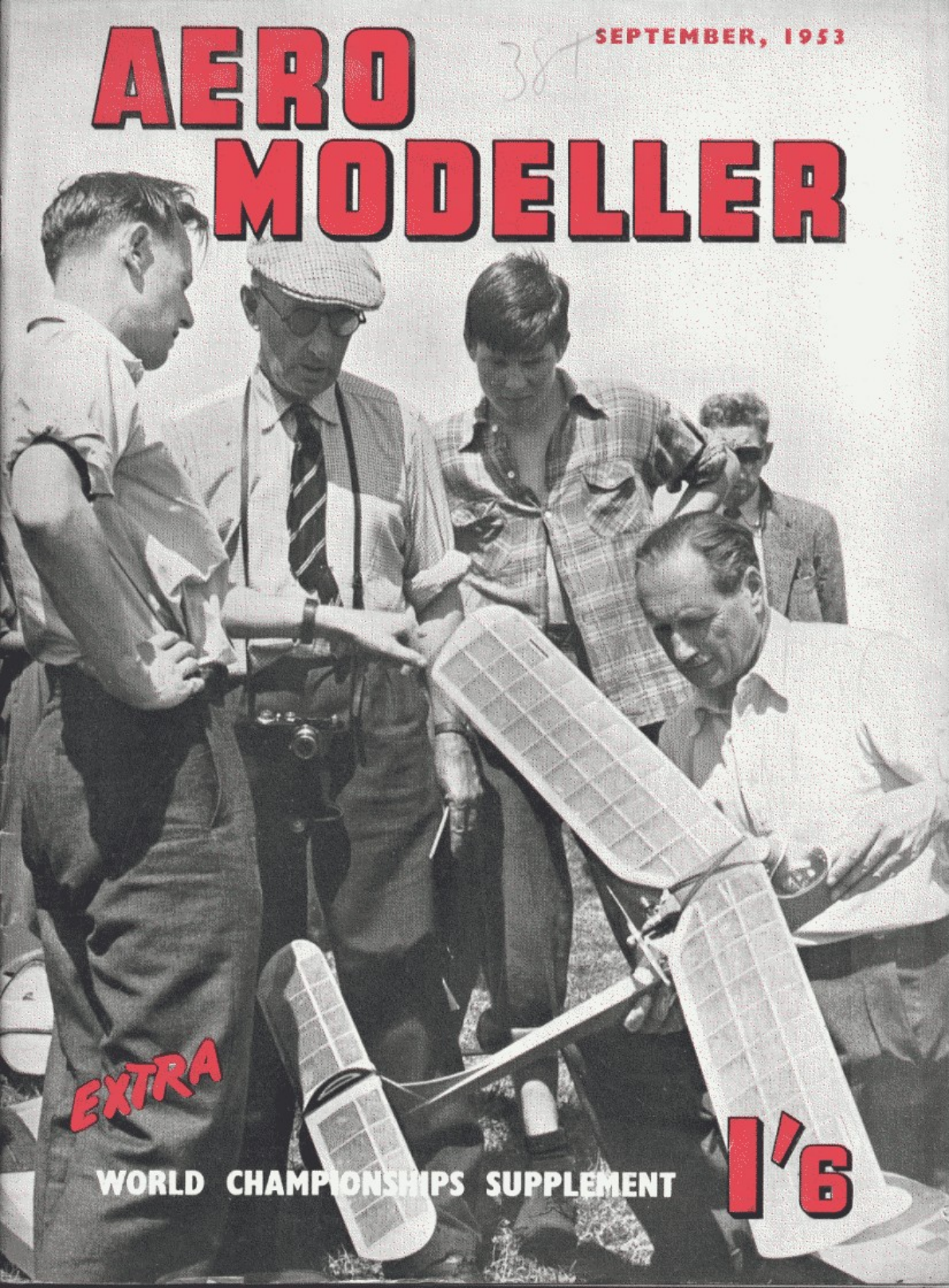
AERO MODELLER

SEPTEMBER, 1953



EXTRA

WORLD CHAMPIONSHIPS SUPPLEMENT

1'6

Allbon SPITFIRE

1 c.c. DIESEL

Order from Your Local Model Shop

64/2 Inc. P.T.

Easy Starting for the Beginner
High Power for the Expert

Start your power flying with the engine that starts first time, every time. The engine which, due to its amazing flexibility is equally suitable for the tyro or the experienced flier who requires high output for competition work. The Spitfire is the most powerful diesel in the 1 c.c. class and is built with watch-like precision for hard wear and long life.

For those who require the same high quality and performance in either smaller or larger sizes there are the Dart and the Javelin as illustrated below which, together with the Spitfire and all other motors in the Davies Charlton range are fully guaranteed.

Mk. II DART

0·5 c.c. 64/2

INC. TAX

The most powerful point five in the world giving ·042 B.H.P., and in spite of its size an exceptionally easy starter. For scale models it is ideal, and for the restricted flying field it is the perfect free flight motor.

Mk. II JAVELIN

1·49 c.c. 65/4

INC. TAX

A high performance contest diesel ideal for free flight and the smaller radio control model.

Built to Last a Modelling Lifetime

Engineered by DAVIES CHARLTON LTD.
Barnoldswick, via Colne, Lancs. Tel. 3310

Sole Trade Distributors: E. KEIL & CO. LTD.
195 Hackney Rd., E.2. Tel. Shoreditch 5336

WORLD WIDE MAIL ORDER Service

SELECTION FROM STOCK

" If it's available, Arthur Mullett is certain to have it." You can depend on that absolutely. As the largest specialist export house in the British model aircraft industry you will find, as more and more are doing, that you get better choice and better service by going to A. M. for it in the first case. SATISFACTION GUARANTEED. ALL STOCKS EXACTLY AS DESCRIBED AND SUPPLIED BY THE MANUFACTURERS—and naturally, I give the same service to buyers at home, too. ARTHUR MULLETT.

Note: Goods sent C.O.D. in Gt. Britain if 5/- deposit is sent with order

RADIO CONTROL EQUIPMENT

E.D. TRANSMITTERS AND RECEIVERS

	P.T.
Mk. II Transmitter and Aerial ...	112/0+21/0
Mk. II Receiver	184/0+24/6
Mk. II Miniature 3-valve Outfit complete	£14.17.6+£2.14.6
Mk. III Transmitter and Aerial ...	92/6+16/6
Mk. III Receiver complete ...	69/6+13/0
Mk. III Miniature Outfit, complete	£9.1.0+£1.14.0
Mk. IV Transmitter, Control Box and Aerial	160/0+30/0
Mk. IV Three Channel Receiver...	240/0+45/0
Mk. IV Tuned Reed, Three Channel Outfit, complete	£20.0.0+£3.15.0

COMPONENTS

	P.T.
Mk. I Clockwork Escapement ...	47/6+ 9/6
Mk. III Escapement	18/6+ 3/3
Compact Escapement	18/6+ 3/3
Polarised Relay	30/0
4-pin Plug and Socket	2/6
2-pin ditto (polarised)	2/3
2-pole Switch	3/0
On-off Single Pole Switch ...	3/0
On-off Double Pole Switch ...	3/9
Flight Control, absorption type Wavemeter	15/6
Potentiometer ... ... etc., etc.	5/6

A new way with Balsa

We now pack balsa strips ordered by post in stout tubes to correct length for transit. Each tube holds a good number of strips and makes useful storage container.

Price, per tube 1/– plus postage

"A CLEVER CONTROL-LINE HANDLE"

Is how this journal describes the AM-PULL on page 531, August issue. The AM-PULL gives extra flight control to C/L flyers.

5/6+11d. P. Tax

KIT SELECTION

Full ranges of the following always in stock. Order in confidence.

KEILKRAFT

Gliders

	P.T.
Topper, 40" ...	8/6+1/5
Soarer Minor, 48"	8/0+1/5
Soarer Major, 60"	11/6+1/11
Minimoa, 50" ...	7/0+1/2
Chief, 64"... ...	18/6+3/1

Free Flight Power

Southerner Mite, 32"	10/6+1/9
Slicker, 42" ...	17/6+2/11
Slicker, 50" ...	25/0+4/2
Southerner, 60" ...	40/0+6/8
Outlaw, 50" ...	22/6+3/9
Ladybird, 41" ...	18/6+3/1

Flying Scale Power

Piper Super Cruiser	18/6+3/1
Cessna 170, 36" ...	18/6+3/1
Luscombe, 40" ...	18/6+3/1

Control Line

	P.T.
Ranger, 24" ...	10/6+1/9
Pacer, 30" ...	15/0+2/6
Skystreak 40 ...	10/6+1/9
Stunt Queen ...	21/0+3/6

Rubber Powered

Ajax, 30"	6/0+1/0
Competitor, 32"	7/0+1/2
Gipsy, 40" (W) ...	10/6+1/9
Contestor, 45" (W)	17/6+2/11

Flying Scale

Series 3/0+ 6d.

SKYLEADA as advertised

VERON

Control-Line

Bee Bug	12/0+2/0
Sea Fury ...	23/6+3/11
Wyvern ...	23/6+3/11
Philibuster	23/6+3/11
Minibuster	15/0+2/6
Panther ...	25/0+4/2

Gliders

	P.T.
Verosonic, 46" ...	10/6+1/9
Vortex, 66" ...	18/6+3/1

Rubber Powered

Sentinel, 34" ...	10/6+1/9
Hi Climber, 38" ...	25/0+4/2

Free Flight Power

Sabre Ducted Fan	25/0+4/2
Streaker, 32" ...	19/9+3/3
Skyskooter, 48" ...	25/0+4/2
Cardinal, 37" ...	14/6+2/5
Lavochkin, 37" ...	25/0+4/2
Marlin Marine Cruiser... ...	62/6+10/3

PARAMOUNT

" Sunanvind ". Available again—this record smashing world-famed sailplane **10/6**

BARRY WHEELER

World-champion Eliminator kit **19/6**

ACCESSORIES • MATERIALS • DOPES • SERVICE

FOR THE WORLD'S BEST EXPORT SERVICE

- ★ All overseas orders, including ALL Forces Overseas are FREE of P.T.
- ★ All orders acknowledged by Air Mail and despatched on day of receipt
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- ★ As a Licensed Exporter, I supply direct and give correct rates of exchange on all foreign currency
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- ★ No inferior substitutes sent against customers' orders

MERCURY TIGER MOTH F/F SCALE

For ·46 to ·75 c.c. engines

This splendidly turned-out kit is amongst the finest ever produced by the "Mercury" people, and is one which never fails to delight all who build and fly it. FROM STOCK.

28/6 +4/9 P.T.

OTHER POPULAR MERCURY KITS

Full ranges stocked as available.

Magpie, 24" glider	4/–+ 8d.
Marauder, 65" Sailplane	14/6+2/9
Grebe	12/3+2/1
Martin	7/6+1/3
Mentor, 36" Rubber	9/–+1/6

ORDER YOUR MERCURY FROM A.M. FOR PROMPT DELIVERY!

MERCURY FUELS The carefully blended grades and consistent high quality of these famous fuels makes them the leading brand as ever. ALL 8 GRADES IN STOCK.

FROG (I.M.A.) KITS

Full ranges stocked as available.

Particularly recommended:—

	P.T.
Fortuna Glider, 48"	12/3+2/1
Vandiver C/L	12/–+2/0
Witch, 36" Rubber	12/4+2/1
Janus, 44" F/F Power	14/4+2/5
Zephyr, 33", F/F Power	10/3+1/9
Fox, 40", F/F Power	17/–+2/10
Firefly, 36", F/F Power	18/5+3/1

JETEX Full range of kits for Jetex by well-known makers as advertised. Also JETEX power units and accessories

ENGINES

AMCO 3·5 B.B. 92/-

A most beautifully engineered job with just that extra power and sweet running. A "big" job for "big" flyers. +17/3 P.T.

	P.T.
Allbon Dart ·5, Mk. II	54/0+10/2
Allbon Mk. II Javelin	55/0+10/4
Allbon Spitfire I c.c.	54/0+10/2
E.D. Baby ·46 c.c.	45/0+ 7/3
Mills 0·75 c.c.	50/0+ 8/0
Mills 0·75 c.c., with cut-out ...	55/0+9/10
E.D. Bee I c.c.	47/6+ 7/3
Mills 1·3 c.c.	75/0+12/6
E.D. 1·46 c.c.	52/6+ 4/6
E.D. Comp. 2 c.c.	57/6+ 4/3
E.D. 2·46 c.c. Racer	72/6+ 6/0
E.D. Hunter 3·46 c.c.	72/6+ 6/0
D.C. 350 3·5 c.c.	66/0+12/5
ETA 29 5 c.c. G.P.	119/6+22/5
D.C. 350 G.P.	66/0+12/5
Fuel Cut-off Valve	3/6+ 7d.

Also all Frog motors as available.

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

NORTH SOUTH EAST WEST

GREGORY'S

Service is the Best

MOTOR OUTFITS

		P.T.
Atom 35*	8/0	+ 1/4
50 Outfit	10/11	+ 1/10
50B Outfit with Augmenter Tube*	10/11	+ 1/10
200 Outfit	31/8	+ 5/3
Jetmaster Outfit	24/0	+ 4/0
Scorpion Outfit with Augmenter Tube*	39/0	+ 6/6

COMPONENTS

Jetmaster Augmenter Tube	5/0	+ 10d.
50B Augmenter Tube*	2/4	+ 5d.
Atom 35 Fuel*	1/5½	+ 3½d.
50 Fuel	1/8	+ 4d.
100 Red Spot Fuel	2/6	+ 5½d.
Scorpion Red Spot Fuel	4/3	+ 9d.
Wicks, Gauzes, Discs, etc.,	etc.	

TAILORED KITS

Voodoo (50)	6/4	+ 1/1
Hawker Hunter (J)	15/6	+ 2/7
Supermarine Swift* (J)	18/0	+ 3/0
Sparrow (35)*	3/3	+ 6d.
M7 with 50 Motor	8/7	+ 1/5
M7 Kit only	4/1	+ 8d.
Swift (50)	4/1	+ 8d.
Javelin (50)	4/1	+ 8d.

READY-TO-FLY MODELS

All complete with Motor(s), Fuel, Wicks, etc.

Helicopter (50's)	27/0	+ 4/6
Sharkie (50)	13/0	+ 2/2
Interceptor Fighter (50)*	27/0	+ 4/6
Wren (35)*	10/0	+ 1/8

STANDARD KITS

Jeticopter 50	5/9	+ 1/0
Jeticopter 100	8/8	+ 1/5
Flying Wing 50	5/9	+ 1/0
Hot Dog 50	3/6	+ 7d.
Contest 200	8/8	+ 1/5
Avro 707b 50	5/9	+ 1/0
Zyra Space Ship kit only (50)	5/9	+ 1/0
Vampire 50	5/9	+ 1/0
Vampire 100	8/8	+ 1/5
Meteor 50	8/8	+ 1/5
Saunders Roe Flying Boat	8/8	+ 1/5
All K.K. Scale Jet Kits as advertised	3/0	+ 6d.
K.K. Skyjet 50	3/9	+ 7½d.
K.K. Skyjet 100	5/6	+ 11d.
K.K. Skyjet 200	7/6	+ 1/3
Veron, Sea Hawk, Attacker, Sabre, Thunderjet, all for 50 unit	5/6	+ 11d.
Veron Fouca Cyclone (50)	5/0	+ 10d.
Skyleada (for 50) :—		
Avro Vulcan, Javelin, MiG. 15, Avro 707A	3/0	+ 6d.
Skyleada (for Jetmaster) :		
Comet and Vulcan	7/3½	+ 1/2½

Items marked thus * cannot be guaranteed as available on Publication Date.

FREE-FLIGHT KITS

		P.T.
Veron		
Streaker, 37"	19/9	+ 3/3
Cardinal, 35"	14/6	+ 2/5
Frog		
Cirrus, 48"	14/9	+ 2/3
Fox, 40"	12/0	+ 2/0
Firefly, 36"	14/3	+ 2/3
Janus, 44"	16/3	+ 1/8
Vixen, 36"	12/4	+ 2/1
Powavan, 48"	14/3	+ 2/3
Zephyr, 33"	8/7	+ 1/5
Tarquin	10/4	+ 1/8
Keil Kraft		
Skylon, 38"	10/3	+ 1/9
Slicker 42, 42"	17/6	+ 2/11
Outlaw, 50"	22/6	+ 3/9
Bandit, 44"	18/6	+ 3/1
Ladybird, 41"	18/6	+ 3/1
Pirate, 34"	12/0	+ 2/0
Cessna 170, 36"	18/6	+ 3/1
Luscombe Silvaire, 40"	18/6	+ 3/1
Piper Super Cruiser, 40"	18/6	+ 3/1
Southerner Mite, 32"	10/6	+ 1/9
Skyleada		
Point Five, 31"	7/10	+ 1/3
S.E.5A, 27"	14/4	+ 2/4½
Doughty		
Eliminator, 48"	19/6	

RADIO CONTROL COMPLETE OUTFITS

E.D. Mk. II, 3-valve unit. Complete transmitter and receiver only. 296/0 + 55/6 P.T.

E.D. Mk. IV Tuned Reed. 3 channels unit. Including control box. Complete 400/0 + 75/0 P.T.

E.D. Boomerang 200/0 + 35/9 P.T.

TRANSMITTERS

E.D. III and aerial 92/6 + 16/5 P.T.
E.D. II and aerial 112/0 + 18/6 P.T.
E.D. IV control box and aerial 160/0 + 30/0 P.T.
E.C.C. Transmitter Unit 50/0 + 9/4½ P.T.
E.C.C. 1061 70/0 + 13/2 P.T.

RECEIVERS

E.D. II 184/0 + 34/6 P.T.
E.D. IV 240/0 + 45/0 P.T.
E.C.C. 951A 70/0 + 13/2 P.T.
E.D. Boomerang Receiver Pack (incl. escapement) 109/6 + 17/2 P.T.
E.D. Boomerang Receiving Set only 89/0 + 13/5 P.T.

COMPONENTS

E.D. escapement, compact and normal type	18/6	+ 3/1 P.T.
E.D. polarized relay	30/0	
E.C.C. 5A relay	25/0	
E.D. Standard relay	22/6	
E.D. Reed Unit (high or low frequency, state which)	60/0	
Hivac Valve	15/0	+ 2/6 P.T.
Milliameter, 0-5 M/A	15/0	
E.D. IV Control Box	44/0	+ 8/3 P.T.

Venner Accumulators. Booklet available (free).

ENGINES

The supply position varies from day to day, and apart from E.D. and Allbon products it is impossible to forecast stocks at publication date

		P.T.
Amco B.B. 3·5	92/0	+ 17/3
Allbon Dart, 1·5 c.c. II	54/0	+ 10/2
Allbon Spitfire	54/0	+ 10/2
Allbon Javelin	55/0	+ 10/2
D.C. 350	66/0	+ 12/5
E.D. ·46 Hornet	45/0	+ 7/3
E.D. Bee I c.c.	47/6	+ 7/2
E.D. 2·46 Racer	72/6	+ 5/11
E.D. Mk. IV 3·46 c.c. Hunter	72/6	+ 5/11
E.D. 1·46	52/6	+ 4/6
E.D. 2·46 Watercooled	98/5	+ 10/9
E.D. 3·46 Watercooled	98/6	+ 10/9
Frog 50, ·5 c.c.	36/9	+ 6/2
Frog 150 Diesel	40/6	+ 6/9
Frog 500 Red Glow	61/8	+ 10/0
Frog 500 Petrol	69/9	+ 11/8
Mills P.75	50/0	+ 8/4
Mills S.75	55/0	+ 9/2
Mills 1·3	75/0	+ 12/6
Elfin ·5 c.c.	54/0	+ 10/2
Elfin 1·49 c.c.	47/6	+ 8/8
Elfin 2·49 c.c.	56/0	+ 10/0
E.D. Miles Special 5 c.c.	140/0	+ 26/3
E.D. Miles Special 5 c.c. Watercooled	160/0	+ 30/0

ORDERING INSTRUCTIONS

HOME CUSTOMERS. Cash with order or C.O.D.

POSTAL INSTRUCTIONS, All orders under 10/– add 9d., 25/– add 1/1, 40/– add 1/6, over 40/– post free. For overseas according to postal service requested and destination. Postal information concerning dispatch to any country given on request.

Cash with order or C.O.D. See previous issues for list of countries. India now included.

NOTE. Will all customers requiring information please include a S.A.E. or if overseas International Reply Coupons.

Customers resident outside United Kingdom, including H.M. Forces, buy free of Purchase Tax.

Correct rates of exchange given.

FORCES CLUBS. Recognised Clubs can buy on a credit account. Details on request.

CALLING HONG-KONG, INDIA, NIGERIA AND CZECHOSLOVAKIA

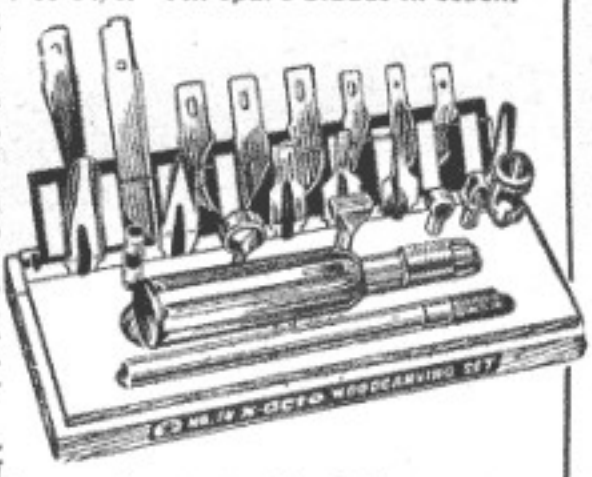
Will customers in these countries please note that C.O.D. orders can now be accepted.

GLIDER WINCH

Inexpensive and strongly constructed. Wooden pistol grip fitted with free running metal drum and line guide. Drum measures 5" diameter, ¾" wide, having ample line capacity. Finished in a glossy red and black ... 5/9 + 1/0 P.T.

X-ACTO TOOLS. From 3/0 to 84/0. All spare blades in stock.

No. 86 Tool Chest, **84/0**; No. 82 Tool Chest, **30/0**; No. 78 Wood Carving Set, **37/6**; No. 77 Wood Carving Set, **23/0**; No. 1 Knife (with No. 11 blade), **3/0**; No. 2 Knife (with No. 22 blade), **3/6**; No 5 Knife (with No. 19 blade), **6/6**; No. 51 Knife Set (No. 1 knife and 6 blades), **5/6**; No. 52 Knife Set (No. 2 knife and 6 blades), **6/9**; No. 62 Knife Set (No. 1 and 2 knives with 12 assorted blades), **12/3**; No. 50 Plane, **5/6**; No. 55 Spokeshave, **3/6**; No. 58 Stripper, **5/0**. See Xacto advert. for illustrations.



An X-ACTO illustrated leaflet will be sent on receipt of S.A.E. Contains full range, prices and contents of tool chests, etc.

P. E. GREGORY & SON

(ALTON) LTD., ALTON *TEL. 3376* HANTS

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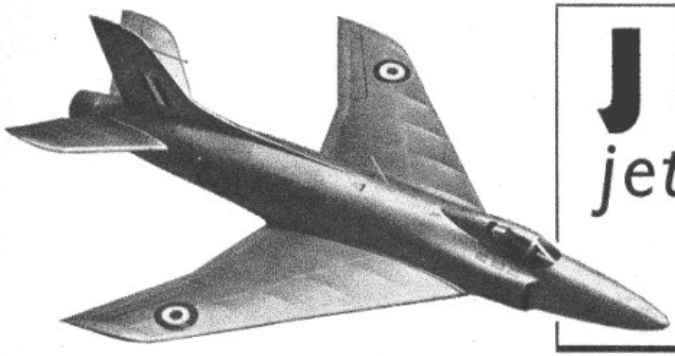
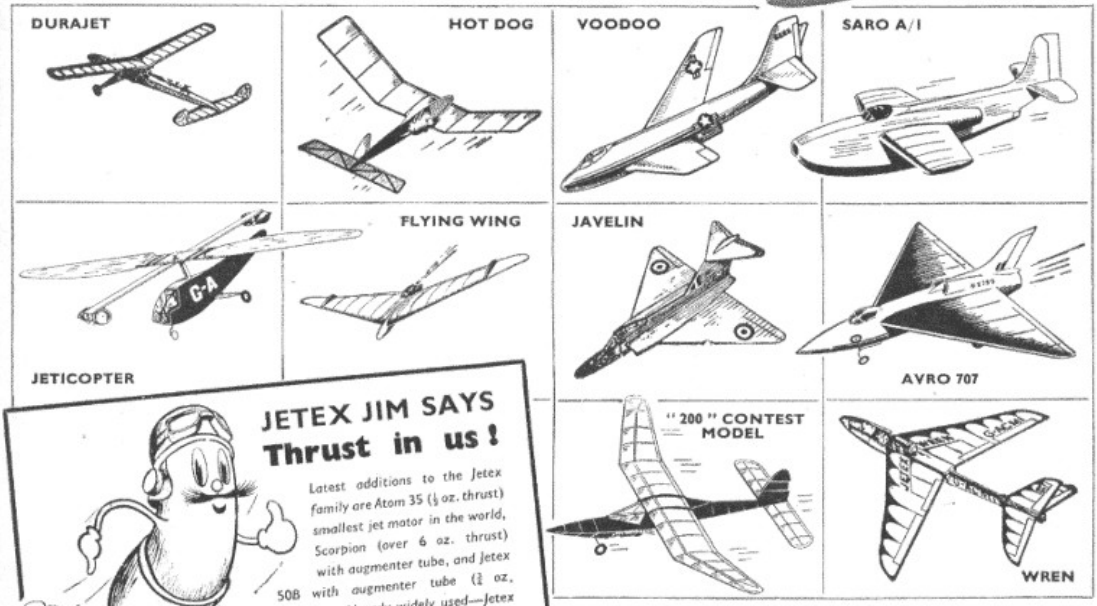


JETEX
jet propelled
KITS

The most beautifully designed models in the air



JETEX JIM SAYS
Thrust in us!

Latest additions to the Jetex family are Atom 35 (⅛ oz. thrust) smallest jet motor in the world, Scorpion (over 6 oz. thrust) with augmenter tube, and Jetex 50B with augmenter tube (¾ oz. thrust). Already widely used—Jetex 50 (½ oz. thrust). Jetex 100 (1 oz thrust). Jetex 200 (2 oz. thrust). Jetex 350 (3½ to 4 oz. thrust) and Jet Master with augmenter tube (4½–5 oz. thrust).

STOP PRESS:
All Britain Rally postponed to September 20th. More time to enter Jetex Ratio-Duration Contest and win £20 and trophy. Contest at Radlett Aerodrome, Herts —sponsored by St. Albans Model Aircraft Club. Write for entry form.

The Jetex range of jet-propelled kits is the greatest anywhere, with the accent on quality; quality of design, quality of materials and flyability. Ask your model shop for leaflets describing complete range of models and motors.

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

JETEX JET MOTORS OUTDATE EVERY OTHER FORM OF MODEL PROPULSION

ESTABLISHED 1935

AERO MODELLER

INCORPORATING "THE MODEL AEROPLANE CONSTRUCTOR"

VOLUME XVIII
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"Covers the World of Aeromodelling"

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Contents

Editorial and Advertisement Offices: 38, CLARENDON ROAD, WATFORD, HERTS. Tel.: 5445

OUR SPECIAL SUPPLEMENT

AS ardent aeromodellers, we often chafe under the strain of not being able to inform our readers of events immediately they take place and in this direction are sometimes envious of our contemporaries on the daily news-sheets. Not for them is the planning and writing for a date that seems so far ahead when hitting the typewriter that one never seems sure of which month in the year we live! However, we gladly suffer the penalties of producing a monthly magazine, knowing that even if we published the AEROMODELLER every week, such is the cussedness of things, events would still occur which would date the news.

However, we feel proud of our current efforts in bringing news of the double World Championship Meeting at Cranfield in what must be record time. Normal publication date did not allow of holding back the magazine in a hectic rush to print our usual fully illustrated report, and the answer is therefore the Special International Supplement that accompanies each copy of this edition, giving as it does brief details of the events as a whole.

The Supplement—*a genuine extra service* to our readers—was produced by a concerted effort on the part of our editorial staff, and by the co-operation of our blockmakers and printers, the work of having this extra special edition on sale by the usual publication date of the 15th of the month has been made possible.

We trust that this supplement will whet your appetites for the fully detailed and illustrated description of this vitally important series of contests to appear in our October issue, due at your suppliers on the 15th September. Make certain of your copy by ordering from your local shop immediately, for the extra demand from our overseas readership for such "International" issues will almost certainly create a slight shortage on the home market.

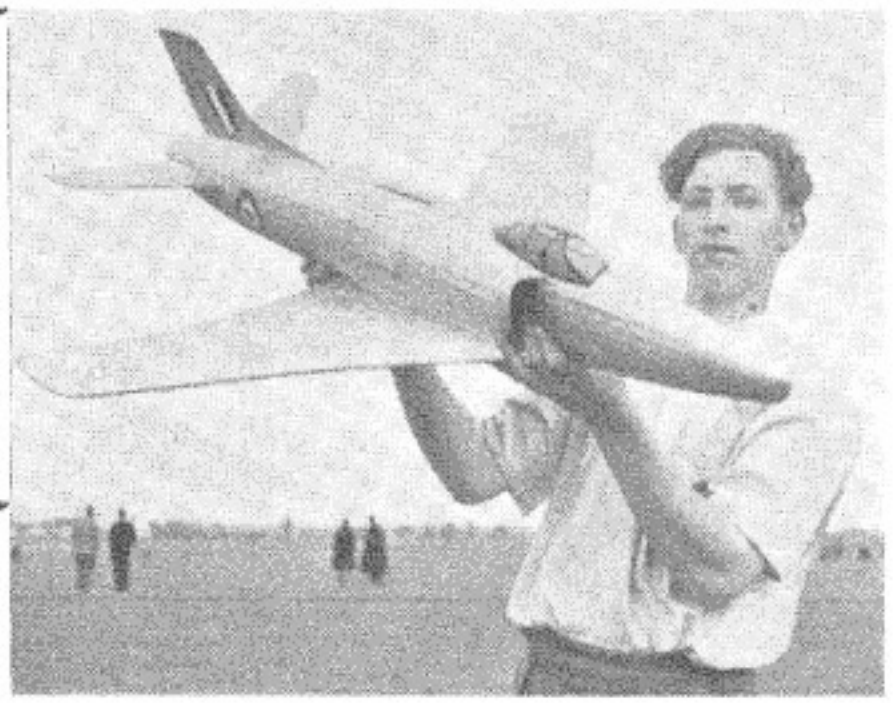
And so, from the contemplation of a small bouquet to come our way, we turn to what can only be termed, in phrases of comparison, a whopping great bunch of flowers! The reason? Nothing less than the really heartening response of readers to our PAAload Design Competition, and even more so the reports of highly successful flying with the "PAAgeboy" design given away free with our July issue. Many models to the Vic Smeed pattern have taken the air, and we have yet to receive one adverse comment on this pleasing, yet easy to build model.

Don't forget your own entry to this worthwhile type of event, keeping in mind the actual flying contest(s) envisaged for next year. Closing date is the 30th September, so if you have still to get down to the drawing board, don't leave it too long and thus miss your chance of one of the magnificent prizes to be won.

Cover Picture . . . .

Colonel Bowden (with cap) and Colonel Binnie (holding model) listen attentively as Vic Smeed explains a point on "Pushy-Cat", his 1953 Bowden Trophy winner. Rumour has it that at this moment he was informing the Colonels that the slots were where you put the pennies in

HEARD AT THE HANGAR DOORS



Sign of progress is the increasing number of ducted fan models. B. Grimston of Bromley flew his Swift at the N.H. Gala, using a 5" dia. fan based on the Newbold system. Span 56", weight 2 lbs. 2 ozs., engine, E.D. 2·46.

World Record Pending

It has been left to a little known corner of England to produce the first real British attempt on a world record with a radio-controlled model, and we are pleased to announce the results of Salcombe M.A.C. member H. L. O'Heffernan's hard work in recent months, which will probably bring Great Britain more into the picture in the international records list.

Flying in a 7-10 m.p.h. wind from Bantham, near Kingsbridge, Devon, Mr. O'Heffernan put his Veron "Skyskooter" into the air on June 24th, 1953, and brought it back to earth only 64 feet away from the transmitter 60 minutes and 35 seconds later, thus handsomely beating the record held by Dr. Walter Good of America. The machine carried 3½ ozs. of fuel, and was powered by a Mills ·75 c.c. diesel engine. A photo and details are in Radio Control notes on p. 558.

New Look for Britfix

A bright display pack containing 36 individually boxed tubes of the popular Britfix cement will soon be gracing model shop counters. Three different sizes of the new package will be available for the ½ oz., 1 oz. and 2½ oz. tubes, and of course, there will be no price increase for the extra service. To the modeller this represents better tube protection . . . no more pools of sticky mass in the pocket on the way home from the model shop, should you endeavour to sit rather awkwardly on your purchases . . . (we know, it happens to us!). To the dealer, it forms a new and neat counter display to expand sales of a popular line and introduces Britfix as an all-purpose adhesive for a multitude ofhousehold repairs.

Yugoslavian Trophies

What happened to the magnificent filigree silver Yugoslavian Power Cup in 1952? General expectation was that it would go from individual winner Jacques Morisset of '51, to Switzerland as leading team in 1952 International Power. The French, however, reserved the right to run a separate event; but support was not forthcoming. Result . . . no 1952 contest. Organised again for 17th May this year, the trophy is now held by Georges Lippens of Belgium . . . a fact that will be news to all but the few who actually competed.

So the original Aeronautical Union of Yugoslavia Cup remains an individual contest: but to meet the F.A.I. requirements on the matter, Yugoslavia has commendably awarded an additional trophy, known as the Franjo Kluz Cup, and this will fill the bill as a *Team* award for World Championship Power. Top individual at Cranfield in Power will still get the F.N.A. (F.O.N.) Trophy (not the Wakefield team award but another and different item of silverware). All of which is very confusing, especially when our transatlantic friends revive the missing King Peter Cup in clerical error, and substitute this for the F.N.A. Power in their contest calendars!

Description of an Aeromodeller!

The following extract from the "By-Pass News", official news-sheet of the By-Pass (Sutton) M.A.C., struck us as extremely apt, and is passed to our readers for their amusement.

"I sometimes wonder what it is about modelling that grips me, more particularly so when I come to realise that the more successful my models are, the more I realise how far short of perfection they fall. It is, I think, partly the struggle to achieve what seems nearly impossible, in my case three maximums—or for the power man the 20–1 ratio with a model that will only do 16–1—or the three-minute R.T.P. rubber model.

"And then there is the business of flying. Aeromodelling is a really splendid outdoor activity. It makes one keenly appreciative of the weather!

And as for the opportunities for travel which it offers, well, without it I should never have visited Lasham or Gosport, Langley or Radlett, Fairlop or Chobham, to say nothing of the innumerable small villages surrounding these places—and of course every ditch and hedge within two miles of the Grand Stand at our native Epsom.

"And then, the other modellers. They are strange birds as a whole, but human, and in the main spiced with just that special touch of insanity which makes life interesting. Who else would watch the rain pour down for four hours in that cafe in Langley Vale? Or stay on Epsom Downs so late at night that they had to light a fire to find their possessions? Or go out in the most glacial conditions because it is 'dead calm'? Or have such a marked dislike of dogs, cows, sheep, horses, small children, well-meaning adults, farmers, trees, houses, telephone wires, fences and expanses of water of all kinds—and even a refreshing breeze."

Truly has Editor J. J. Wheatley been bitten by the balsa bug!

Delivery not effected

Our Plans Service Department performs wonders in deciphering the various handwritings of customers from all parts of the world, but there are times when we are completely beaten.

The following seven customers are probably saying harsh things about our service, for their plans have been returned to us by the G.P.O., who are unable to effect delivery. Will they please contact us at once, giving absolutely full details of their present postal address, in order that we may regain our prestige with them!

John Portelli. 49, Carmel Street, Tarxien. (Order 5 c.c. Engine print.)

J. Armstrong. 21, New Chester Road, Grange Hill, Wirral. ("Sugarfoot".)

E. C. D. Hills. Shaftesbury House, Bisley, Nr. Woking. (De Havilland 108.)

Joe L. Brun. 349, Norwood Road, West Norwood, S.E.27. ("Admiral's Barge".)

Keith Moores. 39, Seymore Park Road, Marlow, Bucks. ("Jabberwocky".)

Robert S. Logan. C/o Porter Staff, Grey Public Hospital, Greymouth, Westland, New Zealand. (Trawler.)

