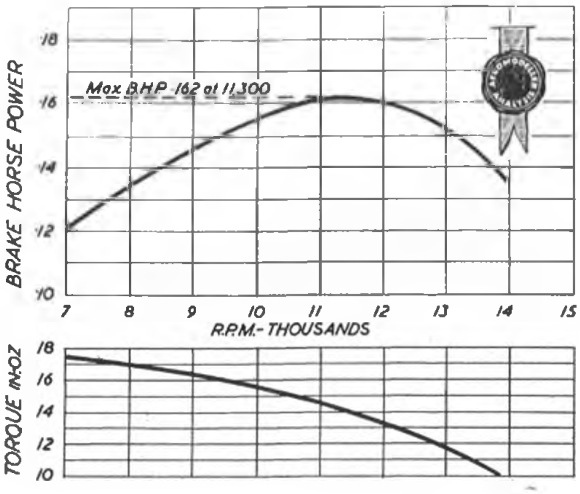
Material specification.
Crankcase: die-cast aluminium alloy.
Crankcase bearing: twin ball races.
Cylinder: steel.
Cylinder jacket: duralumin.
Piston: cast iron (pointed dome).
Contra-piston: steel.
Connecting rod: duralumin.
Crankshaft: hardened steel.

Manufacturers.
Fein-Und Modelltechnik, 5 Genesterasse, Berlin-Schoneberg.

British Agents.
Arthur Mullett, Meeting House Lane, Brighton, Sussex.
Retail price (in G.B.): £4 10s. 0d.

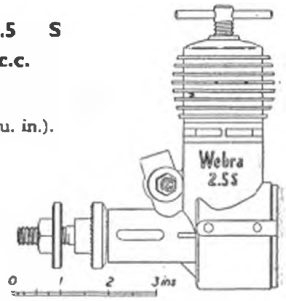


The two plain bearing Webra 2.5 c.c. diesels are similar in all respects except for the method of mounting, each of them offering high power output at a useful R.P.M. figure.



WEBRA WINNER 2.5 S (BEAM MOUNT) 2.5 c.c.

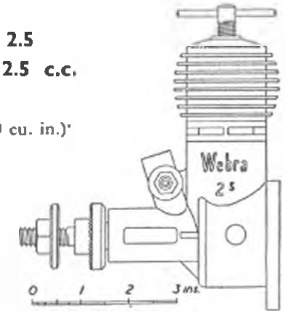
Specification:
Displacement: 2.46 c.c. (.149 cu. in.).
Bore: 14 mm. (.55 in.).
Stroke: 16 mm. (.63 in.).
Weight: 3¼ ounces.
Max. B.H.P. .162 at 11,300.
.065 B.H.P. per c.c.



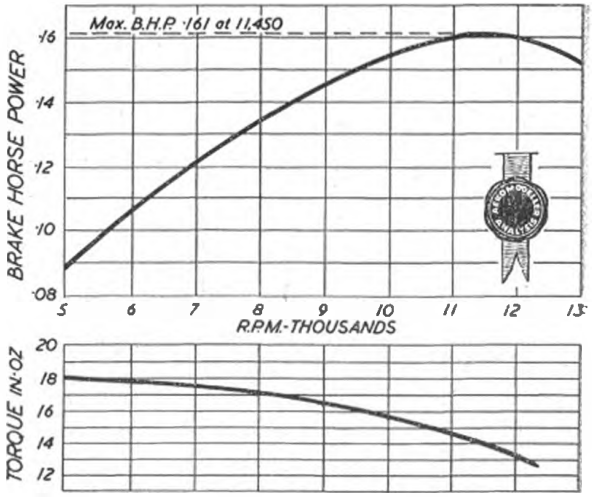
Upper end of torque curve plotted makes interesting comparison with the racing 2·5 c.c. motor by the same manufacturers. Up to about 11,000 r.p.m. the sports motor has an almost identical performance. Plain bearings and crankshaft induction standard on the two versions of the "Winner." Beam-mounted version has angled needle valve.

WEBRA WINNER 2.5 (RADIAL MOUNT) 2.5 c.c.

Specification:
Displacement: 2.46 c.c. (.149 cu. in.)
Bore: 14 mm. (.55 in.).
Stroke: 16 mm. (.63 in.).
Weight: 3¼ ounces.
Max. B.H.P. .161 at 11,450
.065 B.H.P. per c.c.



This radial mount version of the "Winner" is virtually identical in performance and basic design to its beam-mount counterpart. Designed as a sports engine, peak power is reached at a comparatively low r.p.m. figure, implying that it is suitable for use with a variety of large propellers. Power curve is plotted showing the performance from 5,000 r.p.m. upwards.



Cutlass

by G. BRAVEY

Tired of the conventional? Get out of the rut with this unique flying-wing for the smaller capacity diesel. Easy to build and fly, it has a high performance and is virtually crashproof!

WE WERE first attracted to George Bravey's swept flying wing at the 1953 *Yorkshire Evening News* Rally where it made many consistent flights to the delight of a group of admirers. Then again, at the '53 All Britain Rally, Mr. Bravey made further impressive demonstrations with this "suitcase size" design, which we thoroughly recommend to all sport flyers.

When we say "suitcase" this is no exaggeration for the largest portion of the dismantled Cutlass is no bigger than 15 × 6½ in.,—surely no problem for transportation! Breakdown into small parts for easier carriage also adds to the crashproof qualities of this design, for any hard knock taken on the wingtips is easily shockproofed by the split wing fixing at the centre section and elastic band assembly.

Wings: Cut out the ribs using a template on sandwich method. When cutting the spar slots remember to cut at an angle. Construction is normal and to ensure accuracy with the elevons build these in with the wings but remember to set the end ribs of the elevons at an angle while building.

Wing end ribs should be left off until the rest of the wing has been finished. Then cement in and while drying prop *one* wing tip up 1½ in. and then set the angle on the ribs. This ensures accuracy. When set, mark paper tube position and bore holes through the ribs which accommodate the tubes.

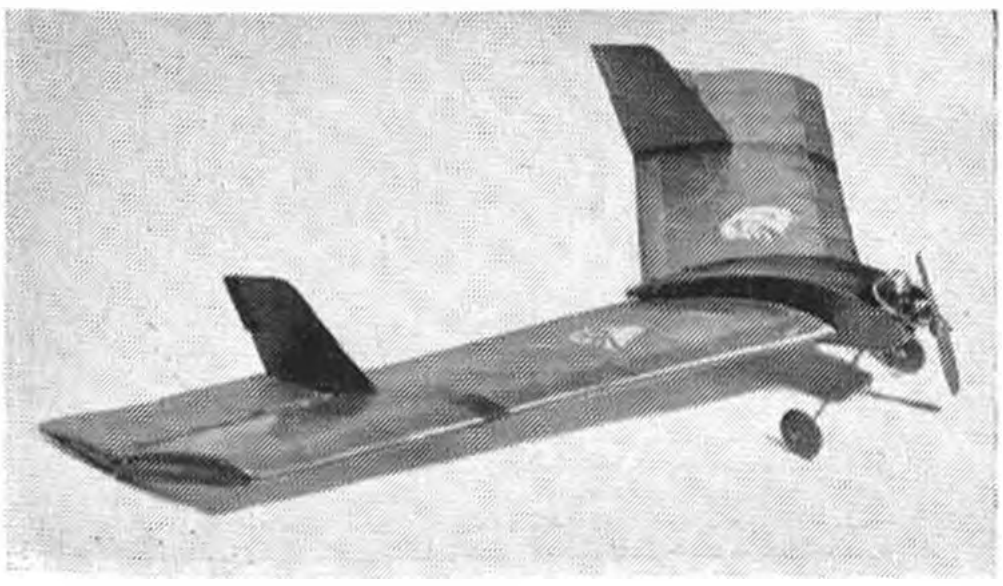
The $\frac{1}{16}$ sheet at the wing root is let in between the ribs. Bore the hole for the rubber bands and set in paper tube.

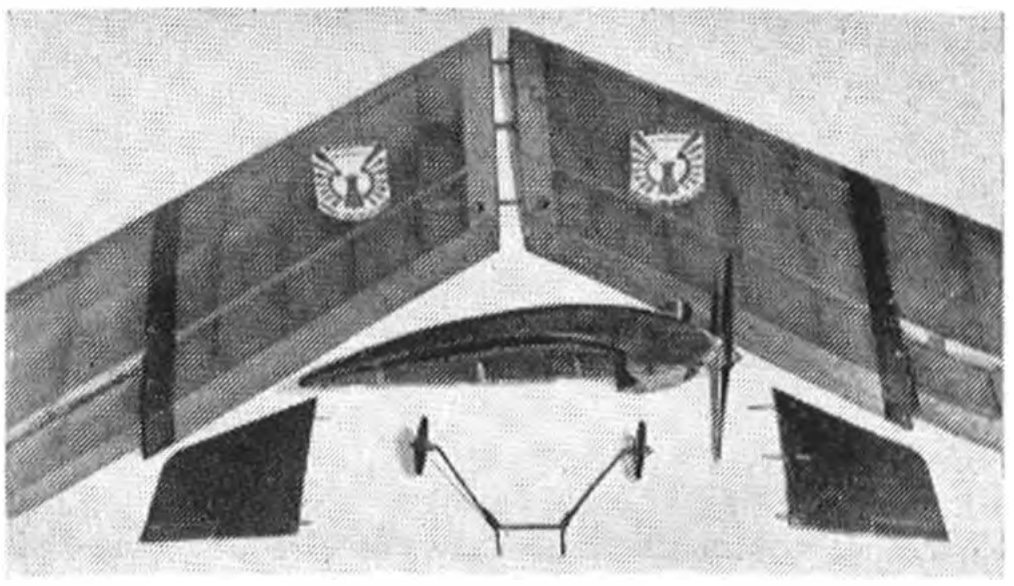
Tubes for the fin mounting can be made around a bicycle spoke, holes bored, and the tubes simply smeared with cement and pushed in.

Fuselage: Cut out the fuselage sides following the grain as per plan. Cement the respective sides together setting in a slight curve which makes for easier building later.

Lay the engine bearers on the plan and cement in the ¼ in. centre spacer using Durofix. Drill bolt holes. Using Durofix again, cement the fuselage sides onto engine bearers.

Cutlass is the name of a full-size American Navy fighter with similar sweepback and twin fin arrangement as George Bravey's model. This model Cutlass also has an interceptor-like performance and zips off the ground after a long take-off run to build up speed. Assembly of the components is simple, as seen in the photo at right.





Pre-cement all joints. Cement on the $\frac{1}{8}$ in. centre piece F.6 the $\frac{1}{16}$ in. sheet platform, F.7, for the $\frac{1}{32}$ in. sheet covering. Bore the holes through Former F.5, into the engine bearers for the u/c brass tubes. Add hardwood and scrap balsa reinforcements. Fit in the $\frac{1}{4}$ in. F.1, bulkheads, F.2-F.4, and add the $\frac{1}{16}$ in. sheet top and $\frac{1}{32}$ in. base. Bore the rubber fixing dowel holes.

Fins: Make these by cementing two $\frac{1}{16}$ sheets, pieces edge to edge. Cut out fins. Add reinforcing strips. Bore paper tube holes. Fit the dowels, or "orange sticks" (used for manicure). Locate the positions of these by checking on the wing tubes.

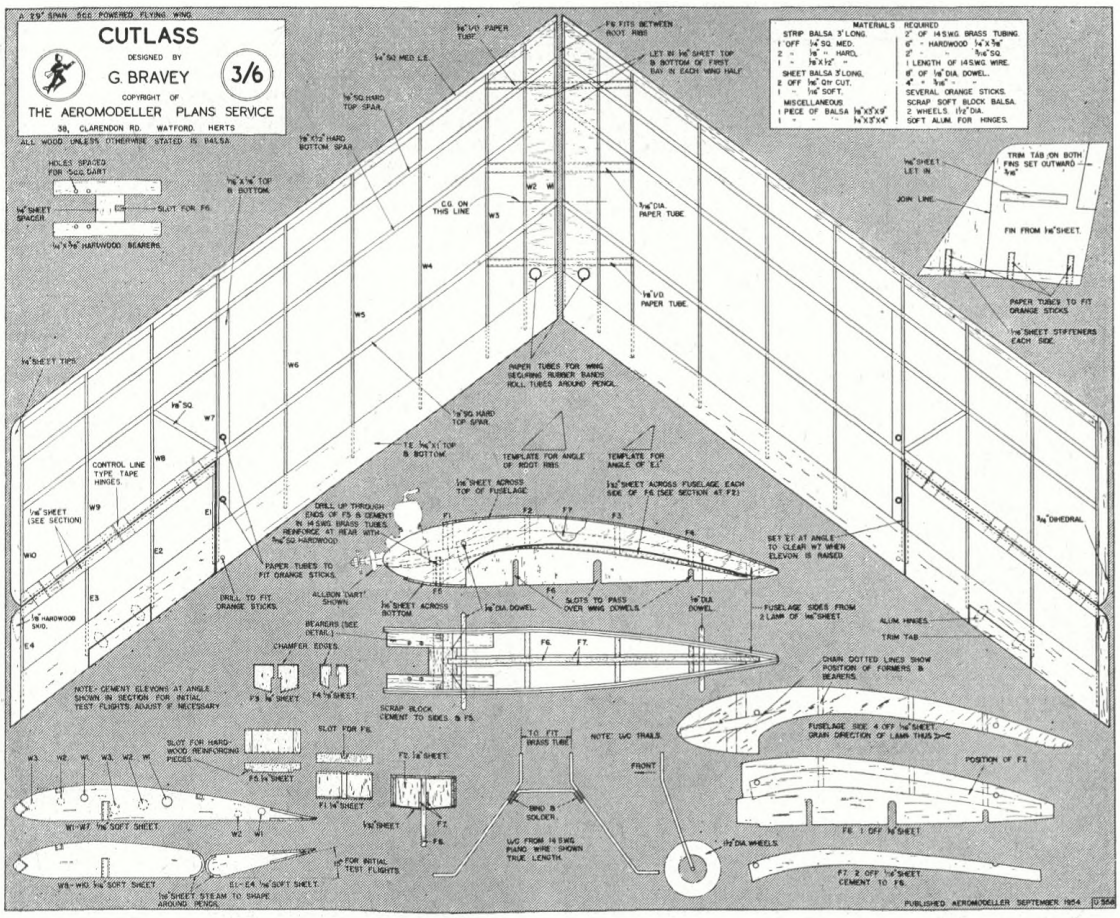
Bend and solder the undercarriage using fuse wire to reinforce, noting that the u/c trails to the rear. It should be a firm fit in the brass tubes on fuselage. Fit a fuel tank of your own choice on the $\frac{1}{4}$ in. bulkhead F. 1 or side.

Covering: Cover entire model with lightweight Modelspan, give two coats of dope and one coat of fuel proofer if desired. If no fuel proofer is used, give a third coat of dope. Finish off fuselage with coloured dope but use sparingly on the wings to keep the weight to $8\frac{1}{2}$ ozs. as on the original.

Flying: Lightly cement the elevons to the angle shown on the plan *making sure that both are at the same angle* and trim tabs are neutral. Test glide over long grass adjusting elevons until a flat glide results. Not much can really be learned from this so the next step is a power-assisted glide. Reverse prop or cement $\frac{1}{16}$ in. strip along each prop blade and run engine slowly. Note any vicious turns and correct with the trim tabs. (Left wing low raise the right wing tab and vice versa.) Increase power until the plane turns to the left in gentle spirals until you are used to the trimming methods. Note that the rudders are not used to turn the aircraft.

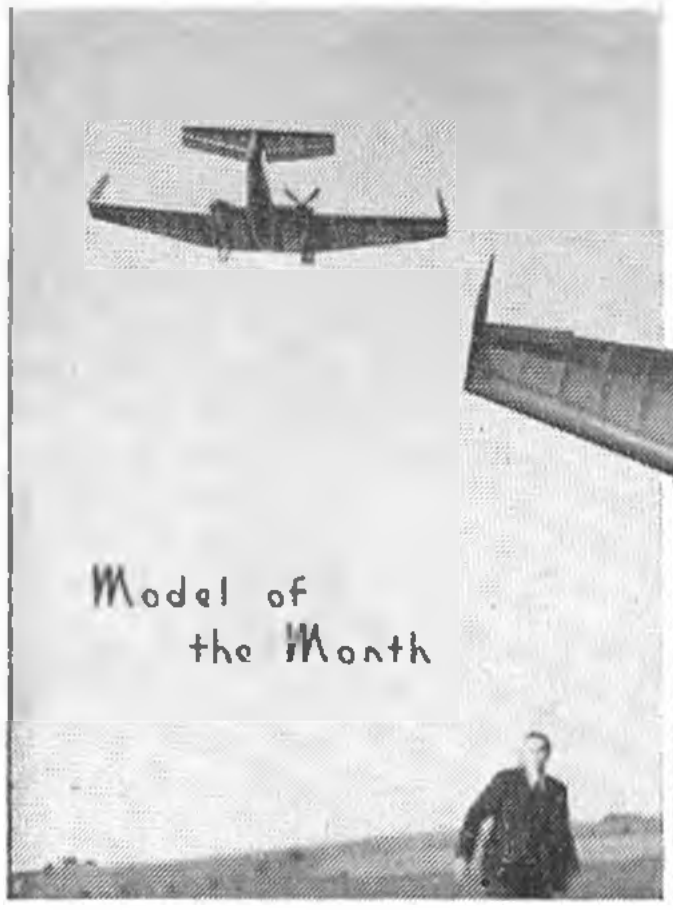
Cutlass is *fast* and should give many an exciting day's sports flying as it is really tough! It has flown under full power into a tree with only a broken leading edge section and torn tissue as scars of the encounter.

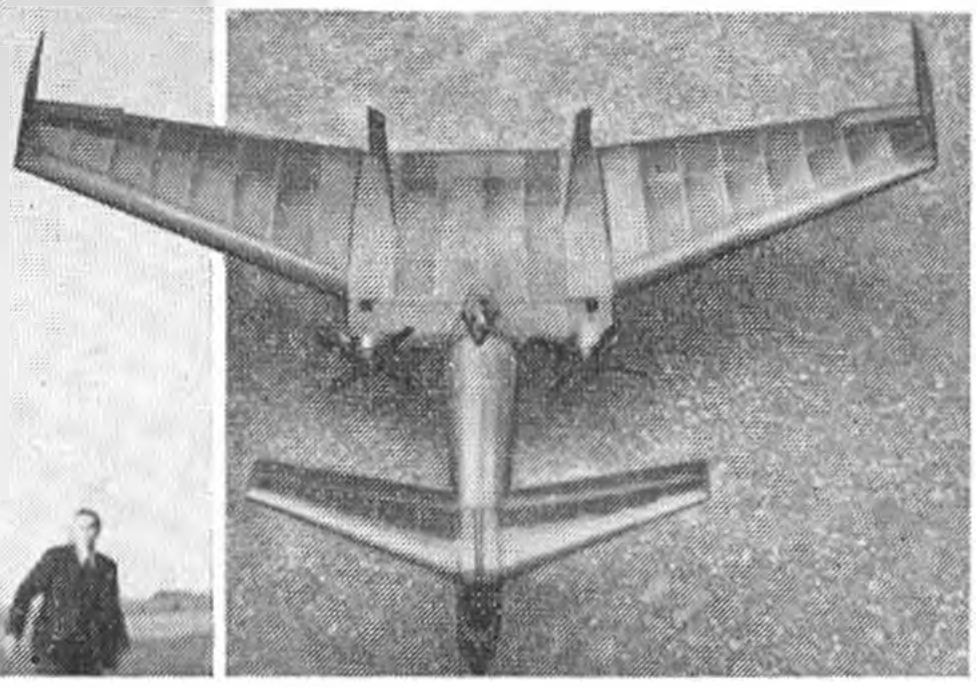
Take-offs are simple. Under full power Cutlass takes a long run and quickly rises at an acute angle until the accumulated speed is expended, then rises in spirals until the engine cuts. If the trim tabs are adjusted loops are easily obtained *safely*!



Full-size copies of this 1/5th scale plan reproduction are obtainable price 3/6 post free from A.P.S.

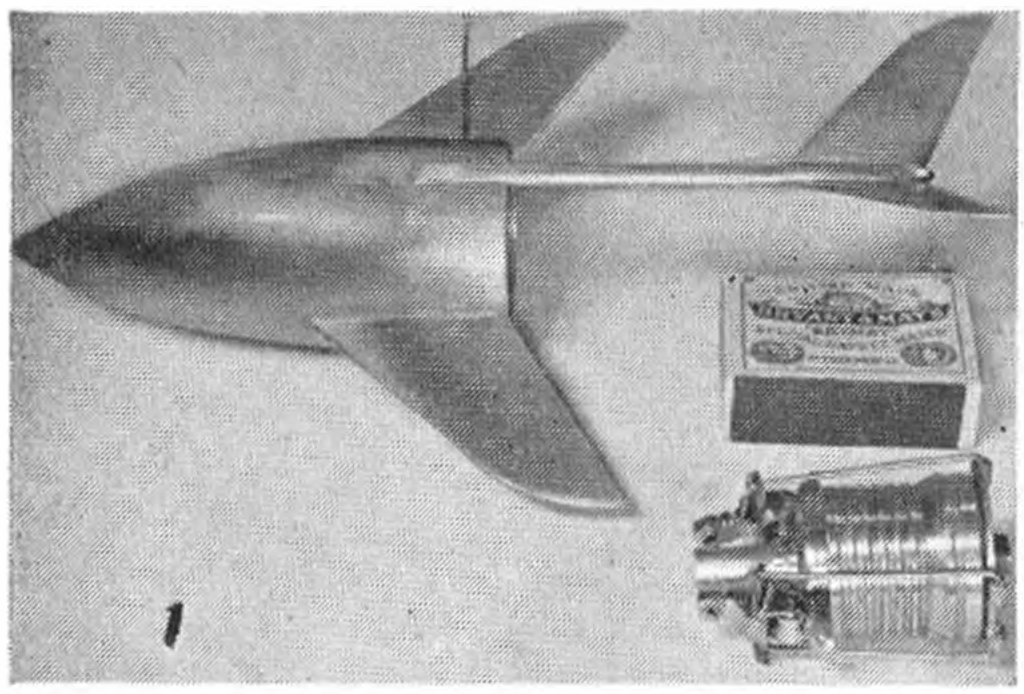
Model News





THOSE who find it difficult to strike an original note in model design will doubtless be inspired by the magnificent effort of a twin canard from R. A. Guntrip at the famous Boscombe Down aero experimental establishment. Named Pteranodon, it is remarkably stable, and even when one or other of the E.D. Bee diesels cease to function, it continues to fly on a normal course. Offset fins and a slotted front plane are notable stability aids for this 55 in. "Model of the Month". The next subject 1 is considerably less safe to fly, and represents an all-metal RTP speedster for a Jetex Scorpion unit which has already attained 107 m.p.h. (did they see it?). J. E. Berry of the Epsom club is the culprit, and 20 g. Aluminium the material. Span is 5¼ in. and airframe weight 2 ozs. Turning to something more akin to flying, 2 shows Chris Marsh of St. Albans with his Queen's Cup-winning FAI job. E.D. Racer powered, and beautifully trimmed for a tight spiral climb, Chris's black/yellow/red Hotrod has also won the 1954 Hamley Trophy.

Duration to Deltas, and picture 3 showing A. A. Stowell's design for radio control. A D.C. 350 diesel driving a pusher prop provides motive power, and control is planned to be via proportional ailerons and sequence elevons with a Fenners-Pike servo, all of which should help to provide considerable entertainment when flight trials begin at Kenley aerodrome. Another ambitious effort, 4 is the 60 in. scale "Connie" in Trans World Airlines, colours by J. Mills, Hon. Sec. of the Tame MAC in Cheshire. Flight trials have yet to take place, and since the airframe weight is about 4 lbs. and only two engines are fitted (an Elfin 2.49 and E.D. 2.46 racer), it could be somewhat of a handful. Fred Carter, in photo 5 has quite a handful of engine. It is his reworked 61 "special" which we understand made an official speed flight of 153 m.p.h. at the Enfield Rally. Remarkable fact is that a weld repair completely disappeared during the fast flight in Davenport's model, leaving the obvious "open-to-atmosphere" crack in the c/case below the bearers, but not affecting performance in the slightest!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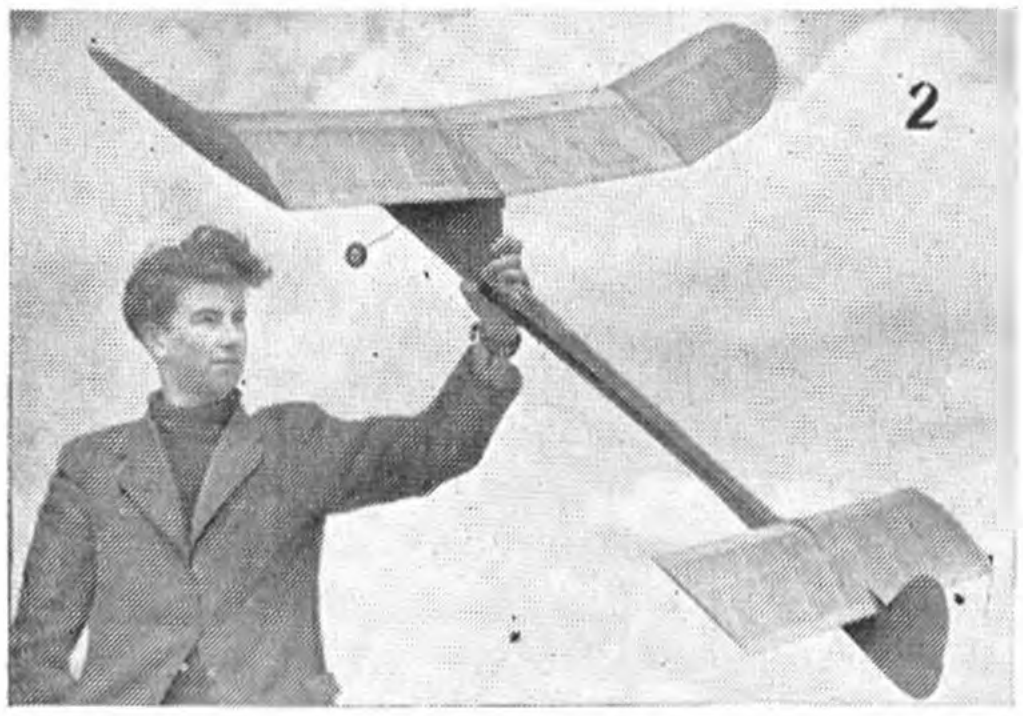
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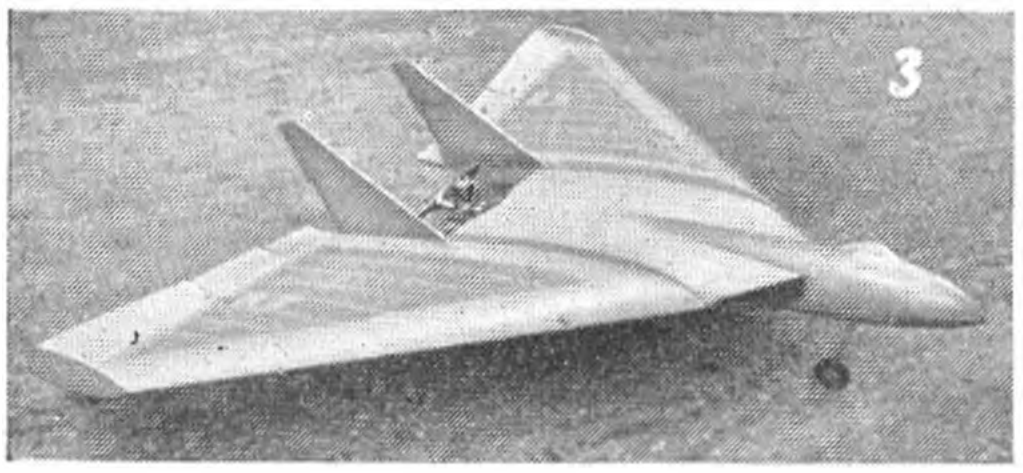
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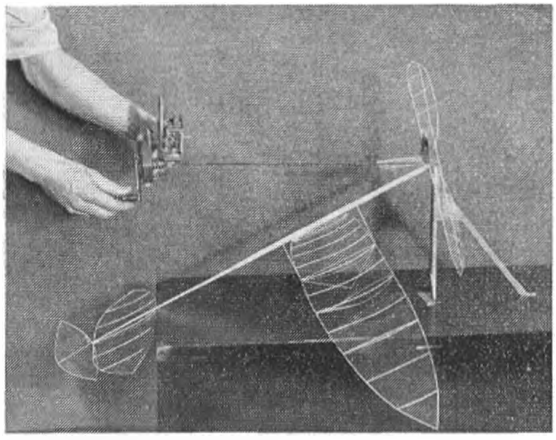