22559610 L/Cpl. Herridge. Surgical Ward 3, 33rd General Hospital, B.A.P.O. No. 1, Hong-Kong. ("Tiger Moth".)

Time Check for Timekeepers

Experience at one or two meetings in recent months emphasises the current deplorable lack of know-how amongst a large proportion of those who undertake (albeit often under duress) the vitally important task of timekeeping.

It should be borne in mind that anyone carrying out such duties has a great obligation to those whose models are being timed, and it is galling to witness the varying degrees of concentration on the part of some timers according to whose model is under the clock. No less frustrating is the case where a blunt refusal is met from certain clubs when asked for volunteers—yet a whole bevy of members, complete with stopwatches, appears out of thin air when one of their members' models is in the air, and the *official* timekeepers are bombarded with advice and assurances that "it's well in sight".

It is high time also that timekeepers were re-informed that flights are now timed TO THE NEAREST SECOND, and where the mean reading of two watches gives a ·5 reading, the flier is given the benefit of the next highest second.

In our opinion we are rapidly nearing the time when the duty of timekeeper is made an office commensurate with other official positions, and we look forward to the day when the S.M.A.E. can call on a panel of timekeepers of proven ability and integrity for the more important centralised meetings.

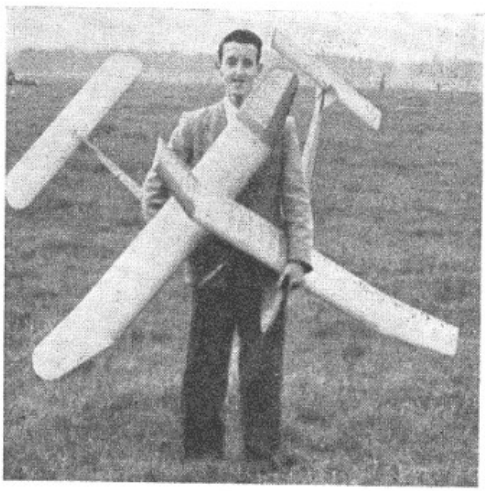
More Top Honours

Mr. R. C. Pollard of the Tynemouth M.A.C. is the ninth Britisher to gain his International Merit Certificate, and incidentally, the second member of that club to qualify for the title of Internationally recognised all-rounder. In the photo below he is seen with his qualifying A.P.S. "Jaded Maid" and O/D Nordic.

Flights were completed in the remarkably short time of three months, and some in what one would expect to be difficult conditions, as the following dates and times show :—

Power : 5 : 12 4 : 56 4 : 18 on Feb. 14th, 1953.
Rubber : 4 : 12 3 : 55 3 : 46 on March 1st, 1953.
Glider : 4 : 59 3 : 28 3 : 31 on May 18th, 1953.

We learn from other sources that Belgium has proposed dropping the "with the same model" rule, it being considered of equal merit to make the qualifying flights with different models, providing the flights are made on the same day.



A 51" SPAN CLASS 'B' TEAM RACER

BLUEBOTTLE

DESIGNED BY

C.S.WEST.

4/6

THE AEROMODELLER PLANS SERVICE

38, CLARENDON RD. WATFORD. HERTS.

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

FRONT VIEW OF METAL COWL NOT TO SCALE

WOOD SCREWS

FROG SOO SHOWN

1/2" X 1/2" HARDWOOD BEARERS

20 SWG ALUM. COWL

ALTERNATIVE NOSE FOR BEAM MOUNT. SIDE VIEW PLAN VIEW

HOLE FOR NEEDLE

TOP COWL REMOVED FOR CLARITY

1/8" PLY

SKETCH OF BEAM MOUNT

USE 9" X 6" WOODEN PROP

HOLES FOR COOLING CRANKCASE EARTH LEAD

CYCLE SPOKE PEDAL

REMOVABLE PORTION

COMMERCIAL CANOPY

NOTE DO NOT CEMENT REAR EDGE OF CANOPY

FUSELAGE BUILT FROM 4 LAMINATIONS OF 1/2" SHT

HOLLOW OUT TO DOTTED LINE

FELT PAD

3/4" X 1" X 2-1/2" TANK

POSITION OF STARTING SOCKETS (STARBD SIDE)

JOINT BETWEEN UPPER & LOWER PORTIONS

1-3/4" DIA SPINNER

16 SWG TANK SUPPORTS

FROG SOO SHOWN

BLOCKS FIRMLY GLUED

BALANCE MODEL ON L.E.

HOLLOW OUT TO DOTTED LINE

FILL WITH 1/16" PLY

16 S.W.G. WIRE

3-1/2"

9 1/8"

SPRAY BAR ASSEMBLY

PRESS STUD

PLUG LEAD

12 SWG U/CART

CUT WITH JUNIOR HACKSAW REMOVE SPRING RATCHET

SPECIAL NEEDLE (16 S.W.G. GRIND TAPER AS ON OLD NEEDLE OR CONSULT LATHE OWNER

TWIN FIBRE WASHERS

EXTRA SLEEVE

2" DIA. WHEELS

1/8" PLY

3-1/2"

1-1/8"

UNDERCART ASSEMBLY READY FOR INSERTION INTO FUSELAGE & SUBSEQUENT BENDING

6 B.A. BOLTS

16 S.W.G. PUSH ROD

BRASS TUBE

BELLCRANK

FLATTEN & DRILL END

JOINT BETWEEN LAMINATIONS

CUT AWAY VIEW OF FUEL PIPE INSTALLATION

NUT SOLDERED TO LARGE WASHER

1/4" SQ COMPRESSION MEMBER

SILK OR NYLON

1/16" SHEET

TUBING

FILE TO POINT

BRASS TUBE, FLATTENED AT END & DRILLED

16 SWG

ELEVATOR HORN 20 SWG

1/8" PLY

1/8" PLY

1/8" PLY

1/8" SHEET

1/8" PLY

EPOXY SOLDER

SECTION AT CENTRE OF WING

BRASS TUBE

BELLCRANK

LOOPS ON LEAD OUTS BRASS TUBE IS SQUEEZED WITH PLIERS & COVERED WITH SOLDER

SECTION X-X NOTE CONST'N

ELEVATOR POST SIDE DATA

SLIT SILK HERE

SET TAILPLANE TO CORRECT DIHEDRAL & GLUE SILK STRIP ALONG JOINT

CELLULOID TUBES — LEAD OUT WIRES FROM HEAVY LAYSTRATE IN CHANNELS UNDER WING COVERED WITH INLAID STRIPS

6 B.A. BOLT

18 S.W.G. DURAL BELLCRANK

1/8" PLY PLATE

RECESS FOR BELLCRANK

SECTION A-A

SHEET LEAD LET INTO STARBOARD TIP & COVERED WITH 1/16" SHEET

BUILD WING FROM 5/8" SHEET MED JOIN ON THIS LINE IF USING 3" WIDE STOCK TAPER TO 1/4" AT TIP NO DIHEDRAL

FUEL TUBING SAFETY SLEEVE

LEAD OUT ENDS 20 S.W.G.

PUBLISHED AEROMODELLER SEPTEMBER 1958 CL 526

★ Winner of the Nationals class 'B' team races

BLUEBOTTLE

by CYRIL WEST

Aged 33 . . . designer of air targets for aero firm . . . secretary Godalming & D.M.F.C. . . . married and has three daughters . . . currently investigating moulded fuselage construction . . . other interests, music and figure skating.

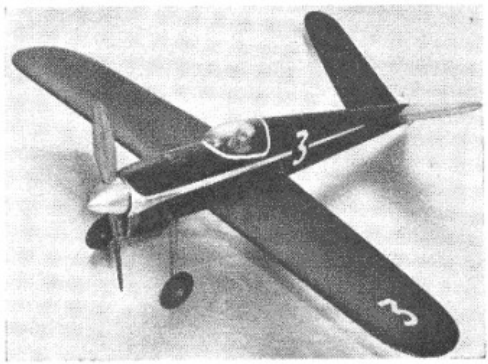
DISTINCTIVE semi-scale lines and first class performance are two of the points which have made " Bluebottle " a centre of interest wherever it has been flown. Many knowledgeable modellers have been surprised at finding only the moderately powered Frog 500 under the cowl, after seeing it perform.

Although the speed is a little below that of most " racing 29 " powered machines, it is in the order of 85 m.p.h. and about twice as many laps per tank are covered due to lower fuel consumption.

Good range and reliability enabled it to win the 1952 West Essex Rally Team Race against faster machines ; the model in this instance was built and flown by a club colleague whilst the original job proved itself with recent success in the British Nationals when it won the Godalming Trophy. Ten miles at an average of 63 m.p.h. is typical of its performance.

Constructionally, " Bluebottle " could hardly be more simple, it is an " all-sheet " model.

Strong emphasis is laid on the importance of using glue rather than balsa cement, particularly where balsa is being united with hardwood. Half inch sheet is used for the laminations of the fuselage and it is surprising how little need be used if the laminations are planned out economically before applying the balsa knife. By the same means much carving and hollowing can be saved, with benefits both in expense and building time.



For external shaping, only spot glue the centre seam and prise apart afterwards for hollowing out the interior. Then reglue the lower halves together and fit the internal details, taking care with the undercarriage.

Shape the wing from $\frac{3}{8}$ in. sheet balsa, fit the control plate and then the lead out wires, seeing that the latter are carefully covered with inlaid strips with a drag free smooth surface. Then make up the tail unit to the correct dihedral and fit the elevator horn securely. Now glue the wing into true position in the fuselage slot, align and fit tail unit with control rod connected. Finally, add fuselage portions and sand all joints smooth. Do not skimp the fixing of the tailskid as this comes in for considerable hard wear.

Radial engine installation will be eased if a small slice is sawn carefully from the exhaust stack and longer crankcase bolts are used. Alternative beam mounting detail is shown on plan. Tank is made up from tin plate according to normal procedure ; note the shape and location as this is important for consistent engine speed throughout flight.

Finish of the original model was sanding sealer and Oxford blue dope with white trimmings, then fuel proofer all over.

A small boost socket should be fitted on the starboard side with one lead to a crankcase bolt and the other down under the engine bulkhead and through to the plug. Find the correct size of female press stud to fit a " K.L.G. Miniglo " plus top and solder it to the lead. Best results come with 9 in. × 8 in. medium width blade wooden prop.

For three years a regular finalist in team races, Bluebottle is still one of the smartest racers seen in the flying circles.

International Power Classes

THE F.A.I. recognises four World Championship events—for Wakefields, the F.A.I. Championship Glider Class (which is the cumbersome official alternative to A/2 or Nordic class), Power and Control Line Speed. In power, all the European countries, including Britain, rate motor sizes in terms of cubic centimetres (c.c.) displacement. American motors are rated in cubic inches displacement. It is easy enough to convert the two, but . . .

This " but " is the great stumbling block. Quite logically the F.A.I. decided that a relatively small model would be best for an International class to ease, if nothing else, the difficulty of transportation. So, again logically by European standards, they adopted a maximum motor size of 2·5 c.c. Unfortunately this particular size (·153 cu. in.) falls midway between ·099 and ·199, or the nearest American standards. With the exception of the O.K. " Cub " ·146 recently introduced, this means that American modellers must either build smaller models to utilise their maximum " stock " size (·099), or the American manufacturers are to be expected to produce an in-between size of motor with no particular prospect of a popular demand.

To summarise a lot of thought and discussion with other modellers on this subject, the only logical conclusion is that the 2·5 c.c. standard size is an unfortunate choice. The *best* answer to a World Championship Power specification is one which produces the best compromise between c.c. and cu. in. stock sizes. Comparing the respective scales in Fig. 1, the two standards never quite meet—the nearest being the ·29 cu. in. and 5 c.c. limits. Popular demand, however, is for a smaller engine—so the next best bets are ·199 cu. in. and 3·5 c.c. ; and ·099 and 1·5 c.c. Either *could* make an acceptable International standard.

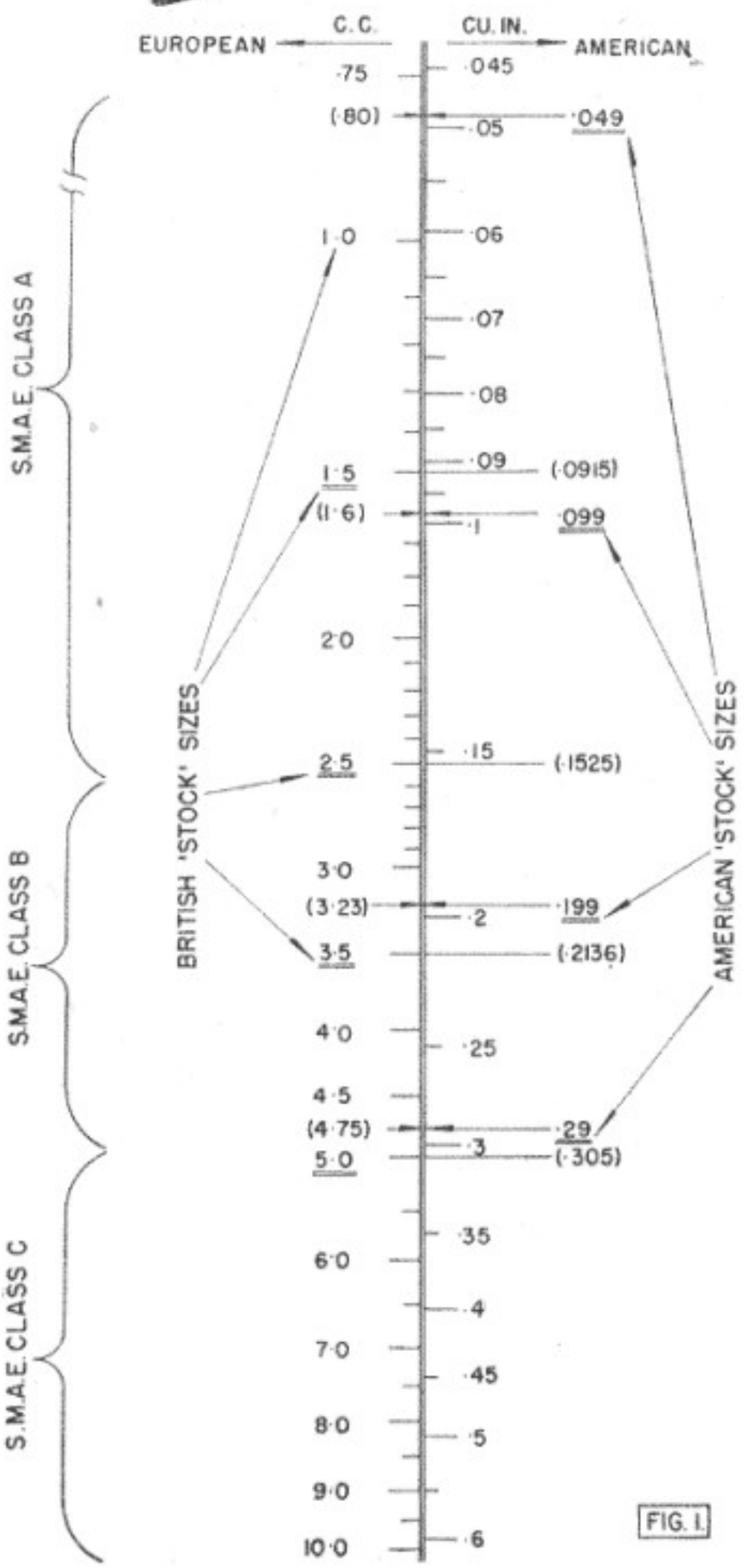


FIG. 1.

The complete F.A.I. specification for power models calls for certain other requirements :—

(i) Minimum total weight of model must be 200 grammes per c.c. engine displacement (*i.e.*, 7·06 ozs. per c.c. or 116 ozs. per cu. in.).

(ii) Minimum total surface loading (*i.e.*, wing plus tailplane area divided by total weight) must be 12 grammes per sq. decimetre (2·73 ozs. per 100 sq. ins.).

(iii) Fuselage cross section (minimum) to be total area divided by 80.

Requirement (iii) we can afford to ignore. The cross section rule could well be done away with. It makes one more item to check. The " limit " still produces a very thin fuselage. Let designers decide how slim they want to make the fuselage—and take the consequences of it whipping or warping in flight.

Requirements (i) and (ii), however, enable us to determine very readily a nominal size of model required for the specification, by calculating the minimum weight required for a given engine, and from that calculating the total area required to produce the required minimum loading.

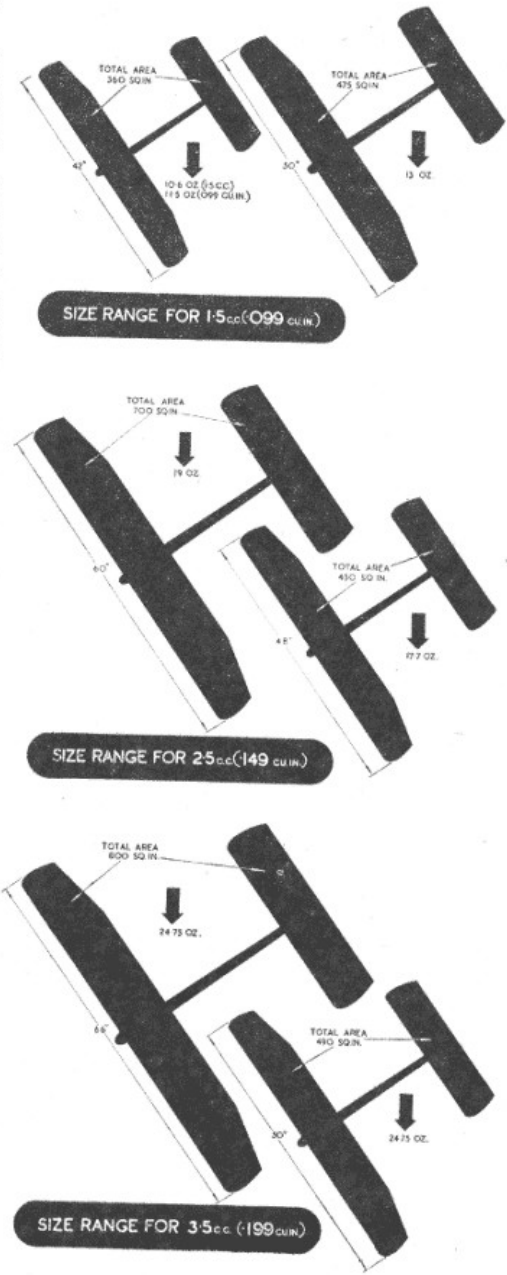
You can build a *larger* model for the same size of engine for improved aerodynamic efficiency and a better glide, but it will weigh more and, with extra drag from the larger wing, will sacrifice climb. Similarly, a *smaller* model can be produced for a better climb, with a slight sacrifice in glide performance, since the same minimum total weight must be observed, and thus the wing loading is increased. We can have, therefore, quite a range of model sizes suitable for any given engine size, all within the F.A.I. formula—see Fig. 2.

On the whole, the model produced around the ·099 engine seems a little small for a world power standard. The 3·5 c.c. size gives more scope for design. If the larger engine size *were* adopted as the maximum limit, there is nothing to stop modellers building smaller models (for smaller engines) if they wished. The main question is, do we want to tie up the world power specification quite tightly (like the Wakefield and Nordic) ? If yes, then the ·099 (1·6 c.c.) maximum motor size is the answer. If we want to leave more scope for design, then the 3·5 c.c. maximum is the answer. Then we should have models with 1·5 c.c. ·099, 2·5 c.c. ·199, and 3·5 c.c. all competing against one another, with a wide range of model sizes.

No one person is going to come up with the right answer to that question. It does not follow that everyone would use ·199 or 3·5 c.c. engines with a 3·5 c.c. maximum limit. With the present 2·5 c.c. maximum limit, a 1·5 c.c. model won the 1952 contest. The 3·5 c.c. maximum is more *attractive* in that it leaves the field wide open for development and research into what is the optimum model size. The smaller class (1·6 c.c. or ·099 cu. in. maximum) is more in keeping with the popular trend to favour small capacity engines. Note, however, that the suggested limit in this case is **1·6 c.c.** (not 1·5 c.c, which would rule out the ·099's). Any concession between the standards (the stock 1·5 c.c. class giving away ·1 c.c. in this case) should, initially, be in favour of the American stock sizes, rather than the other way round. The 1·5 and 3·5 c.c. sizes are both " odd ", even if they are standard, for they are not the logical half way limit between other standard European stock sizes. It would be more than easy for the 1·5 c.c. stock size to " grow " to 1·6 c.c. but not for the ·099's to shrink to ·0976 cu in. without making all the ·099's produced to date obsolete.

SIZE RANGES FOR THE SUGGESTED CLASSES

FIG. 2



A further reason is that, having learnt so much of power models from America, we might offer a gesture in repayment. Particularly if the 1·6 c.c. (·099 cu. in.) standard were adopted, American modellers competing in world events would find the diesel out-performing the glow motor of the same capacity every time. Currently the first class contest diesel could probably afford to give away something like a quarter to one third of its capacity to a glow motor—a good 1·25 c.c. or even 1 c.c. diesel, in other words, comparing pretty favourably as regards power developed in comparison with a ·099 glow motor.

However, the main point is that the present F.A.I. specification for the World Power Championship is not entirely satisfactory. It cannot be altered this year, but it can for 1954, if popular opinion demanded. But to do this needs definite action, and quick action, to draft an acceptable set of new standards to put before the F.A.I. backed by the necessary authorities. How about *your* views on the subject ?

We have designed the following questionnaire to cover the main points of the World Championship specification as concisely as possible. Send us your questionnaire, filled in, by August 31st, 1953, and we will undertake to analyse the results, and forward them to the S.M.A.E. as representative of our readers' feelings towards Power Championship standards. We are sure the Council will consider such data with interest.

Since the F.A.I. standards are already well established in Europe—and are the rules behind the present World Championship events—only the minimum alterations should be proposed to keep all parties happy. Thus, in fact, number 1 *is the major question to be answered and the one point on which a change might appear necessary. The others could well remain as they are—but we shall be interested to learn the popular opinion of the people who really matter, those who are most interested in flying in these events.*

QUESTIONNAIRE

1. Which maximum motor size do you prefer ?

1·6 c.c. (·099) ☐ 2·5 c.c. (·153) ☐ 3·5 c.c. (·214) ☐

2. Do you agree with the present power loading ?

7·06 oz./c.c. ☐

Should be **greater** How much ? ☐ oz./c.c.

Should be **less** How much ? ☐ oz./c.c.

3. Do you agree with the present wing loading ?

2·73 oz./100 sq. ins. ☐

Should be **greater** How much ? ☐ oz./100 sq. ins.

Should be **less** How much ? ☐ oz./100 sq. ins.

4. Do you agree with the present fuselage formula ?

$\frac{\text{Total area}}{80}$ ☐

Fixed minimum How much ? ☐ sq. ins.

No restriction ☐

5. Do you agree with the present motor run allowed ?

20 seconds ☐

More How much ? ☐ secs.

Less How much ? ☐ secs.

Name..... Club.....

Address.....

☐ indicates present F.A.I. standards.

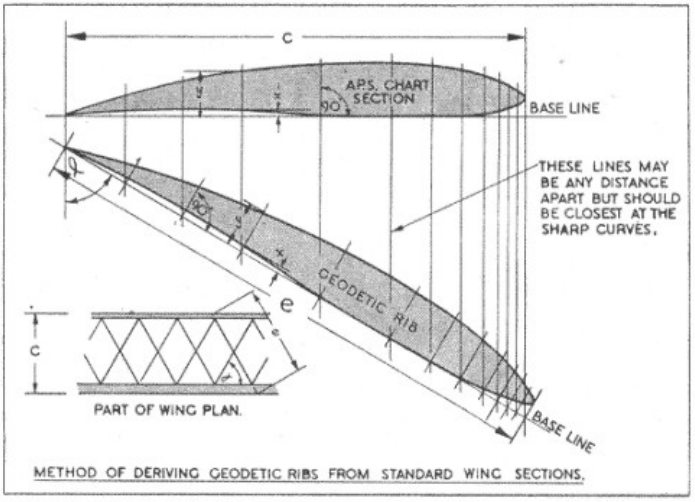
If you prefer not to spoil your "Aeromodeller," copy this form on to a plain sheet of paper.

George Woolls describes . . .

How to develop Geodetic Ribs

IN the many articles on geodetic construction little has been mentioned regarding the development of the modified rib section required. What has been written may lead many to believe that the geodetic section must always be plotted, using the section ordinates on an extended grid, and that airfoil section charts are of no use when a geodetic wing is required.

The method shown here uses standard A.P.S. section charts, and enables accurate geodetic wing ribs to be drawn quickly with very little draughting skill. A straight edged ruler, set square and a French Curve, are all that is required.



METHOD OF DERIVING GEODETIC RIBS FROM STANDARD WING SECTIONS.

(1) Pin or cellotape a sheet of plain paper just below the chosen section outline on the A.P.S. sheet. This should have the required *true* chord.

(2) Draw a base line along the bottom of the section.

(3) Draw vertical lines across the paper at the leading and trailing edge.

(4) Draw a diagonal line equal in length to the required diagonal rib. This is the Geodetic Rib Base Line.

(5) Draw a series of vertical lines across the " chart section " and down to the Geodetic Rib Base Line. These may be any distance apart, but should be more closely spaced where the rib curvature is sharpest.

(6) Draw a new set of " verticals " to the diagonal Geodetic Rib Base Line.

(7) Now with the aid of a piece of scrap paper measure the heights of upper and lower cambers off the " chart section " and mark off on the appropriate geodetic rib verticals.

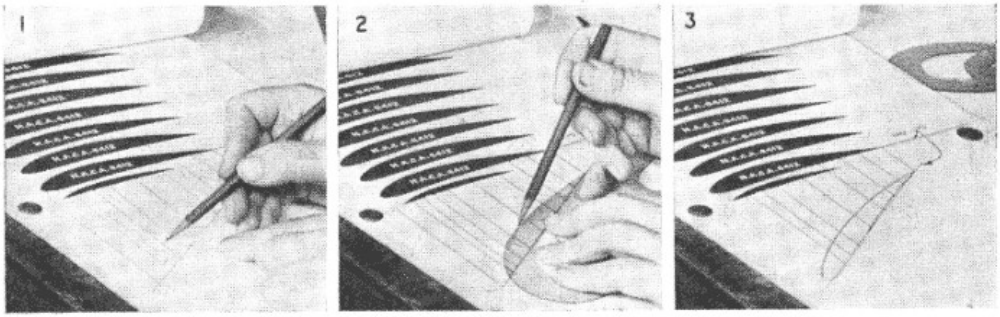
(8) Join up the new points with a French Curve.

After a little practice the whole process may be carried out in about five minutes, and the result will probably be much more accurate than that produced by plotting from a table of ordinates.

There is another use for this technique. Standard sections may be thinned or thickened as desired. To thin, work off a chart section having the required final thickness, and make the diagonal equal to the required chord.

To thicken, make the " chart section " of required final thickness the diagonal one, and work backwards to a horizontal line of required length.

Stage 1. Transferring rib thickness using scrap paper. Stage 2. Joining ordinates with French Curve. Stage 3. Final section.



A 16 year old schoolboy, W. A. Edwards is a member of the Barnstaple D.M.A.C. and lists among his interests C/L Stunt and Team Racing, and scale or contest F/F. Also keen on swimming, cycling and shooting.

HOT CANARY

A 34 in. power model of simple construction & proved flying ability for motors up to ·87 c.c.

BY W. A. EDWARDS

WHEN a model flies consistently and well in all weathers for nearly eighteen months, and still remains in flying trim, it obviously "has" something. Such a job is "Hot Canary"; the somewhat austere lines may not appeal to the aesthetic builder, but the all-round ruggedness and flyability are just what is required by the average knockabout club junior.

Construction is simple to a degree, as the straight outlines indicate, and the fuselage is built around the bearers for maximum strength. These are first cut to length and the three $\frac{1}{8}$ in. formers slipped in place and cemented. The wing platform secures the tops of the formers and ensures alignment. Pin down bottom longerons and insert spacers, and erect remainder of fuselage on this. Cement fin, tailplane platform and dowels in place. Remove from plan, bind in undercarriage, and cement skid in place.

Cut and notch wing spars and build wing in four separate panels. The lower parts of the ribs are $\frac{1}{8}$ in. sq. and the upper pieces are cut from $\frac{1}{8}$ in. sheet. Assemble with correct dihedral and insert braces. Build tailplane in normal way.

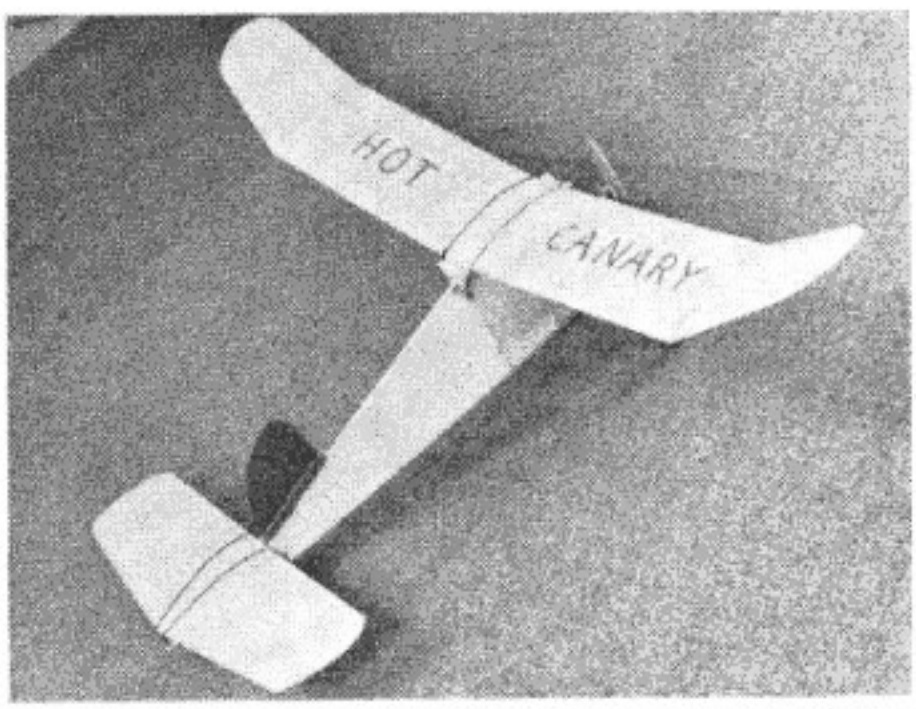
Covering is straightforward, using rag tissue and tissue paste. Care must be exercised around the wing mount, and some builders may care to insert a strip of 1/16 in. $\times$ $\frac{1}{4}$ in. along the angle of the three formers to facilitate the attachment of the tissue at this point. The original was water-shrunk and given two coats of clear dope, followed by a coat of red all over, with yellow leading edges, lettering and fuselage motif. (The photographs show the model after re-covering.)

When used with a Mills ·75, three degrees left thrust and a little downthrust was required; these settings were obtained by drilling the port bolt-holes $\frac{1}{8}$ in. further back than on the starboard side and using washers under the rear of the lugs. All-up weight is approximately $7\frac{1}{2}$ ozs. and the model should balance $3\frac{1}{4}$ ins. back from the leading edge. Use an 8×4 in. prop for first flights, changing to 7×4 in. when adjustment appears satisfactory. Aim at left climb and glide circles. The best flight recorded with the original model was **4 : 32** on a **30** sec. motor run.

MATERIALS

5 3/16 × 3/16 in. hard, 1 $\frac{1}{8} \times \frac{3}{4}$ in. soft, 1 $\frac{1}{8} \times \frac{1}{8}$ in. medium, 1 $\frac{1}{8} \times \frac{1}{4}$ in. soft, 1 $\frac{1}{4} \times \frac{1}{4}$ in. obeche, 1 $\frac{1}{8} \times \frac{1}{8}$ in. obeche, 3 $\frac{1}{8} \times \frac{1}{8}$ in. medium, 1 $\frac{1}{8} \times 3$ in. medium, 1 1/16 × 3 in. medium, 12 ins. $\frac{1}{8}$ in. dowel, 18 ins. 14 S.W.G. piano wire, 18 ins. $\frac{1}{4} \times \frac{1}{2}$ in. bearer.

Full size copies of the $\frac{1}{8}$ scale plan opposite can be obtained from the Aeromodeller Plans Service, price 3/– post free.



A 34" SPAN BEGINNERS POWER MODEL.

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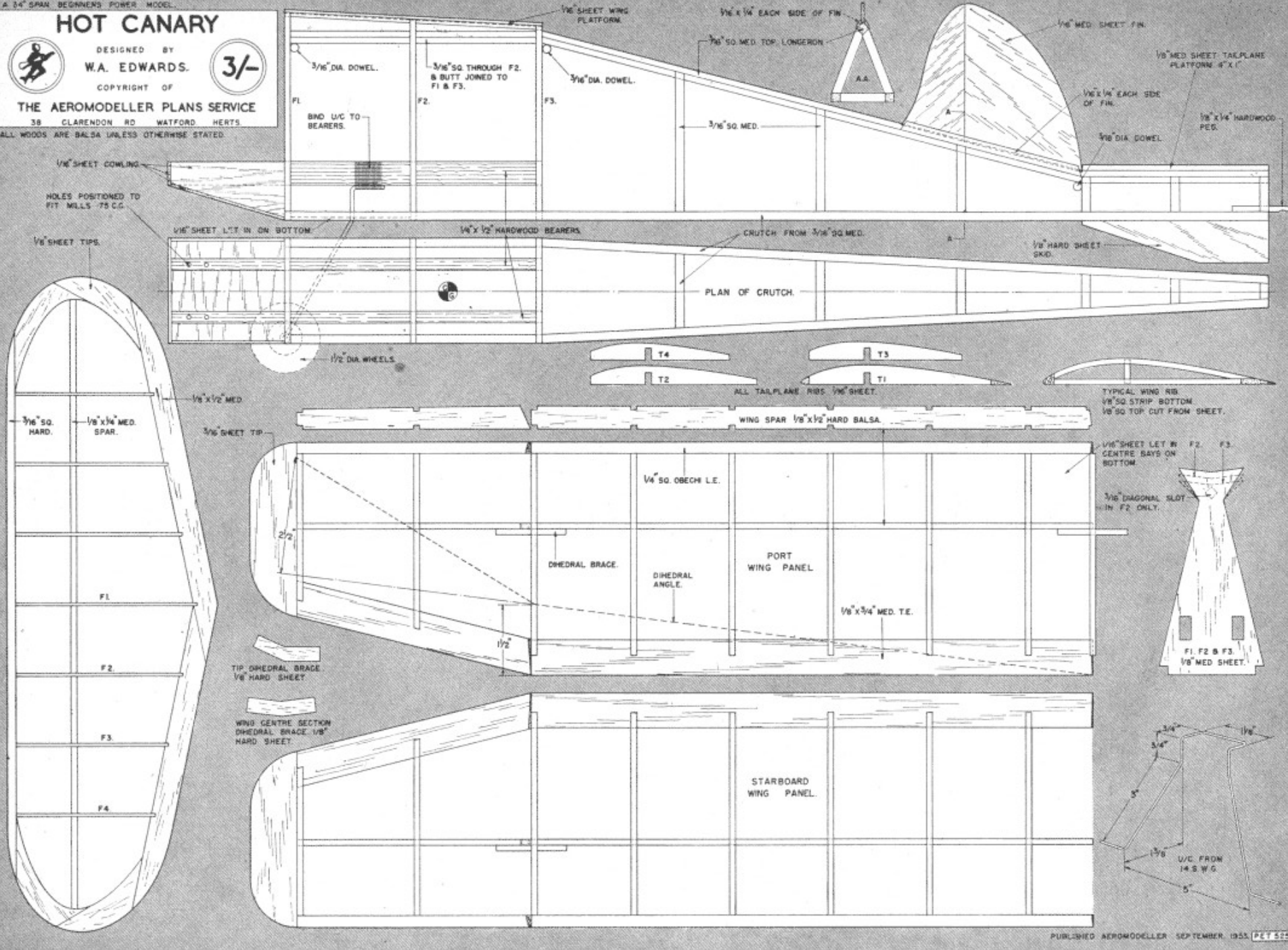


PUBLISHED AEROMODELLER SEPTEMBER 1955 PET 525

ARMCHAIR AERONAUTICS

A review of new books of aeronautical interest

By OWEN G. THETFORD

The War of the Magic Mirrors

Cover of Darkness, by Air Commodore Roderick Chisholm, C.B.E., D.S.O., D.F.C. (Chatto and Windus, 12s. 6d.), 222 pages. Illustrated.

When the crews of Blenheim night fighters joked about the " magic mirrors ", their name for the still somewhat primitive form of airborne radar, introduced in June, 1940, they little guessed what far-reaching consequences were to follow these first experiments. Repeated failures during the German night blitz of 1940 eventually turned to triumph as technical snags were surmounted, the crews gained more confidence and the Blenheims were superseded by the much faster Beaufighters. The night fighters took heavy toll of the German bombers in the spring of 1941—then the enemy turned east.