arranged that the model, turned on its back, rests with its tail boom and wing bracing wires on the edges of the box. Thus the microfilm is not likely to be damaged.

With the model held in this way, the motor can be stretch-wound and the box, if a reasonably stout one, will require no anchoring to the floor.

There remains, however, the danger of a broken motor while winding, and to protect the model in such an eventuality we devised a shield.

The construction of the shield from tinplate, a small bolt, and a piece of brass tubing is clearly shown in the drawings. If the two little lugs on the top of the shield are pressed together, the main jaws open out scissor fashion, and the shield can be slipped over the hook and motor. The jaws are then closed, and the model is fully protected.

Solo winding Indoor models

UNIQUE SCHEME DESCRIBED BY J. H. MAXWELL

INDOOR MODELLERS develop a delicate touch which comes as a result of handling parts so light and fragile that you can hardly feel them between your fingers. Also, the knowledge that one hasty movement may wreck a complete model soon teaches a man to move his hands in a slow calculated manner. In consequence the indoor man is a particularly careful type with a greater degree of model-making patience than is normal for an aeromodeller.

In view of these facts it is rather unfair to trust a model in the hands of a helper unless he is himself a practising indoor flier—unfair, that is, to both model and helper.

This reasoning led us to invent a system of solo winding which has proved most satisfactory in practice.

The main feature of this system is a little wooden bipod which, in use, is bolted to the top of our model box. A length of 16 S.W.G. wire, bent as shown in the illustration, is secured to the top of the bipod. The model's propeller hook incorporates a special loop "inside" the propeller, and this loop slips over the wire until it rests in the kink just above the bipod. The height of the kink is so

The sequence of operations to be followed when using these winding aids is as follows:

(1) Fit model on bipod.

(2) Hook front end of motor on propeller hook, and rear end on winder.

(3) Fit shield.

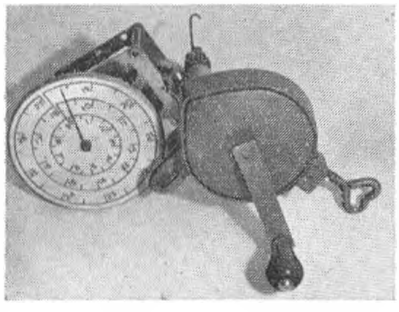
(4) Wind motor.

(5) Remove shield.

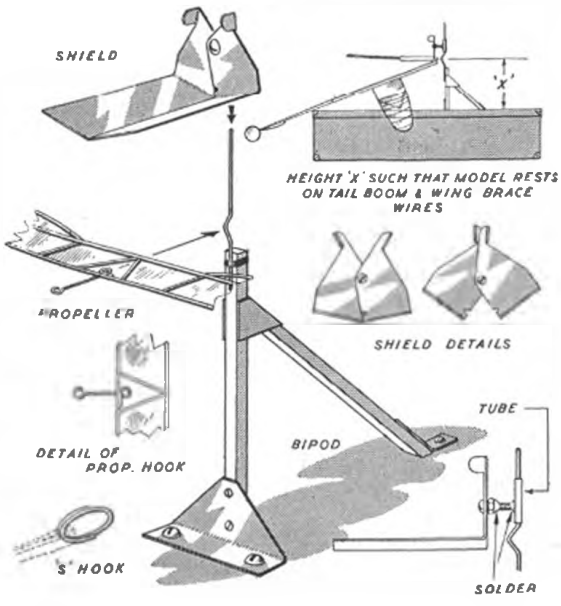
(6) Detach rear end of motor from winder and fit it on rear hook.

(7) Lift model off bipod.

(continued overleaf)



Mr. Maxwell's winder is a simple conversion of the geared grindstone obtainable from most multiple stores. Addition is the alarm clock mechanism to provide a counter up to 2,700 turns.



Solo-Winding . . .

When handling an indoor model, particularly when hooking on the wound motor, make it a rule never to touch the tail boom. In modern lightweight indoor models the tail boom is probably the most fragile part. At least, that has been our experience. The safest handling points are: Right hand holding the motor stick close to the rear hook, and left hand holding the propeller rear spar at the propeller shaft.

Winders

Indoor models are geared more highly than those for outdoor use, the reasons being that the torque is very much lower, and the number of turns is higher. We have tried gear ratios as high as 25 : 1, but find that these become "solid" and very difficult to turn.

Probably the ideal ratio is 10 : 1, for it makes counting easy, but unfortunately suitable gear boxes are not readily available. Most indoor modellers, therefore, use small grinders, usually with a ratio of 8 : 1, with a hook where the grindstone should be. 8 : 1 is a rather awkward ratio from the counting aspect, and some sort of automatic counting device is a worthwhile addition. The one shown in the photograph overleaf, employs the gear train from an old alarm clock. This engages with a Meccano gear on the grinder shaft, and the final reduction ratio at the pointer spindle is 900 : 1. The dial has three concentric scales reading up to 2,700, which is more than adequate.

The hook on the winder should be of fairly thick wire (18 or 16 S.W.G.) and it must be smooth and rounded, with all sharp edges polished off. Just before use it should be smeared with a spot of rubber lubricant.

An indoor model, as previously mentioned, is wound from the rear. This means that, when wound, it has to be transferred from the winder to the rear hook. To do this, grip the wound motor firmly about a quarter of an inch away from the winder hook and force it off. If the winder hook is smooth and lubricated this will not be difficult. This last quarter of an inch of motor immediately unwinds, forming a loop which can be placed over the rear hook.

If you find the last operation rather tricky, or if your hands are inclined to be a little shaky under the stress of competition, then the small additional weight of an "S" hook is justified. The best form of "S" hook is not an S at all, but an O—which sounds a bit Irish. However, the sketch makes our meaning clear. Note how the ends of the wire overlap on the open side of the O.

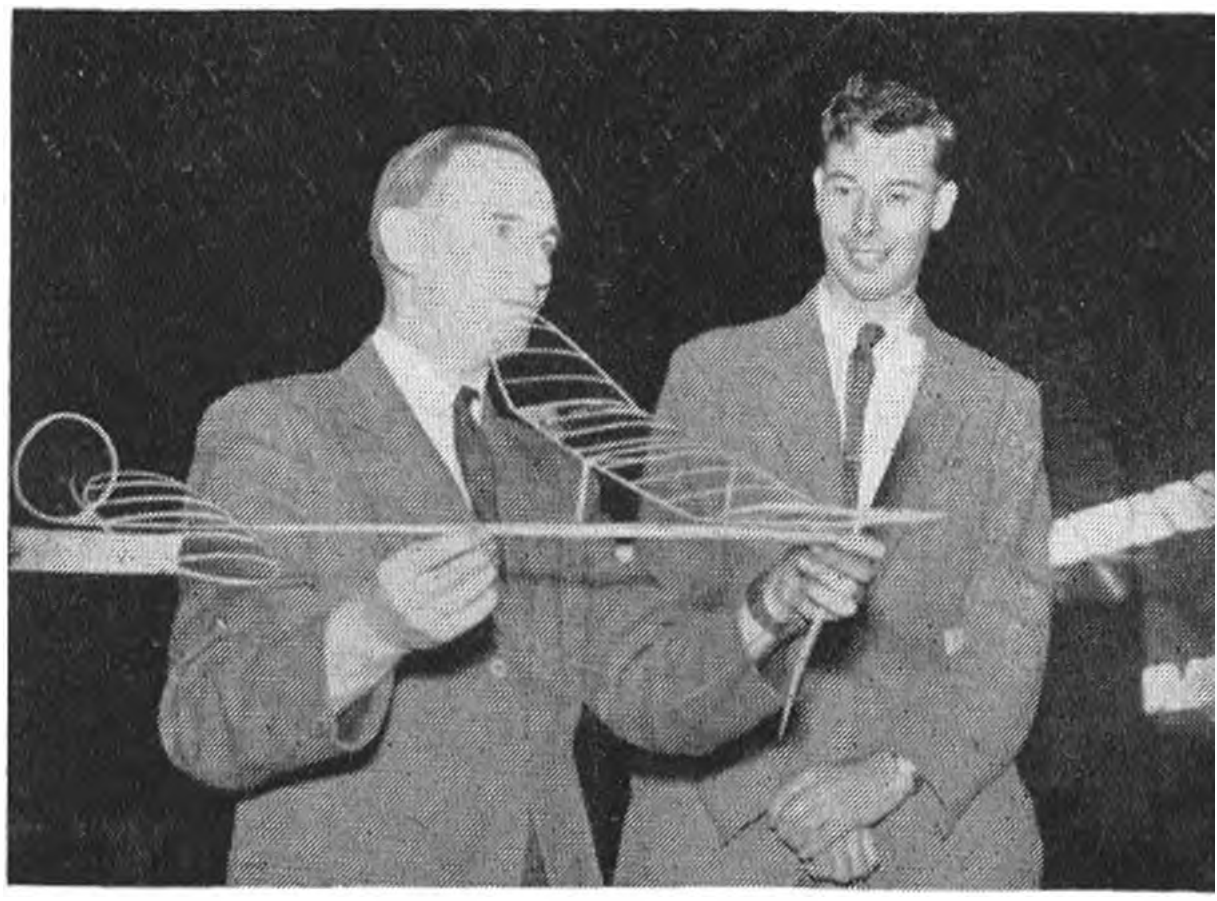
A neat slip-proof knot is essential for joining the ends of the rubber in an indoor motor. Our favourite method—and we have tried several—is to tie 1½ reef knots, which, we believe, is the same as three thumb knots. The ends are then snipped off close to the knot, and the whole coated lightly with rubber solution. So far such a knot has never let us down.

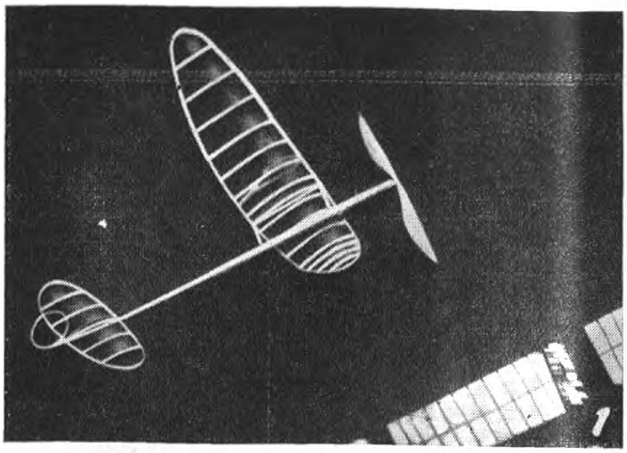
INDOORS AT CARDINGTON

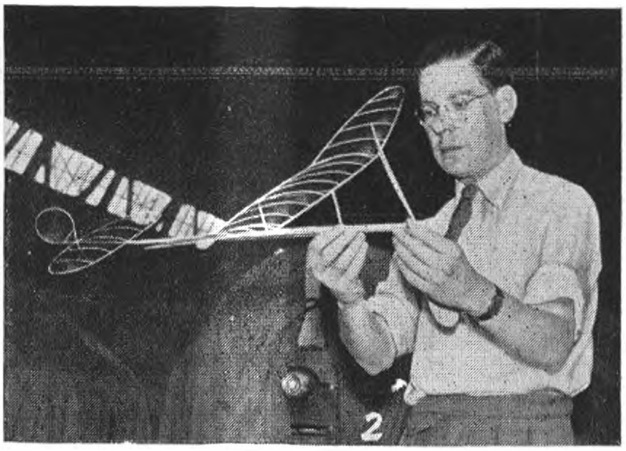
SUNDAY, the 4th July, 1954, saw the real rebirth of Indoor flying in Great Britain, a phase of aeromodelling that has been dormant for 17 years (with the exception of the meetings staged in Manchester by the North Western Area). Held within the enormous airship shed at R.A.F. Cardington through the courtesy of the Commanding Officer, this initial affair was confined to practice flying by a handful of enthusiasts who had waited years for the opportunity of getting under a really high ceiling.