Air Commodore Chisholm gives a gripping, first-hand account of these early days, when he was flying as a pilot with the famous No. 604 (County of Middlesex) Squadron of the Auxiliary Air Force. Later he worked as a fighter controller at Middle Wallop, and in June, 1942 was given command of a night fighter development unit at Ford. One of the author's operations from Ford was in pursuit of enemy fighter-bombers over London in a radar-equipped Typhoon, the only example of its kind.

Development of radar and night interception tactics proceeded apace and with the introduction of the long-range Mosquito, the night fighters ranged over Germany in search of their enemy counterparts. Air Commodore Chisholm was posted as a staff officer to Bomber Command's Radio Counter Measures Group and he tells for the first time the remarkable story of this complex organisation which not only baffled German radar defences with airborne jamming equipment, but sent out its Mosquitos to destroy German night fighters.

One of the highlights of the book is the record of the author's interviews with Luftwaffe officers after the war and the account of their reactions to Allied radio warfare. Among the officers interviewed was Major Schnauffer, who claimed to have shot down 124 bombers in his Me 110 night fighter.

Cover of Darkness is an enthralling book, not only because of its revelations on the psychology of night fighting, but also for its clear account of the development of this little-known aspect of the air war. Nobody interested in the R.A.F. can afford to miss it.

An Ace in a Messerschmitt

I Flew for the Fuhrer, by Heinz Knoke (Evans, 12s. 6d.), 187 pages. Illustrated.

Comparatively few books have emerged so far dealing with the war in the air as seen through German eyes. Unlike **Stuka Pilot,** which was mainly about the Russian front, **I Flew for the Fuhrer** is concerned almost exclusively with the author's combats with Royal Air Force and American aircraft. It is written in the form of a diary and records Knoke's development, surprisingly slow at first, on Focke-Wulf 44 and Bucker Jungmann trainers, into one of the Luftwaffe's outstanding fighters with 52 victories to his credit. All his operations were flown on Messerschmitt Me 109's, first the " E ", then " F " and finally " G ", known to the Luftwaffe as the " Gustav ".

Early fights are with Blenheims, then with Spitfires, for which the Germans evidently had a profound respect. The first massed daylight attack on Germany by the Americans in January, 1943, is noted by Knoke as marking a new phase in the war in the air which was to go on creating more and more problems for the hard-pressed German Fighter Command. Knoke was the first German pilot to attack the Fortresses and Liberators by means of air-to-air bombing which earned him the personal congratulations of Reich-Marshal Goering.

Knoke pays tribute to the deadly fire-power of the American bombers and losses among his fellow-pilots were heavy, particularly after the Americans introduced air escorts of Thunderbolts, Lightnings and Mustangs.

In April, 1944, Knoke is jubilant. He records in his diary his first flight in a Messerschmitt Me 262 jet in which he claims to have reached 580 m.p.h. Is the end of Allied air supremacy in sight ? It was not to be. Knoke confirms finally the oft-repeated story that it was Hitler personally who prevented these remarkable aircraft from being used in the defence of the Reich until it was too late. Instead they were squandered on futile bombing missions.

This veteran of over 2,000 operational sorties had his flying career ended abruptly when his car was blown up by a mine laid by Czech resistance workers. Yet this accident probably saved Knoke's life. In German Fighter Command's last fling of New Year's Day, 1945, over 500 of Knoke's fellow-pilots were killed.

By this time Knoke was convinced that Germany

had lost the war, but his writing does not lack patriotic fervour and his political outbursts reveal the fanatical nature of his beliefs. His acceptance of Germany's mission never wavers.

I Flew for the Fuhrer is a valuable and authentic portrait of a German fighter pilot who fought gallantly and, unlike so many of his contemporaries, lived to tell the tale.

Beyond the Headlines

Flames in the Sky, by Pierre Clostermann, D.F.C. (Chatto and Windus, 12s. 6d.), 200 pages. Illus.

Pierre Clostermann's volume of personal reminiscences of air fighting, **The Big Show,** was one of the publishing successes of 1951. **Flames in the Sky,** a series of excellent imaginative accounts based on official records of outstanding exploits in the air war, establishes beyond doubt that Clostermann is the most talented aviator-writer to emerge since his fellow-countryman Antoine de Saint-Exupery. The incidents brought to life so dramatically in this book are based on extensive researches which the author made into official archives of the Air Ministry, the U.S. Navy and Air Force, the Luftwaffe, and Japanese documents.

The subjects treated include the attack on Pearl Harbour, the brilliant records of such aces as the French S/L. Max Guedj, who flew Mosquitos with Coastal Command, "Screwball" Beurling of Malta fame, and Colonel Pijeaud, a hero of the Free French Air Force in North Africa. Perhaps most interesting of all is the account of a Japanese suicide mission in Kamikaze "piloted flying bomb" during the closing days of the war in the Pacific.

For the Spotter-1

The Observer's Book of Aircraft, by William Green and Gerald Pollinger (Frederick Warne, 5s.), 280 pages. 278 Illustrations.

To their famous series of books on Birds, Butterflies, Wild Flowers and so on, Frederick Warne have now added this extremely useful recognition handbook on military and civil aircraft of the world—164 types are described and illustrated with photographs and silhouettes. The book is remarkably informative, even on types of aircraft such as the Venom, about which no official performance figures have been released! Slips are few, though the Prentice is quoted as a three-seat trainer, a role which was abandoned at prototype stage. With the Flying Training Schools it has been used exclusively as a two-seater.

For the Spotter-2

A.B.C. of Military Aircraft Recognition 1953 by John W. R. Taylor (Ian Allan, 2s. 6d.), 78 pages. Illustrated. Paper covers.

The extremely sensible layout of this little book, with types arranged by name alphabetically, makes for easier reference than in other recognition handbooks and is excellent value for money. It includes all current types of British and American military aircraft to be seen flying over the British Isles, from the U.S.A.F. Albatross amphibian to the Fleet Air Arm's Wyvern fighter, and is to be followed by a companion volume on European Military Aircraft.

For the Spotter-3

Jet Aircraft Picture Encyclopædia (Alkmaar, Holland), 64 pages. Illus. Sold in Britain at 5s.

Printed in Holland in 1951, copies of this interesting little book are still to be found in the bookshops. Fifty-three jet aircraft of British, American, South American, French, Russian and Swedish manufacture are illustrated with neat sketches and silhouettes. Performance figures for restricted aircraft are freely quoted (with what accuracy one can only guess). Examples are Orenda-powered Sabre at 710 m.p.h., Fairey F.D.1. Delta at 800 m.p.h. and the French Mystere at 670 m.p.h.

Met. Without Motors

On Being a Bird, by Philip Wills (Max Parrish, 15s. 6d.), 231 pages. 15 illustrations, 34 drawings.

This book is a new approach to the difficult problem of presenting the appeal of soaring to an uncomprehending and unsympathetic public. In it the author attempts to paint a picture of the air as it seems to one who approaches it silently and alone, and the pigments he uses for his picture are simply-explained meteorological phenomena and performance factors, and anecdotes illustrating triumph, disappointment, idiocy, fear, jubilation and a host of other emotions which play their part in the world of gliding. The resulting "canvas" gets over much of the atmosphere of this world, and at the same time, the light way in which most of it is written makes it a painless, and therefore, valuable introduction to the serious study of the air itself. Perhaps the strongest impression given is that of the colossal individualism of sailplane pilots, and this is swiftly followed by respect for the immense amount of knowledge and skill (not to mention a slide-rule mind!) required to make a successful long-distance flight.

All aeromodellers—particularly contest fliers—will enjoy this book, especially for the large amount of easily-assimilated information on the formation and patterns of ever-changing currents in the air

V. E. S.

Flashback on a Career

The Crowded Hours. The story of 'Sos' Cohen, by Anthony Richardson (Max Parrish & Co. Ltd. 15s.), 248 pages.

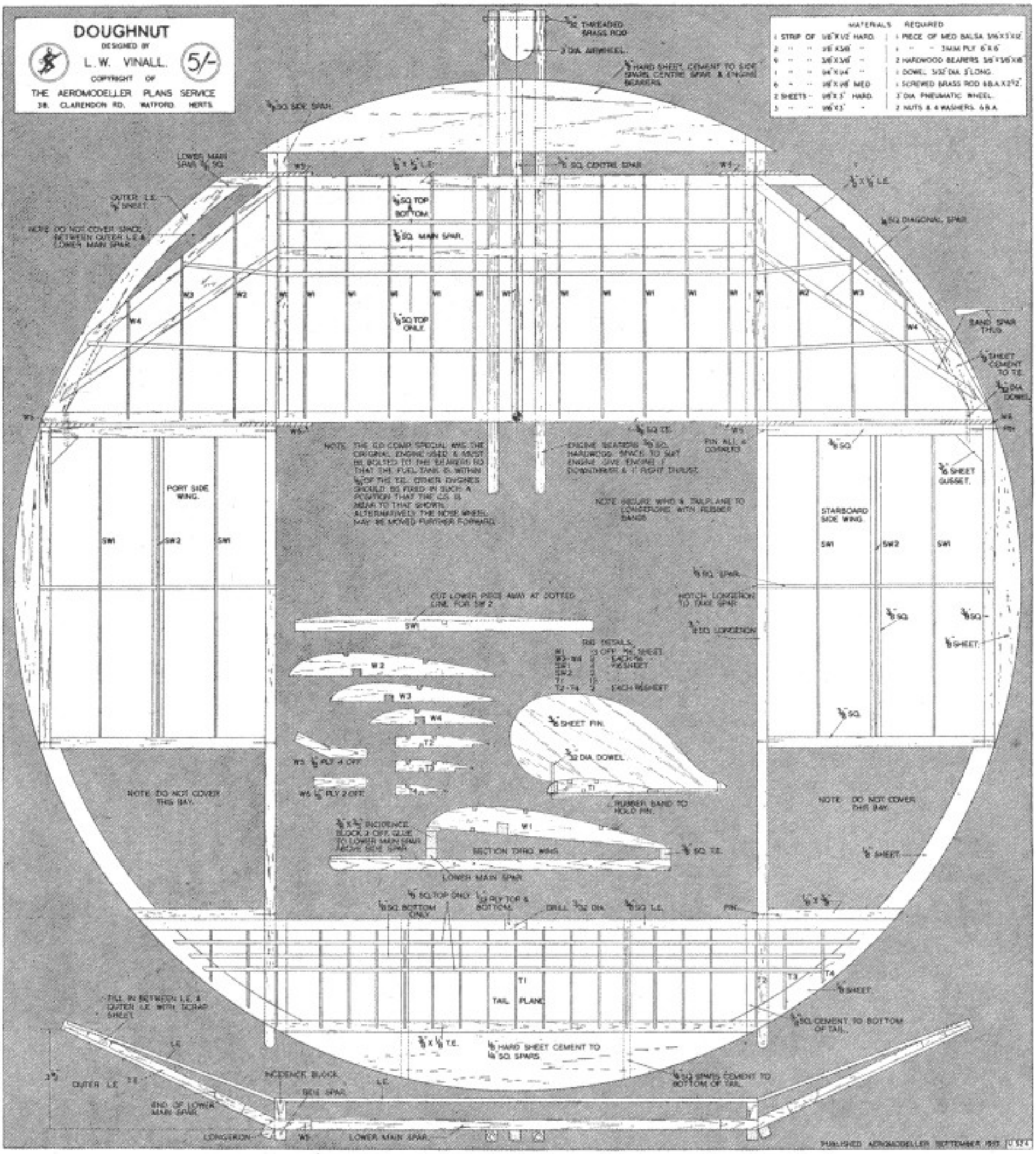
As a pleasant change from the "handsome hero" type of biography this is the story of that indomitable old gentleman, "Sos" Cohen, who, after doing so much to found the R.A.F.V.R., insisted on his rights to don uniform, and could be found defiantly airborne when many a younger man would be excused for waging war in the security of his club writing-room. His early adventures as a young man in the Africa of Cecil Rhodes, building up a fortune as a young man, organising a guerilla-cum-spy force in the '14-'18 war on the Portuguese East African border, serve as a flashback commentary on how and why he should be in a crippled bomber with its engines afire and unlikely to make a friendly landfall.

D. J. L. D.

DISCUS, Flying Saucer, call it what you will; but this 38 in. diameter novelty, inspired by a visit to the land of tailless cats, otherwise known as the Isle of Man, *really* performs with the climb of a pylon job and the glide stability of a sailplane.

In all, there are no less than 423 square inches of lifting area tucked away in this annular wing, and for the E.D. 2 c.c. Competition Special and equivalent power units, its just the thing to raise the cobwebs and cause much brow-scratching in the clubhouse.

Construction begins by cutting the forward wing $\frac{3}{8}$ in. square trailing edge to length and cementing the two $\frac{3}{8}$ in. square longerons at right angles to this. Then add the lower mainspar and all of ribs W1. Leading edge and incidence blocks follow in that order and you should now have one length of quite normal wing attached to the two



Full size plans are available price 5/- post free from The Aeromodeller Plans Service.

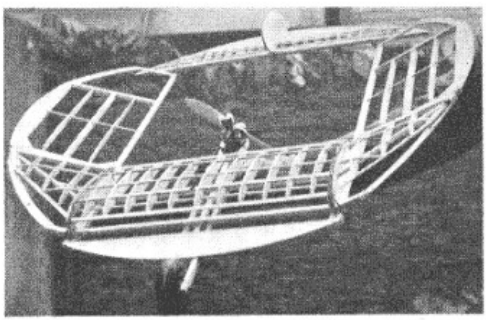
longerons. The outline of this model is maintained with hard $\frac{1}{8}$ in. sheet and these parts can now be cut and fixed in position. Make four dihedral braces from three-ply and assemble the outer panels of the forward wing with addition of ribs W2, 3, 4, and the $\frac{1}{8}$ in. sheet outer leading edge.

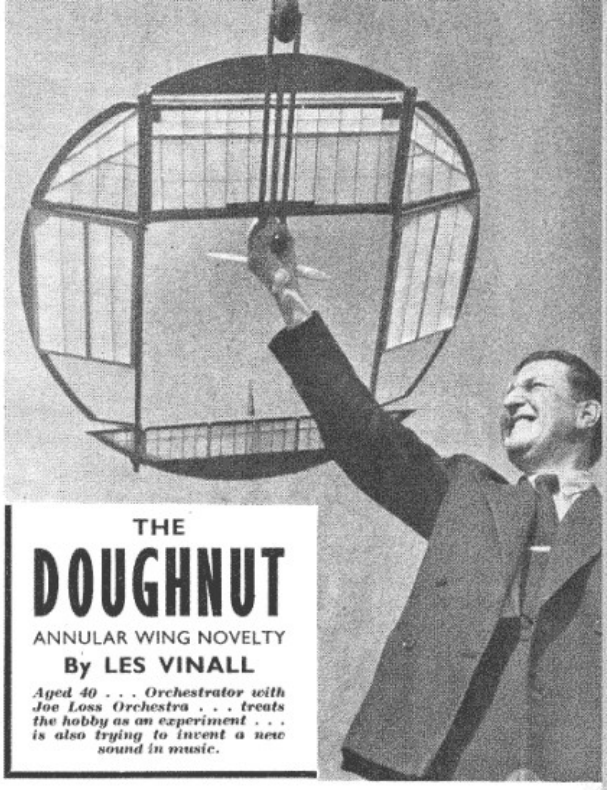
The side panels are made next and these are quite conventional and can be built straight on to the sides of the longerons with the whole model placed in position over the plan. Note that the panel immediately behind each of these side wings is left uncovered as you will see in the photo at top right. If there is any difficulty in building these side wings at the required dihedral, then they can be built flat as separate units and then added to the longerons after lifting from the plan. 3/32 in. dowels are used to peg the side wings to the forward wing.

The tailplane is quite normal in construction with the exception that the piece of $\frac{1}{8}$ in. hard sheet balsa attached to the trailing edge to retain the circular shape, is supported with two small spars which protrude from the undersurface of the tailplane. Now cut those abnormally long engine bearers and drill them to suit your power unit. At their other end, drill to take the axle shaft for the nose wheel and then, with the whole airframe assembled, shift this fore end unit to obtain reasonable balance with the centre of gravity on or about the trailing edge of the forward wing.

Cement the engine bearers firmly to the forward piece of $\frac{1}{8}$ in. sheet, the lower mainspar and the $\frac{3}{8}$ in. sq. trailing edge of the forward wing. Some cotton binding at these points plus a liberal dose of reliable cement will prove worth while. Lastly, the fin is cut from 3/16 in. sheet and fitted with a 3/32 in. dowel which plugs into the tailplane leading edge. A notch in the end of the fin can then take an elastic band to hold the fin in position and yet allow it to be swivelled for flying trim.

Now cover the " Doughnut " after sanding all parts and give at least three coats of dope over the lightweight Modelspan. The plan is presented exactly as detailed by the designer, and all construction is identical to the original model. This does entail one point, which might be difficult to cover,





THE DOUGHNUT

ANNULAR WING NOVELTY

By LES VINALL

Aged 40 . . . Orchestrator with Joe Loss Orchestra . . . treats the hobby as an experiment . . . is also trying to invent a new sound in music.

and that is at the forward wing trailing edge. The Modelspan must, of course, follow the lower contour of the rib, and be attached to the upper level of the sturdy trailing edge, where additional cap strips would be helpful. One more thing will be required, and that is a plastic airscrew of the non-breakable variety for your engine, since the ground clearance of this annular novelty is zero !

Flying trim is simple, the prototype needed rudder correction only, a degree to the right being sufficient to counteract any tendency for the natural left-hand turn to tighten up dangerously. Lateral stability is exceptional. Even if badly launched, the model will right itself immediately though you should avoid launching in a strong wind. Being a pusher, it does introduce some difficulty in hand launching ; but an underarm motion has found to be best and after becoming accustomed to this rather unorthodox system, you will find it almost as natural as the customary overarm launch. Points to hold for the underarm launch are the nose wheel with the left hand and the tailplane trailing edge with the right hand.

Flight pattern generally resembles that of a pylon model with a spiral climb but the appearance of this flying ring in the air is very deceptive and it is difficult to draw any direct comparison with the rate of climb of a competition design.

One final point . . . don't be too rude about the " Doughnut " when you see it on the flying field . . . you might wind up with it around your neck and looking rather like the milkman's moke hauling the dairy cart.

Getting the best out of . . . .

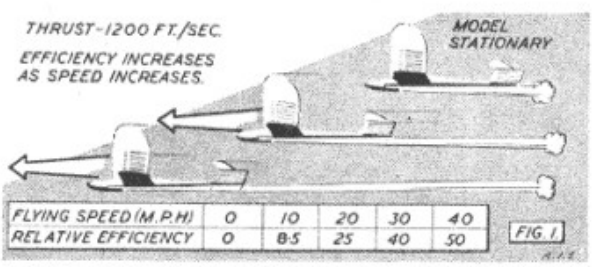
JETEX MODELS

Ron Wilson lights d/t on Bob Wheatley's (West Hants Club) Contest Jetex 200 model, best performer in their local competition.

THE Jetex model appears basically very simple, with a self-contained constant-thrust power unit which requires no adjustment and the minimum of servicing. About the only " maintenance " required, in fact, is periodic cleaning of the Jetex motor, and even this very necessary feature is often ignored with not too harmful results.

What is not commonly realised, however, is that trimming a Jetex model almost exactly reverses the trimming process associated with a rubber model. In the latter case we start with low turns and progressively work up to maximum power, adjusting trim at each intermediate stage, as necessary. With a Jetex motor, ignoring the initial period when the charge is developing its full burning rate, the thrust from the motor is appreciably constant, but the efficiency *increases* over an appreciable part, if not the whole, of the power run. This means that it is the *end part* of the power run with a Jetex motor which can be critical as regards trim, not the initial few seconds as with a rubber model.

A simple explanation of why this should be so can be given. A measure of the efficiency of the jet unit is given by dividing the flight speed by the jet velocity of the unit. With a standard Jetex the exhaust velocity, or the speed at which the burning gases escape from the nozzle are of the order of 1,000 feet per second or more. If stationary, then the efficiency of the jet unit is zero, since it is doing no work. As the model speeds up the " efficiency ratio " increases. At just over 10 m.p.h., for example, it is 1/120, increasing to 1/40 at a little over 20 m.p.h., and so on—Fig. 1. With a given thrust output the model will, in fact, tend to speed up until the drag generated exactly balances the thrust, in purely horizontal flight.



It is quite common to see Jetex-powered models which start to fly quite satisfactorily from a launch, increasing speed slowly until they eventually wind up into a vicious spiral dive, or perhaps a series of loops. Particularly in the former case it is often the aerodynamic design of the model which is at fault. The Jetex motor being free from torque encourages the use of lower dihedral angles and smaller fin areas than would be considered satisfactory for other forms of power flying. Such practice, in general, decreases the ability of the model to recover from a sideslip and tends to make the fin area much more critical. In other words, such models are inherently more prone to spiral instability. Start too steep a turn and, with the efficiency of the motor building up all the time, even more speed is picked up and there is no recovery from the ensuing spiral dive.

This does not necessarily mean that " normal " duration dihedral angles are necessary with Jetex models. If, for considerations of scale or semi-scale appearance, we want to use small dihedral angles a certain corresponding fin area can be found to give optimum spiral stability for that particular combination. Unfortunately there are no simple rules as to how this fin area (and shape) can be determined. At best the result can only be a " guesstimation ", adjusted by trial and error methods as necessary. Even if the resulting combination has not got all the spiral stability we want, we can still fly it successfully with Jetex power, simply by trimming the power flight so that the model does not adopt a severe angle of bank which will lead to loss of lift, the model speeding up and aggravating the stability problem —Fig. 2. In other words, the model is trimmed to fly appreciably straight under power, when trimming is concerned mainly with making sure that it does not go over into a loop as the efficiency of the motor increases with increasing model speed.

As a general rule it pays to fly all types of Jetex models appreciably straight, or in wide circles, under power. To do this consistently demands a structure which is rigid enough to maintain its setting and remain free from warps. The effect of small warps may not show up at low speeds (such as hand glide tests) but may well upset our ideas on straight trimming under power.

It does not follow, for example, that corrective action taken to offset the effect of a warp at one speed will remain " in balance " at other speeds. In the case of a wing warp corrected by rudder offset to give a straight glide from a hand launch, the relative power of the two turning forces generated may diverge considerably as speed increases when Jetex thrust is applied—Fig. 3. The model then turns one way or the other, depending on which over-rides the other—the warp or the " corrective " rudder. Such divergencies will show up more markedly towards the end of the power run.

There is, of course, another way in which this bugbear of Jetex trimming can be tackled—proportion the model so that the drag increase with increasing speed under power soon reaches a balancing figure. In other words, the model is virtually underpowered, as compared with normal design practice for the size of Jetex motor considered. This is not good practice where optimum performance is required for, by limiting the flight speed, we are also operating the Jetex at lower efficiency. But it is a safer way of flying.

The opposite also holds true in that a model trimmed quite satisfactorily with a particular Jetex motor may become unstable towards the end of the power run if a more powerful fuel is used in that same motor. Obviously for duration flying we want as much power as possible from the Jetex motor and so the use of a more powerful fuel is attractive from this point of view. Before the introduction of " Red Spot " fuel, in fact, it was quite common practice to cut down " 350 " size fuel pellets to fit " 200 " or " 100 " motors, since these were found to provide more thrust than standard fuel charges for the smaller sizes of motors. Wasteful, perhaps, but considered worth it in the interests of maximum performance.

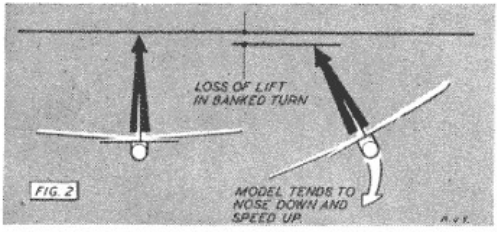


FIG. 2

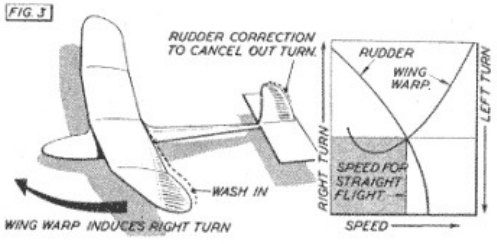


FIG. 3

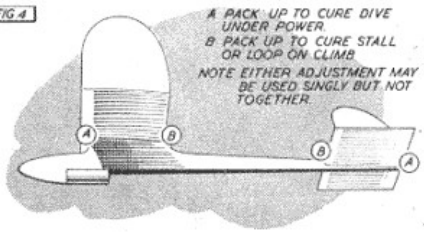


FIG. 4

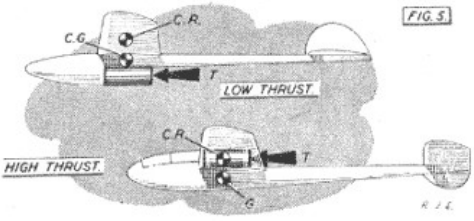


FIG. 5

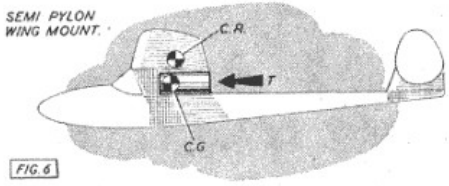
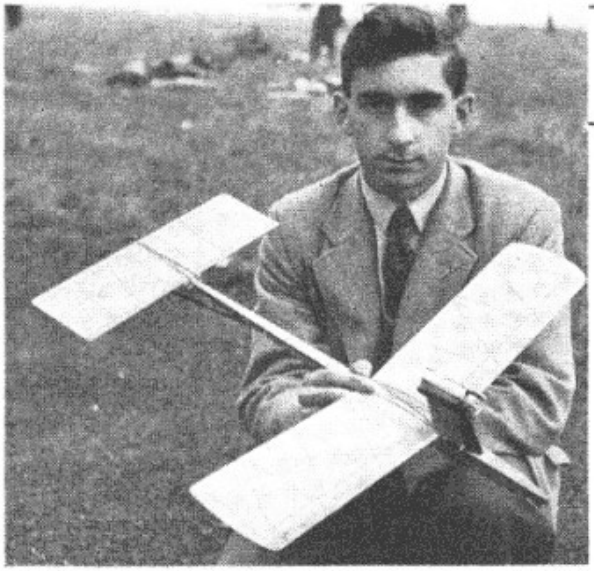


FIG. 6

Theoretically, the faster the Jetex model flies under power the better from the point of view of sheer efficiency (*i.e.*, getting the most out of the power run) which means, in effect, a minimum size model for duration work. The real limit then becomes the amount of wing area required to produce a low wing loading for optimum glide performance, coupled with the necessary tailplane area and design layout to ensure stability under power. The smaller the model and the faster it flies under power, the more tricky it may prove to trim out.

Actually, trimming a typical Jetex model is not as difficult as it may appear from the above descriptions, provided the design layout itself is basically sound. For sports flying all that is really necessary is a substantially straight power-on flight or a wide sweeping circle, when the necessary longitudinal control to prevent the model either diving or nosing up into a loop or stall as speed builds up can be achieved by adjusting the incidence of the tailplane a *small* amount at a time. Packing strips used for tail trimming in this manner should be 1/64 balsa or pieces torn off a cigarette packet (just over 1/100 of an inch thick, on average), not thicker, adding or taking away one piece at a time. The resulting glide may not be as good as it could be, but this can be ignored where maximum duration is not the aim—Fig. 4. Once the correct packing has been found it should be cemented in permanently.



Dick Twomey, who favours a high thrustline, has pylon mounted motor and slender underfin on his '52 entry for the I.C.I. Challenge Trophy. Span is only 24 inches.

Trimming for duration, a good glide trim is just as important as the power trim. The power run represents only a fraction of the total duration required—say a tenth or less—and to have the model slightly out of trim for nine-tenths of its flight in the interest of getting the first one-tenth right is bad practice.

Successful Jetex duration models have had the power unit mounted both above and below the wings—Fig. 5. In the former case the line of thrust is usually substantially below the centre of resistance of the whole model, and below the centre of gravity, so that power-on flight does tend to nose the model up. Generally such models are more prone to loop than those with the thrust line appreciably level with the centre of resistance, as in the second layout. In the main, however, a slight nose-up tendency would appear to be more desirable than a " balanced " or nose-down power-on trim. A loop can, by careful trimming, be turned into a spiral climb. Spiral dives are usually initiated by the model nosing down as it circles, and a spiral climb can just as easily turn into a spiral dive if overdone.

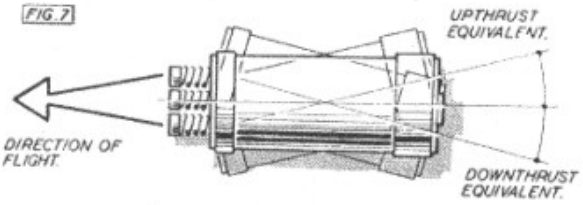
The most satisfactory solution for duration flying seems to be an underslung Jetex unit but mounted reasonably close to the wing, as in Fig. 6. Such a model can usually be trimmed out satisfactorily with a wide sweeping climb. Provision for adjusting the position of the thrust line in a vertical direction (up or down) whilst still remaining substantially horizontal would also be a good thing. The effect of offsetting the Jetex thrust line (*i.e.*, equivalent to sidethrust or down or upthrust) is usually insignificant unless appreciable angles of offset are employed. Some Jetex experts do use an offset thrust line to achieve optimum trim under power, consistent with the best glide trim ; others appear to get similar results with the thrust line substantially parallel to the fuselage. *See Fig.* 7.

Some of the little " tricks of the trade " employed in duration contest work take advantage of the fact that a " hot " Jetex motor generates more thrust than a " cold " one. In other words, with multi-charge units (*e.g.*, Jetex 200 and 350), the second (or final) charge generates more thrust than the first. For " ratio " contests (and most Jetex contests are based on flight ratios), single charge only is used, as a general rule. But a multi-charge unit is loaded with full charges and ignited in the normal way. The model is then held until the first charge has burnt out and only launched when the second charge has fired.

The increased thrust effect of the second charge is most noticeable if a normal flight is made with two charges. The model drops into a glide when the first charge burns out, and then picks up again into a climb as the second charge cuts in. The climb on the second charge will be appreciably better in most cases, provided the model is trimmed out satisfactorily.

The standard rating for length of power run with different Jetex combinations is given in the table. These are the figures usually adopted for contest work, but vary slightly in practice with individual charges and the condition of the Jetex unit. Notching the edges of the charge or cutting away for a loose fit generally tends to build up more gas pressure, increase the thrust and lessen the length of power run. Partially clogged jets may increase the power run and decrease the thrust produced. The size of the jet hole in the Jetex unit is critical, for optimum performance, emphasising the necessity for careful, regular cleaning. In fact the maker's instructions should always be

FIG. 7



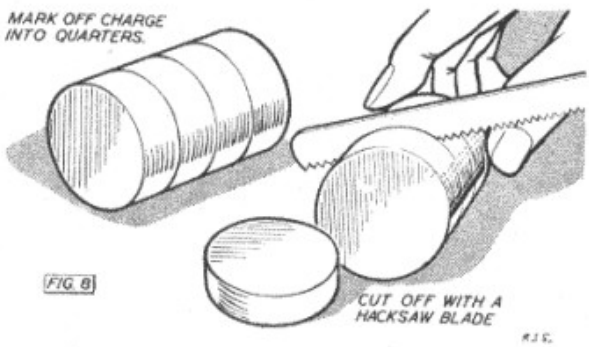


FIG. 8

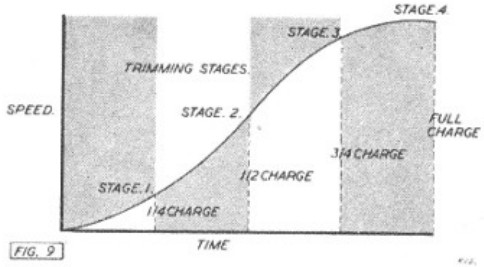


FIG. 9

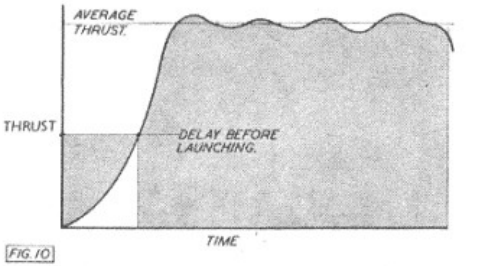


FIG. 10

followed for best results. Their recommendations on cleaning and loading, etc., are based on more experience than any individual flyer is likely to amass.

Trimming for duration can be attempted on a " progressive " basis by using cut-down charges for reduced power-on duration. An old hacksaw blade is a useful tool for slicing up individual charges—Fig. 8. With a number of quarter charges, however, we can tackle the business of approaching the " critical speed " in stages without the possibility of winding up the first power-on test flight (with a full charge) in disaster. The " critical speed ", of course, is the maximum speed which the model will reach on a full charge, which will vary with individual designs. Fig. 9 shows, diagrammatically, how this can be approached in stages with cut-down charges, trimming out at each stage, as necessary.

In practice the use of a single quarter charge is often of dubious value. The thrust of a Jetex motor builds up relatively slowly at first and all Jetex models need to be held in the hand until the full thrust builds up before launching. The remaining power-on duration with a quarter charge is then a matter of two or three seconds at the most—rather too short for comfort since it may cut and leave the model in a stalled attitude with too little altitude for recovery. Usual practice would call for initial flights with a half charge. An alternative method, of course, is to load with a full charge each time and delay the launch to " time " the power run, in stages. This is more wasteful of charges, but rather more accurate in the long run.

Finally, we would like to explain how the power rating of a simple jet engine, where performance is expressed in terms of thrust developed, can be compared with performance of propeller driven aircraft where the engine horse power is specified. With a constant thrust jet engine, the equivalent horse power of that engine is simply related to the product of the speed at which is flies the model and the thrust it is developing. In other words, horse power equivalent is a combination of the speed/time and thrust/time curves of Figs. 9 and 10. In a simple formula :—

$$\text{H.P. (Jetex)} = \frac{\text{T.V.}}{8{,}800}$$

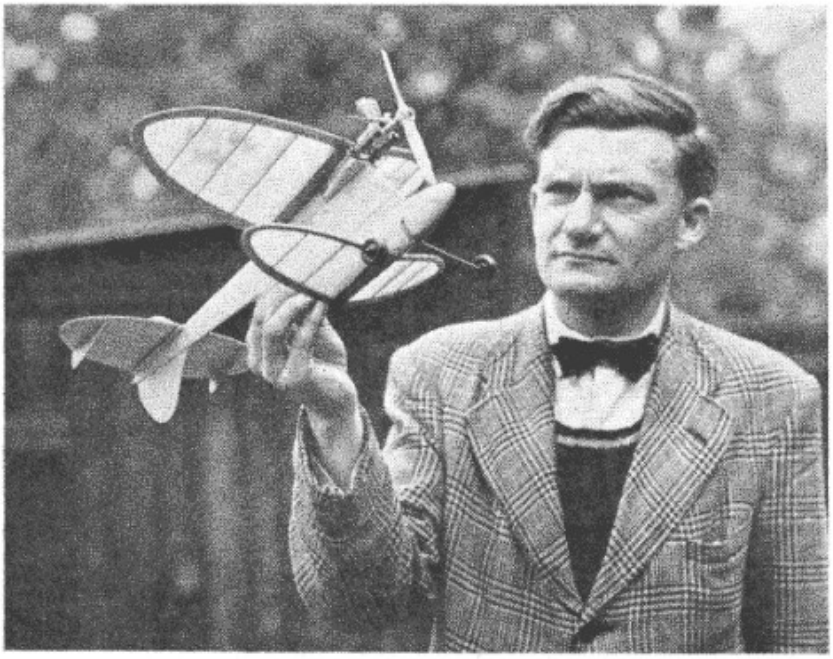
where T = thrust in ounces
V = velocity in ft./sec.

Thus a Jetex 100 developing a thrust of 1·2 ounces producing a critical or maximum speed of 20 m.p.h. with any particular model is developing a maximum of ·004 horse power. Horse power rating ranges from zero at the start of the flight (no forward speed) to a maximum at this critical speed, intervening values depending on the form of the speed/time curve for that particular model.

Motor	Fuel	Average Thrust	Duration of Thrust		
			Single Charge	Two Charges	Three Charges
Jetex 50	Standard	·5–·6	15 secs.	—	—
Jetex 100	Standard				
	Red Spot	1·2	18 secs.	—	—
Jet Master	Standard	1·7*			
	Red Spot	1·85†	18 secs.	—	—
Jetex 200	Standard	2·3	14 secs.	28 secs.	—
Jetex 350	Standard	4·0	11 secs.	22 secs.	32 secs.