Best time of the day went to Phil Reid(*above*, *right*) of Birmingham with a magnificent 15 : 05, whilst Bob Copland (*below*), current British record holder, clocked 11 : 30, 10 : 56 and 8 : 24. Flights generally ranged from 8 to 10 minutes, belle of the meeting being Ray Monk's little 16 inch "soapbubble" which regularly put up times of 6 to 7 minutes.

More news next month of the Indoor Nationals, due to take place on August 7/8th. (Other meetings are scheduled for September 11/12th, and October 9/10th.)

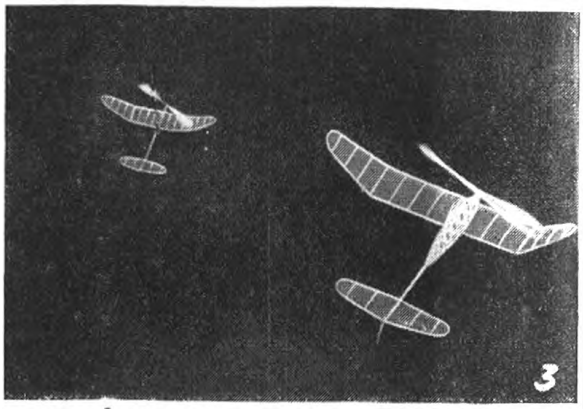






1 Bob Copland's pre-war type model was a consistent performer, though heavy in comparison with the Birmingham brigades' machines.

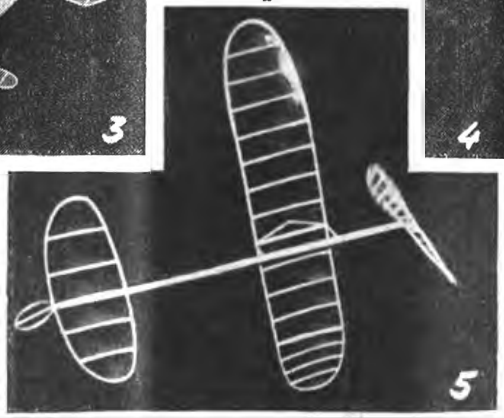
2 Northern Heights' secretary Malcolm Young used a similar model to Copland, but had trouble with power ratio. More rubber took the model up to probably the highest flight of the day, but duration suffered.



3 A rare moment when two models were close enough to get in the same picture.

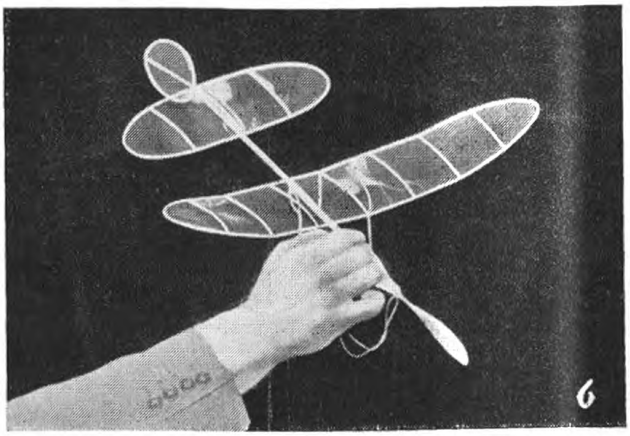
5 Phil Read of Birmingham supplied the top flier of the day, his super light microfilm model clocking 15:05. Just after this picture was taken, hailstones coming through the roof ventilators peppered the wings!

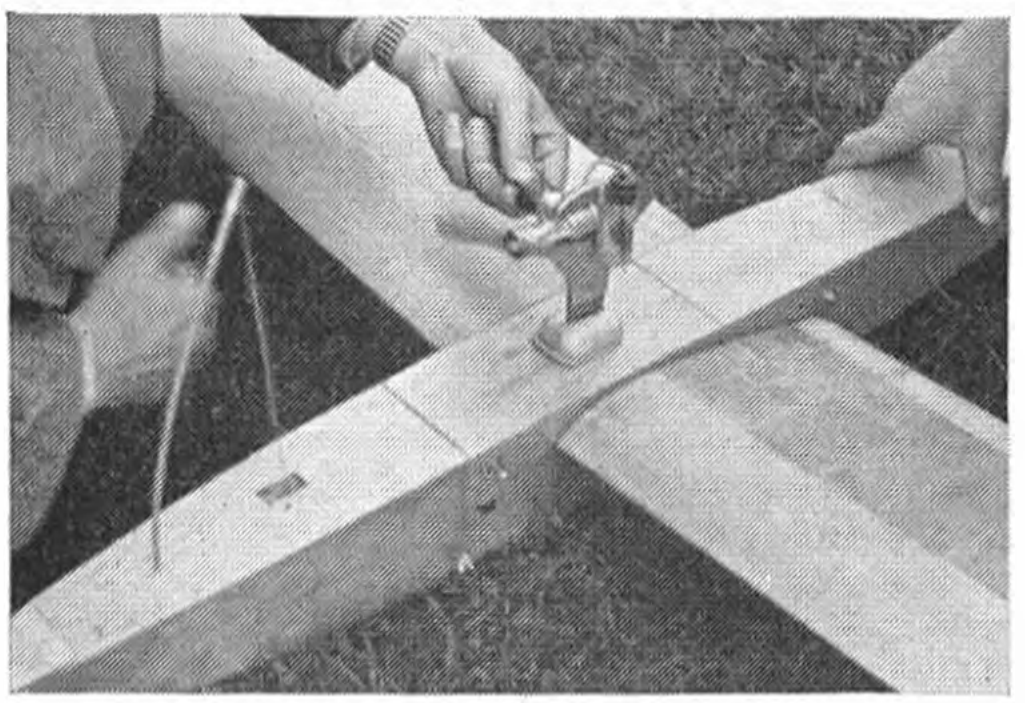
4 One of the neat constructed machines on view was the cabin model of Ray Monks, featuring geodetic fuselage, tungsten wire braced wings, and built-up microfilm covered prop.

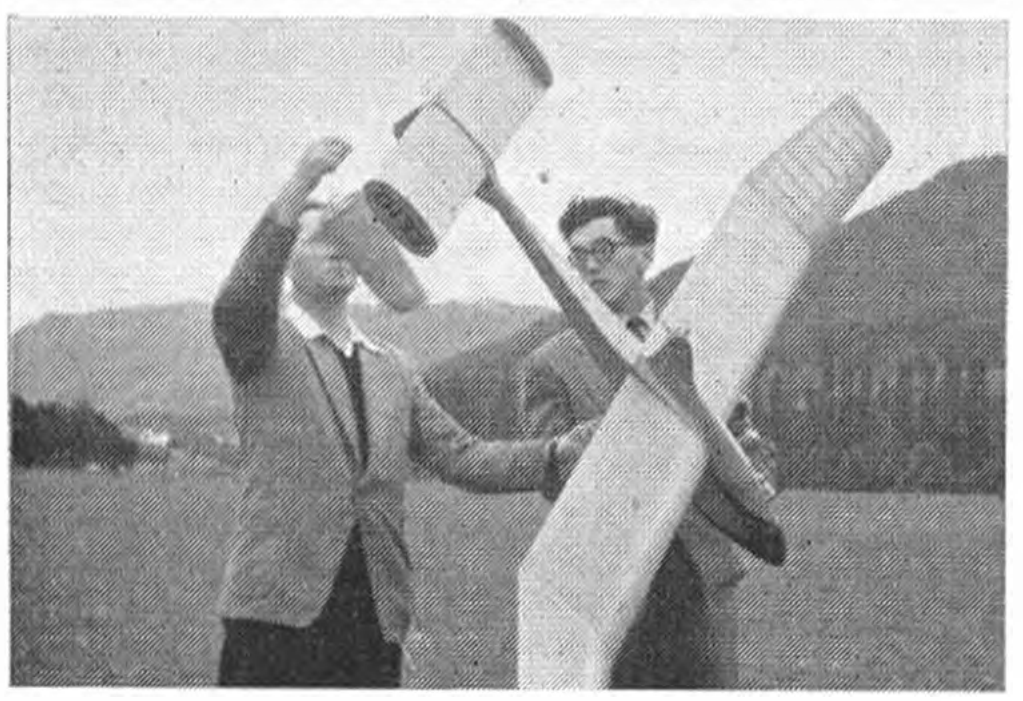


6 This tiny microfilm free-flighter put up consistent six-minute flights using only a portion of the great height available. Of simple construction, we shall feature this model in a future issue.

7 Breathless anticipation seems to be the rule when launching any type of indoor model. Monks releases his model for a long duration with Phil Read a very interested spectator. Further meetings at this venue are anticipated with keen interest.







NEWS of a radio-controlled Helicopter project is news indeed, and when the prime mover is Joe Axisa of **Malta G.C.** we can expect to hear of some results, successful or otherwise in the future. Joe is going to attempt cyclic pitch control, reversible pitch tail rotor, and changing angle of attack on the main rotor. There will be two blades, diameter 12 feet, and air-driven by two E.D. Racers mounted on separate booms as with the Jetex Helicopters. We wish Joe luck, and trust he enjoyed Charlie McCutchen's findings in the July issue on a similar approach. R/C will be an E.D. reed unit, Joe already having radio experience with a motor yacht and APS Mermaid flying boat over Malta's pleasant waters.

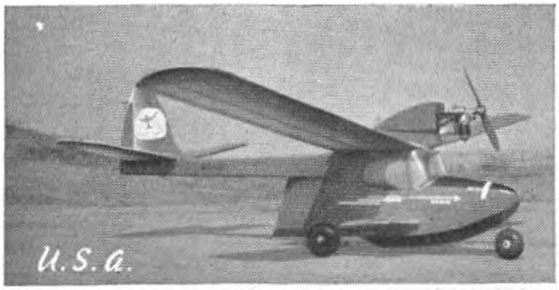
Silver cups and diesels were awarded at the Academico Flying Club's Championship meeting in **Portugal** for glider and power where quite a number of jobs were lost in strong thermals. Sounds as though they need extra positive d/t's in that country! This was the first Portuguese meeting where respective merits of the E.D. Racer and Webra Mach 1 (selling for the same figure) could be assessed in competition. Which won? . . . An Allbon Javelin job, the Racer placing second and Mach 1 third!

The **Czech** team to go to Moscow for the Internationals has been selected by a series of stringent eliminators, and top times indicate a high standard. F.A.I. rulings for flight times and classes apply, giving the following top averages in the final elims:—A/2, 2 : 34; Wakefield 2 : 43; Power 2 : 14; Class II speed 125 m.p.h.; and Jet 150 m.p.h. Two representatives go for each class.

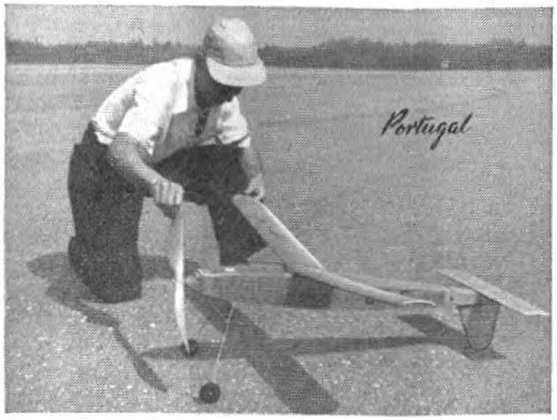
We wonder how many of the teams attending the Odense A/2 finals respected the extreme supply difficulties that beset the **Israel** aeromodellers? Arthur Guttman, recently returned from Switzerland to his home country, tells us that those little items that go to make the modeller's life a pleasant one, such as wheels, props, coloured tissue, etc., are unobtainable. Balsa (reclaimed from scrapped life-rafts) is available to club members cheaply at the awkward size of 3 × 12 in. and roughly sawn at that. Models are covered with paper used for orange wrapping, and a concoction used by shoe makers serves as cement. Nevertheless the Israeli boys do very well at A/2 gliders and improvement in performance over last year's contest times is over 100%.

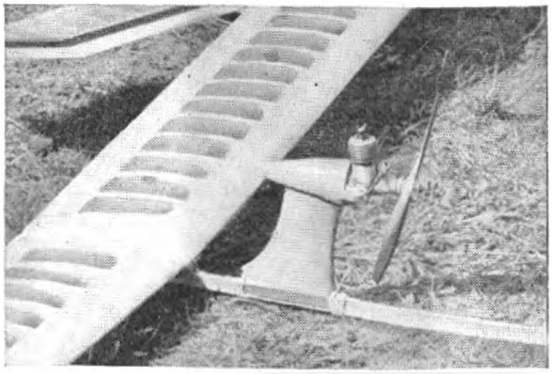
Like most European countries, **Switzerland** is having a late summer this year, and their national radio contest had to take place in very "un-Swiss" weather. Strong winds and rain are hardly helpful for R/C power entries in the form of power-assisted gliders; but Monsieur Nievergelt of Zurich managed to hold a thermal in spite of the conditions and made a 15 minute controlled flight with his glider. As a "Motoplaneur", the same model also performed best in its class with a small diesel pylon mounted amidships (*see photo*).

Top: Team racing is international at cosmopolitan Singapore where the boys circulate against a palmy background. Swiss radio nationals were beset by rain and wind, as evidenced in upper view of Enteroth's power entry and umbrella'd judges. Centre shows Nievergelt's pylon mounted diesel on winning model and lower view is of Bievel with a pusher layout.



Wayne Schindler's semi-scale radio controlled amphibian is a mere 40-in. span and has an O.K. Cub .074. Wayne was testing the model free-flight when it landed in a farmyard. It was seen to be carried into the house, and the occupants stoutly deny any knowledge of the model so Wayne now has to build another! Portugese Wakefield by Jorge Laroze Rocha has fin below fuselage and enormous undercarriage.

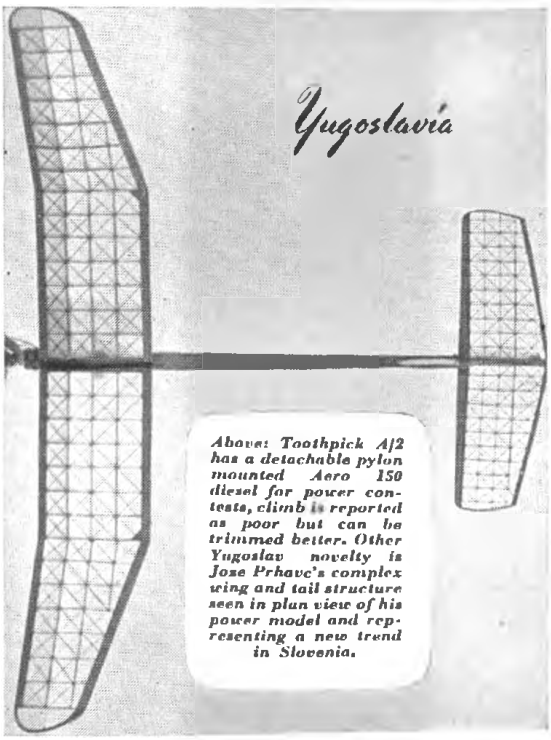




First clue as to how they were able to scrape up sufficient funds in **Australia** to send Alan King all the way to the World Championships comes in the MAA of NSW Bulletin. It seems they had a raffle for a paid-up holiday at Hayman Island which was worth quite a lot of money. Roy Stannard, sec. of the Concord club was the deserving winner and now the speculation centres on who will win the £100 S.M.A.E. crossword prize. Aussie entries for this continue to arrive and will of course, be accepted right up to closing date on September 30th. Have YOU entered? . . . Talking of the World Champs. in the **U.S.A.**, the West Coast reps were John Tatone in power and Dick Baxter in Wakefield. Joe Foster was in the running for a *power* place this time, most Wakefielders also partaking in F.A.I. power.

Dick McCoy is quoted as stating his new .15 diesel "turns more, faster" than any engine he knows of, and though he has tried glowplug versions of each of his diesels, they cannot match compression-ignition for r.p.m. or power. Fox advertise their 59 engine "as supplied to the U.S. Government for R/C target aircraft" which evokes interest; but not quite as much as the Jim Walker Meet at Ft. Lewis, Washington. This was a three day marathon sponsored by Jim in which every entrant had a chance of collecting the grand prize. and what a prize! A free trip round the World by air, doubtless in the grand company of Jim Walker himself. Higher they placed in the contests, the more chances they had of drawing the lucky airline tickets out of the hat. There was night flying too—did they sleep?

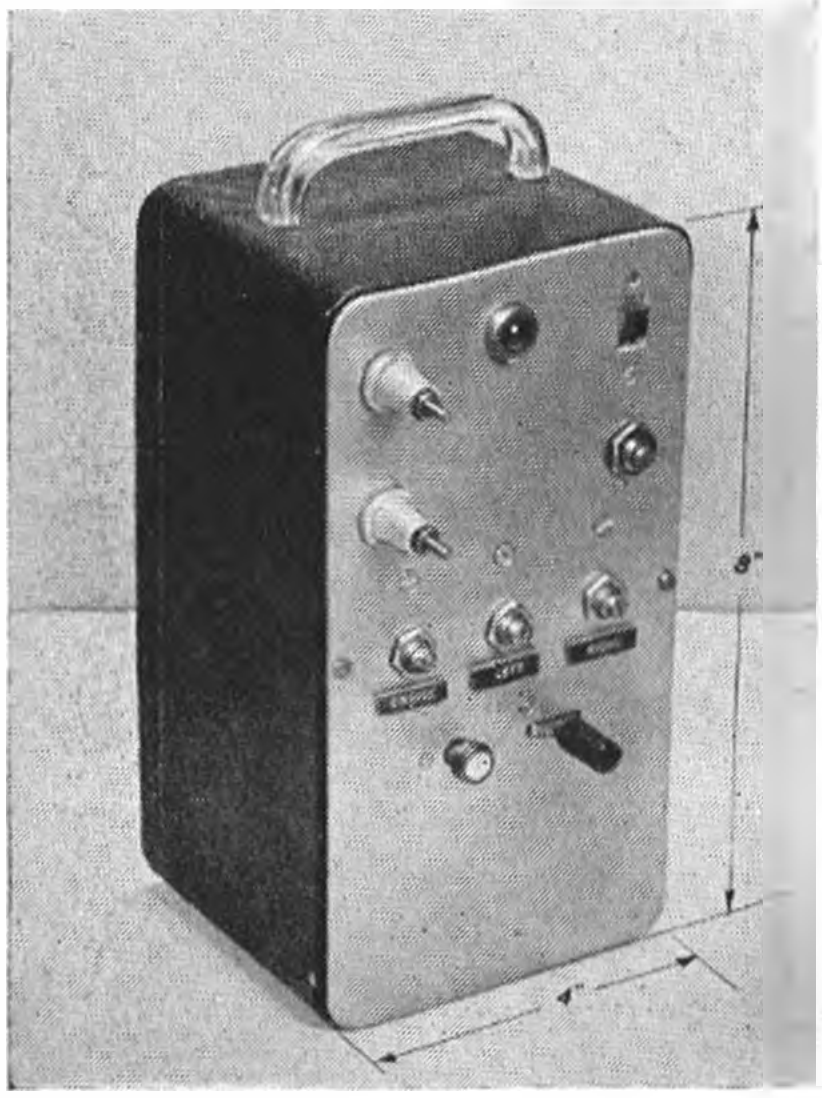
Photographic backgrounds of world land-speed record attempts (car type) on the famous Salt Lake flats have often appealed to us as possibly the World's ideal flying site. Just imagine all those miles of treeless dead level acres! First copy of the *Salt Flat Sentinel*, voice of the "Ute" (Utah) modellers, gives a pretty good idea of the aeromodelling activity there, and like most places, it seems they have wind too . . . and mud. To fly in the West Coast team eliminators and be drubbed by the Californians at Sacramento, the Utah men had to make a 1,200 mile journey according to our atlas, or roughly the equivalent of London to Munich and back; makes one think does it not? Next Salt Lake contest was to be C/L endurance, a test of model, motor and pilot with reimbursment for the winners fuel and bonus of $500 war bonds from K & B if one of their motors is used to make it a 24 hour non-stop flight. That's about £178 10s. 0d.—bet they had a mammoth entry! Only Utah residents of longer than 90 days were allowed to compete.

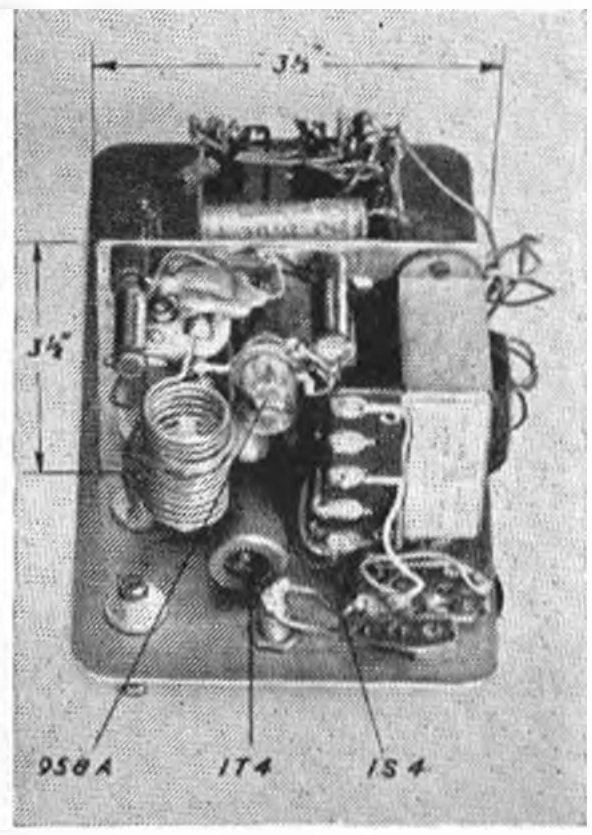


Above: Toothpick A/2 has a detachable pylon mounted Aero 150 diesel for power contests, climb is reported as poor but can be trimmed better. Other Yugoslav novelty is Jose Prhave's complex wing and tail structure seen in plan view of his power model and representing a new trend in Slovenia.

Radio Control Notes

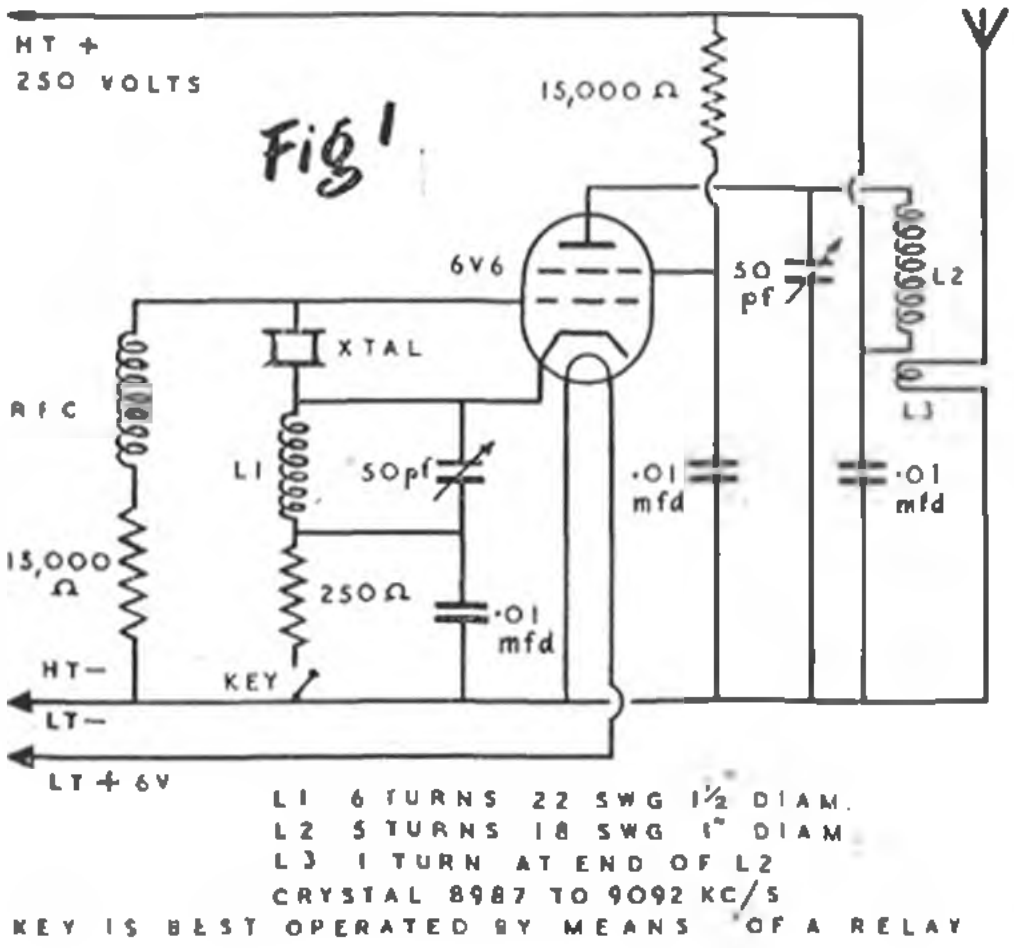
Power output, range, a crystal transmitter, engine control and Tx. indicator reported by **Howard Boys**





LICENCE regulations are the chief topic at the time of writing. Methods of checking frequency have not yet been settled, nor how often they must be made, but the I.R.C.M.S. boys have been busy on the rest of the regulations. The Hon. Gen. Secretary, Mr. Charles Lindsey, soon got out a circular to all members explaining the essentials in simple language. The latest interpretation allows 3 watts to a ¼ wave vertical aerial, so that unless a very elaborate or powerful transmitter is made, we are back just about where we were.