* 2·0 with augmenter tube.
† 2·25 with augmenter tube.

K. D. Mole of Tynemouth and his version of Dick Twomey's Twizzler design, available through A.P.S. An easy model to build and trim. Jetex 200 unit is used ; span is 28 inches.



FULL-SIZE ★ MI

How small can a power little biplane by Ray Frog 50 or E.D. ·46, and length, simple to Full details on the

HERE is one of the smallest, most convenient to transport F/F power jobs yet designed, and moreover, a model that knows all about the business of getting upstairs in double quick time. Flying fun is a " built-in " feature of this little bundle of aeronautical mischief. So simple to construct that modellers with a little experience will get all the gen from the plan. Building hints that follow are really for the beginner, but read them just the same, then you'll see how easy MIMI is to build.

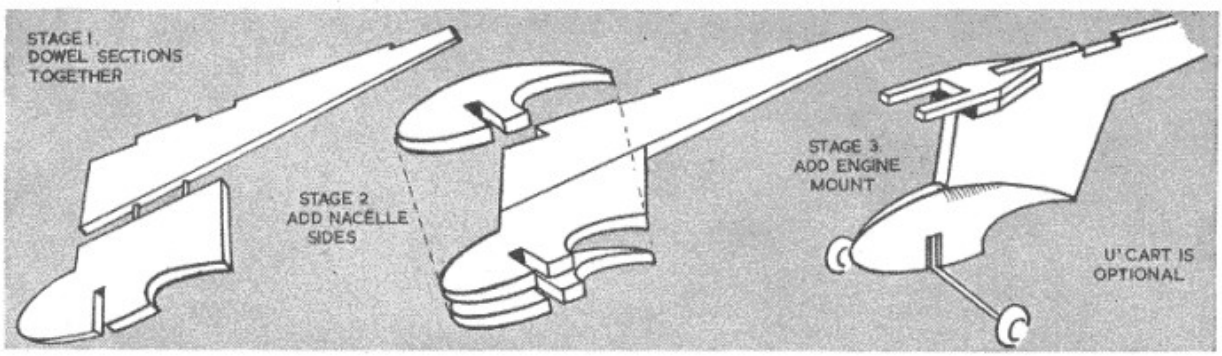
Here's the building list:

¼×1½×3½ ins. hardwood (engine bearers), 1 sheet 3×36 ins. ¼ in. balsa, 1 sheet 3×6 ins. ¼ in. balsa, 1 sheet 3×18 ins. ¼ in. balsa, 1 sheet 3×36 ins. 1/16 in. balsa, 1 sheet lightweight Modelspan, 12 ins. 16 S.W.G. wire, 6 ins. 1/16 in. dowel (or matchstick pegs), small piece 1/16 in. ply, small piece 1/32 in. sheet balsa.

Trace the fuselage parts onto ¼ sheet and cut out. If you have some 6 in. wide quarter stock, the fuselage can be cut in one piece. To the basic fuselage shape, add the two nacelle side pieces and ply liners in the U/c slot. Cement in position the top wing rear mounting and the angled tail-plane platform. Add dowels and small rear peg. Before sanding the fuselage, add the engine mounting, drilled ready for your engine. Make sure it is level from side and front views. Add blocks *A*. Carefully sandpaper all over to the correct sections, checking that you have the necessary clearance in the nose for a 6 in. × 4 in. propeller. Cement the lower fin in place and the fuselage is complete except for dope and fuel proofer.

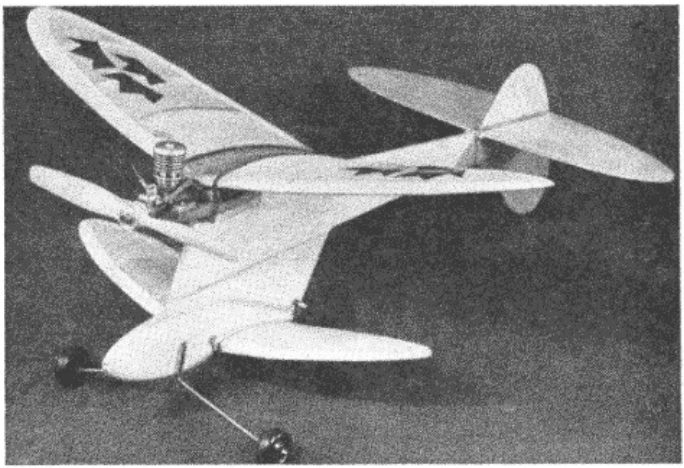
Now don't fade away at the prospect of having two wings to build, these are really easy to construct. Trace the L.E.'s onto ¼ sheet and the T.E. of the top wing onto 3/16 in. sheet. Cut out, taking care that the notches for root ribs are at a slight angle. Add ribs, using the template for setting root ribs at the correct angle. When dry, raise the top wing tips by 1½ in. and cement the centre ribs together. Sheet over the centre section with 1/32

FUSELAGE STAGES



PLAN OF THE MONTH

MI



★

model be? This pert Malmstrom, for the is only 16 inches span build, and easy to fly. next four pages.

sheet. Cover with lightweight Modelspan. The lower wing is built in the same way (with L.E. of ¼ sheet and T.E. of ⅛ sheet), with the exception that ¾ in. wide centre section is flat and there is 1 in. dihedral from root ribs to the tips, see sketch.

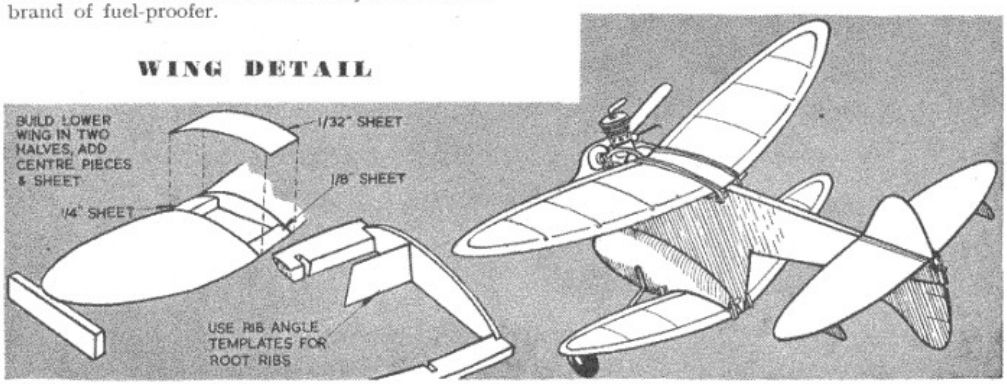
No model is really complete without an undercart, but relax, because if an undercart is an abomination to you, you need not have one. Mimi isn't a bit particular. It is certainly not indiscreet to say she makes excellent landings on her belly! If (being a stickler for decency!) you fit an undercarriage as shown on the plan, please see it is a *tight* fit into the U/c slot.

Cut the tail assembly from 1/16 sheet, and cement on the top portion of the fin, and the two small tip fins. Give the sheet parts of the model two coats of dope, sanding lightly between coats, and the wings one coat of thin dope. Finally go over the whole model with a coat of your favourite brand of fuel-proofer.

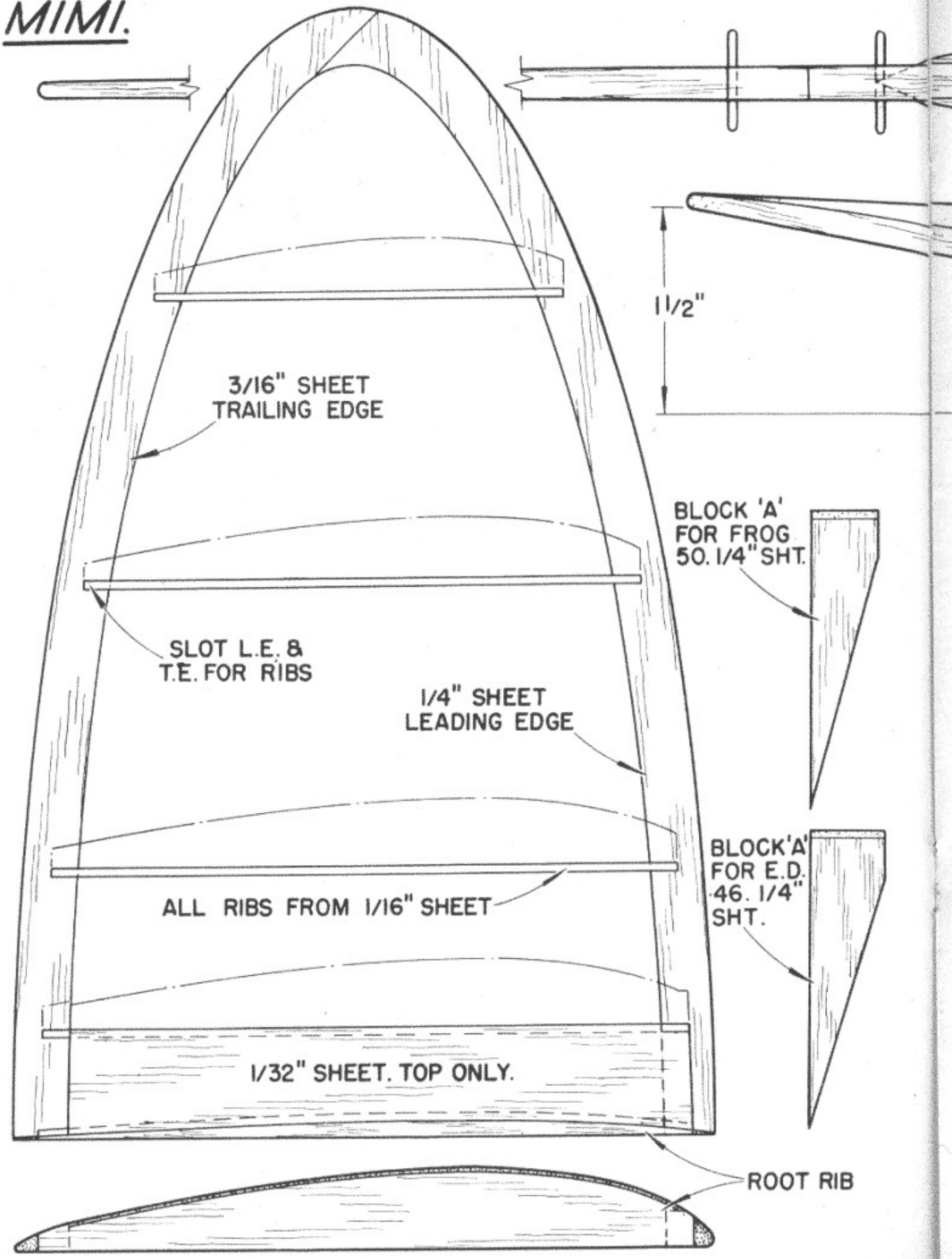
Check Mimi's balance, test glide over long grass, always launching with the nose pointed slightly downwards. Don't hurl the model, but launch smartly, as Mimi has a pretty fast glide. By means of packing (about 1/16–3/32) under the trailing edge of the tail, get the glide as shallow as possible, avoiding any tendency to stall, and see that the glide path is straight. A slight turn to the left is all right, but, and here quite seriously is a word of warning, avoid a turn to the right. Give the engine 1/32 packing for downthrust and throttle it down as much as possible, or fit the prop on back to front for the first test flights.

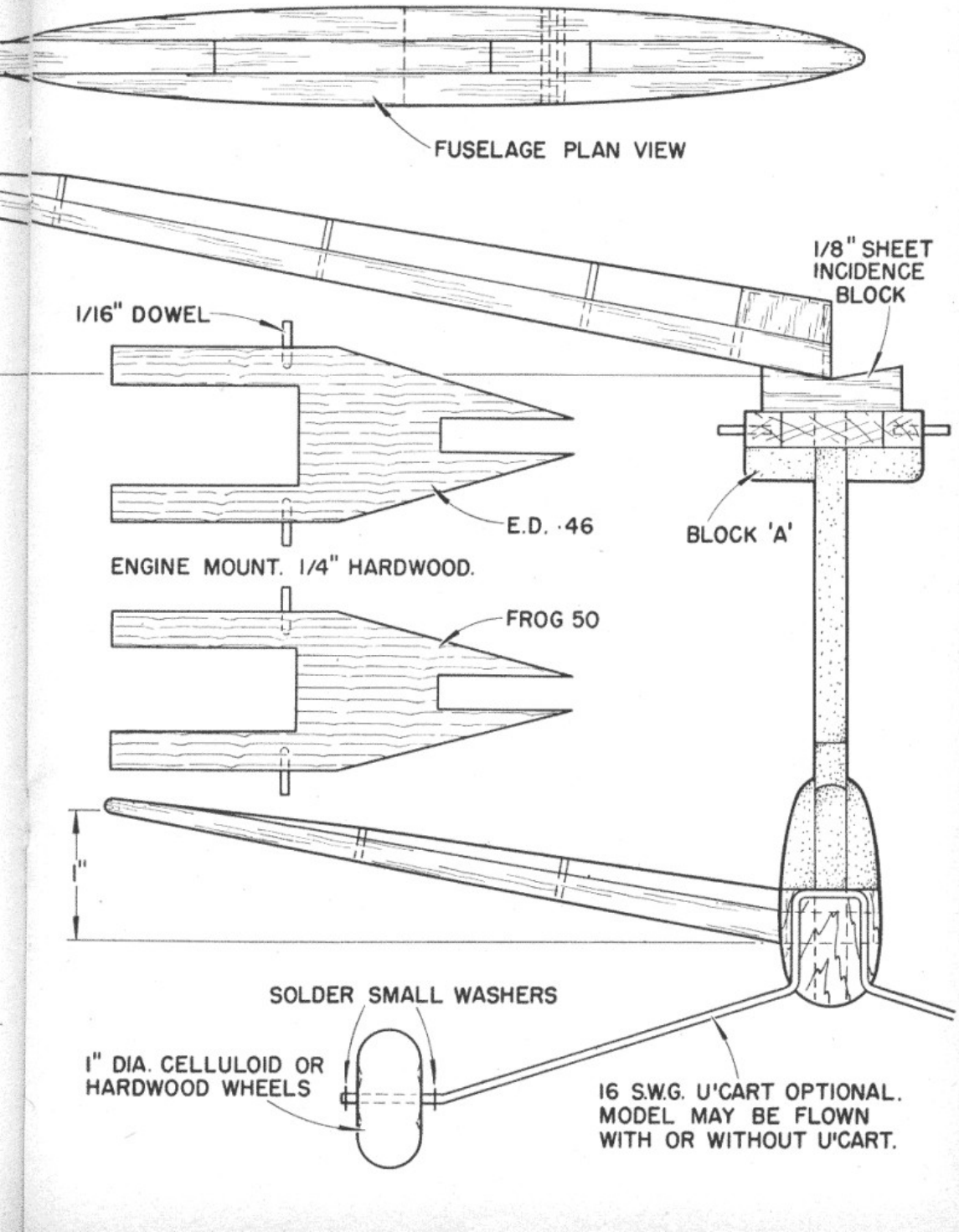
Good flying to you, and don't forget your name and address on your model—this diminutive job flies an awful long way on half a tank of juice, and I'm still looking for the original Mimi!!

WING DETAIL

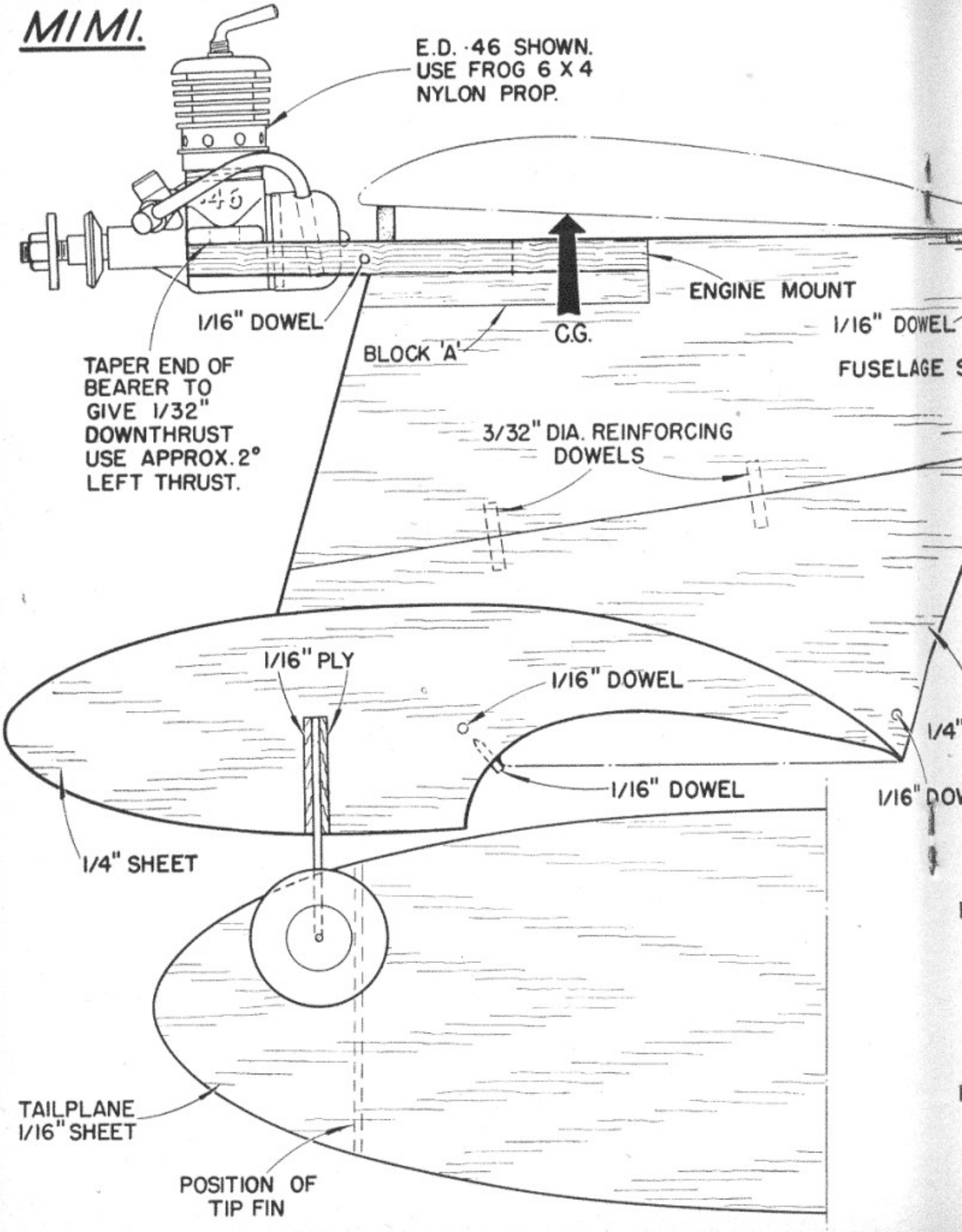


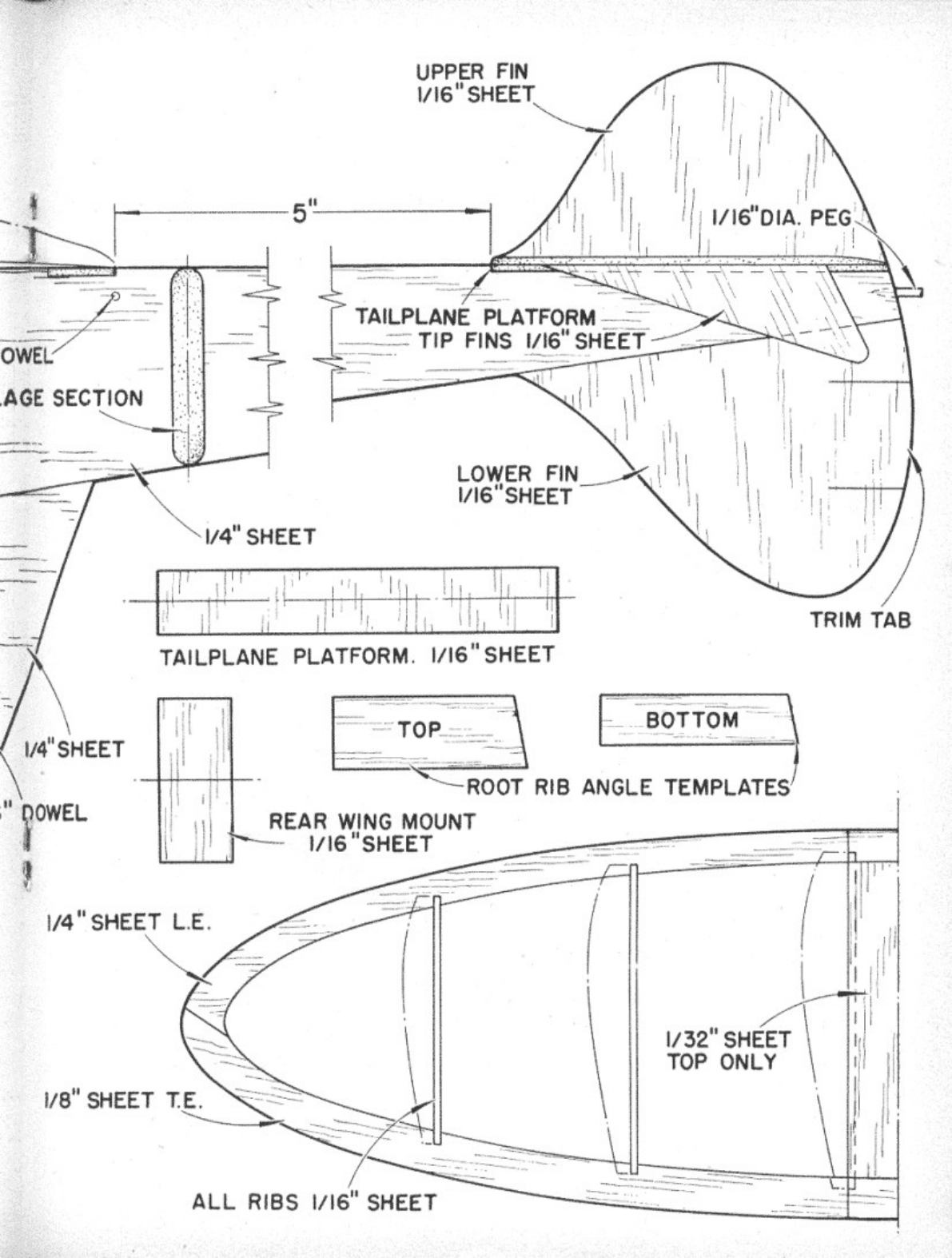
MIMI.

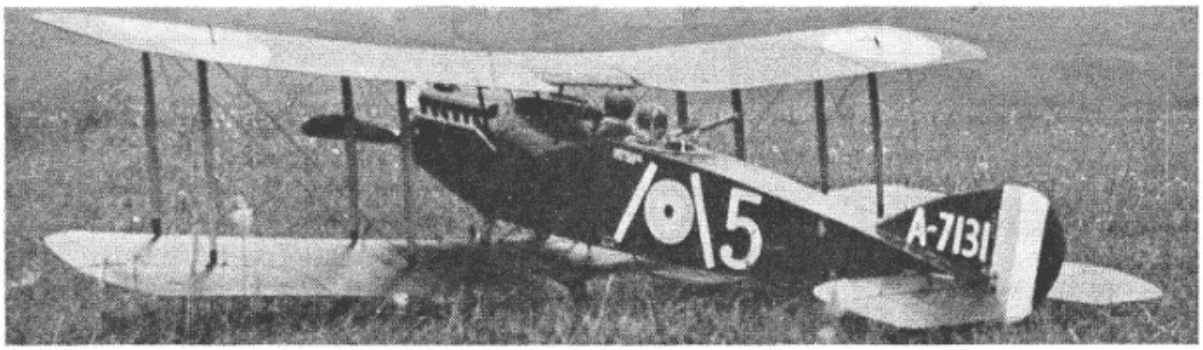

1 1/2"
3/16" SHEET
TRAILING EDGE
BLOCK 'A'
FOR FROG
50. 1/4" SHT.
SLOT L.E. &
T.E. FOR RIBS
1/4" SHEET
LEADING EDGE
BLOCK 'A'
FOR E.D.
46. 1/4"
SHT.
ALL RIBS FROM 1/16" SHEET
1/32" SHEET. TOP ONLY.
ROOT RIB

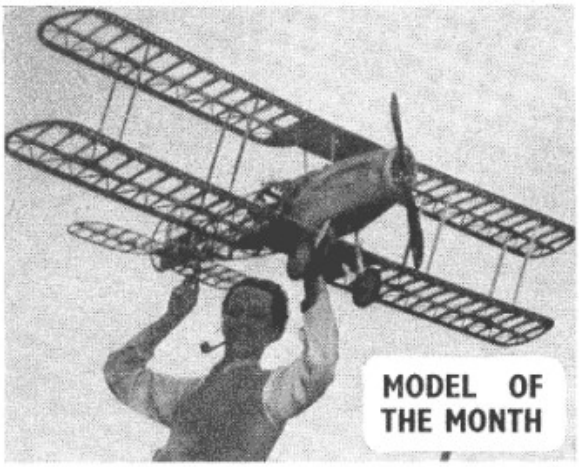

FUSELAGE PLAN VIEW
1/8" SHEET INCIDENCE BLOCK
1/16" DOWEL
E.D. ·46
BLOCK 'A'
ENGINE MOUNT. 1/4" HARDWOOD.
FROG 50
1"
SOLDER SMALL WASHERS
1" DIA. CELLULOID OR HARDWOOD WHEELS
16 S.W.G. U'CART OPTIONAL. MODEL MAY BE FLOWN WITH OR WITHOUT U'CART.

MIMI.


E.D. ·46 SHOWN.
USE FROG 6 X 4
NYLON PROP.
ENGINE MOUNT
1/16" DOWEL
C.G.
BLOCK 'A'
1/16" DOWEL
FUSELAGE S
TAPER END OF
BEARER TO
GIVE 1/32"
DOWNTHRUST
USE APPROX. 2°
LEFT THRUST.
3/32" DIA. REINFORCING
DOWELS
1/16" PLY
1/16" DOWEL
1/4"
1/16" DOWEL
1/16" DOW
1/4" SHEET
TAILPLANE
1/16" SHEET
POSITION OF
TIP FIN

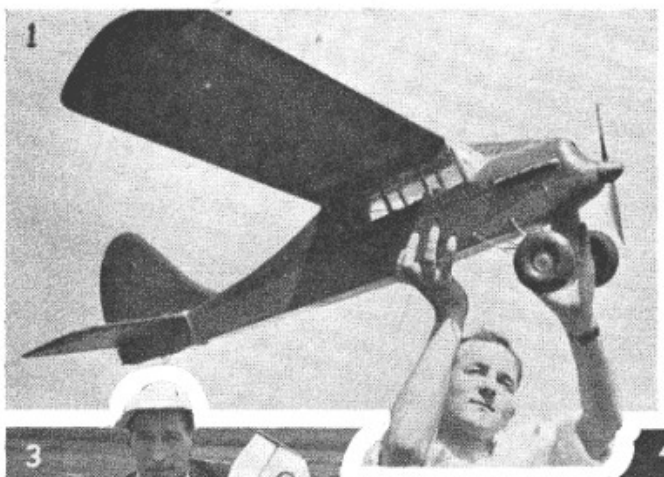

UPPER FIN
1/16" SHEET
5"
1/16" DIA. PEG
TAILPLANE PLATFORM
TIP FINS 1/16" SHEET
OWEL
AGE SECTION
LOWER FIN
1/16" SHEET
1/4" SHEET
TRIM TAB
TAILPLANE PLATFORM. 1/16" SHEET
1/4" SHEET
TOP
BOTTOM
" DOWEL
ROOT RIB ANGLE TEMPLATES
REAR WING MOUNT
1/16" SHEET
1/4" SHEET L.E.
1/32" SHEET
TOP ONLY
1/8" SHEET T.E.
ALL RIBS 1/16" SHEET

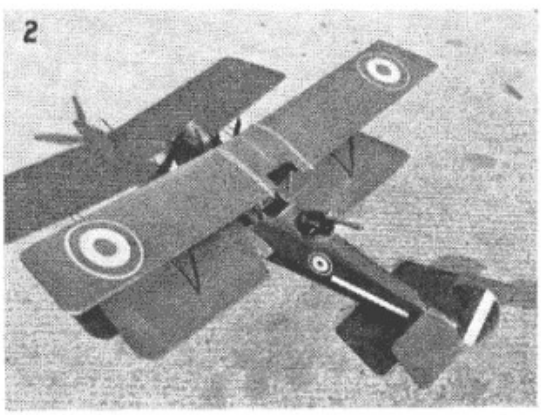


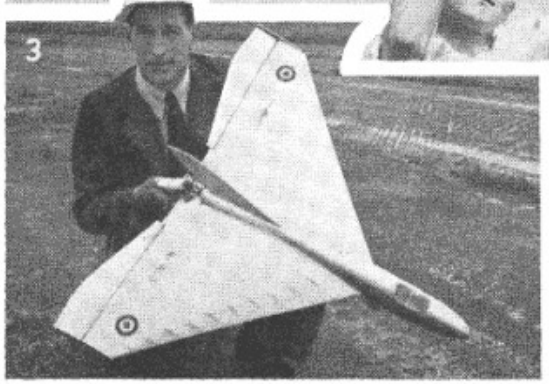


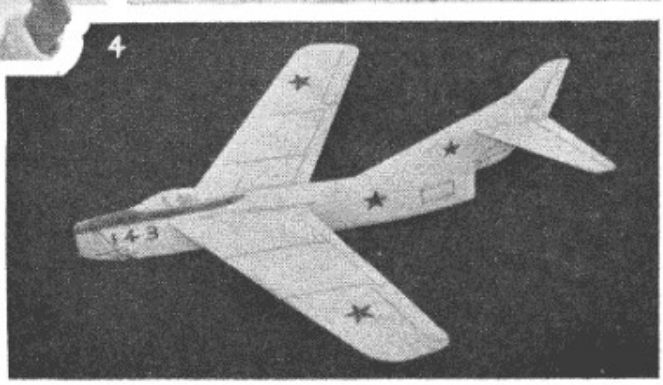
★ MODEL

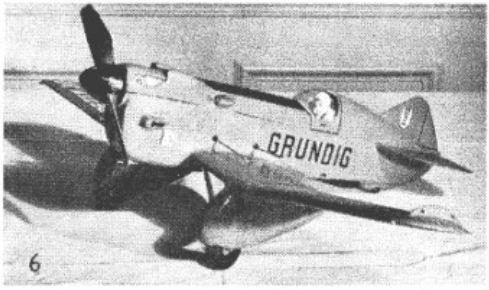
"BEFORE and after" photographs are always specially interesting, and when they are of a mammoth project like A. G. Overfield-Collins' beautiful 1/6th scale Bristol F2B Fighter, who can deny that they earn the "Model of the Month" title? Take note of the giant proportions: Span, 6 ft. 6 ins.; area, 1,600 sq. ins.; weight, 6 lb. 14 ozs.; wing loading, 10 oz./sq. ft.; power, 10 c.c. Super Cyclone, petrol ignition; prop, 19 ins. diameter, 6 ins. pitch; building time, 8 weeks. And all scaled up from the A.P.S. solid-size drawing! Decorated in the correct scheme for aircraft number five of No. 11 Squadron R.F.C., the Bristol has already undertaken first flying tests, and bears every evidence of smooth and slow stable flight. Both pictures, incidentally, are grand examples of just what can be done with the ordinary Box Brownie.











NEWS ★

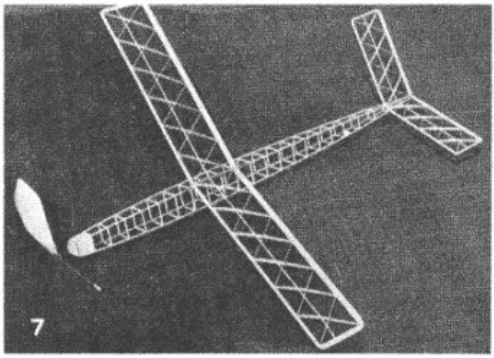
More big-stuff in photo **1**, where J. Lock of the Ely Club shows off his three-year-old Pegasus radio control design. E.D. 3·46 diesel is neatly hidden in the nose cowl, while Flight Control receiver is readily accessible through the cabin . . . a smart and very consistent model. Next door, in **2**, we have almost a mate for the Bristol Fighter in P. Wise's (Chelmsford) R.E.8, which bears No. 12 Squadron markings. Also with a scale diameter prop, a 10-in. four-blader, but the power is less than a tenth of that in the Bristol, a Mills ·75 being used here as specified on the A.P.S. plan.

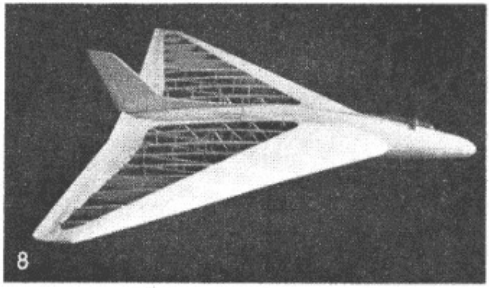
Same engine is used by S/Ldr. Laurie Ellis for his 36½ in., 480 sq. ins. original Delta, which appears in **3**. Laurie is Club Secretary of the Debden R.A.F. Club and is one of the real old-timers in this modelling game, so we have no doubts as to the performance of this free-flighter. For catapult or chuck launch is the MiG 15 sheet "solid" in number **4**, sent by P. Bradshaw of Torquay. He scaled this one up from drawings in our May 1952 issue, and reports flights of up to 30 secs. Handy hint for scale chuck glider fans is to strengthen the nose with 1/16th ply on either side.

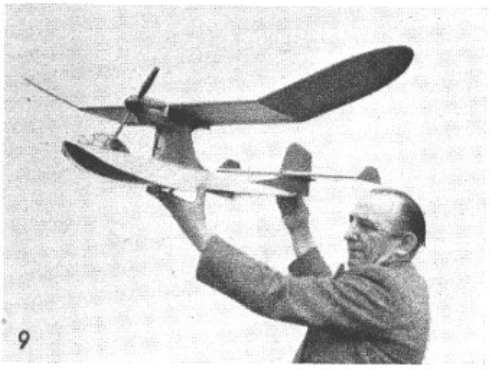
"Built on the wife's ironing board" is F. C. Green's claim for the neat Gloster Gamecock in **5**, which is from A.P.S. drawings of the famous P. E. Norman original, while another smart piece of work from the best dyeline prints in the business is the Pacemaker in **6**. Wearing a constant advert for his firm's tape recorders, John Ridley's version of this most popular A.P.S. Class A team racer is his thirty-second effort in two and a half years of modelling.

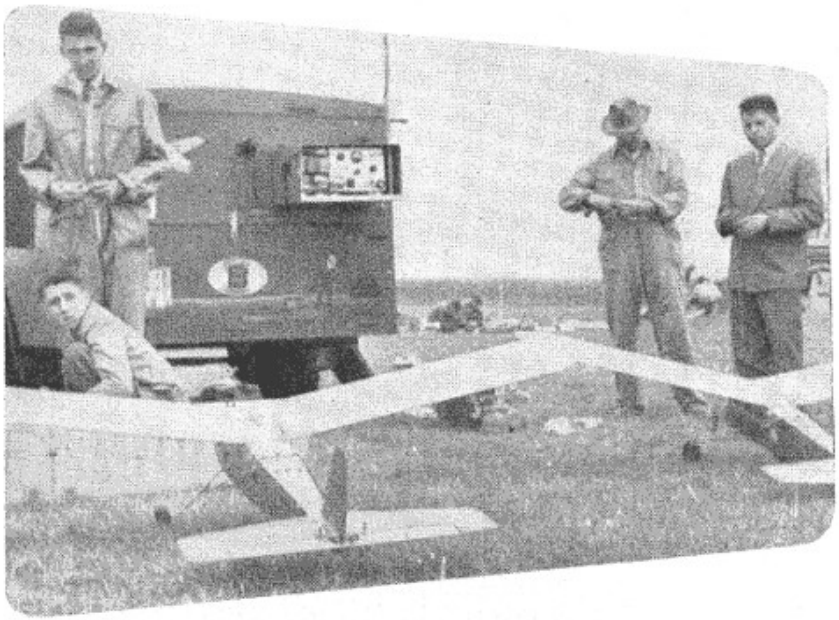
Now to a refreshing change, and Brian Lewis' vee-tailed lightweight rubber job with criss-cross anti-warp structure in **7**. 32 ins. span, 37 ins. long and with single-bladed 16 ins. diameter prop, this is Brian's 203 sq. ins., 3½ ozs. approach to the open rubber events of 1953. Another quite different type of model is the Delta glider in **8**, with 38 ins. span, 46 ins. length and 522 sq. ins. area. Total weight at 12¼ ozs. represents a light wing loading for builder/designer Ed. Dougal of Slough, and we gather that a parachute d/t is contemplated after first tests.