Regarding power output and range, some interesting notes have been sent by Mr. Ralph Greenfield, the hon. sec. of the Birmingham Group I.R.C.M.S. He writes: "In carrying out tests I was getting ranges with 1/3 watt and 1/2 watt into the aerial, on a standard Ivy receiver at 400 yards with a drop of 2 milliamps. A strange thing occurred when I came to check a crystal controlled transmitter built by Phil Such. This is the No. 1 transmitter in the Society's pamphlets and it was impossible for me, with the equipment I had, to measure any aerial current whatever, output was so low, yet on checking at exactly the same time and range on the Ivy receiver with a transmitter showing ½-watt aerial current, I got exactly the same range and results. I checked this several times to make sure, so it would seem that a stable output at low power is probably of more use than a large output which fluctuates with hand and ground capacity."



The crystal transmitter referred to is obtainable in pamphlet form from the I.R.C.M.S. at a cost of 2s. to non-members, but it is almost identical with the first valve of the tritet circuit given in the book by George Honnest-Redlich and shown in *Fig.* 1.

Mr. Greenfield then goes on with some notes on reed units and operating more than one model at a time.

"On reading the article in the July AEROMODELLER I have found that with the D.C. amplifier type of receiver (Bolton No. 2) the reed unit works quite well when the first battery is new (low internal resistance), but as soon as this battery fades it serves to block all audio notes and after a little while anything faster than about 30 cycles per second fails to get through the amplifier valve operating the reed unit, so it would seem that the only D.C. coupling of use is one that does not involve a battery as the coupling element."

Mr. Robert Burns of Stewarton, describes an engine control he has worked up, and is shown diagrammatically in *Fig.* 2.

The engine is an E.D. 3.46 which will oblige by running slowly with the intake plugged. The plug is moved by an electric motor through gears from an old clock. On the slowest gear is a copper cylinder half of which is insulated with sellotape, forming a type of commutator with two brushes on it, opposite each other. Another brush is used to make the copper "live." When the other brush which is "live" is on the copper the motor will rotate until the tape comes under the live brush. This will

happen with the plug full in or full out, the plug being moved by a crank similar to that used for rudder operation. At the rear end of the model is an E.D. actuator with a cam contact fixed on. There are two springy arms of phosphor bronze which touch on this in the two neutral positions. You then have a four sequence set-up, right rudder, fast engine, left rudder, slow engine, etc., with the difference that it takes half a second or so for the engine to change.

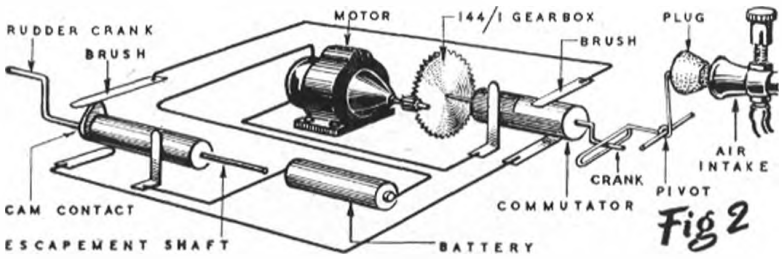


Fig 2

You can send a dot and dash and get through the first two in sequence without working the engine control very far round. You thus work by sending dot dash for one rudder, and dash dot for the other without engine change. When you want to change engine, send one dot only. It seems to work all right, but the engine control gradually kicks round so after about five signals you must give a short engine change signal and then another, to get it back again.

A short description of how this works will perhaps help. With the rudder crank in the top neutral position as shown, the cam contact is touching the top brush which is connected to the top brush on the commutator. The tape insulation has come under this brush so no current can flow and the engine is in top speed. By going through one rudder position into neutral again, this time with the crank at the bottom, the battery will be switched to both bottom brushes, and the motor will rotate until the tape comes under the bottom brush and stops the motor with the crank in the top position, giving slow engine. One advantage of this is that if the escapement skips a position it will change the engine speed thus giving an indication, and a turn in one direction always follows a certain engine speed.

Mr. Burns' actuator reminds us of the one used some time ago by Mr. Alec Wilson on his Manx Monarch. This is a four position motor-driven type that is self centring, and only uses current while actually moving from one position to another. This is shown in *Fig.* 3, and it will be seen that the motor drives the rudder crank through a gearbox that can be made from the works of an old clock, or there are various light gears and timers on the ex. gov. market. Contact segments are arranged so that each brush makes contact for a quarter of a circle in turn. When a signal is sent the relay contacts make on one side and complete the circuit on that side and the shaft rotates a quarter of a turn, and the motor stops when the segment leaves the brush. By this time the other segment has made contact with the other brush, and when the signal stops the relay contacts change over, making the circuit through this brush, and the shaft turns another quarter of a circle. This system seems to have quite a lot in its favour, and very reliable motors can be obtained for the price of an escapement.

Mr. Cuckson's three tone transmitter is seen in the leading photos with dimensions added. On the front can be seen a small indicator lamp which he says is a cold cathode diode of a type made by Messrs. Hivac. This is switched across the H.T. battery in series with a (Hunts) leaky 0.1 mfd. condenser, see *Fig.* 4. This flashes on and off three times a second, attracting attention whenever the set is left on, thereby saving expense on batteries. This particular transmitter measures only 8 in. x 4 in. x 4 in. and the batteries, type Drydex 526, DH 509 and L.T. H 118, fit in the case underneath the switches. These photographs have reminded him that he put radio frequency chokes in the filament leads to the 958A valve as shown in *Fig.* 5. He says there are three advantages in this: (*a*) It brings the valve up to the correct height for connection to the tuning coil. (*b*) It drops the filament volts to 1.25. (The makers say the valve is O.K. for operation up to 1.5 volts, but this was jibbed at considering that the anode voltage swings to 180 on modulation.) (*c*) It stops R.F. getting back to other parts of the circuit.

Incidentally, this Tx circuit as shown in *Fig.* 1, p. 434, last month has the H.T. values crossed, the 90 and 135 volts should be reversed at top right though it means that 135 v. go to a 90 v. Valve!

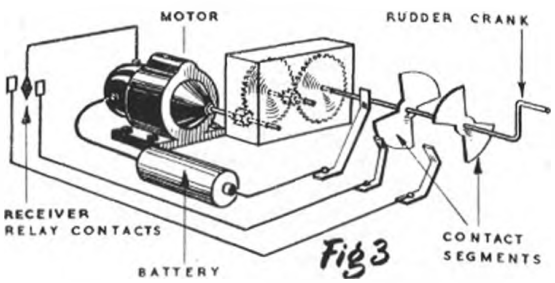


Fig 3

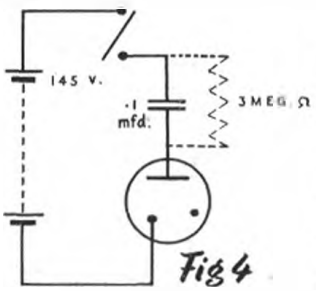


Fig 4

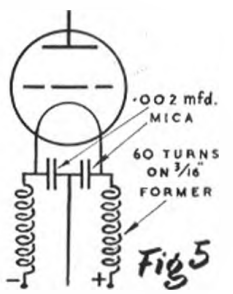


Fig 5

Readers' Letters...

Beginner's problem

DEAR SIR,

As a newcomer to the hobby, I am perhaps a little early in offering criticism, but it is my very newness that prompts me to seek your reactions to my problem.

It seems to me that there is a great danger of the beginner being regarded as an infant who has smashed all his toys, and is looking for something new to do—and must therefore be kept quiet quickly. I am 25, and, wishing to branch out into aeromodelling, I naturally turned to your most excellent magazine for guidance. I wished to begin at the beginning, and so I scanned the advertising pages for ideas within my comprehension—and what a sickening gulf I found!

For the beginner—apart from dear old Achilles and Ajax—there were adverts for a few chuck gliders, some completely characterless prefabricated toys giving no scope at all for self expression and initiative, and a galaxy of machinery and accessories (which might be parts of lathes for all I know.)

Perusal of the articles made me regret having left college after barely comprehending only the second book of Euclid. I now know that a tube-full of rubber with a one-bladed propeller with a hinge, a wing on a platform, and separated from the ground by a wire leg, is something called a Wakefield. An Olympic javelin surmounted at one end by a polyhedralled plank, and at the other by a dart flight, is known by the mysterious designation A/2. I saw also that a Piat shell with stub wings was a Jetex model and flew on a string, and was consoled to a slight extent by an angel in disguise who had designed an easy-to-build aeroplane-like machine powered by a diesel—which I haven't got!

A thesis on electronics as applied to the manipulation and control of models in free flight by means of wireless waves completed my agony, and I admit I barely glanced at a page-full of elongated tear-drops beautifully drawn by Grant Y (Grant Y what?) before putting the book down and going mad.

Now, I am involved in the motor business. If, on commencement of my employment, I had been given a Grand Prix Maserati and told to learn about cars, I should have been nonplussed. And I would have been equally narked at being given a little red wheelbarrow and asked to work my way up from there. Do you follow me?

How am I to bridge the void between the chuck-it-and-chance-it phase to the current B.Sc. standard of modelling? How am I to follow the train of mathematical thought which makes a winged beanpole the very omega in gliders? If I could learn by what steps and what philosophy the Wake-field has developed from its infancy to its present stark efficiency it would be a great help, and would assist in developing naturally from rubber to power.

Doubtless I could learn by buying all your back numbers since 1935, but poverty forbids. Therefore, I do feel that a monthly "refresher" would be welcome to many, and it might even help to remind the "big boys" of a few things they've long forgotten.

I trust you will excuse my somewhat biased note, but it did come as rather a shock to me to look for a hobby and find a science. I should very much like to join a club, and through personal contact with enthusiasts acquire the desired knowledge—but I don't want to burst into their midst with an 8 inch span cardboard dart—I have *some* pride! So, I trust you will perceive my dilemma and pass on one or two sage comments, with the addresses of one or two clubs within reach of myself and my motor-bike.

Beaconsfield. Norman F. Wells.

(*Well . . . we have done our best to satisfy Mr. Wells, and duly supplied him with the addresses of numerous clubs, whose members will rapidly educate him into the intricacies of the lordly Wakefield, etc. However, as indicated in our Editorial, the newcomer is always with us, and we shall continue to cope with his requirements as far as possible, but it is not easy to produce repetitive beginner's material in a magazine that is read by expert and tyro alike.*)

Isaacson's article

DEAR SIR,

Sigurd Isaacson's article is just about the last straw. He states that Ellila's 1950 airfoil incorporated the latest developments, yet the "AEROMODELLER" report states his wing section was designed by "cutting it by eye from a piece of plywood." Hardly the best way to incorporate the latest development.

Also I fail to see why this section should be superior to the Benedek section (noted for its high performance) used by second man Evans.

As to the 1952 contest the "AEROMODELLER" report states "things began to take on the familiar aspect of a British contest where thermals can play havoc with any type of forecast". Hardly non-thermal conditions?

Surely Joe Foster was the best man under the conditions and conditions in England are just a matter of luck.

In my opinion M. Isaacson's article adds up to the old expression "We Wuz Robbed."

Rothley, Leicestershire. G. M. Brewin.

(*We visualised that Mr. Isaacson's article would arouse a certain amount of comment, and we would be particularly interested to learn of Joe Foster's own opinion! Experience does seem to prove that many factors come into play with the selection of an airfoil section, and we know of many cases where the good old Clark Y has beaten many of the slide rule sections. It all depends, of course, on who handles it!*

Editor.)

CLUB NEWS

Members of Beavers M.A.C. in front of their clubroom. All the clubmen are employees of the De Havilland Aircraft Co. at Hatfield.

GADDING about the rallies with camera, notebook, and on occasion, a model, has been our pleasurable occupation this last month or so, and it is a welcome change to be able to report fair weather for all. Organisation remains a pitfall for the unwary (and unprepared), the two "newcomer" rallies to the calendar suffering from this aspect, particularly the Darlington "do" where Northerners, apart from committee men and a few Sheffield stalwarts plus the local clubsters were noticeably conspicuous by their absence either with stopwatch or models. It seemed to us that Croft was in use as a battleground for the far-travelling Scots and Londoners to fight for the honours, though it should be recorded that North-Western experts Tom Smith and Hugh O'Donnell stepped into collect the Frog Senior and CMA trophies. Like the fact that eating, even at legitimate hours and in places claiming to cater for such physical needs, appears to be a forgotten facility for the traveller in these parts, it also defeats us that the *least* model-attended meeting of the year should take place in perfect weather on a public holiday at a site only 60 miles from the *best* attended show of last season.

South Midland Area

What must be one of the largest clubs in the country is **HALTON M.A.S.**, with a membership of over 100, composed of Aircraft Apprentices at R.A.F. Halton. The main interests are glider and C/L, and these are reflected in the club's placings in the R.A.F.M.A.A. Tech. Training Command Championships, where clubmen Smith, Haiter, French and Collins took, respectively, 1st glider, 1st T/R, 1st Jetex, and 2nd stunt. A/A Webster's *K*6 A2 turned in a flight of 75 mins. at Langley, where conditions were ideal.