A flying boat always makes a nice picture, and when Jack Henley of West Essex posed for Bill Dean's camera with his Miss Yamamata, the result is as good as you see in photo **9**. Based on the reduced scale drawings in the AEROMODELLER ANNUAL this 60 ins. flying boat originally had an Arden ·199, but is now fitted with a Frog 150 diesel which copes very ably with the 2½ lbs. weight.









THE THIRD

COUPE FRACHET

PARIS, JUNE 28

As recounted by

SID ALLEN

A QUITE strong British contingent travelled over for the third "Coupe Frachet" International Radio Control Contest, held at Pontoise, on the outskirts of Paris, on Sunday, June 28th. Weather was excellent, and the standard of flying of most of the two dozen or so entrants, first class.

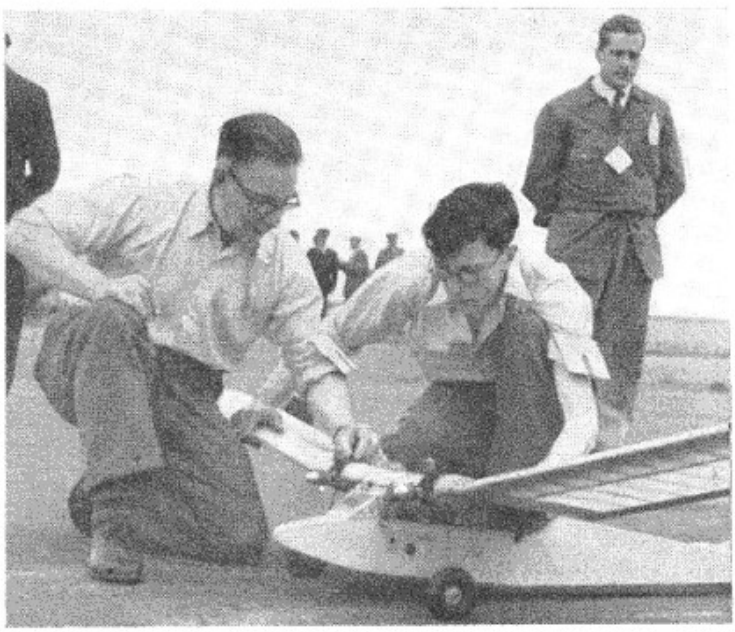
One of the most impressive flights was by Albert Wastable (Moulins, France) with his six-foot, seven-reed cabin job. The model was left waiting on the runway with the motor (10 c.c. ignition) ticking over, while its owner held a lengthy discussion with the judges and one or two other competitors. At the conclusion of this, he turned to his radio and proceeded to advance the motor speed smoothly and progressively. The model gathered speed down the runway until, with the motor fully advanced, a touch of up elevator completed one of the most authentic take-offs yet seen by a radio model. Wastable then flew his complete pattern and brought the model back to a landing with the motor still ticking over; after touching down he used bursts of throttle and rudder to taxy the model back to his feet—a distance of approximately twenty yards. This incredible performance earned only *second* place, which gives one some idea of the standard achieved by Belgium's Dr. C. Gobeaux, who placed first.

The Doctor used a diesel powered seven foot cabin model of apparently quite conventional design, fitted with reed-operated engine, rudder, and elevator. No doubt the model's perfect loops from level flight (using elevator only) netted the few extra points which gave him a clear win.

In view of this very high standard, congratulations are certainly deserved by the British fliers who followed close on the winner's heels.

PLACINGS

1.	Dr. C. Gobeaux	(Belgium)
2.	A. Wastable	(France)
3.	G. Honnest-Redlich	(Gt. Britain)
4.	S. Allen	(Gt. Britain)
8.	E. Hemsley	(Gt. Britain)



The "Coupe Frachet" was won by Ted Hemsley when first put up by Mme. Frachet (widow of French air ace) in 1951. Heading shows Dr. Gobeaux, this year's winner (in trilby) with trailer and crew: winning model on left. At right: Col. Taplin and son John entered their cross-shafted twin E.D. veteran.

Readers' Letters

New Rule Opinion

DEAR SIR,

Recent issues of the AEROMODELLER note the early shoots of a controversy over the alteration in the Wakefield rules. I would like to get my little shot in on the subject while there is still time, as having designed a very orthodox model and built it just as the new rules were made known, I have trimmed it and flown it with the object of determining the performance of a Wakefield with a 2·82 oz. motor.

The motor was made up into 14 strands and needed only a few pre-tensioning turns to get it quite taut when loaded in the 40 inch fuselage. First shock was the low number of turns absorbed, I haven't had 700 on yet! Take off was easy, but duration in still evening air turned out quite low at first, because with the model designed for a heavier motor, the nose was far too heavy, giving a poor glide. I eventually managed to screw 2 mins. 6 secs. out of the job on 600 turns, landing up with a fair quantity of ballast in the tail and a whole ¼ in. of packing under the T.E. of the tail-plane! I also had nearly 3/16 in. down and side-thrust on the prop. The model has a low pylon with the T.E. of the parallel chord wings lying on the top longeron of the fuselage. The U/c is fixed and the prop. freewheels.

My opinion on the new rule is that it is an excellent one. The fact that the motor is lighter, and consequently less expensive, appeals to me privately, while I have found that the duration is reasonable. I never could get five minutes before, so why should I fret if I cannot get three now? Furthermore, the average aeromodeller like me can build an airframe he will be more confident of, without reducing strength for a saving in weight as before. A really strong wing can be designed, perhaps with geodetic ribs and the luxury of a mainspar. As for gears, I hope we've seen the last of them, and I predict the ratio of freewheel enthusiasts to folders will remain unchanged.

My next design will have a longer fuselage aft of the wing and consequently a smaller tailplane and larger area wing and on this I pin my hopes for 1954.

Trusting these lines may have afforded you some interest, I remain.

Montrose. C. G. CAMPBELL.

Propelling Comments

DEAR SIR,

May I be permitted to draw attention to two paragraphs written by Mr. Warring on p. 297 of the May issue of the AEROMODELLER, which could very well be misinterpreted by a reader and cause him to be led to fallacious conclusions.

Concerning the idea of using a constant-speed propeller on a rubber driven model to improve the propeller efficiency, it must be pointed out that a rubber job flies at practically constant speed (or should do) and the propeller has to cope with large variations of torque, while a full size aircraft flies at varying speed and constant propeller torque. Evidently, if a model propeller worked at constant efficiency, the shape of the Thrust VS turns curve would be similar to the Torque VS turns curve and the large variations of thrust over the time of motor run would cause difficulties in trimming. Apart from this, the first burst of energy from the motor would be gone so quickly that there would be nothing to show for it. In the past, we have seen what has accurately been described as a constant-speed propeller, whose pitch increased with increasing turns to cope with the increasing torque. In this content a constant-speed propeller is *not* a constant efficiency propeller, in fact the efficiency at the beginning of the motor run is almost zero; fortunately the main idea is to persuade the model to remain airborne while the large pitch slows down the motor as much as possible during the first burst of power. It would appear that neither type of variable pitch propeller represents a substantial advance in the search for improved performance at constant weight of rubber motor.

Concerning the idea of a limited-speed propeller using a "governor or similar device," Mr. Warring forgot that a governor absorbs excess urge by friction (which means energy dissipated) and it does not, as he suggests, reallocate energy or torque from the fully wound part of the motor run to the end of the motor run but merely cuts off all the torque above a specified value on the Torque VS turns curve, hence throwing away all the energy represented by the area enclosed by the Torque VS turns curve above that line. In general, no "governor or similar device" will do what Mr. Warring has described quite accurately as the ideal. A variable diameter propeller has certain aerodynamic advantages, but is strictly limited in its scope. To set the reader's mind at rest that the article was specifying an attainable ideal, it should be remarked that there is a mechanical method of reallocating Torque VS turns curve so that it is more uniformly distributed and the undersigned is at present engaged on constructing a considerably simplified mechanism to determine whether it is a practical proposition.

Incidentally, I can't understand the implied objection to return gears with limited rubber weight. Surely if you concentrate the motor in the front half of the fuselage and re-position the wing fore and aft, you reduce the pitching inertia quite considerably? In view of the same effect resulting from flying with ballast instead of putting weight into the structure, where is the snag?

Aylesbury. R. H. W. ANNENBERG.

Popular Venue Required

DEAR SIR,

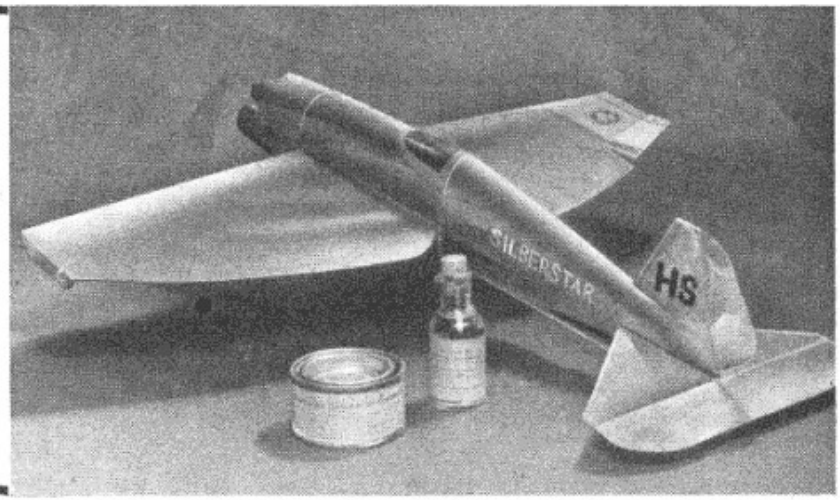
Scale or Precision fliers are not contest men; they are enthusiasts who like to "Fiddle and Mess" (as one Area news-sheet aptly quotes), and take time to look around between flights. Neither are they the types to travel a hundred miles or more to waste their day at a near empty centralised venue! Surely, 18 entrants lucky enough to be local to Halton are hardly indicative of adequate interest in these "Fly for Fun" events.

No! Scale and the Bowden should be held in future at a popular meeting, the Nationals, or one of the larger Rallies, then perhaps they will warrant the extraordinary amount of publicity received in the past.

London. B. BROWN.

METAL COVERING

A new German light metal for models reviewed



Completed Klebmetall model sent from Germany is for Frog 50 and is remarkably light.

METAL flying models are not new, and thin aluminium or dural sheet is often used by the more expert speed control line modellers as a wing covering. But when a large package arrived by post from Germany recently, we were privileged to review the first example of " Klebmetall ", an entirely *new* form of metal covering. With some sheets supplied for test, a fully completed team racer cum sport control liner came as an example of what can be made with this material, and we were agreeably surprised at the relatively light weight of the airframe.

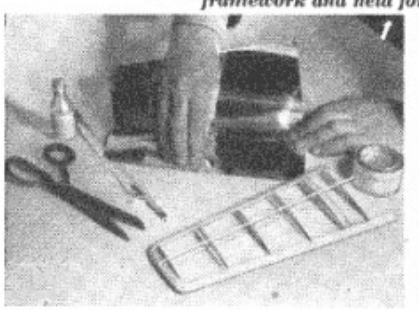
The metal is non-ferrous, it will not solder, but it can be fused with heat, though this is not a satisfactory method of making joints. The correct method relies on the very soft nature of the highly polished surface. Fine sandpaper will engrave deep enough scratches in the surface to enable the special glue to gain a firm hold, and since this translucent blue coloured glue is obviously from the cellulose family, it is a natural supposition that the metal can be stuck to a balsa airframe in just the same way as tissue covering. The metal is too soft and prone to damage for it to be used entirely for an airframe, so the best way to employ " Klebmetall " is over a normal structure. Leading and trailing edges, could, however, be safely omitted from any wing.

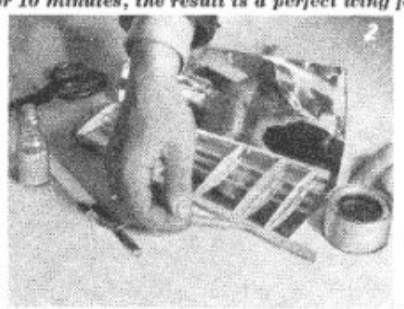
Klebmetall weighs 0·93 ozs. per square foot, so allowing for double surface covering on, say, the " Debutante," then the extra weight would amount to about 3 ozs. Which is not altogether impractical in view of the magnificent high glaze finish, automatically supplied by the metal, and not forgetting perhaps an ounce saved in tissue and dope. We doubt whether it would be a worthwhile proposition for a larger model.

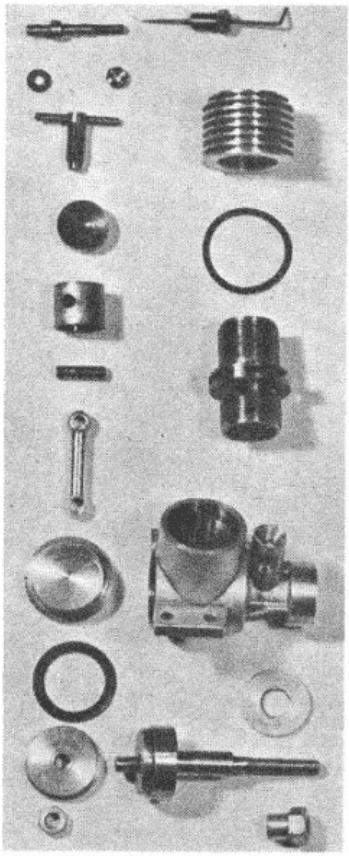
For control line, particularly team racers, the metal has distinct advantages. The ultra-smooth surface should guarantee a few extra miles per hour, while the impervious nature of the covering obviates the need for fuel proofer or any guard against oil soakage. Supplied in sheets measuring 50×70 cm. ($19\frac{3}{4} \times 27\frac{5}{8}$ ins.), it is very easy to handle and on the test wing seen in the photographs below, the metal adopted a perfect curve over the rib section. The edges were scratched with sandpaper, the balsa and the metal coated with the special glue, and it was possible to stick the covering on immediately. In an hour, the job was firm, in ten hours it reached absolute firmness.

We understand that in the team races at the U.S. Nationals '52, the winning model was covered with this same material. Supplied in rolled sheets, size as above, with glue and thinners, Klebmetall cost DM.3.90, or 6s. 8d. per sheet and the manufacturers are CONSTRUCTOR, Westernstrasse 6/8, Paderborn, Germany.

1. Etching the glueing area with sandpaper, shears or scissors cut the metal easily. 2. Glueing the balsa with special adhesive; note reflection from highly polished surface. 3. Folded over the framework and held for 10 minutes, the result is a perfect wing for control line speed.

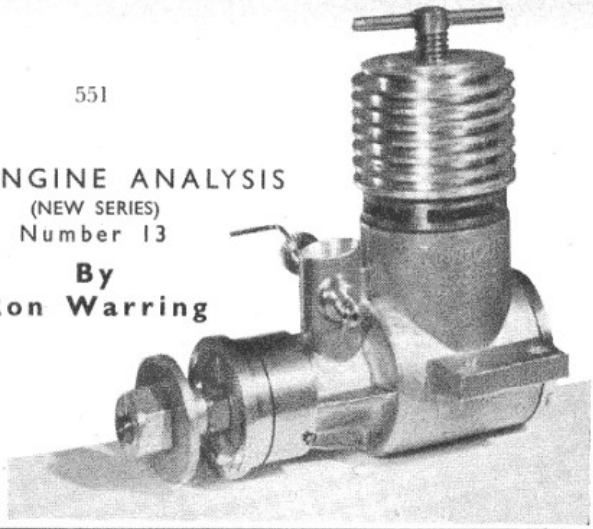






ENGINE ANALYSIS
(NEW SERIES)
Number 13

By
Ron Warring



TYPHOON R250

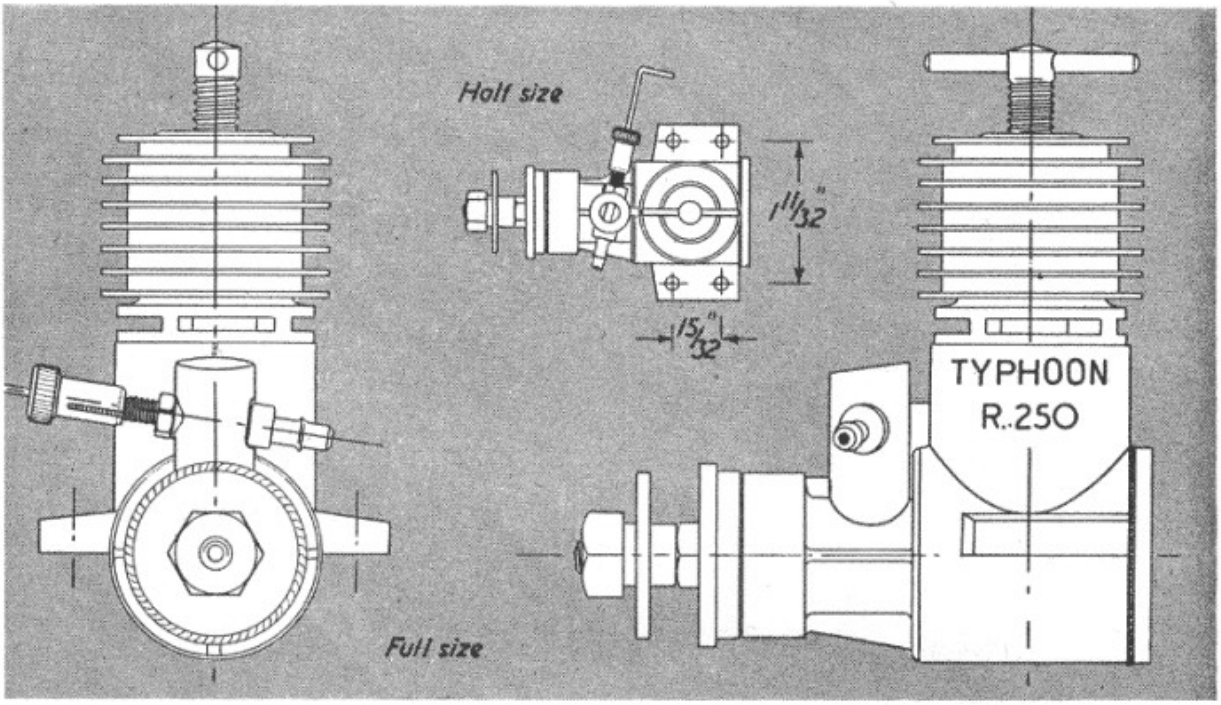
Though an exceptionally powerful motor, all port sizes are of moderate proportions. Front ballrace is peened in place, inner race a tight fit on the shaft making it a perfect free-running crankshaft unit.

IF we can use an Americanism to describe a Dutch engine, the new Typhoon R.250 diesel produced by *Miniatuur-motorenfabriek Typhoon* of Amsterdam is a "honey"—one of the most powerful motors in its class and a delight to operate. It will be remembered that we reported on the *Typhoon IV* by the same manufacturers in the March, 1953 issue, whilst a report on the plain bearing *Typhoon* 2·47 appeared in THE AEROMODELLER, April, 1952. The new R.250 appears essentially the same as the original engine of the same displacement with the crankcase unit now re-designed and incorporating two ball races. It is, as the manufacturers call it, a true racing engine.

In all fairness to Messrs. *Miniatuur-motorenfabriek Typhoon* we quote from a letter received from them commenting on the *Typhoon IV* report, largely on the matter that the brake horse power realised on test was not as high as they had anticipated . . . "The reason of this low result probably is that we sent the engine new and not run in. The report mentions that the engine was run at 5,000 to 7,000 r.p.m. At high revs. the engine gets much hotter and as the aluminium piston expands more than the lining, the engine will seize. The best method of getting the motor run in for high speed is gradually increasing the revs, whilst injecting small amounts of oil in the choke. This method has been proved by extensive experience. Glowplug engines can only give their maximum power at high revs., therefore are very sensitive to friction of moving parts, which is not so much the case with diesel engines."

If you want the complete picture, re-read the original report. One of the main reasons for including the above quotation is the mention of applying lubrication through the intake tube during running in. In the days of spark ignition engines which were frequently set up very tight and left to "wear themselves to a fit", such "running lubrication" during the break-in period was common practice. Just about the best lubricant for the job was castor oil. A drop of castor in the intake tube as soon as the engine showed signs of slowing up was usually worth an extra few hundred revs. in a matter of a second or so.

It would also appear particularly pertinent to remark the low brake horse power realised is not confined to their particular product. With virtually no exception, the *New Series* of tests has consistently given lower figures than previous test figures would appear to indicate as probable, or which would even compare with contemporary test figures from other sources. One outstanding feature has been the *consistency* of these lower figures and the subject of testing techniques in general has been investigated in some detail over the past few months. We hope, shortly, to be able to make an announcement of unusual importance on this score. In the meantime, may we get back to the "Typhoon" R.250 ?



What the maker's claim for the R.250 diesel in the manner of brake horse power we do not know. Our own test produced a maximum of 0·29 b.h.p. at a round 13,500 r.p.m. with a well rounded peak—directly comparable with any 2·5 c.c. design so far tested, and therefore a motor which must receive serious consideration in the International contest sphere. Quite apart from excellent power performance, however, flexibility as regards control, easy starting characteristics and general non-critical handling make the R.250 a most likeable engine.

Consistent with our standard practice, initial running-in was done with a large 11 in. × 6 in. propeller until the revs. worked up from about 6,500 to 7,000. This provides an initial " bedding down " of the moving parts, after which higher speed running with smaller propellers can safely be attempted. Changing over to a smaller propeller we chose one with an oversize hole through the hub which, as events subsequently proved, we did not lock on truly central. Vibration was considerable, so much that the nuts ran off the hold-down bolts just as fast as you could have unscrewed them by hand. We tried a quick shut-down (supposedly!) by opening the compression *two* whole turns and still the engine kept on running, so we simply had to hold the now almost free engine down with one hand and close the needle valve right down with the other to starve the engine to a stop! For this operation we blessed the designers for angling the needle valve assembly both backwards and upwards for easy handling. A very good point, indeed, which more engines might copy, even if it is a little more difficult to manufacture.

Impressed with the non-response to compression control we repeated tests (this time with a balanced propeller!) and confirmed that you could, indeed, with an engine speed of around 8,000 r.p.m. slacken off compression more than two turns without stopping the engine. The needle valve was similarly non-sensitive so that you could, quite comfortably, leave *both* controls well alone, set for best running position, and simply start by choking and flicking. Starting rich, the R.250 soon settles down into absolutely consistent running at virtually any speed between about 6 and 14,000 r.p.m., depending on the load. An occasional miss as speed was increased by using smaller propellers was soon cured by increasing the compression slightly so that, at 12,000 r.p.m. and above, optimum compression was some two thirds of a turn greater than for slow running.

The final running-in was done with an 8 in. × 4 in. propeller which it turned comfortably at just under 12,000 r.p.m. It batted this around indefinitely at that speed for just as long as any fuel remained in the large test tank with never a miss or a protest or variation in r.p.m., except for a total gain of just over 100 r.p.m. after prolonged running.

Hand starting was approached with a little diffidence with even smaller propellers, having got to appreciate the racing characteristics of the engine. Of the alternative starting techniques possible—priming through the exhaust, choking with a finger over the intake, priming through the intake, etc., finger choking seemed to work as well as any. Enough fuel was sucked in to make the engine feel " squishy " after which flicking the prop. over sharply usually produced almost instantaneous response with an initial burst of rough running, quickly settling down and screaming up to maximum revs., which were then held steadily.

The first backfire, incidentally, produced something of a crisis. The propeller backplate screws onto the threaded front end of the crankshaft and is locked in place with a nut. The propeller nut, incorporating a spigot making it rather like an overgrown plain bush, is drilled through and tapped, also to screw on the crankshaft. Prop. nut assembly, the backplate and its locking nut came spinning loose and efforts to screw the backplate back on and lock it with its proper nut met with little success. Every time the propeller nut was tightened up the backplate seemed to unscrew just that bit sufficient to loosen the propeller. Finally we dispensed with the backplate locking nut, turned the prop. nut the other way round with spigot projecting forwards and found it much better that way. The variations that could be worked with the prop. nut, backplate locking nut and prop. washer were numerous and sufficient to accommodate any thickness of propeller from 2 to 14 inch pitch—not that we think the makers intended it to be used any other way than as shown on the drawing.

It would be difficult to fault the R.250 on any major point. Probably its worst feature is that the top of the cylinder gets very hot after a short period of high speed running and adjustment of the compression at this stage is a rather painful process. Normally, however, what adjustment might be called for, if any, would be completed before the engine had warmed up.

It is not a particularly light engine, but in view of its excellent power output it has a very favourable power : weight ratio. What penalty may have been paid for in weight is more than counterbalanced by the extremely rugged construction. In particular the sensibly thick mounting lugs call for favourable comment, as well as the short length, reducing the vulnerability of the crankcase in a crash landing. Not that the R.250 crankcase is particularly vulnerable. Like the rest of the engine it is extremely sturdy.

It is favourable comment, too, to say that this essentially racing engine, which appears particularly suited to free flight duration or control line speed, should also make a good " sports " engine on account of its easy handling characteristics and consistent running at low, as well as high, speeds. A 12 in. × 4 in., 11 in. × 4 in. or 5 in., or a 10 in. × 5 in. or 6 in. propeller would appear excellent for sports flying. For free flight duration a 4 in. pitch with 8 in., 9 in. or 10 in. diameter, according to the speed required, would be a good choice. An 8 in. to 10 in. pitch propeller would appear about the best for control line speed.

Propeller Test Data*

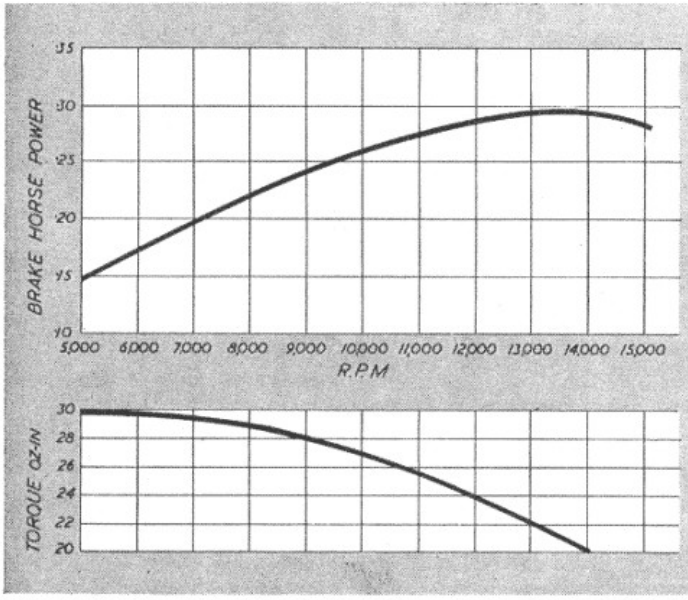
Fuel: Mercury No. 8

NOTE.—For the benefit of overseas readers, Mercury No. 8 fuel equivalent formula is :—

PARAFFIN	40%
CASTOR OIL	25%
ETHER	32·5%
AMYL NITRATE	2·5%

Propeller Dia.	×	Pitch	R.P.M.
11	×	6	6,600
10	×	6	7,400
10	×	4	8,700
9	×	6	7,900
9	×	5	8,750
9	×	9	10,900
8	×	6	9,200
8	×	5	10,750
8	×	4	11,900
8	×	3	12,750

*Constant geometric pitch wooden propellers



TYPHOON-DIESEL R.250

Specification

Displacement: 2·47 c.c. (·15 cu. in.)
Bore: 15 mm. (·590 in.).
Stroke: 14 mm. (·551 in.).
Bore: Stroke Ratio: 1·07.
Bare weight: 4½ ounces.
Mounting: Beam

Material Specification

Crankcase: Pressure Diecast Duralumin light alloy.
Crankcase bearings: two ball bearings.
Cylinder: Nickel-chrome steel.
Cylinder casing: Duralumin.
Piston: Plain.
Conecting rod: turned duralumin.
Crankshaft : Nickel-chrome steel.

Manufacturers:

Miniatuur-Motorenfabriek Typhoon, Keizeragracht, 372, Amsterdam, Holland.

Retail price (Holland): 47·45 guilders, (approx. £5 equiv.).

★ GADGET REVIEW ★

WITH the change in rules for Wakefield models in 1954, more interest than ever will be centred on the streamlined fuselage. M. B. Osborne of Audenshaw near Manchester submits his idea **A** for making an entirely new former which is both light and easy to make for the streamliner. Briefly, the formers are made from thin sheet celluloid so that the resulting cross section is in the form of a " T ". As many will know this is one of the strongest sections used in structural steel work. Moreover, by carefully planning a circular section fuselage using this system, it is possible to plot formers inside one another so conserving the amount of celluloid used. Celluloid is easily cut and a clean break is simply made by scribing a line and then bending along the line between the fingers. The interior ¼ in. wide strip will of course cement firmly to make a permanent joint.

Not all engines, but nevertheless a good many of them, have the common fault of providing needle valve bodies without any means of retaining the fuel tubing. Mr. Riall of London finds that a small length of brass tube slipped over the needle valve body **B** (not the choke tube as stated in the sketch opposite) and soldered in position, is sufficient to hold any length of neoprene tubing firmly in place.

From the same gentleman we have the discovery that those little rubber grommets used in electrical installations and radio construction are very handy for use as insulators in model bulkheads. No longer do we have to be precise in cutting out the hole in the bulkhead for fuel tubing or wiring, just purchase a grommet with a hole that will be a tight fit around the wire or tube and then fit the grommet in a roughly shaped hole as shown in **C**.

The Whirligig illustrated as **D** is another brainwave from George Woolls of Bristol. George will be well-known for his outstanding rubber designs and he passes on this little tip to other enthusiasts to aid them in testing out rubber motors or prewinding indoors. Four pieces of 1/16 in. balsa each 1¼ ins. wide and about 7 ins. long, are stuck around a hardwood hub and as shown in the sketch, are attached to a shaft. Just hook up the bobbin or winding loop on to the end of the shaft and when allowing the motor to unwind, the balsa vane will slow up the rate of turns to a satisfactory speed.

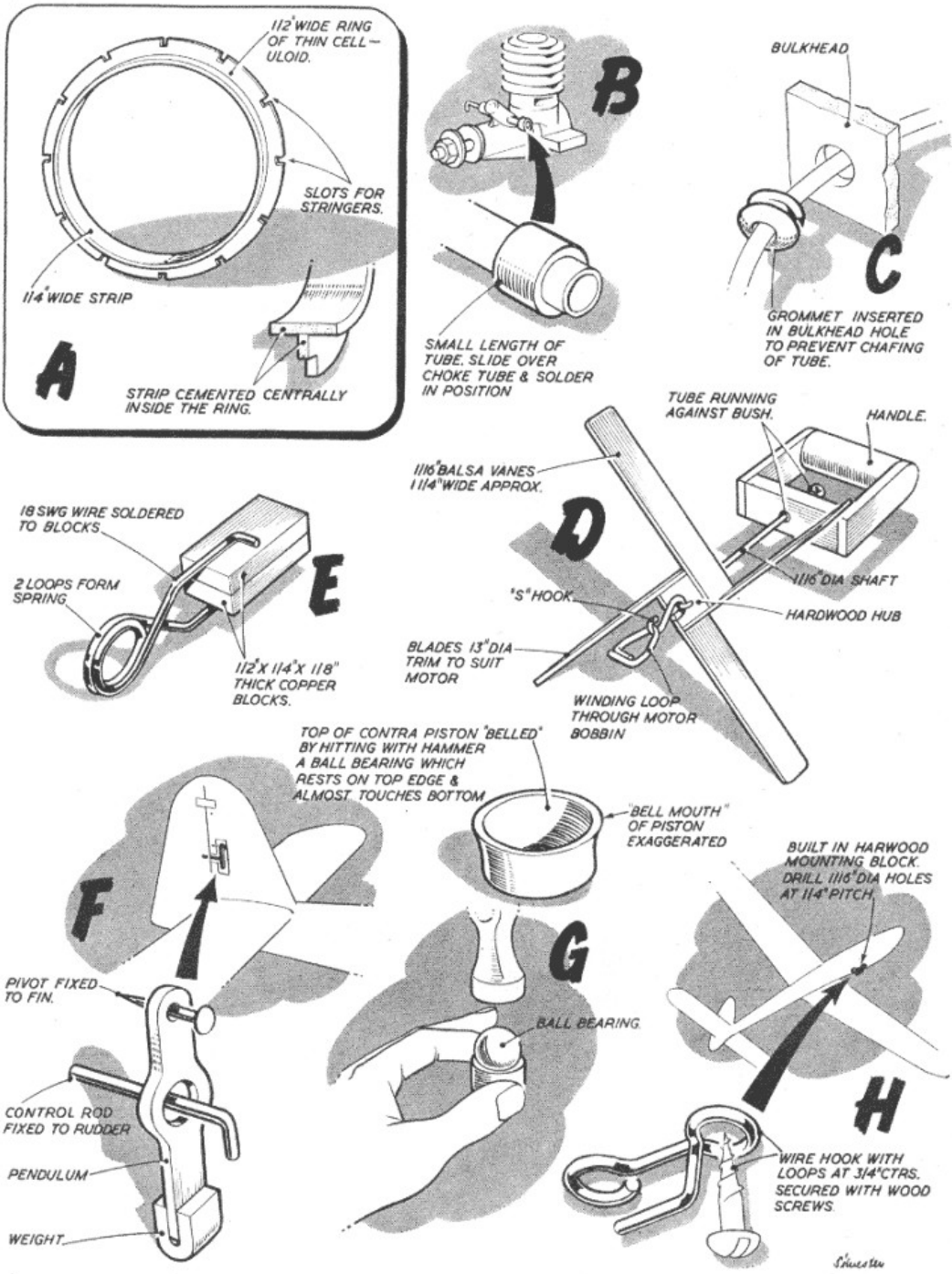
Soldering is the subject of the next sketch **E** and this one comes from Donald Wilson of Worthing. This gadget is intended for those who prefer to make up their own radio control equipment and the general idea is to conduct away some of the heat which would otherwise " fry " small resistors and capacitors. How many of you, we wonder, have cracked a valve base whilst soldering a radio circuit ? Two copper blocks are attached to a wire spring made from 18 s.w.g. piano wire. The clamp is then clipped on to the wire " upstream " of where the joint is being made and you will find this will take away all of the excess heat passed from the soldering iron to the wiring.