North Western Area

A flurry of A2 activity, to incorporate many of the new ideas brought back from Denmark by John Hannay, is taking place in **WALLASEY M.A.C.** Wider use of hardwood is one result, and the men are greatly impressed by the price and quality of some sample Danish kits, in particular that of Hansen's 1953 winner. Less affected by all this are the three die-hard tailless A2 members, although J. Done has rather let the other two down by deserting the classic sweepback for a plank.

Activity is increasing in the relatively new **ENGLISH ELECTRIC M.A.C.,** no doubt spurred by Tom Smith's convincing Nationals win. Tom, incidentally, placed 3rd at Woodford with his *Oliver Twister*. Chuck glider contests are extremely popular at present, scoring being on the best three of nine flights. John O'Donnell won the most recent of these events with an aggregate of 2 : 02. With the influx of members from the E.E. Electronics Section, radio interest is high.

Southern Area

A thoroughly enjoyable day was spent by **SOUTHAMPTON M.A.C.** at Langley, especially by the Oldest Member, who snoozed peacefully throughout the day in the coach. More energetic types entered various comps., chief success going to Mike Ingram, who collected the Helicopter Trophy with his Jetex job. Three racers entered emerged unscathed, A. Silvey's *Eta* job getting as far as the semi-finals. The club's own T/R League second round has again been postponed—could this be due to the mysterious disappearance of the organisers' very hot B job?

Big laugh for the **WEST HANTS A.A.** was Bob Wheatley returning exhausted to the club camp at Langley, groping blindly for a bottle, taking a long swig—and finding it was glow fuel! May we suggest an appropriate name for the next Wheatley machine—*Gloca-Cola?* The club have a very full programme, including an exhibition and display at a local fete; the weather isn't being very helpful, though, and has already caused the postponement of the second round of the West Hants v. Bournemouth series.

Some interesting calculations in the **BOURNEMOUTH M.A.S.** "News," based on a suggested entry fee of 5s. for International eliminators and 10s. for the Trials, show that the sum of £420 would have been raised this year towards sending teams abroad *by the people most concerned*. Certainly non-contest modellers would consider this as eminently fair, but it does mean a pound to fly in the Trials by the time you've got that far, and how would that affect total entries all through? Only people who sincerely feel they have a chance of making the team would be prepared to risk it, perhaps?

A recent exhibition by **SALISBURY D.M.E.S.** has resulted in a flood of new members, most of them young aeromodellers. An aircraft sub-committee has accordingly been formed and contests are being laid on throughout the rest of the season at the Society's flying ground, R.A.F. Old Sarum. F/F and gliders are the main interest.

CONTEST CALENDAR

Aug.	22	World Speed Championships, Holland.	
		South Midland Area Rally, Cranfield.	
		Croydon Gala, Chobham.	
	29	Keil Trophy (Open Power Ratio) ...	D/C
		FROG JUNIOR TROPHY (Open Rubber/ Glider)	D/C
Sept.	5	Y.E.N. Festival, Sherburn-in-Elmet.	
		West of England Championship, *Cancelled.*	
	19	GUTTERIDGE TROPHY (1955 Wakefield Elim.)	Area
		MODEL ENGINEER CUP (Team Glider)	Centralised
	26	All-Britain Rally, Radlett,	
		AEROMODELLER I c.c. PAAload	

Midland Area

The Abbey Park Show is quite a regular annual fixture for **LEICESTER M.A.C.**, but the "free flying" the club sec. mentions takes on a different meaning—propellers and fuel are provided by the organisers, and the models used are, in fact, all control-line! A new open record was set up by F. Canham's *Topper*—5 : 45 o.o.s., losing the model in the process.

Another club believing in the value of live demonstrations is the **SOUTH BIRMINGHAM M.F.C.**, who gave their first public show of the season at a sports meeting on July 3rd. A good show was put on despite strong wind. Several scale twins (Deeley influence?) have appeared lately on the club field at Allen's Cross. Strong-arm policy is indicated by the ultimatum issued to junior members—build a model or get out. A simple kit job has been chosen as a standard and several youngsters have taken the hint; the aim is to weed out those who have no real interest in modelling and who simply make a nuisance of themselves on club nights.

London Area

Sixty-five team race enthusiasts comprise the **SIDCUP A.S.**, or, at least, more team racing than anything else goes on. Successes lately include 3rd in B at the N.H Gala (P. Denyer with a new *Eta* clocking 98–100) and getting as far as the semi-finals at the Nats. The A fans haven't had much luck so far.

D. Thompson's 36 in. 2¼ oz. lightweight won the **HORNCHURCH M.A.C.'s** Jackson Challenge Cup, an all-in contest held one evening under fine, calm conditions. Second was E. Hodge with a new rule Wakefield. Most unfortunate was P. Fraser, whose potent lightweight disappeared o.o.s. on a pre-comp. test; however, the flight was in sight for 10 : 33, constituting a new club record, which was some consolation.

South Western Area

Hamley conditions in the south-west were, apparently, terrible, blowing a gale and raining intermittently. **EXETER M.A.C.** braved the elements and had a crack, S. Gibbons topping the times with 3 : 10. A club glider event on the same day was won by R. Bamford, most members being content to retain their models whole.

East Anglian Area

Gliders are top of the popularity poll in **WARE D.M.A.C.**, and great things have been going on with them. E. Barks won the Open Glider Cup in an evening contest under somewhat turbulent conditions, aggregating 5 : 13. A week later, at Debden, perfect thermal conditions were found, and D. Ling raised the open glider record to 8 : 41. An hour later Barks upped this to 10 : 07, and a few minutes after this F. Hills put an emphatic end to it with 18 : 09 o.o.s. Both the latter models were underweight A2's; Hills launched with a foot of fuse on the D.T. but the model vanished into cloud and was not seen again. Thought for the many *Seraph* owners is Ling's version, which has a Dart strapped on the wing. The climb is slow but steep and the glide seems little impaired.

Northern Area

The Northern Area knock-out is going along fine, and round one was distinguished by **SHEFFIELD** beating **HULL** by 0 : 05 on the aggregate, which is pretty close going. Round two is now drawn and the clubs concerned are: Halifax v. Doncaster, Wakefield v. Bradford, and York v. Sheffield.

The programme for the Yorkshire Evening News rally has now been announced, and the events scheduled are Open Rubber, Open Power (15 secs.), Open Glider (164 ft. line; all these events two flights, 4 min. max.), Concours—Freelance F/F (1 min. qualifier), Scale F/F (30 sec. qualifier), Control-line (level flight and landing qualify), Chuck Glider (3 flights per entry fee), Combat, and T/R A and B to S.M.A.E. rules. Entry forms and programmes (6d.) from Y.E. News, Trinity St., Leeds.

A new combat design by R. Gibbard of **MEANWOOD I.M.** has some resemblance to an unswept *Cutlass*, and uses a BB Amco, as appears customary in this C/L only club. The "Leeds Branch" of the club are at present concentrating on stunt, using 500 sq. in., flapped, with BBs. Some 10 c.c. stunters are emerging too.

Members of **BRADFORD M.A.C.** had a good day at the Daily Dispatch rally, with C.P. Miller 3rd in the rubber fly-off and S. Eckersley Senior Rally Champion. Three domestic competitions have now had to be postponed because of weather, one of these having been scheduled to run in conjunction with the Hamley; like everywhere else, though, on this day it was cold, wet, and blowy. J. A. B. Pannett was the club's only entry, recording 8 : 06.

South Eastern Area

Keen new members are sought by **MEN OF KENT AEROMODELLERS** (try 2 Hall Road, Aylesford, if you're interested) who are primarily interested in A2s, especially now that rubber stalwart Mike Green has moved away. Experimental types in the club include a *Charybdis* and a Clipper Cargo model due for flight tests shortly.

At the close of the first leg of **SOUTHERN CROSS A.C.'s** 1954 Club Championship, Fred Smith, winner of the Lady Shelley for the second year running, holds a slight lead over R. H. C. Smith. The latter, incidentally, holds the club H.L. A2 record with a splendid 11 : 30 flight made in May.

Scotland

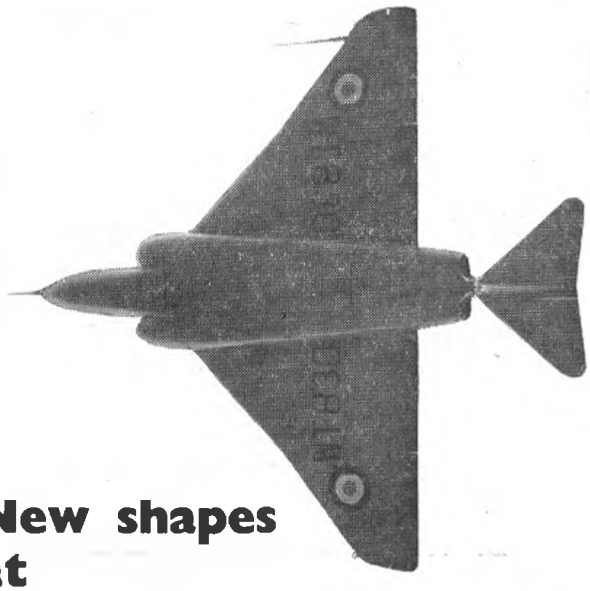
The S.A.A. Power and Rubber Nationals were held in good weather on July 4th; seven clubs competed but **GLASGOW** showed the way home by taking top two places in each event. J. McMaster obtained 9 : 29 with his *Toreador* in power, this being one of the few commercial designs flying. In rubber, R. K. Burt flew a lightweight for 7 : 22. A conducted tour of the "Condor" hangars finished up the day.

A new club, **BANFF M.A.C.**, (D.C. Whyte, 2 Back Path, Banff) has been formed with about 25 members and every chance of doubling that number. This is getting way up north to the land of light evenings, so we may be hearing of *night* contests?

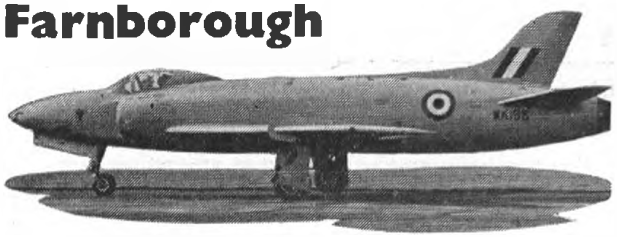
Aftermath of Langley—Hayes police (Tel. Hayes 1113) have a blue, silver, and red 54 in. *Monocoupe* awaiting its owner. Hope they blister him for police charities for not having his name and address on it.

'Sall for this month.

'The Clubman.



New shapes at Farnborough



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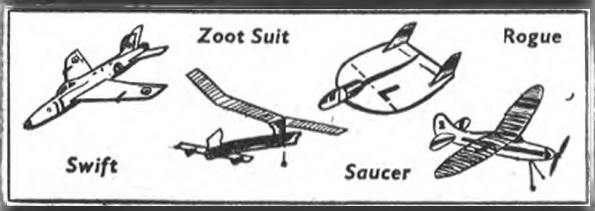

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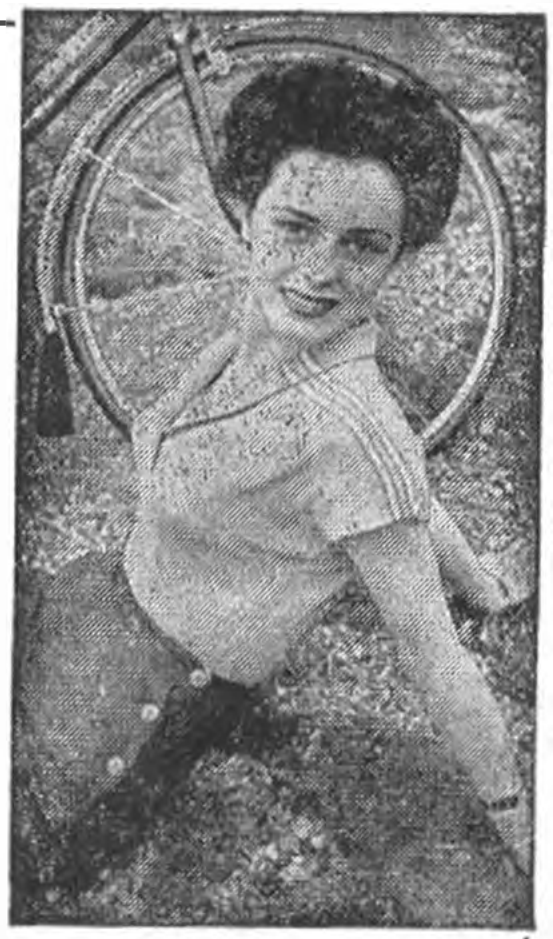

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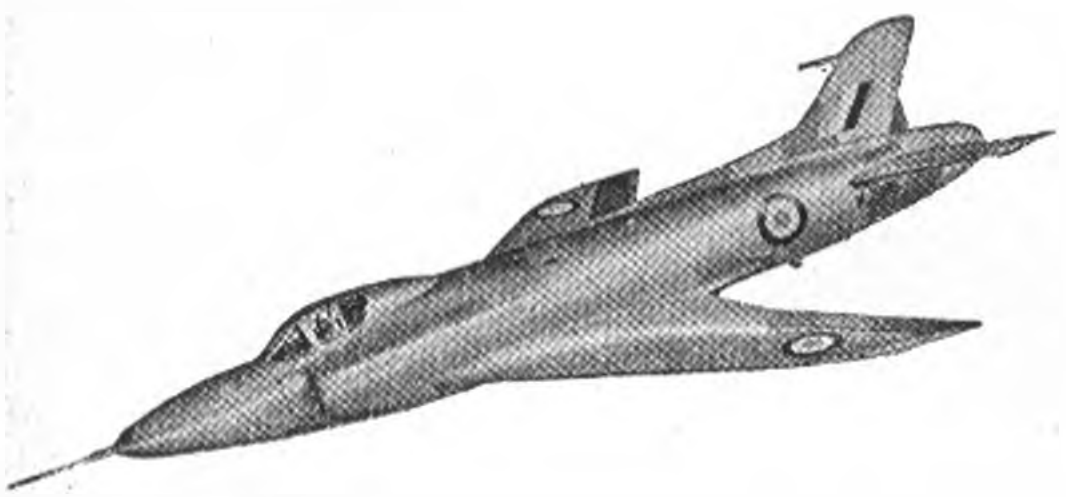

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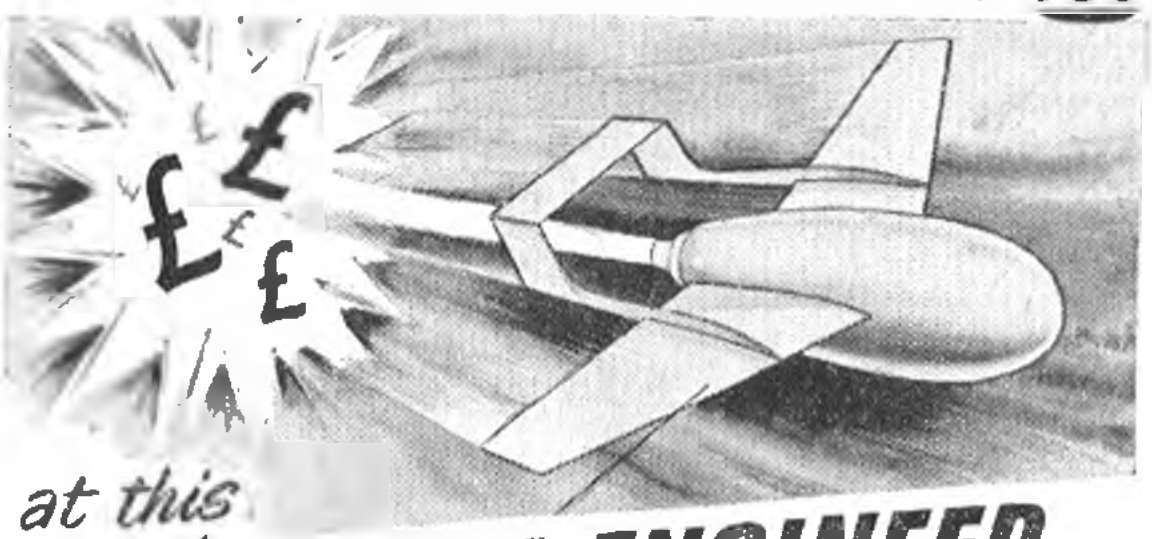

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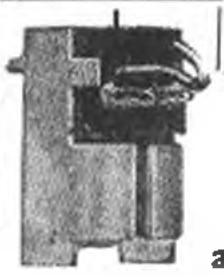

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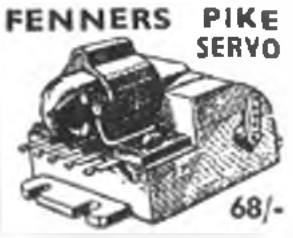

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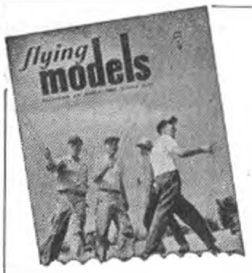

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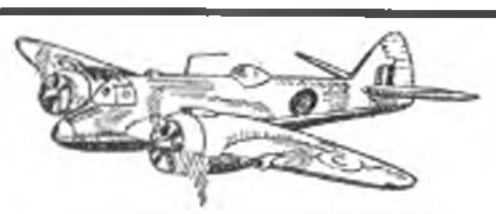

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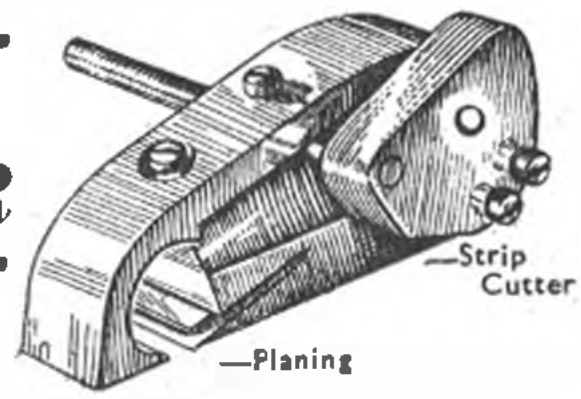

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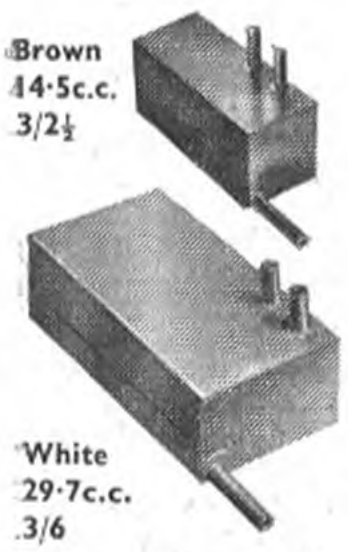

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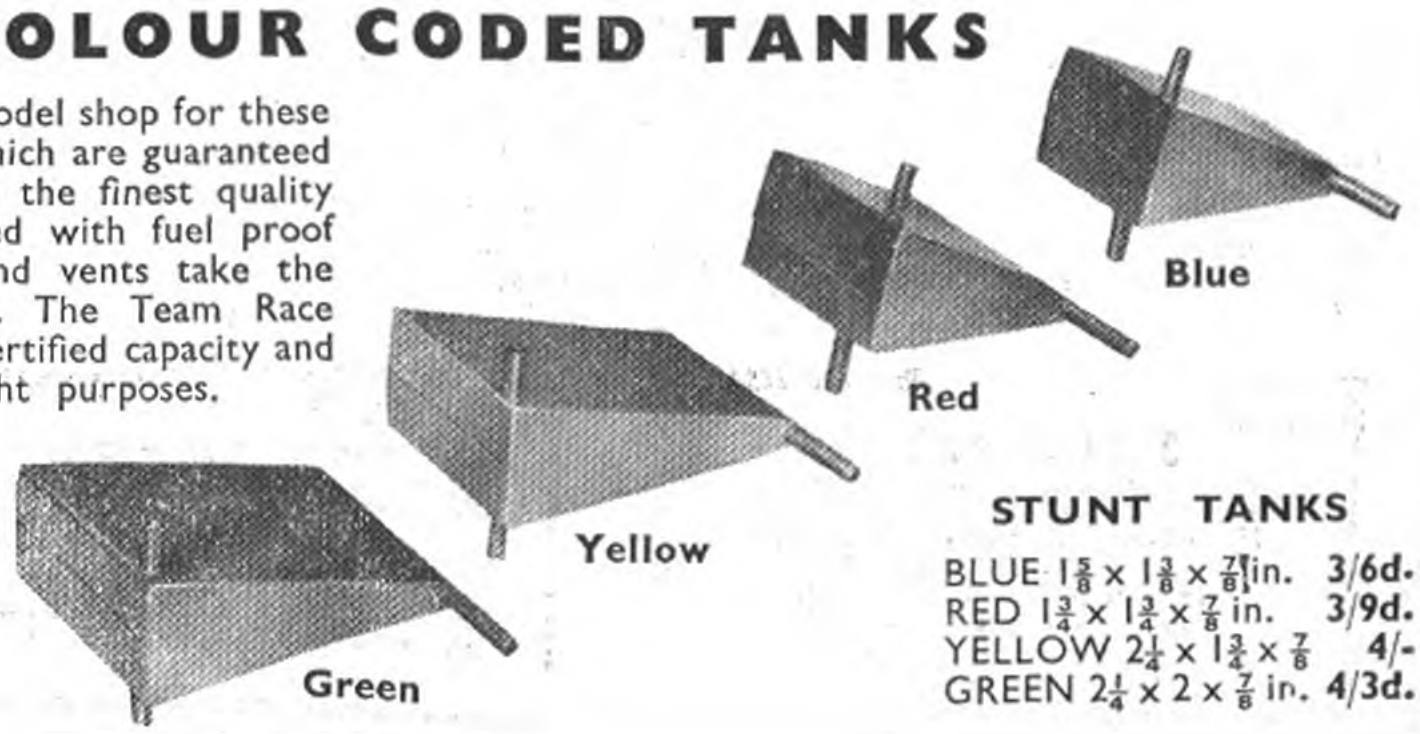

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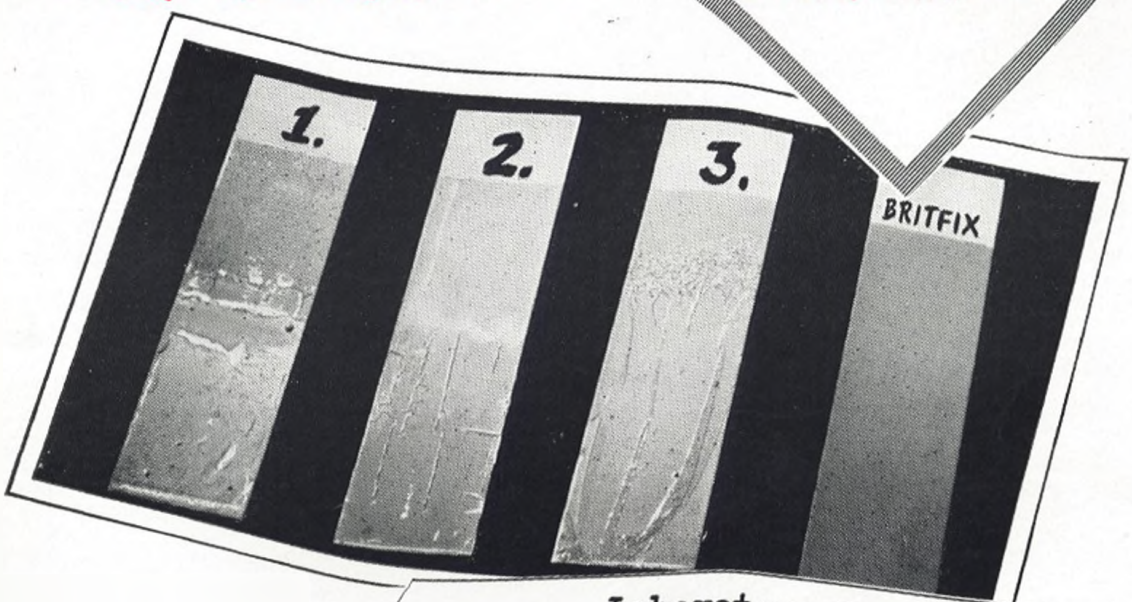

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1.	20 mins.	3 mins.
2.	6 hrs.	10 mins.
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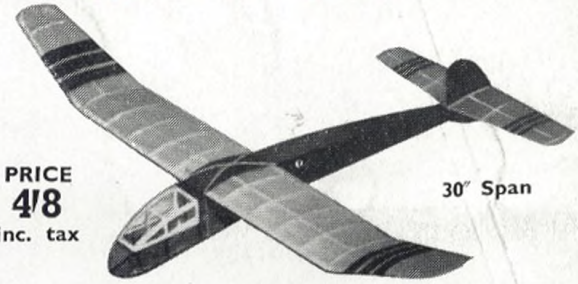

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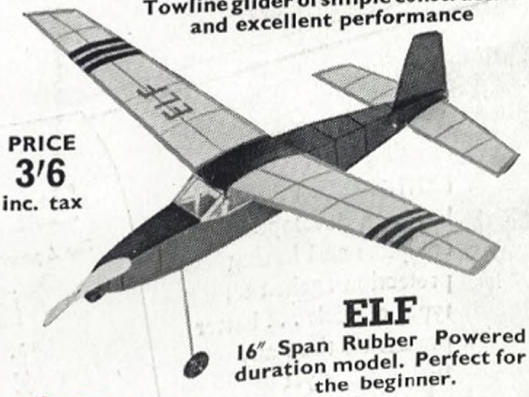

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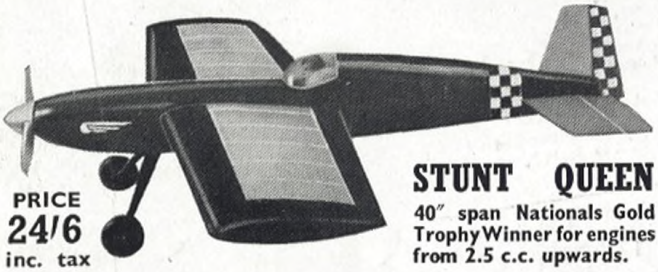

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