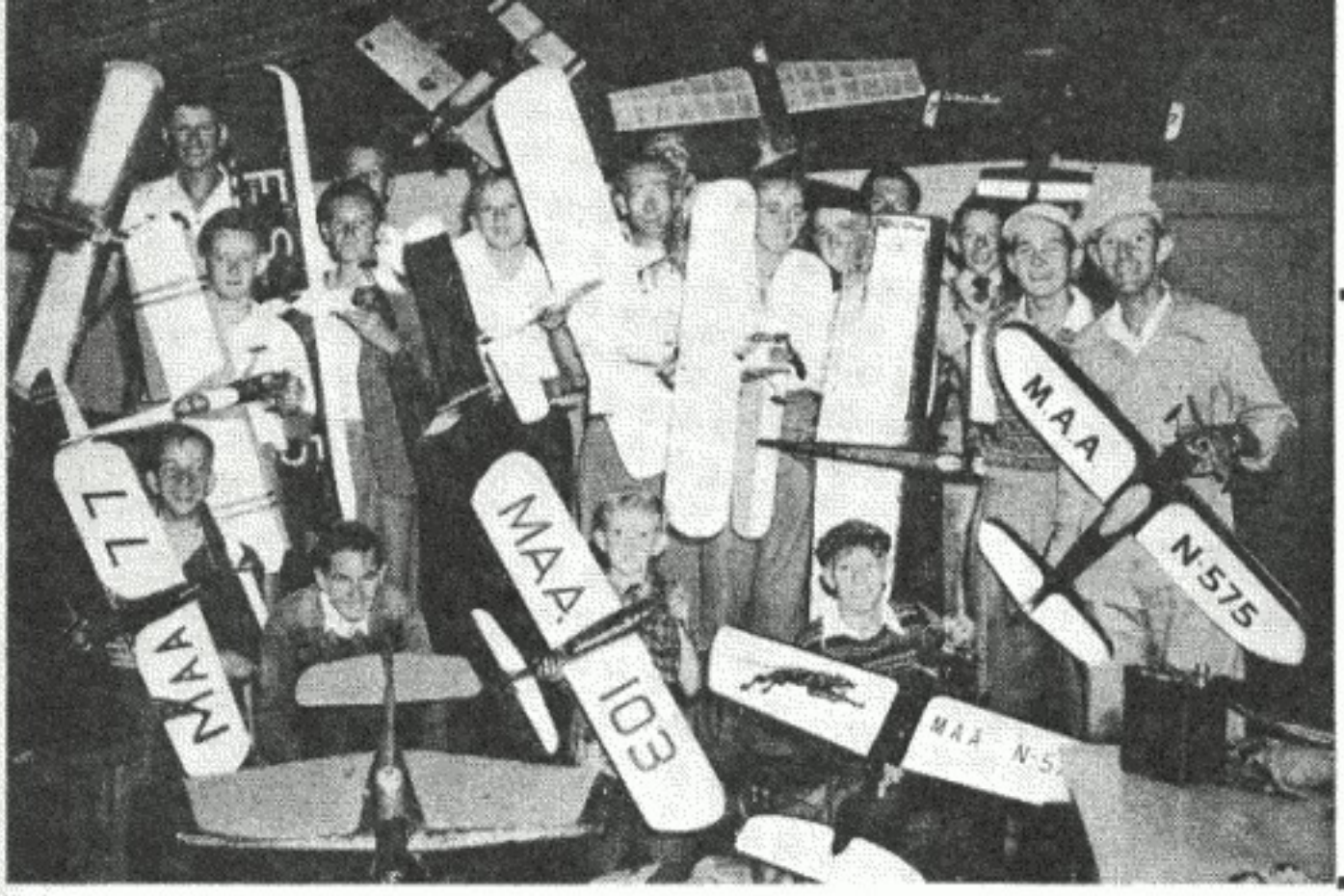
It seems like we just cannot have a Gadget Review without another pendulum idea and in **F** we have D. Williams of Kenton, showing a simple installation in the fin. A lot will depend on the actual leverage of the swinging pendulum ; but by trial and error it should be a fairly easy matter to arrange sufficient power in the leverage to overcome slipstream effect. The distance between the pendulum and the hinge line of the fin and rudder should be at least ¾ in. for satisfactory operation.

Quite often we have suffered the experience of an engine thoroughly running itself to a perfect fit in every respect with the exception of the contra piston. Just when the piston and crankshaft bearings have loosened up for fast running, the contra would begin to show a leakage. C. Potter of Crosby tells us that it is possible to bell out the top of a recessed contra piston if you find a ballbearing with the right diameter. In sketch **G**, we exaggerate the operation, and of course, we have no need to tell you to be cautious when laying on those final taps with the hammer. This is an idea we would really restrict to emergencies only on the flying field or when time is precious since as you all should know, the reboring services offered by AEROMODELLER advertisers, now happily include a first-class contra piston replacement service. So if you have a case of " compression creep " be cautious before you start looking for the hammer.

Like the pendulum, one of Gadget Review's old favourites is the glider towhook and George Harrison of Hull sent in idea **H** which is a very simple approach to the problem. A couple of woodscrews and a short length of piano wire are all that are required, plus a short length of hardwood recessed into the fuselage. Bend the wire with loops to go around the shank of each woodscrew and simply screw in the towhook at whatever position required. If the hardwood insert is long enough, a series of pilot holes could be drilled in an untested model, and the towhook shifted fore and aft for a succession of tows to find the ideal position.

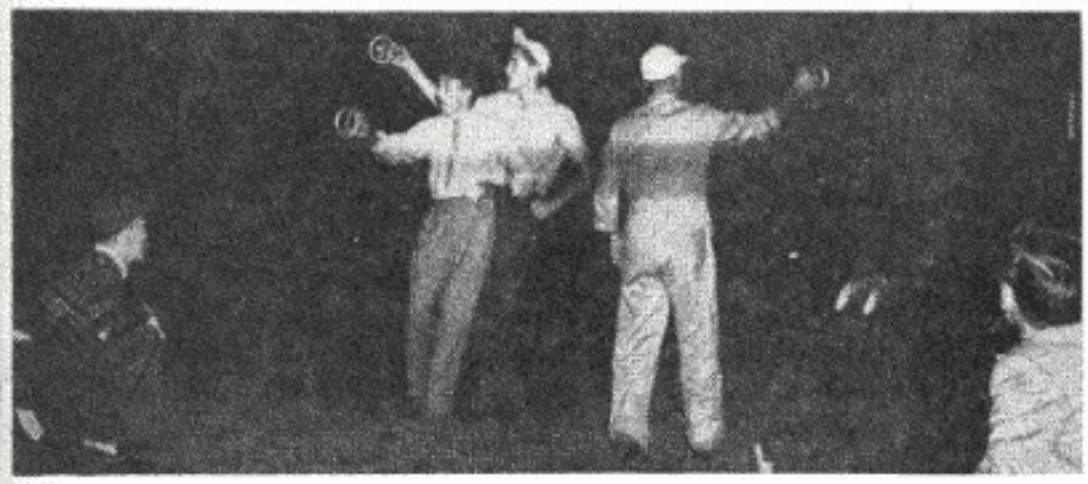
That's all for this time, don't forget that the little gadget or idea you incorporated in your last model might also be useful to other aeromodellers, so why not send it in for possible publication in this feature ? All published ideas are paid for ! !


1/2" WIDE RING OF THIN CELLULOID.
SLOTS FOR STRINGERS.
1/4" WIDE STRIP
A
STRIP CEMENTED CENTRALLY INSIDE THE RING.
B
SMALL LENGTH OF TUBE. SLIDE OVER CHOKE TUBE & SOLDER IN POSITION
BULKHEAD
C
GROMMET INSERTED IN BULKHEAD HOLE TO PREVENT CHAFING OF TUBE.
TUBE RUNNING AGAINST BUSH.
HANDLE.
1/16" BALSA VANES 1/4" WIDE APPROX.
D
1/16" DIA SHAFT
"S" HOOK
HARDWOOD HUB
BLADES 13" DIA TRIM TO SUIT MOTOR
WINDING LOOP THROUGH MOTOR BOBBIN
18 SWG WIRE SOLDERED TO BLOCKS
2 LOOPS FORM SPRING
E
1/2" X 1/4" X 1/8" THICK COPPER BLOCKS.
TOP OF CONTRA PISTON "BELLED" BY HITTING WITH HAMMER A BALL BEARING WHICH RESTS ON TOP EDGE & ALMOST TOUCHES BOTTOM
"BELL MOUTH" OF PISTON EXAGGERATED
F
PIVOT FIXED TO FIN.
CONTROL ROD FIXED TO RUDDER
PENDULUM
WEIGHT
G
BALL BEARING
BUILT IN HARWOOD MOUNTING BLOCK. DRILL 1/16" DIA HOLES AT 1/4" PITCH.
H
WIRE HOOK WITH LOOPS AT 3/4" CTRS. SECURED WITH WOOD SCREWS.



WORLD NEWS

Sydney members of the M.A.A. of Australia run control-line displays at the city speedway meetings; photo below left shows the boys in action. during three-man combat flight.

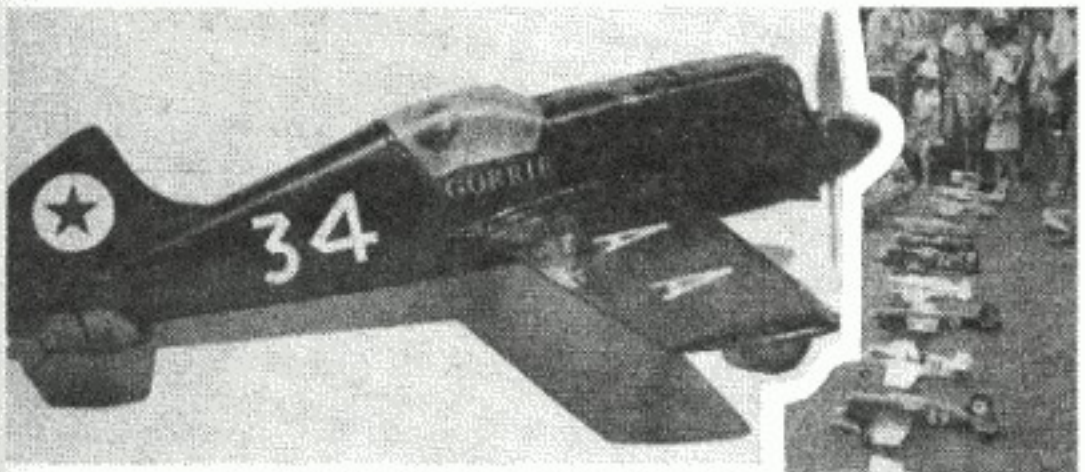


HOLLAND provides welcome news, especially for the many control-line enthusiasts who suffered disappointment at the cancellation of this year's Knokke meeting in Belgium. Already scheduled on the International Calendar, is the Team Race meeting to be held at Soesterberg air-field (between Amersfoort and Utrecht, and 20 miles from Amsterdam) and we gather that the Dutch authorities have now offered to add the Knokke speed and stunt events to this with the co-operation of the Federation de la Petite Aviation Belge. Flying will take place on September 19th/20th, and all visitors are requested to arrive sometime after 15.00 hours on the 18th. So the Fifth "Criterium of Europe" will now take place.

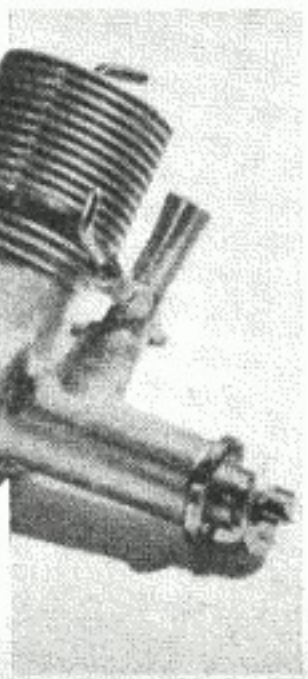
High glider times in the **GERMAN NATIONALS,** where the 50 metre line and three-minute maximum rule were employed, will mean that the team from that country for the A/2 in Yugoslavia will be a group to be watched. Karl-Heinz Denzin topped the team eliminators with a total of 14 : 11 out of a possible 15 : 00. Some going when you consider this is from 5 flights, and it seems to bear out Karl's claim for a regular 2 : 45 to 2 : 55 duration for his model which has two tail positions. Set at minus 4° for thermal flights, or at minus 2·5° for still air, the tail is unique in having a surface turbulator. Drawings will appear in the 1953 "Aeromodeller Annual."

Other German team men for Lesce-Bled will be Hacklinger, Wummel and Linder with Horst Jung as team manager, while **AUSTRIA** announces little change in their team, with Ossie Czepa, Skalla and Schober qualifying in the eliminators.

Novel idea from the **DANISH NATIONALS** which might not work so well here in Great Britain or in other lands, was the share-and-share-alike plan for travelling expenses. Whether the bods came from Odense, only 6 miles away, or the other end of Denmark the fee was 25 Kroner (about 25/–). Another distinct difference is the regulation that only the best and most qualified modellers can compete . . . they *must* be well organised in the Dansk Sveveflyver Union to lay down the law on that one. As reported earlier, the Hansens are well



Above: "Starbomb" Australian B team racer with Frog 500, winner of the Queensland Champs. View at right shows the entry. Below: Czech, V. Hajek of Prague with high performance tailless Wakefield, and Letmo 2.5 diesel by Husicka.

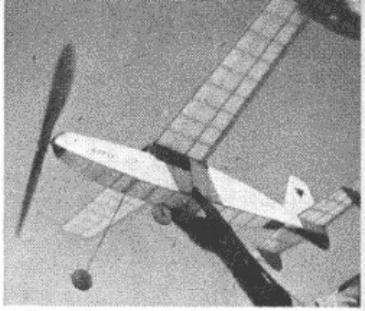


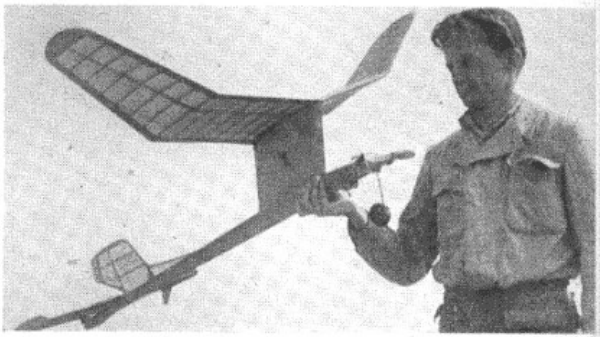
to the fore in the A/2 team ; and we now learn that reserve Fritz Neumann is now included on the trip to Yugoslavia.

In a letter published in "Model Aviation", the news magazine of the A.M.A. in the **UNITED STATES,** Jim Tangney raises a point on the '54 Wakefield rules that concerns all rubber fliers. " A good Wakefield *has* been able to stand its own with almost any type of rubber model," says Jim . . . " A Wakefield will now be just a Wakefield instead of a good all-round model. That means we shall have to work on Wakefields for Wakefield events and on another model for all other rubber events ". Which is very sound reasoning, the solution now being for all countries to adopt the one-third rubber weight rule for all open rubber contests to reinstate the Wakefield in its leading position on the performance tables. Unless this is done, interest in the Wakefield model might very well reduce to the limited hard-core of " Wakefield-only " specialists.

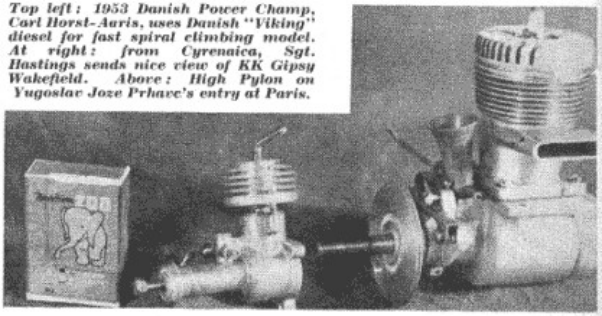
Designs at the **SOUTH AFRICAN** Nats showed the popularity of A.P.S. plans in the Union. " Stomper," " B.G.44," the " Woodford Special " and " Quickie " performed with honours and captured some of the hardware. Highlights appear to have been Eddie Boys' " Sandy Hogan " landing in the high tension wires . . . he eventually got it back after a regular Bisley had taken place. Then there was the man who turned up, asked what was going on, and then informed contest organiser Bill Teague (and this on the third day) that the boys were on the wrong plot, and this was *his* ground . . . Bill, revived with amyl nitrate after the first shock, nearly passed out again when he looked around at the litter ; but all's well that ends well . . . the character said it was quite all right—provided it wasn't a political meeting. In team racing, Ken Papenfus and Cliff Culverwell, each managed to encourage 57–60 laps per 30 c.c. out of their McCoy 29's ; and last happy note . . . there's still a writ in circulation from the Railway Police for a certain club having too much luggage in their compartment, and furthermore, for turning aforementioned compartment into a carpenter's shop !

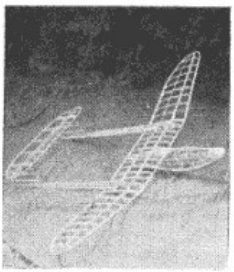
AUSTRALIA, on the other side of the globe, is another country where long distances have to be covered by competitors at Nationals, etc. In **QUEENSLAND,** they run their own Championships, and this year, the events were held at Brisbane over the Easter period. Arthur Gorrie punctuates his report of this affair with frequent quotes of " It's Mighty ! " and we gather that the spectacle of four in a circle combat flying was a regular " rat-race " that held the crowd hypnotised. " No longer," reports Gorrie, " can two in a circle with streamers be called combat. Every pilot scored at least two cuts of a streamer, and only three models in the whole event (heats and final) were damaged. It's Mighty ! "



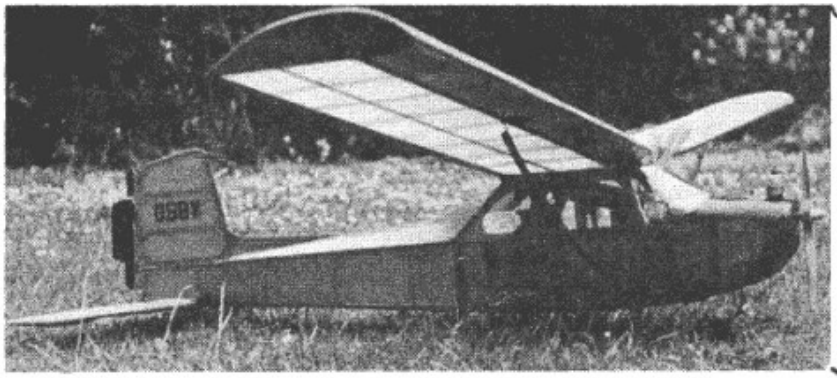


Top left : 1953 Danish Power Champ, Carl Horst-Aaris, uses Danish "Viking" diesel for fast spiral climbing model. At right : from Cyrenaica, Sgt. Hastings sends nice view of KK Gipsy Wakefield. Above : High Pylon on Yugoslav Joze Prhave's entry at Paris.





Busek's 1·2 c.c. 1953 diesel and 1948 10 c.c. racer compare to show variety in Czech engine design. Left above : Twin boom glider frame by Schlosser, in Holland, has thin, curved plate section. At right is Hans Grass' S-51 with Webra 1·5 from Germany. Below: Dr. Sultan's O.K.60 radio model is soon to have an O.K. Twin installed.



RADIO CONTROL NOTES

By HOWARD BOYS

A RECENT unusual experience seems worth recording. What looked like a small thunderstorm was approaching from the far side of the aerodrome. Two onlookers said they could hear the rain pattering on the runway, but the sound appeared to come from the other direction, to the writer. His transmitter was between him and the onlookers, and the sound actually came from the top of the aerial. Everything was working satisfactorily, so another flight was made, thinking the noise was due to the transmitter radiating in a damp atmosphere. With the transmitter switched off however, the noise continued. The writer, remembering that an experimenter was once killed by trying to collect electricity from the atmosphere during a thunderstorm, did not like the prospect of de-earthing the sizzling aerial. The transmitter was dragged to an earthed car body, and the aerial held in contact while it was removed from the transmitter and lowered to the ground. It was then held in contact with the ground and raised again. When nearly vertical it began to sizzle again. The onlookers had retired due to the imminence of rain, and the writer followed suit, feeling that being a lightning conductor in the middle of a large expanse of aerodrome was an unhealthy occupation.

Thoughts on Contests

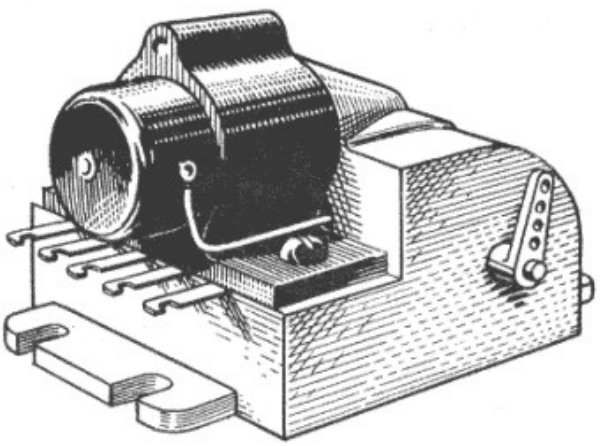
Mr. Sills (AEROMODELLER Trophy winner) has sent along some interesting suggestions regarding contests, power, and range. He suggests that, as radio control contests always take up a lot of time, bonus points should be given for saving time in getting airborne. Five minutes are allowed for this, and 10 or 20 points could be awarded for each minute saved. This would encourage pre-flight checking and make for reliability, in addition to saving a bit of time. This suggestion is being passed on to the S.M.A.E. Council as a resolution from the Midland Area.

Regarding power, the suggestion is to classify transmitters according to their input. Say up to 1½ watts low power, 1½ to 3½ medium power, and above 3½ high power.

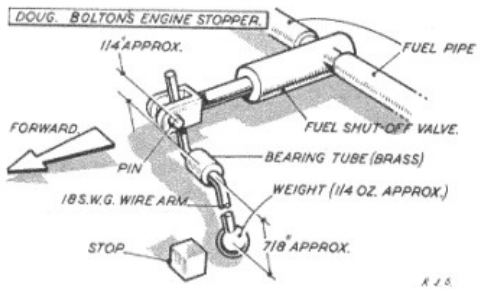
For range Mr. Sills suggests that up to 200 yards should be called " close range ", up to 400 yards " medium range ", up to 800 yards " long range ", and over 800 yards " extreme range ". If we all agreed on these it would provide a useful means of comparing the sensitivity of receivers.

Pirate Transmitters

For the first time as far as the writer knows, a transmitter has been operated unlawfully in a contest. This was at Waterbeach, and a number of contestants were affected. Mr. Sill's model was not behaving properly, and this could be seen by anyone who knew what Mr. Sills' flying was usually like. He reported to the judges that the model was picking up spurious signals, but they were not convinced. Of course, it has been known for a contest to be held up while a pirate transmitter was sought, when the trouble was eventually found to be a faulty receiver. However, Mr. Sills found that some receivers had been switched on in an effort to find out what control system was used,



Heading picture shows H. L. O'Heffernan's Mills ·75 powered " Skyskooter " which, as detailed in " Hangar Doors ", flew for 1 hr. and 35 secs. : subject to ratification, this is a new world record. One advantage of so small a model is that only 3½ ozs. of fuel were used on this flight ! Drawing above shows the new Fenner-Pike actuator, which gives several controls on a single-channel set.



and one of these receivers radiated strongly enough to cause a 1½ m.a. kick in the Sills receiver, so this was thought to be the trouble. Mr. T. H. Ives also had trouble using a sensitive receiver, which might have been upset by another receiver. In his case the transmitter is kept on, and keying off gives a turn. Another transmitter would prevent him turning the model. The writer used a receiver that was not sensitive enough to be affected by another receiver, but his model made two uncontrolled right turns when a desperate effort was being made to keep the model on a straight course for landing. While this could have been caused by a peculiar fault or air current, it was exactly what would happen if another transmitter had been operated.

Unfortunately, this year there is no handbook with sets of rules that can be read and kept for reference ; nevertheless, at all events it is necessary for every R/C man to ensure that neither his transmitter nor receiver is switched on during a contest, except while he is making his own effort. It might even be advisable to impound all transmitters for the whole of the contest instead of only up to the time a competitor makes his flight.

We have recently had the opportunity of seeing a pre-production version of the new Fenner-Pike actuator. Our old friend Geoff Pike is the originator, and the actuator gives proportional control by mark-space ratio. In addition, a pair of contacts are provided that will close or open another relay by changing the pulse speed of the mark-space, thereby enabling a two speed engine control, or two position elevator, progressive control for anything, or an escapement, to be used also. We have been promised one of these units for trial as soon as production gets under way, but, like everything else these days, the first batch will go to America. However, by the time these notes appear in print there is a chance that some actuators will be available in the shops. Only single channel radio is needed.

We seldom seem able to keep Geoff Pike and Doug. Bolton apart, so here is Doug.'s latest gadget. It is a fuel shut-off valve operated by a pendulum, so that if the model begins to dive at more than about 5 degrees, the engine is stopped. The illustration is pretty well self-explanatory. The brass tube, stop, and valve are all fixed somewhere on the model.

Now over to G5BY for the next item.

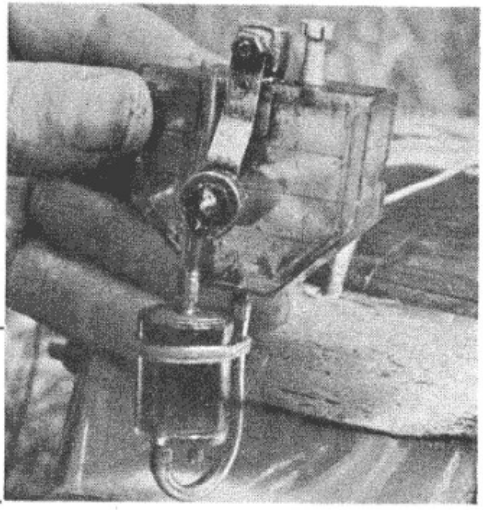
Elevator and Engine Speed Control

Hilton L. O'Heffernan (G5BY) developed this ingenious mechanism, which gives two extra controls on a single-channel receiver for an additional weight of only five ounces.

This is a well tested arrangement which enables two-speed engine (diesel) and elevator control to be obtained from almost any type of receiver and transmitter that normally operates a rubber driven self neutralising escapement.

Two additional escapements are required, one to operate the elevators and the other, which rotates a shutter mounted adjacent to the air intake of the diesel (Fig. 1) to obtain the two-speed engine control. These are E.D. current-saving types, wired in parallel, and operate simultaneously ; they are energised from the existing 4½ volt rudder escapement battery.

My elevator escapement sequence is neutral, down, neutral, up, whilst the corresponding engine escapement sequence gives low speed, full speed, full speed, full speed. It is therefore possible to have normal flight (neutral elevators) with choice of low or full speed engine operation, whilst whenever the elevators are either up or down, the engine is always at full speed.



Nifty notion for preventing fly-aways should the radio fail in neutral was photographed (on right) at the Nationals, where gadgeteer Joe Fox of Hatfield placed third in radio. Swinging pendulum controls main tank vent, allowing fuel to flow into smaller feed tank only when model is banked in a turn. Thus, straight flight of more than a minute or so causes engine to starve, so that retrieving runs in the event of loss of control need never be very long.

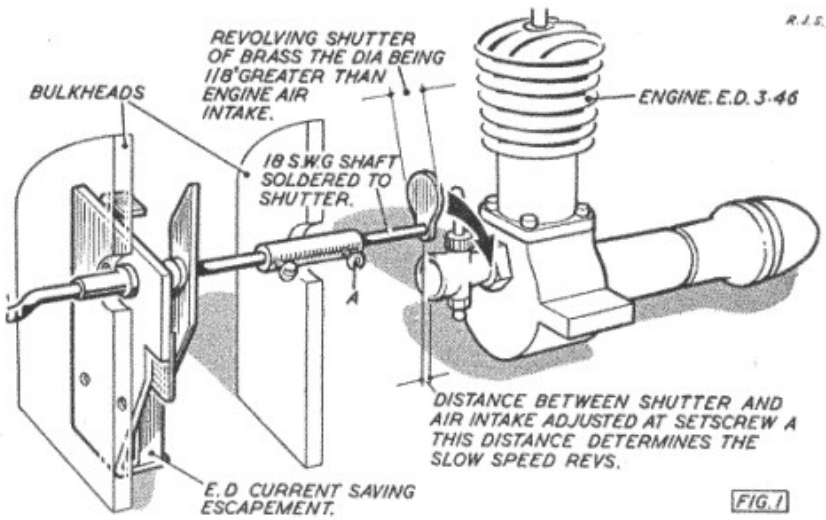


FIG. 1

On the shaft of the rudder escapement (between the mounting plate and the hook for the rubber on the E.D. Compact model used by the writer) is soldered a four arm " star " (same dimensions as the two arm " striker " of the escapement itself but with four arms) which makes momentary contact, *whenever the rudder moves*, with a fixed contact of springy metal—like the contact used in the E.D. current-saving escapement. This contact is connected to an E.C.C. type 5A relay (4,000 ohms) through a delay circuit, and the relay is energised by means of 22·5 volts tapped off the receiver H.T. supply (Fig. 2).

To operate the system the rudder is pulsed quickly by hand (about two per second is used by the writer) and after four or five such pulses the elevator and engine speed escapements operate. If only a change of engine speed is desired, then these few pulses are all that is needed, the elevators going quickly from one neutral to the other as the engine speed changes. To keep the elevators either up or down, continuous quick pulses must be sent for as long as necessary. Normal rudder operation cannot cause an elevator/engine speed change.

With fourteen inches of rubber drive on the rudder escapement, 85 turns are normally used, and this has been found to give plenty of pulses for normal aerobatic operation, leaving sufficient in hand for rudder operation after the engine cuts. A large elevator surface (1½ ins.) is used to give instant response, and about six seconds of down elevator gives a perfect loop.

In order to adjust the delay circuit it is suggested that R be made variable, about 1,000 ohms maximum. Now wind up the rubber drive of the rudder escapement to the maximum turns it is intended to use and vary R, together with the spring tension on the E.C.C. relay, until the system operates satisfactorily with four or five quick pulses.

It should be clearly understood that as the rudder escapement's rubber drive runs down, and the rudder moves more slowly from one position to the other, the pulse rate needed to operate the elevator/engine speed system becomes less, because the extra contacts on the rudder escapement close for a correspondingly longer period. Towards the *very end* of the rudder escapement's rubber drive turns, even two pulses—as used to obtain consecutively the same rudder direction—may cause the elevators to change from one neutral to the other and the engine speed to alter. This in turn will cause the rubber drives to these escapements to run down and therefore the current-saving type is strongly recommended, since the friction of the spring contact tends to hold the escapement in a *neutral* position when this occurs.

* * * *

Mr. O'Heffernan often uses four different elevator positions by off-setting the neutrals so as to obtain

Single Channel 3 - Control Circuit

R = 400 ohms (see text).
C = 50 mfd 50 V.W.T.C.C.
Ry = E.C.C. Type 5A, 4,000 ohms.
S.1 = Switch, to avoid accidental discharge of H.T. battery when model stored with rudder escapement rubber unwound.
S.2 = Optional, gives engine control only when in off position.
S.3 = Ditto, gives elevator control only when " off ".

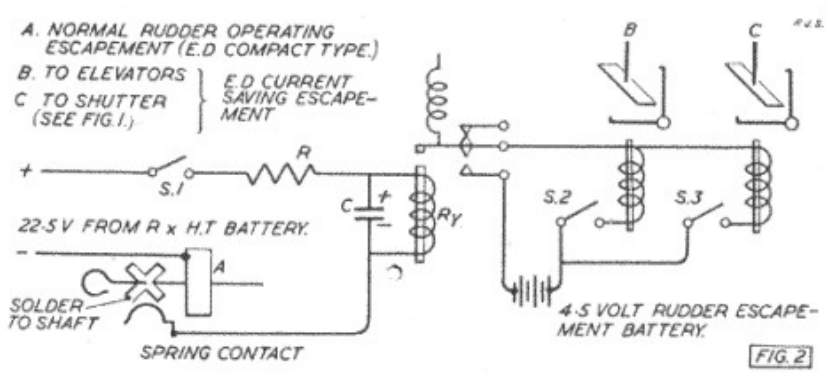
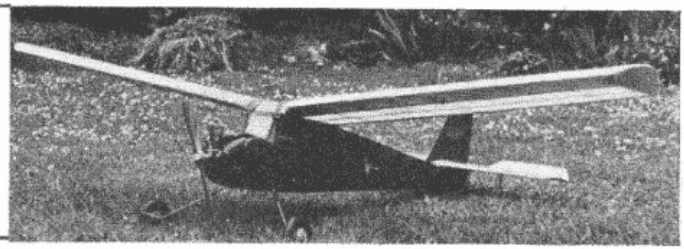


FIG. 2



That multiple controls are restricted to large models only is disproved by this converted Keilkraft "Outlaw" fuselage fitted with a 54 in. wing. R. Heffernan, the builder, has installed three escapements with rubber drives, complete radio, etc., and an E.D. 3.46 in the 2½ in. width of the body: for a weight (all-up) of 41 ozs. he now has engine, elevator and rudder control, and can adjust for four different motor speeds and four elevator positions.

slight up elevator in one " neutral " position and slight down elevator in the other. Thus one takes off (hand launch) using low engine speed and slight up elevator and then, when sufficient safe altitude has been obtained, a change is made to full engine speed with slight down elevator for good wind penetration.

By modifying the shape of the shutter revolving behind the engine air intake it is possible to obtain four different engine speeds!

Total weight of the extra equipment needed for this system is approx. 4½ to 5 ozs.

General data of E.D. 3·46 powered " Robin " used to test out the above system :—

Fuselage :—Started life as free flight K.K. "Outlaw"; now modified to take E.D. 3·46 engine, radio (Hivac), three escapements, escapement, rubber drives, etc. Length 34 ins., **overall width 2½ ins.**

Mainplane :—Area 352 sq. ins., span 54 ins., Plan form parallel, Section NACA 4415, with sheeted leading edge.

Tailplane :—As K.K. " Outlaw ", area 101½ sq. ins. plus 1½ ins. wide elevators.

Fin and Rudder :—Scaled down from E.D. " Radio Queen ".

All up weight :—41 ozs.

All escapement rubber drives are wound up by means of separate handles at side of fuselage. Has done three consecutive loops using elevator and engine speed control for dive and climb (no spiral diving using rudder). Model has made well over 200 flights under R/C, but only recently fitted with elevator and engine speed controls.

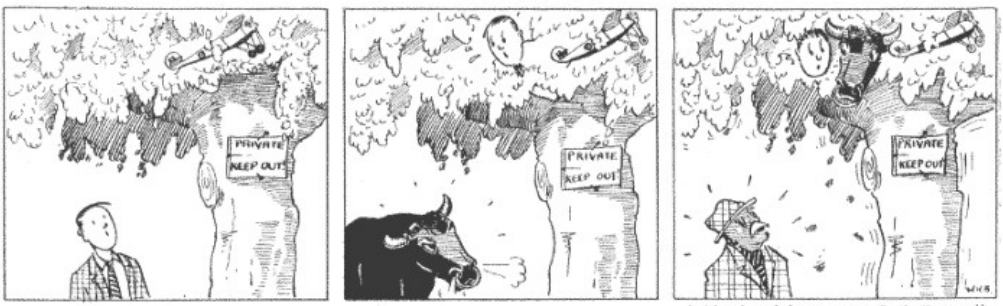
Relay Supply

Those readers who have difficulty in obtaining suitable relays at reasonable prices will be interested to know that the following are available from: J. E. Annakin, 25, Ashfield Place, Otley.

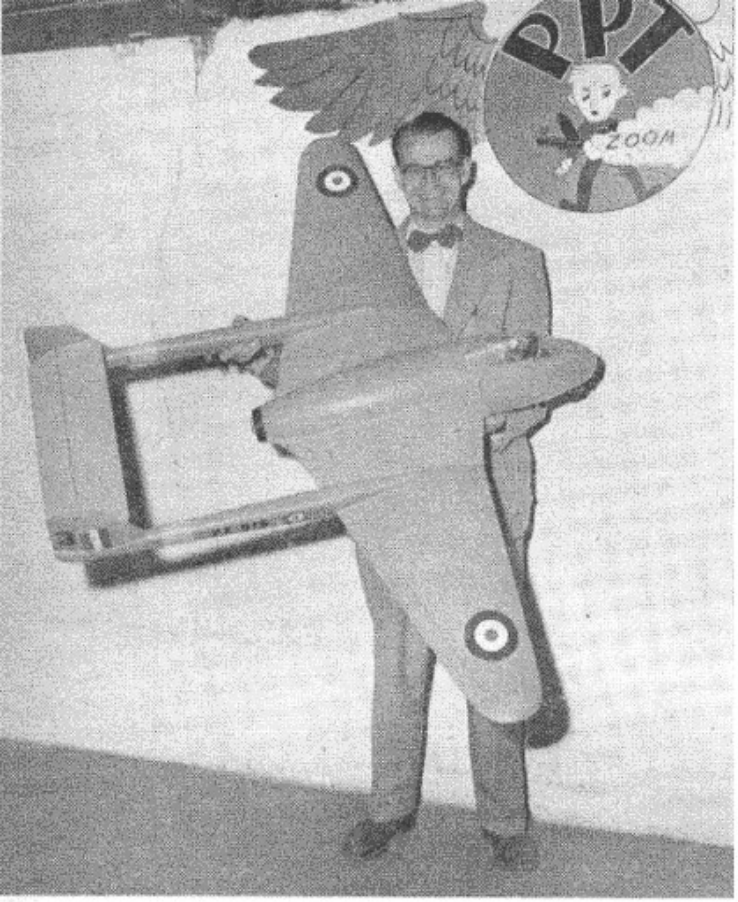
No. 836 High Speed Siemens relay with 2 coils of 100 ohms each, 7s. 6d.

No. 841, Two 1700 coils to fit No. 836, 1s. 6d.

(No. 841 is similar to 836 but is without armature and contacts.) Postage 6d.



(with acknowledgements to " Daily Express").



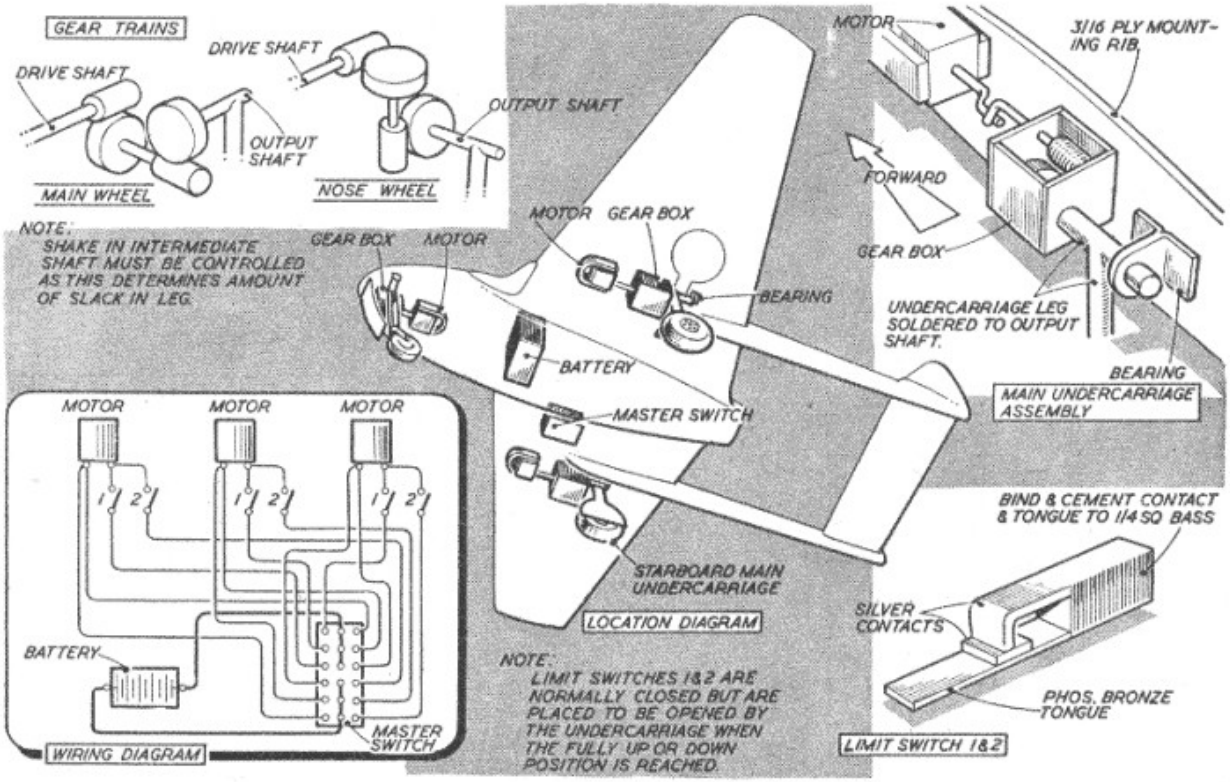
RETRACTING UNDERCARRIAGE

Developed by Howard Yonkers, Frank Hynes and Bill Hittenburger

AMONG the models most remarked upon at the 1952 American Nationals was the magnificent Dyna-jet powered " Vampire " built by Howard R. Yonkers of San Mateo, California. One of the main features of this model was the realistic retracting and " detracting " undercarriage, and, in response to readers' requests, we have obtained full details of this mechanism.

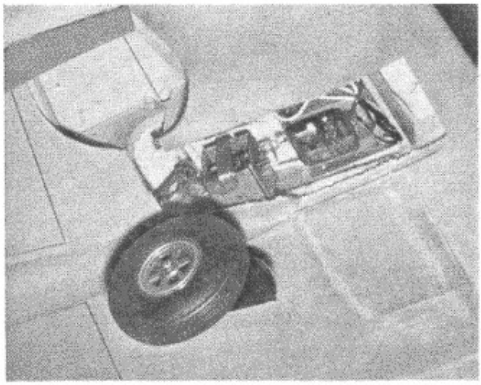
Basically, it consists of three individual motors, each operating one leg through worms, with up and down limit switches and a six-pole double-throw master switch. A 6 volt wet cell accumulator supplies the current ; dry batteries are inadequate in this particular installation because the rear leg motors require to be fairly powerful (they are Japanese boat motors, $\frac{3}{4}$ ohm resistance, 4 amp. total drain) to overcome centrifugal force on the legs. The " Vampire " model flies at about 85 m.p.h. so that this force is considerable—enough to lock the inside leg down on the first flight, and the heat generated whilst full current was applied to an earlier motor was sufficient to melt its plastic case. Small plastic-case motors would be suitable for retraction in a fore-and-aft plane only.

The master switch is operated by a third line, and has a spring bias which makes it necessary to



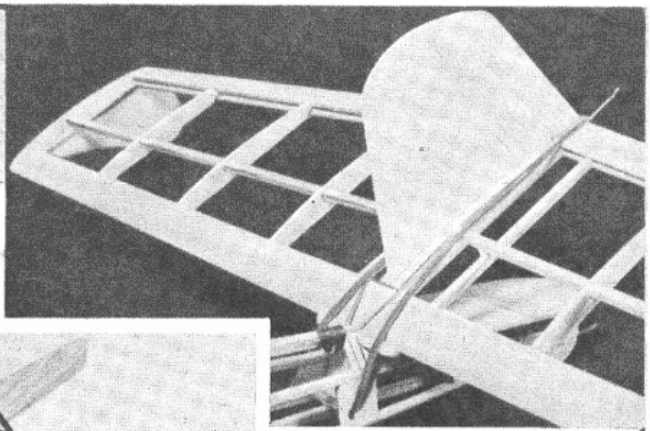
retain some tension. In the event of line slackening or breakage, the undercart immediately lowers. Upon operation, the motors retract the legs through double-worm gearboxes (each a model railway worm 37 : 1, total reduction 1369 : 1), the legs being soldered to the gearbox output shafts. Spring in the legs cannot be allowed, as the wheels must register correctly with the wells each time; no trouble was experienced in this respect with Yonkers' model, even though the flying weight was 9 lbs.

The limit switches, made from ¼ in. phosphor bronze strip, are arranged to contact the u/c legs to stop movement at the appropriate up and down positions. All switches must be silver-tipped, to reduce resistance, and two circuits are necessary because, with one limit switch open, the reversing current must reach the motor over a different route. A six-pole master switch is used to prevent feed-back and by-passing of open limit switches.

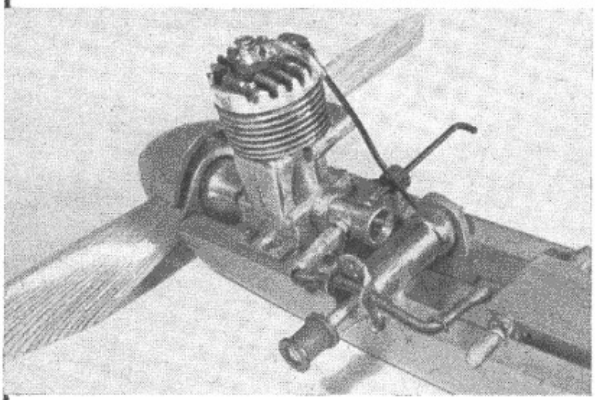


Howard Yonkers proudly displays his massive "Vampire" (opposite); the undercarriage mechanism can clearly be seen in the above view of the starboard leg.

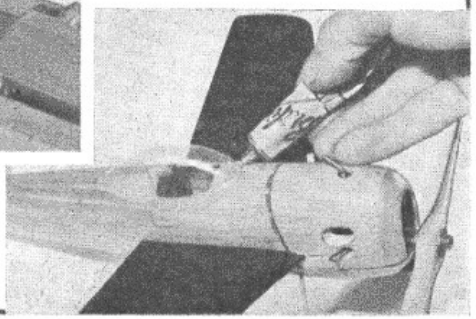
PHOTO TIPS



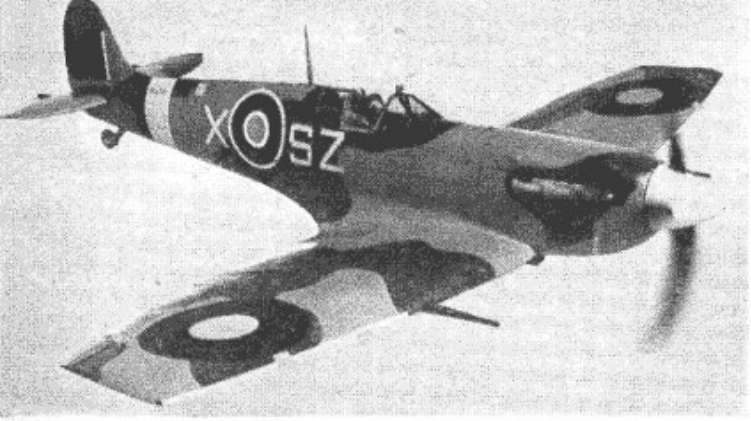
***Right:** A dethermaliser stop adjustable for angle of tip can be formed from 18 s.w.g. wire and bound to the fuselage top longeron, as on this "Skylon". Idea is adaptable to most fuselages.*



***Below:** Many builders smear cement over celluloid cockpit covers. Try positioning the canopy with two strips of cellophane tape, running the cement nozzle carefully round the joint, and wiping off the surplus with a finger.*



***Above:** The neat power egg of Carl Goldberg's "Cumulus" design is used to full advantage in this version by E. J. Webster. Motor is McCoy 19, fitted with a "Bat" tank and one of the new Elmic "Mini-Diesel" timers. Note permanent glowplug leads to socket on outside.*



AIRCRAFT DESCRIBED No. 57

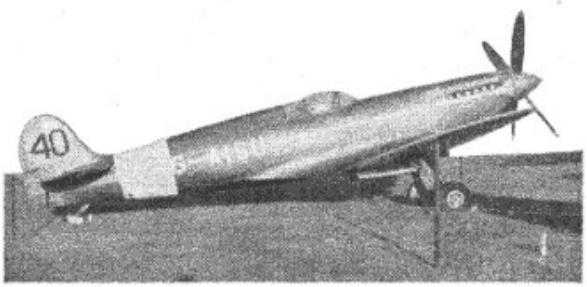
By G. A. CULL

VICKERS SUPERMARINE

SPITFIRE V

PROBABLY no other aeroplane will ever have a history to excel that of the Spitfire and, of all the many versions up to the Mk. 24's still flying, the Spitfire V played its part to the full. Developed from the Mk. II which had fought in the Battle of Britain, the V joined the squadrons in 1941 and differed in the main from the II in having the Merlin 45 engine which for combat, delivered 1,470 h.p. at 9,250 ft. As this engine was developed, its variants were also fitted to the Mk. V, i.e. the Merlins 45M, 46, 50, 50A, 50M, 55 and 55M. At first two versions were built, the VA with an eight-machine gun wing and the VB with two 20 mm. cannon and four m/guns. Later, the V was produced with the universal "C" wing which could mount either of the two mentioned armaments or four cannon, and had fittings for two 250 or 500 lb. bombs. The Mark Vc had a strengthened fuselage and in common with the VB, could carry a 30, 45 or 90 gallon drop tank beneath the fuselage, but the armament usually fitted was two cannon and four m/guns. With these guns the stub fairings for the absent pair of cannon distinguished the Vc from the VB, and the Vc could then carry 120 rounds per cannon against the VB's 60. The Spitfire V also introduced a new windscreen with internal bullet proof panel and flat side panels but early machines had the old windscreen, which was retained on Mk. II's which were re-engined and so converted into VA's or B's according to their original armament.

Of the Spitfire V's the VB was best known in this country and with this Mk. the Spitfire swung over to the offensive throughout 1942. Spitfire VB's were the first Spitfires to go overseas when fifteen flew off from H.M.S. Eagle on March 7th, 1942, to fight from Malta. Thereafter many VB's flew overseas alongside the Vc's which was the real overseas version and of the 1,352 Mk. V's delivered, 978 were Vc machines. In 1943 however, the new F.W. 190 fighters began to better the Mk. V's which was then replaced by the Mk. IX. The prototype IX was, in fact, the VB BS 289

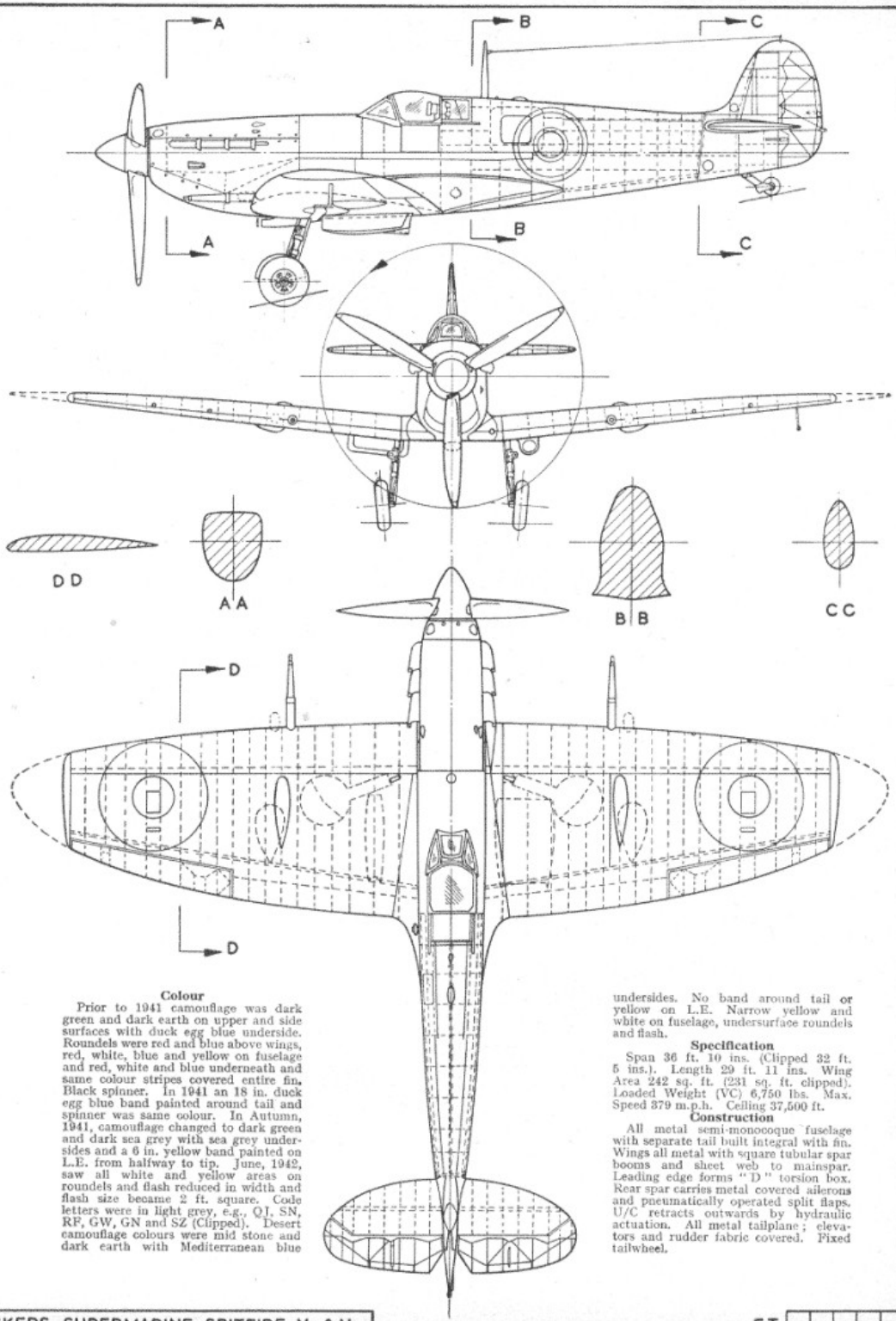


fitted with the new high altitude Merlin 61, but much good work remained to be done by the Spitfire V. Already fitted with Merlins 45M, 50M and 55M which gave 1,585 h.p. at low level (2,750 ft.) for combat, many V's had their wings clipped to improve performance low down. For service in tropical climes, various forms of air filter were fitted to the carburettor intake and this resulted in a bulged underline to the Mk. V's shapely nose, but helped to beat the dust of Burma and the Middle East.

An outstanding feat in the Spitfire V's history was the shooting down of pressurised JU 86P photographic aircraft over the Mediterranean at 40,000 ft. and later at nearly 50,000 ft. This was achieved in few special Vc's which had been stripped to minimum weight and fitted with four-bladed propellers but remained *unpressurised*. In 1942 a Mk. VB W 3780 was fitted with floats and flown with a four-bladed prop. and two further seaplane VB's were EP 751 and 754 with increased fin and rudder area, but the idea was dropped. A unique VB was EN 830 which fell into German hands. After being tested by the enemy it was fitted with a Daimler Benz DB.605A engine for further investigation and achieved 379 m.p.h. at 22,000 ft.

With the Navy the Spitfire became the Seafire and the wartime Seafires I, II and III were the navalised versions of the Mk. VB and c, the prototype being a VB with a deck hook. When superseded in service by later Spitfires the V's carried on as trainers, etc., and two survived to become civilian. The first was really a Mk. IIA, P 8727 which had been modified up to Mk. VA standard with a Merlin 45, and named "Josephine," bore the registration G-AHZI until crashed. The other is Spitfire VB AB 190, with Merlin 55, which is now unarmed G-AISU, with various modifications such as individual exhaust stubs, and one piece windscreen.

Top left: A clipped Mk. Vb (photo, E. Brown). Other view of Mk. Vb shows the Spitfire's characteristic "gull" centre section at trailing edge, a point often missed ("Aeroplane" photo). At left: Civilian registration and racing number on AB 910, now much modified from its original service state (photo, G. Cull).



Colour

Prior to 1941 camouflage was dark green and dark earth on upper and side surfaces with duck egg blue underside. Roundels were red and blue above wings, red, white, blue and yellow on fuselage and red, white and blue underneath and same colour stripes covered entire fin. Black spinner. In 1941 an 18 in. duck egg blue band painted around tail and spinner was same colour. In Autumn, 1941, camouflage changed to dark green and dark sea grey with sea grey undersides and a 6 in. yellow band painted on L.E. from halfway to tip. June, 1942, saw all white and yellow areas on roundels and flash reduced in width and flash size became 2 ft. square. Code letters were in light grey, e.g., QJ, SN, RF, GW, GN and SZ (Clipped). Desert camouflage colours were mid stone and dark earth with Mediterranean blue undersides. No band around tail or yellow on L.E. Narrow yellow and white on fuselage, undersurface roundels and flash.

Specification

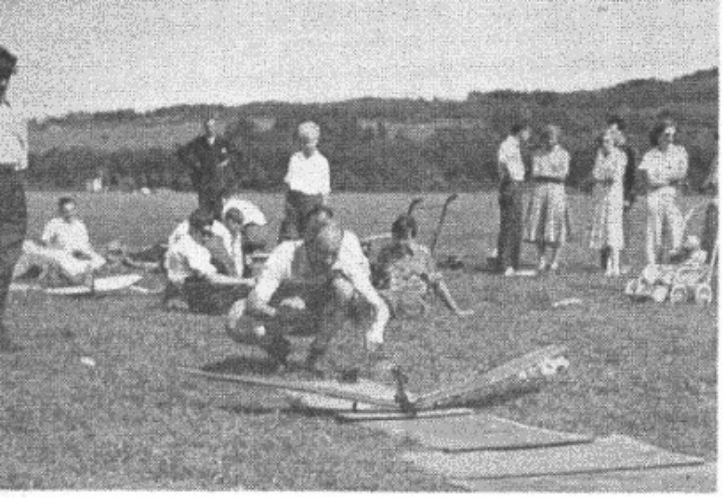
Span 36 ft. 10 ins. (Clipped 32 ft. 5 ins.). Length 29 ft. 11 ins. Wing Area 242 sq. ft. (231 sq. ft. clipped). Loaded Weight (VC) 6,750 lbs. Max. Speed 379 m.p.h. Ceiling 37,500 ft.

Construction

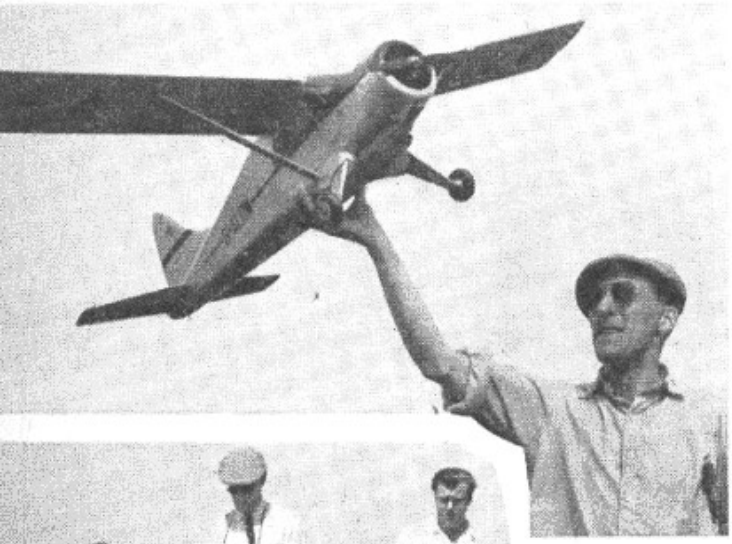
All metal semi-monocoque fuselage with separate tail built integral with fin. Wings all metal with square tubular spar booms and sheet web to mainspar. Leading edge forms "D" torsion box. Rear spar carries metal covered ailerons and pneumatically operated split flaps. U/C retracts outwards by hydraulic actuation. All metal tailplane; elevators and rudder fabric covered. Fixed tailwheel.

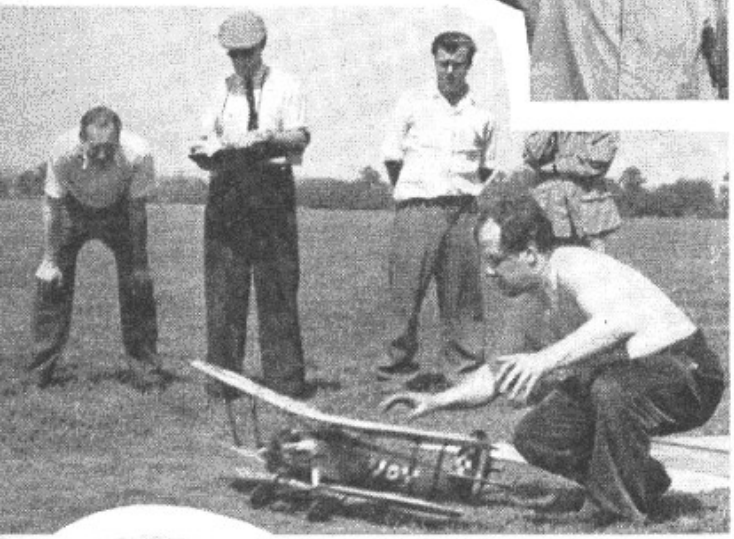
VICKERS SUPERMARINE SPITFIRE Vb & Vc

FT



BOWDEN & SUPER SCALE CONTESTS





SOCIALLY, the meeting at Halton R.A.F. aerodrome on July 5th was very satisfying, the wooded Wendover Hills overlooking the grass field setting a most picturesque scene to which the constant comings and goings of a variety of R.A.F. training gliders added considerable interest. When G-AEXT, a pert little " Dart Kitten " wagged its wings as a pre-landing salute and came down for the afternoon, things became even more exciting.

We regret to report, however, that models were few and far between. Quality there was, indeed, the collection of scale entries exhibiting a standard of finish, detail and scale accuracy not altogether matched by their qualifying flights; whilst the Bowden models were the reverse, with a succession of reasonable flights from an extra-ordinary selection of " original " designs.

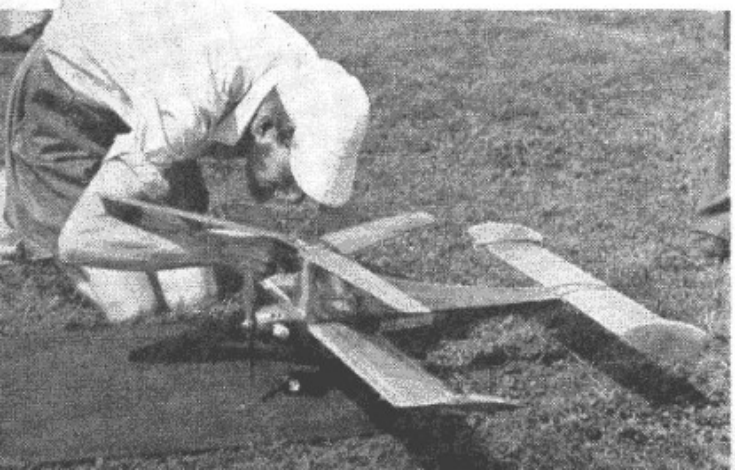
The general response to these " sport-flying " contests is, to say the least, disappointing. Far better entries would be assured if in future such contests were combined with one of the more popular national meetings.

BOWDEN	SUPER SCALE
1. V. Smeed (Pilgrims)	1. T. Nachtman (Polish AFA)
2. E. Mann (Brentwood)	2. F. Smith (Northampton)
3. P. Holland (W. Herts)	3. V. King (W. Middx.)

Social scene at picturesque Halton is set in top left view of Howard Boys releasing his Mills ·75 Tailless entry for the Bowden. At right, Vic Smeed tunes the pusher Mills ·75 on his winning model, featuring sweepback, high tail and slots.

Beautiful De Havilland Beaver by Nachtman of the Polish A.F.A. was undisputed winner of the Super-Scale. Fully detailed dummy engine shrouded an Elfin 1·8. Below it, Col. Binnie watches, and Col. Bowden notes points as P. E. Norman lets go his E.D. 3·46 fully detailed Bristol Bulldog.

Bottom left shows Pete Holland sorting out the rotors on his " Sportogiro " which placed 4th in Bowden and is scheduled for a special record attempt. Below right, F. Smith and large flame and silver Luscombe Sedan which made best scale flights of the day, and is fitted with French 6 c.c. petrol motor.



Scottish Page

RECENTLY, the West of Scotland Area was privileged to entertain Mr. and Mrs. Ron Moulton, who were on a motor-cycle tour north of the border. The area was running a couple of flying displays at the time at Kilbirnie and at Troon, but sad to say the absence of the area's stunt experts and prevailing raw weather (38 degrees in the shade) generally affected the standard of flying at these shows. Other C/L demonstrations were laid on at Ardrossan, and the White City Stadium at Glasgow. Extra short interval time between the speedway racing at the White City rather curtailed flying there, but **GLASGOW** fliers A. Finch and R. Murdoch stunted well. The S.A.S. boys laid a good smoke trail by burning "Gamaxane" insecticide in an aluminium container clipped to the fuselage of an old stunt job. An additional coronation effect was obtained by trailing coloured paper streamers in the whitish smoke, it looked exactly like red white and blue smoke being laid simultaneously.

The Scottish Aeromodellers Association had pretty foul weather for the Caledonia Shield club team contest at Arbroath. **LANARK M.F.C.** were the winners, with the **BUCKSBURN** Aeromodelling Team second. Other Scottish Association news is of the AEROMODELLER Trophy Scale Power contest and the National Rubber and C/L Championships. The former was won by Dave Cassels of **PAISLEY M.F.C.** flying his well made "Aeronca Sedan" over Lanark's rain soaked golf course. The "Sedan" featured full cockpit detail and E.D. 3·46 power. Second place went to Dave Brown, also of Paisley, who flew a Stinson "Voyager". The National Rubber, flown at Lanark in concurrence with the scale event, produced the following results.

1st	J. Finlayson	Stirling M.F.C.	8 : 42·4
2nd	W. McConachie	Glasgow M.A.C.	7 : 44·1
3rd	D. Brown	Dunfermline M.F.C.	5 : 36·8

The Association's National Control Line Rally, held at Paisley on July 11th brought some keen competition in stunt and team racing. One of the main items of interest here was **MONIFIETH** modeller Norman Wood's Oliver "Tiger" powered Class A racer, one of the first "Tiger" jobs to be seen in Scottish competition racing. Class A winner, though, was Bob Murdoch **GLASGOW M.A.C.,** with an E.D. racer job. A. Finch, G.M.A.C. won the Class B racing and Ian Clark again of G.M.A.C. won the Stunt event.

West of Scotland Area enterprise has raised considerable cash for the kitty by well organised control line displays. Here Bill Meechan ties up red, white and blue streamers to Bob Murdoch's A.P.S. Virago for a spot of combat to entertain a Coronation fete.

News from the North East Scottish Area; **ABERDEEN & D.M.F.C.** have considerably revived, after having been inactive for about a year, and flew in the Caledonia Shield contest at Arbroath. **DUNDEE M.F.C.** have had some very enjoyable flying during the past few weeks, mainly with flying scale. Models which are flying include two "Tiger Moths" by Oliver McLaren and Jack Valentine, and an Avro 504K, the work of Mr. D. Hay. D. Smith has a radio controlled Mercury "Monocoupe" rarin' to go. A model which flies no more is Norman Guild's D.H. Beaver, this being lost in the River Tay. Finally there is a Westland "Swallow", by J. S. Outbie, who has his model complete down to such details as a compass with a universal mounting. Scale certainly seems to be catching on for **ARBROATH M.A.C.** send a list of models under construction: Cessna 170, Chrislea "Ace", Stinson "Voyager", Ryan "Navion" and a Westland "Widgeon"; all power free-flight models. An interesting C/L model is David Webster's Miles "Gemini", powered by two Baby Spitfire glow plug engines.

PERTH M.A.C. on the advice of the S.M.A.E. have left the N.E. area for the S.E. area, but there's trouble in the ranks about the 8s. 8d. fee. In the Area Team Race League Perth lost Class A to Arbroath, but in Class B they won easily, since Arbroath pranged at 30 laps, by which time the Perth crew had done 126. When the McCoy was really turning, the kite was doing 90 for 30 laps.

HAWICK M.A.C. The local Rotary Club held an arts, crafts and hobbies exhibition in the town hall recently, which was opened by the Earl and Countess of Dalkeith who took a great interest in the club stand. Thirty-five models were on show at the stand, which was the largest in the hall, and to add more interest a junior and a senior member combined their Hornby Dublo railway layouts, keeping the stand alive with something mobile. The Hawick club are keen to learn of other clubs starting in the district with the idea of inter club contests in mind, which would help to popularise aeromodelling in the border country.

CLUB NEWS

THE " Big Four " Galas seem to be getting a rough deal this year. The first two have been practically rained out—the " Daily Dispatch " do at Woodford, as reported last month, and now the Northern Heights. The latter is usually held on the last Sunday in June or, on occasions, the first in July. Both these weekends were perfect this year, but the Langley meeting was dated for July 12th and for just about the first time in its history the phenomenal weather for which it has always been renowned failed to materialise. Instead, heavy rain greeted early arrivals, and though this eased off into comparative calm by late morning, wind and more rain attended the afternoon.

In addition to this, the All-Britain Rally has had to be postponed, for security reasons (remember last year's Woodford ?) to September 20th. Fortunately we just managed to notify readers of this in the last issue, giving plenty of warning for postponing coach bookings ; if, however, you have been unable to alter your booking, the South Midland Area has stepped into the breach and is organising a rally at R.A.F. Halton on August 23rd, which should be well worth attending.

North Western Area

The **MERSEYSIDE** 11th slope-soaring contest at Clwyd was favoured with sunshine and a moderate wind, though the latter came from an unusual direction and was responsible for several lost models. Scoring was on best single flight, and winners were : Senior, Miss P. Healey (Belfairs) 5 : 06 ; Junior, M. Shepheard (Moreton) 3 : 54 ; Nordic, J. Hanney (Wallasey) 4 : 09. The last-named, incidentally, flew a " Quickie ". Dick Twomey came up from Cardiff to lose his " Leprechaun " for 3 : 55 and third place in Senior, and also flew an A2 for 3 : 13 and second place in that class.

A " training " scheme is in force in **CHEADLE D.M.A.S.** contest group, using more or less standard designs ; A. Anderton's double-max and 3 : 47 o.o.s. to place second in rubber at Woodford may be an indication that this pays off. Two members swam to the Northern Heights Gala and B. Hooley pinned a saturated long-fuselage Wake together to manage 7th, which somewhat alleviated a shocking weekend.

SHARSTON D.M.S. are considering adopting the " Tadpole " as a club design, if they can find room for the fuselages in a club-room already getting crowded with one member's 22 ft. full-size glider ! A recent exhibition proved successful and inter-club events with Hyde Club are growing popular. D. Cook's " Quickie " returned best club time at Woodford, followed by E. Helliwell's o.d. A2.

Small pylon jobs are the rage in **HYDE M.A.C.** and R. Wilson achieved early results by losing his 27 in. Dart-powered " Amigo " within twelve hours of purchasing the motor. The rained-out Coronation show was re-staged with better success, helped by Cheadle, Tame and Sharston clubs. P. Shorter has a 4 ft. Delta (E.D. 2·46) ready for test, and the club are organising an all-types rally later on ; interested clubs please contact.

Apart from Wakefield honours, **WHITEFIELD M.A.C.** have been doing well in other spheres. Nine places were shared between members S. Ward, H. & J. O'Donnell, P. Quinn, Wendy Bennett and Mrs. Bennett at Woodford, and despite the wind and rain on Lobden Moor, Whitefield was well to the fore in the Keil and Frog Junior comps. ; see results.

North Eastern Area

A successful Coronation rally was held on Town Moor, Newcastle, when **TYNEMOUTH M.A.C.** took most of the honours. T. Stoker flew a double-size " Sunnanvind " to top place in glider and K. Mole led the rubber event with his Wakefield. The latter also filled second place in power, while R. Nichols managed third in both rubber and glider. Messrs. Mole and Pollard have recently acquired " C " certificates and T. Stoker has raised the club chuck glider record to 5 : 30 o.o.s., which is quite some going.

East Anglian Area

An A.P.S. " Arrow 50 " aggregated 3 : 01 to win the **WARE D.M.A.C.** Jetex comp. for new member D. Ling. The success of the recent gas showroom exhibition by this club (which attracted several new members as well as excellent publicity) is being followed up by a flying demonstration at a town fete.

A similar date is booked for **NORWICH M.A.C.** when it is hoped that the junior member, who, for some obscure reason, keeps a valvespout full of water lying around, will avoid repeating his recent error of trying to run his engine on pure H2O. A local R.A.F. unit going on block leave means the chance to get club competitions dealt with on a decent aerodrome. Yes, permission has been granted !

CAMBRIDGE M.A.C. received a whole page and a bit in a local newspaper, tracing the history of model aircraft and the club, as well as summarising the types of model used nowadays. Such write-ups—especially

Heading picture on opposite page shows W. Neald of Cheadle heaving off his eleven-foot slope-soarer at the Clwyd meeting. On right, R. Wilson and fellow members of the Hyde M.A.C. pose with " U2 Lulu ", alleged to have originated from a double-size " Debutante ".

when it is *informed* writing—could change the whole picture of model flying in this country. What a pity that every model club hasn't a member working on the local gusher !

Northern Area

The clubs in Yorkshire, etc., are crossing their fingers for the **Y.E.N.** meeting at Sherburn on September 6th. Given favourable weather, this should be bigger and better than ever.

Bad flying conditions upset **BRADFORD M.A.C.'s** fourth general comp., held on Keil Trophy day. (This weather was universal, as witness the small entry in the Keil and Frog Junior.) A two flight total of 4 : 58 gave top place to C. P. Miller's Wakefield, with junior J. Oxley returning 4 : 20 for second. The following week saw the all-comers slope-soaring event, in which J. Oxley senior aggregated 2 : 38 to win the Cripps Cup. Anything was eligible, including Collinson's San-de-Hogan with a lump of sandstone tied under the fuselage, which produced some Cripptic remarks.

Woodford saw **FORESTERS M.F.C.** C/L devotees place 1st, 3rd and 4th with three class A teams, J. Weston's Oliver powered bomb doing 70 laps at 86 m.p.h. to win. J. Howard survived a cloudburst and a broken prop to place 3rd in B. A demonstration was given at the Matlock N.C.U. rally which wound up with five in a circle streamer cutting. " Wound up " was the word, judging from T. Woodward's blue face and bulging eyes as R. Noble's wires coiled lovingly round his neck ; J. Hales, too, was encircled slowly from top to toe like a cocoon, just managing to get rid of the handle before he toppled over inanimate. This had the audience rolling in the aisles, especially when he was carried from the arena like a trussed duck.

London Area

Repercussions over the loss of Fairlop are still being felt, particularly by the **LAMBETH M.F.C.** who have lost nearly all their members. With the excellent facilities the club have at the Beaufoy Institute, Black Prince Road, S.E.11, this is a great pity ; however, the half remaining is keen and active, and would welcome any prospective members at their weekly meetings (Friday, 7 p.m., at above address).

HORNCHURCH M.A.C. have been bitten by the power duration bug, although strong wind upset the first comp. for these models ; A. Major won with a ·46 and a two-flight aggregate of 11·1. The same modeller produced a nice ducted fan Lavochkin recently, and all his fans crowded round for the first flip. When the motor began to work loose, however, how the fans duct !

A L.D.I.C.C. Cup round was flown off on July 12th, when **BY-PASS MODELLERS (SUTTON)** recorded 12 : 32 for three flights (G. Pearce's 48 in. lightweight glider 7 : 08 and J. Wheatley's 200 sq. in. 5 oz. rubber job 5 : 24) against a six-flight total of 9 : 36 by **ST. ALBANS M.A.C.** Rain prevented further flights.

Southern Area

Most of the **" BOURNEMOUTH M.A.S. NEWS "** is this month given over to a remarkably comprehensive treatise on the history and design of Paaload models. All this, of course, arising from the AEROMODELLER Design Contest, which appears to have captured this club's imagination. (How is *your* entry coming along, by the way ?)

P. Godfrey of **OLD SARUM M.A.C.** joined up with a party from **SALISBURY D.M.E.S.** for a trip to Langley on the 12th. Although damp, the day proved most enjoyable, notwithstanding bad luck for all three models they entered in the team race event.

Ireland

If you're holidaying in Ireland, rush your entries for the 13th Irish Nationals (September 5th–6th at Baldonnel) to the M.A.C.I., 9, Lower Abbey Street, Dublin, by August 20th. Glider and C/L stunt on the Saturday and Wakefield and Power on the Sunday are the arrangements.

Unluckiest man of the day at the Northern Heights Gala was perhaps Ian Dowsett, who appeared to have the Thurston Helicopter Trophy in the bag when, spwlap ! A sonic boom was heard and a Queen's Cup job hurtled into Dowsett and model, severely damaging his elbow and also wrecking his model, which was just ready for the third flight. The S.J.A.B., thirsting for customers, swept all before and kidnapped Ian in

CONTEST CALENDAR

Aug.	23	**WORLD A/2 CHAMPIONSHIPS.** Yugoslavia. **South Midland Area Rally,** R.A.F. Halton. **North-East Coast Competitions.** Town Moor, Newcastle-upon-Tyne. **Bolton M.A.S. Rally.** Edgeworth.
	30	**Area Championships, Taplin Trophy, 1·5 and 2·5 c.c. Payload.** Long Marston, Stratford-on-Avon.
Sept.	5–6	**Irish Nationals.** Dublin.
	6	**Yorkshire Evening News Flying Festival.** Sherburn, Yorks.
	13	**Gutteridge Trophy, M.E. Cup.** Area Centralised (1954 Eliminators).
	20	**International Team Races and Criterium Europe.** Holland.
		All Britain Rally, International Jetex Contest. Radlett, Herts.
	27	**K. & M.A.A. Cup, Halfax Trophy.** Area Centralised (1954 Eliminators).
Oct.	11	**U.K. Challenge Match.**
	18	**Davies Trophies, Ripmax Trophy, C/L Speed.**

CONTEST RESULTS

FROG JUNIOR CUP
(21st June, 1953)

1.	O'Donnell, H.	Whitefield	8 : 56
2.	Sleight, R.	Prestwick	7 : 56
3.	Francis, A.	Hayes	5 : 48
4.	Banfield, A.	Croydon	4 : 14
5.	Williams, —.	Croydon	3 : 59
6.	McNulty, F.	Leeds	3 : 54

(15 entries)

KEIL TROPHY
(21st June, 1953)

1.	Mitton, D. H.	By-Pass	8 : 59
2.	Buskell, P.	Surbiton	8 : 55
3.	Gorham, J. A.	Ipswich	8 : 48
4.	Bennett, A. D.	Whitefield	7 : 41
5.	Butcher, N.	Croydon	7 : 34
6.	Harrison, I.	Cheadle	7 : 31

(31 entries)

an ambulance; the model was walked on. One faint gleam—Ian was on the big parade for the R.A.F. Review the following Wednesday, so at least he missed that. Sick transit . . . ?

The CLUBMAN.

NEW CLUBS

HODDESDON M.F.C.
P. J. Jackson, 31, River Avenue, Hoddesdon, Herts.
HESWALL M.A.C.
F. P. Bodey, 26, Hesketh Drive, Heswall, Wirral, Cheshire.

SECRETARIAL CHANGES

ILKESTON M.A.C.
A. Dean, 12, Stratford Street, Ilkeston, Derbyshire.
CRESWELL W.M.A.C.
S. Poole, 49, Bevin Est. Creswell, nr. Worksop.
CHELTENHAM M.A.C.
S. B. Perry, 2, Lewis Road, Arle, Cheltenham, Glos.
DEREHAM D.M.A.C.
M. J. Hall, The Lodge, South Green, Dereham, Norfolk.
CLYDEBANK M.A.C.
J. Mackie, 97, Melbourne Avenue, Dalmuir West, Clydebank.
LONDON AREA COMMITTEE
R. Martin, 21, Caesar's Walk, Mitcham, Surrey.
CHESTER M.F.C.
K. A. Modern, 34, Well Lane, Newton, Chester.
PORTSMOUTH D.M.A.C.
J. F. Sidey, 42, Chilcote Road, Copnor, Portsmouth.

Reminder!

1 c.c. PAY-LOAD DESIGN COMPETITION

CLOSING DATE IS SEPT. 30th

NAME OF MODEL.....

NAME..... AGE (if under 18).....

SPAN..... WING AREA..... TAIL AREA.....

ADDRESS.....

EMPTY WEIGHT..... MOTOR.....

I certify that the above model conforms with the specifications as published in the Aeromodeller July, 1953 to the best of my knowledge and belief, and that I have witnessed a flight of ..... m. .....s. from a motor run of .....s. with this model.

Signature of Club Official or Adult not related to entrant.....

OCCUPATION .....

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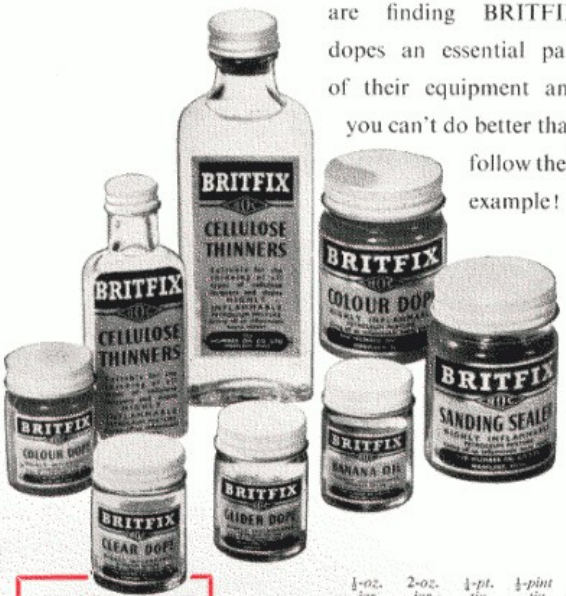

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1953 WORLD CHAMPIONSHIP POWER RESULTS

			Total				Total
1.	Kneeland, D.	U.S.A.	15 : 00	25.	Broerse, P.	Holland	8 : 34
2.	FULLER, G.	G.B.	13 : 18	26.	Leppert, H.	Germany	8 : 11
3.	Vidossich, G.	Italy	12 : 54	27.	Goetz, A.	France	8 : 07
4.	BUSKELL, P.	G.B.	12 : 30	28.	Maibach, F.	Switzerland	8 : 02
5.	Lederer, A.	Austria	12 : 27	29.	Bergamaschi, G.	Italy	7 : 57
6.	Hill, S.	U.S.A.	12 : 02	30.	Stergards, B.	Finland	7 : 48
7.	Tasic, T.	Yugoslavia	11 : 53	31.	Auner, C.	Sweden	7 : 27
	Woodworth, G	Ireland	11 : 53	32.	Krois, E. H.	Germany	7 : 26
9.	Kempen, C.	Holland	11 : 49	33.	Thompson, P.	Ireland	7 : 18
10.	Rupp, G.	Germany	11 : 48	34.	Blomberg, S.	Sweden	7 : 05
11.	Elgin, J.	U.S.A.	11 : 45	35.	Rennesson, A.	France	7 : 01
12.	Ferber, M.	Belgium	11 : 42	36.	UPSON, G.	G.B.	6 : 32
13.	Lippens, G.	Belgium	11 : 22	37.	Mokry, P.	France	6 : 19
14.	Huber, P.	Switzerland	11 : 20	38.	Prhavc, J.	Yugoslavia	6 : 15
15.	Partinen, J.	Finland	11 : 19	39.	O'Regan, M.	Ireland	6 : 01
16.	Bacchi, R.	Italy	10 : 37	40.	Dahlqvist, N.	Sweden	5 : 49
17.	Barth, J.	Germany	10 : 28	41.	Vandermeulen, W.	Belgium	5 : 39
18.	Wheeley, C.	U.S.A.	10 : 15	42.	S'Jongers, J. J.	Belgium	4 . 41
19.	Zigic, D.	Yugoslavia	10 : 06	43.	Hekking, R.	Holland	4 : 18
20.	Schmitter, P.	Switzerland	10 : 05	44.	Carroll, J.	Ireland	4 : 15
21.	CAMERON, P	G.B.	10 : 01	45.	Ericssen, K.	Sweden	1 : 50
22.	Lefort, P.	France	8 : 52	46.	Domberger, H.	Austria	0 : 54
23.	Marchina, R.	Italy	8 : 46	47.	Krenn, E.	Austria	—
24.	Kainz, H.	Austria	8 : 38	48.	Bodmer, M.	Switzerland	—

TEAM RESULTS.—(1) U.S.A. 38 : 47. (2) G.B. 35 : 49. (3) Italy 32 : 17. (4) Germany 30 : 27. (5) Switzerland 29 : 27. (6) Belgium 28 : 43. (7) Yugoslavia 28 : 14. (8) Ireland 25 : 12. (9) Holland 24 : 41. (10) France 24 : 00. (11) Austria 21 : 59. (12) Sweden 20 : 21. (13) Finland 19 : 07.

WAKEFIELD RESULTS

1.	Foster, J.	U.S.A.	15 : 00 + 7 : 25	
	O'DONNELL, H.	G.B.	15 : 00 + 6 : 20	
	Scotto, E.	Argentine	15 : 00 + 2 : 44	

			Total				Total
4.	Reich, G.	U.S.A.	14 : 59	31.	Hermes, C.	U.S.A.	10 : 55
5.	Ferber, Madam L.	Belgium	14 : 55	32.	Mackenzie, D.	Canada	10 : 34
6.	Nilborn, J.	Sweden	14 : 53	33.	Mursep, F.	Argentine	10 : 32
7.	Blomgren, A.	Sweden	14 : 40	34.	Ford, A.	Canada	10 : 24
8.	Samaan, I. Mrs.	Germany	14 : 34	35.	Knudsen, E.	Denmark	10 : 19
9.	Kannenworf, L.	Italy	14 : 33	36.	Higgs, H.	Canada	10 : 05
10.	EVANS, E. W.	G.B.	14 : 32	37.	Moberg, C.	Sweden	10 : 00
11.	Fea, G.	Italy	14 : 28	38.	Bobkowski, A.	Guatemala	9 : 53
12.	Montplaisir, C.	U.S.A.	14 : 02	39.	Drew, G.	Ireland	9 : 35
13.	O'DONNELL, J.	G.B.	13 : 47	40.	Lipinski, G.	Germany	9 : 30
14.	Vonk, M.	Holland	13 : 33	41.	Campbell, W.	New Zealand	9 : 28
15.	Hakansson, A.	Sweden	13 : 28	42.	Ferber, M.	Belgium	9 : 19
16.	Colombo, E.	Argentine	13 : 17	43.	Kleiman, L.	Canada	9 : 14
17.	Gerlaud, E.	France	13 : 05	44.	Fresl, E.	Yugoslavia	9 : 07
18.	Lippens, G.	Belgium	13 : 01	45.	Tomkovic, M.	Yugoslavia	9 : 05
19.	Marsh, B.	New Zealand	12 : 47	46.	Prhavc, J.	Yugoslavia	8 : 40
20.	Nocetti, G.	Italy	12 : 40	47.	Strattner, W.	Germany	8 : 04
21.	Gilg, P.	France	12 : 37	48.	Visser, P.	South Africa	8 : 03
22.	Rowe, R.	S. Africa	12 : 14	49.	Hewitson, R.	New Zealand	7 : 17
23.	De Vries, C.	Holland	12 : 10	50.	du Toit, D.	South Africa	7 : 13
24.	Corwell, N.	Ireland	12 : 05	51.	Morisset, J.	France	6 : 57
25.	COPLAND, R.	G.B.	11 : 48	52.	Martins, P.	South Africa	5 : 48
26.	Sadorin, E.	Italy	11 : 24	53.	Stojadinovic, V.	Yugoslavia	5 : 18
27.	Balasse, E.	Belgium	11 : 23	54.	Chase, M.	Australia	4 : 41
28.	Heidmuller, B.	Germany	11 : 10	55.	Sandham, A.	Argentine	4 : 37
29.	Bethwaite, F	New Zealand	11 : 01	56.	Osbourn, N.	Ireland	3 : 24
30.	Goetz, A.	France	10 : 57	57.	Fitzpatrick, G.	Ireland	2 : 35

TEAM RESULTS.—(1) U.S.A. 44 : 01. (2) G.B. 43 : 19. (3) Sweden 43 : 01. (4) Italy 41 : 41. (5) Belgium 39 : 19. (6) Argentine 38 : 49. (7) France 36 : 39. (8) Germany 35 : 14. (9) New Zealand 33 : 16. (10) Canada 31 : 03. (11) S. Africa 27 : 30. (12) Yugoslavia 26 : 52. (13) Holland 25 : 43. (14) Ireland 25 : 04. (15) Denmark 10 : 19. (16) Guatemala 9 : 53. (17) Australia 4 : 41.

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World Championships Digest

CRANFIELD, BEDFORDSHIRE — AUGUST 2nd & 3rd, 1953

U.S.A. WINS ALL 4 CHAMPIONSHIPS

With a narrow lead over the British entries in all four of the International contests at Cranfield, the American contingent carried back the Wakefield, F.N.A. Team Trophy, F.N.A. (F.O.M.) and the Franjo Kluz (Team Power) as supreme victors in this, the greatest World Championships ever. Weather conditions were superb, the organisation could not have been bettered and the flying standard was higher than all expectations. It was the first occasion on which the actual holder of the Trophy had to be decided by a special fly-off.

All visiting team managers agreed that Cranfield excelled itself in every possible respect over the August Bank Holiday week-end, 1953. Held in a between-term period at the College of Aeronautics flying field in Bedfordshire, the classic Wakefield contest and its near rival in popularity, the International Power Event, were remarkable for the outstanding excellence of the organisation and the perfect weather. Not a single complaint or protest was heard over the entire contest period, and even the Southern Californian competitors were impressed by the strength and frequency of the British thermals.

MANY MAXIMUMS

A record number of "maximum" flights of over five minutes (some went up to twenty minutes) figure on the results sheet, but despite this, only one model was definitely missing at the end of the meeting, thanks to the excellence of a keen and efficient recovery service staffed by several well-known British contest fliers.

Visiting teams from twenty-one different countries assembled at the College of Aeronautics on Friday, 31st July, and settled in the modern furnished rooms vacated by the students for the holiday period. Processing, introductions and test flying for the big days on Sunday and Monday were soon in full swing after arrival from central assembly at the Aviation Centre, Park Lane, London, and language difficulties melted fast, though Slav., Latin, German, French and English tongues were all to be heard.

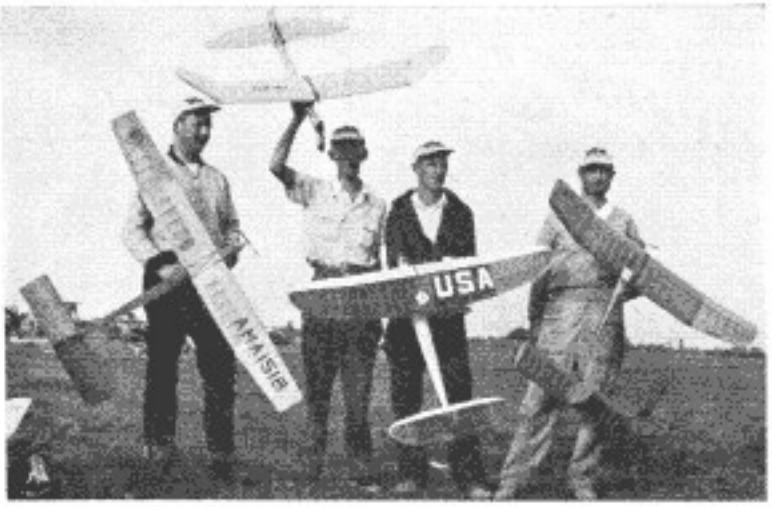
SPLENDID FACILITIES

All thanks are due to the Principal of the College, Sir Victor Goddard, K.C.B., C.B.E., M.A., for his permission to run the contests at this magnificent venue. We gather from his speech at the concluding Dinner that he was most impressed by the enthusiasm and sportsmanship of aeromodellers, and we well know how much the hobby is appreciated as an assisting factor in the study of aeronautics. For recreation, the library and lounges were made available to all visitors. Film shows were given on two nights with emphasis on aeromodelling and subjects most likely to appeal to the sporting modeller; but the prime object of all and sundry was to enjoy the large field and the low wind speed conditions prevailing. At all times, dawn to dusk on the days prior to the contest, proxy fliers and visitors alike utilised their time in getting accustomed either to strange models or the peculiar English climate.

MAGNIFICENT WEATHER

Perhaps of all the impressing features of this memorable week-end, the weather conditions stood out above all else and formed a contributory factor to the amazingly high standard of model performance. For the first time ever, triple maximum flights gained individual honours in the two World Championship events and both of these go to members of the U.S.A. Team. In the case of the Wakefield, a triple tie is officially recorded as the correct result, with the Argentine, Great Britain and the U.S.A. in equal position. This is due to the fact that the Wakefield stipulates that it shall be a three-flight contest, and on those grounds, a final unlimited deciding flight was used to determine the individual Trophy holder for 1953.

FULL REPORT—OCTOBER ISSUE ON SALE SEPT. 15th



Victorious U.S. team, winners of the magnificent silver filigree Franjo Kluz trophy. Left to right: Stan Hill, Carl Wheeley, Dave Kneeland and Joe Elgin, each an expert representative of his particular quarter of the vast U.S.A.

SUNDAY, AUGUST 2nd

When Carl Wheeley of A.M.A. Headquarters in the U.S.A. and member of the U.S. Power Team, said to Manager Bill Fletcher, "If the winner doesn't clock 15 minutes in this event, something's wrong", he was referring to the weather at 10 a.m. on Sunday morning. High level cloud, low wind which developed into virtually dead air for the 3rd round, and an abundance of thermal activity, made this a classic competition with extremely high flight times. Carl Wheeler did not know then that it would be Dave Kneeland of his team who would collect the F.N.A. (F.O.M.) Trophy, nor that he himself would be a member of the team to collect the magnificent silver filigree Franjo Kluz Team Trophy. But there were many whose minds were already set on a high American position after viewing test flights and having heard their K. & B. Torpedo motors on test runs. It was, in fact, a victory for the K. & B. factory who equipped the U.S. team with standard production motors in advance of the motor reaching the American market.

Not so very far behind the U.S.A., whose total of 38 : 47 included no less than six maximums, was the British Team, of whom George Fuller, Peter Buskell and Peter Cameron knocked up 35 : 49 with only one over-five minute flight. It is needless to relate that every flight of four minutes or more reflects thermal aid, but it should be borne in mind that the British Team were singularly unfortunate where "lift" was concerned. For height gain, everyone must readily concede that the U.S. Team were supreme, particularly in the case of Stan Hills' "Amazon", which earned spontaneous applause for its magnificent rate of climb, but the British boys were well up there every time, only to lose the lift or be swamped by downdraught at the crucial moment. All credit should go to George Fuller for his three flights of 4 : 26, 4 : 50 and 4 : 02 with his Elfin 1-8 "Zoot Suit" to bring the Union Jack into second individual place, and commiseration goes to Peter Buskell for an inexplicable loop after take-off on his third flight which brought him from third to fourth place.

At lunch break (after the first round had been completed), there were no less than seven people tying for first place with a single maximum. At the conclusion of the second round the leaders were reduced to a double tie involving Kneeland and Geoff Woodworth of Ireland, who was flying a modified Mercury "Mallard" with Oliver Tiger 2·5 diesel. Among the unfortunates in the second round who failed to connect with lift or found themselves descending through downdraught, otherwise known by the continentals as an "abwint", we list Georgie Zigic (Yugoslavia), Lefort, the yodeller from France, Goetz, his countryman, and Joe Elgin, whose 370 sq. in. American entry was the fastest flier on the field and actually opened the contest with a five-minute flight that had everybody chattering with expectation. Joe returned another maximum on his third flight to show that he is one of the world's leading power fliers.

As is now customary, the Italian contingent provided considerable entertainment with their pre-flights preparations on the tarmac.

For technical variety in design, greater contrast cannot be found than in the comparison of the Austrian vertical take-off, ultra-long fuselage moment entry with single blade propellor, and the Dutch double-decker types developed by Kempen, with the engine mounted on the centre section and wing atop of an otherwise normal pylon. The Italians, British, Irish, French and Yugoslavs were using pylon designs almost exclusively, whilst in other teams, a fair spread of shoulder-wings with low C.L.A. show that there still remains a strong following for high thrust-line design. Two models were remarkable for the acute dihedral employed. Lippens, whose shoulder wing (E.D. 2·46) has already won one international this year, and Jakob Huper's version of Swiss Bodmer's pylon layout. This model has tip dihedral with a very short flat centre section and, like Lippens', climbs in a tight spiral with very quick recovery at cut-out.

Most popular of the motors in use was the E.D. 2·46 Racer, closely followed by the German Webra, Typhoon, Elfin, Allbon and Super Tigre products, not forgetting the American K. & B.'s.

MONDAY, AUGUST 3rd

A total of 25 maximums scored in the first round of the Wakefield Contest will give some idea of the outstanding weather which, if anything, was slightly better than the previous day. Scattered cumulus clouds with large welcoming patches of blue sky were there to greet the teams of seventeen different nations when they assembled at the take-off area.

One glance at the field and it was immediately apparent that a very high standard of flying would ensue. We noticed Blomgren of Sweden, last year's winner, with the identical model he has flown the past two years, which, in spite of its long usage was in impeccable condition. Ted Evans was using an ungeared model built to his usual perfection, Bob Copland flew one of his familiar black streamliners, and the O'Donnell brothers, their rather well-worn, but very effective later mark "Maxie's" developed from "Borderline". Ted Evans climbed so high that the timekeepers unfortunately lost the model at 4 : 32, thus spoiling a triple maximum.

Biggest surprise for staid old-timers was *two* lady competitors who *both* put up double maximums! They were Madame Ferber of Belgium who eventually shook the male population by placing fifth, and Frau Samaan who was not so very far behind in eighth position.

At the end of the second round when thermal activity was not so plentiful, and when the wind had changed through nearly 90 degrees, there were five competitors with a double maximum.

Amongst the people in the top five positions at the end of this round were Moberg and Hakenson of Sweden. It was certainly not Sweden's lucky day, for Hakenson had to rebuild his fuselage in time for the third round, and Moberg lost a tail-plane upwards when it became detached on D. T'ng. This was his second model and having already lost the first earlier on, he could not use a tailplane from a third model.

Soon there was loud applause from the crowd, numbering some two or three thousand, when it was announced that Senor Scotto of the Argentine had achieved the first treble maximum. Not long after, Hughie O'Donnell received a terrific ovation on doing the same thing, especially in view of his tender years.

Joe Foster then enjoyed the crowd's ovation for a third and final treble maximum.

After a lull whilst the F.A.I. Jury sorted out differences of opinion on how a fly-off should be conducted, we finally saw the three little groups, composing competitor, timekeepers, and F.A.I. Juryman walk out to the take-off area.

First away was Scotto the Argentine whose climb was soon surpassed by Foster's geared model, which pointed its nose to the heavens and climbed like a rocket.

At this juncture, to say that the situation was tense would be a considerable understatement, and when we suddenly realised that the diminutive figure of Hughie O'Donnell had stopped winding, quite a few British hearts almost stopped beating. One had to hand it to the lad for his cool head. Calmly he unwound to attend to what was apparently a broken motor strand. Brother Johnny did a field repair in double quick time and once again Hughie was back at the winder. By now those of us with any nerves left, were losing them fast as we sweated out the possibilities of the motor going.

Hughie's take-off was to most of us rather like a tooth extraction, certainly we were glad when it was over. As the model left the ground to a roar of applause from the crowd we reflected how well this fourteen-year-old British Junior Champion bore the heavy burden of British prestige on his young shoulders.

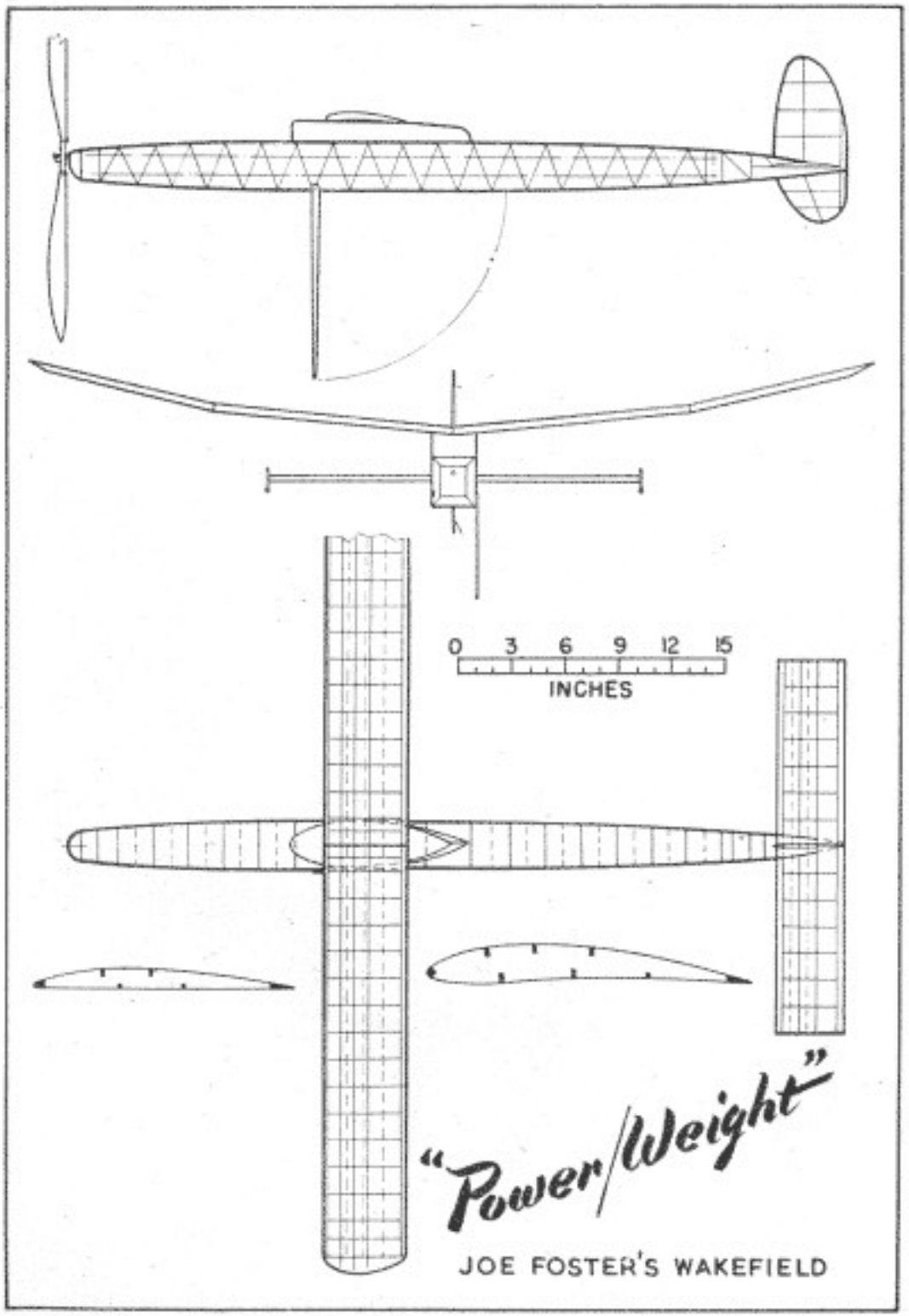
Soaring skywards in the typical tight O'Donnell spiral, the model was obviously away for a five minute plus flight. By now the Argentine was down having failed to reach sufficient height to catch what little lift there was about. Joe Foster was gliding beautifully at a very comfortable height and we had the impressive spectacle of two championship models fighting it out neck and neck at seven or eight hundred feet.

Foster's model finally touched down for a time of 7 : 25 and all eyes were now on Hughie's familiar black and red model.

It was, however, not to be, his final time being 6 : 20 and Joe Foster in very sporting style rushed across to congratulate a very stout-hearted little lad.

And so after the photographers and reporters had had their fill of the victors, not forgetting the entire American team who once again pulled off the team Trophy, we reached the end of a very memorable World Championship.

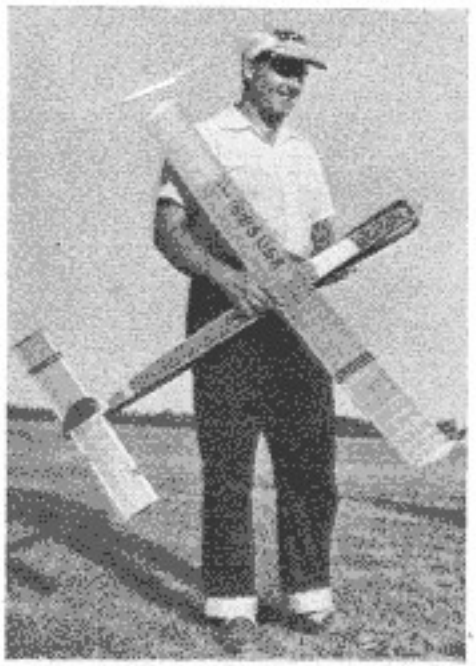
Below: Joint winners, Eliseo Scotto of Circulo Cordobes de Aeromodelismo, Argentine, and Hughie O'Donnell of Whitefield, upholder of British prestige with his "Maxie" Mark 23, airframe weight 2·7 ozs., motor 5·25 ozs.



JOE FOSTER of the U.S.A.

The Man . . . .

Burly, dark, Joe Foster is a Californian. He is typical of a top class Wakefield flier, a very neat builder and a stickler for precision in construction. Born 26 years ago, Joe is married and has one baby girl aged five months. He claims he has been a modeller since he was five years old, and is now a prominent member of the Oakland Cloud Dusters Club along with his neighbour Joe Bilgri. Much of his modelling is similar to that produced by Bilgri and we gather that it was a sure thing that one or other of these men would be in the U.S. Team. Employed as a machinist at the Food Machinery and Chemical Corporation, his home town is San José. To qualify for the U.S. Team he entered the eliminators at Sacramento and Marysville, involving travelling distance of almost 1,000 miles. This is the second occasion on which he has represented the U.S.A. in the Wakefield competition, for he was a member of the U.S. Team to Finland in 1951, placing 29th in the final results. A pioneer of the long fuselage Wakefield, he now concentrates on the twin skein gear motor, but with the current arrangement, for the rule changes, it is doubtful whether he will stick to this power arrangement. Joe does not usually give his models a name but in response to special request from ourselves and his fellow Americans he christened his victorious Wakefield on the spot as the "Power/Weight". An all-rounder, he was U.S. National Champion of 1952.



And his Model . . . .

A great example of the highly developed Wakefield, Foster's model used a twin skein motor arrangement with gears fabricated by the Oakland Cloud Dusters Club members. Each motor is stretched tight between hooks and consists of sixteen strands of ¼ in. rubber. For his three maximum flights Foster used Dunlop 6010 Rubber and for the final unlimited deciding flight of 7 : 25 he changed for some Pirelli he had held in reserve especially for such a purpose. The model was beautifully constructed with multi-spar wing and Warren braced fuselage. Airframe weight is 3·25 ozs. and the motor weight no less than 6 ozs.—hence the choice of name for this outstanding model. Checked through processing, its projected areas were :—Wing, 215 sq. ins., tail 78·5 sq. ins., giving a total of 293·5 sq. ins. Fuselage cross section is 10·1 sq. ins. and process span 40·9 ins. Like young Hugh O'Donnell, who placed second, Joe employs the Bilgri-designed prop of 22 ins. diameter and, in his case, 22-in. pitch (O'Donnell for his feathering prop employs 24-in. pitch). Foster's prop is a two-blade folder with stop and hinge arrangement for the blades to fold flat on the fuselage sides.

Joe Foster has every reason to look happy as he poses with his nine and a quarter ounce model. The glide was near perfect and there is no doubt that the folding prop was a particular boon, especially in view of the calm flying conditions.

POWER

DAVE KNEELAND of the U. S. A.

The Man . . . .

Quiet, very reserved Dave Kneeland is the persevering type of modeller bound to succeed. 29 years old and employed as a draughtsman at the Midwest Research Institute in Kansas City, Missouri, Dave is married and has two children. This was not his first opportunity of representing the U.S.A. in international competition, for he was a member of the 1951 Wakefield Team, though on that occasion he had to carry two untested machines to Finland. That he built those two Wakefields in the space of fourteen days and—despite one dud flight of eleven seconds—managed to place midfield in the final results, shows that he is the keen, tenacious type, ready to do his best whatever the limitations.

This time, in " Vapour Trail ", Dave had a well tried model for his power entry. He used it to qualify through two eliminators and still considers that he has not yet perfected the model in spite of its " maximum " performance. Though he lives in the heart of Missouri at a little place known as Hickmans Mill, near to Kansas City, Dave is surprisingly hard-hit by the universal flying field problem and, with his fellow-members of the Winged Motors Club, has to make do with a field of less than 50 acres in the midst of poor recovery area. Flights like those at Cranfield are only possible for Dave when he attends big meetings. The two Mid-West eliminators for the U.S. Power Team were held some distance from his home town. In fact, Dave logged over 1,800 miles to make his qualifying flights.

Kansas City is subject to extreme temperatures —when Dave departed for Europe, the day temperature was 104° Fahrenheit, and the night temperature only 20 degrees lower. Such conditions demand careful building, with particular emphasis on anti-warp structure. Study of the " Vapour Trail " reveals that Dave is an expert on this subject and is able to build in neat and effective special bracing, to combat the ravages of changing climes.

He had a Wakefield ready for the 1953 eliminators, but it just failed to make the grade due to lack of trimming experience with the new model. He considers the new rules for 1954 Wakefields will place this class of model out of reach of the " all-rounder ", and will demand too much from the rubber men. Restrictions, he says, should be limited to a bare minimum and rule changes kept as small as possible.

His opinion of other models at Cranfield is that " some are very good " and of diesels that " some have very good possibilities ".

And his Model . . . .

Designed to utilise Carl Goldberg's " Cumulus " wing and tail planform with its neat, efficient elliptical shape and same Goldberg sections. Additional ¼ sq. anti-warp structure used on the wing tips and on the tail. Leading edge is covered with sheet and painted with one coat of white Alkali paint, normally employed for decorating venetian blinds and therefore heat reflecting. Fuselage is a sheet diamond using ⅛ balsa and blending to a 2-in. circular radial mount for the engine. Streamline section pylon, also sheet, is superimposed and brings fuselage up to correct cross-sectional area. Nose completely encloses sheet metal tank and Austin Craft airdraulic timer and Spitfire shut-off valve. Motor runs were 17, 17, 19, out of an allowed 20 secs. Motor, a K. & B. Torpedo " 15 " (2·47 c.c. measured capacity), using K. & B. Supersonic 1,000 20% nitro-methane fuel. R.P.M. on ground guessed at 11,500. O.K. Cup 149 was used in " Vapour Trail " to make qualifying flights and Torpedo was substituted a week before leaving the U.S. Model was nearly lost on a check flight when D.T. failed and model entered a Missouri cumulo-nimbus. Thanks to publicity in " Kansas City Star " it was recovered seven miles from Kneeland's flying ground. Prop used at Cranfield, an 8½ × 4, Top-Flight. Flight pattern is fifty foot take off blending into 40/50 m.p.h. 60° climb straight into wind then wide left hand circuit gaining height at a terrific rate. For two of the three flights, climb developed into wide loop due to increased power of Torp over O.K. motor on which it was trimmed. Fuselage finish, like leading edge, is Alkali white, wings were doped to reach required rigidity and 17·4 oz. total weight (5 coats), then sprayed with dye to achieve orange/yellow toned effect. This combination provided the second best finished model on the field (Leppert of Germany being 1st).