AEROMODELLER

CONTENTS

JULY 1951 1/6

Digital Edition Magazines.

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

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

All Plans and Articles can be found here:

Hlsat Blog Free Plans and Articles.

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

AeroFred Gallery Free Plans.

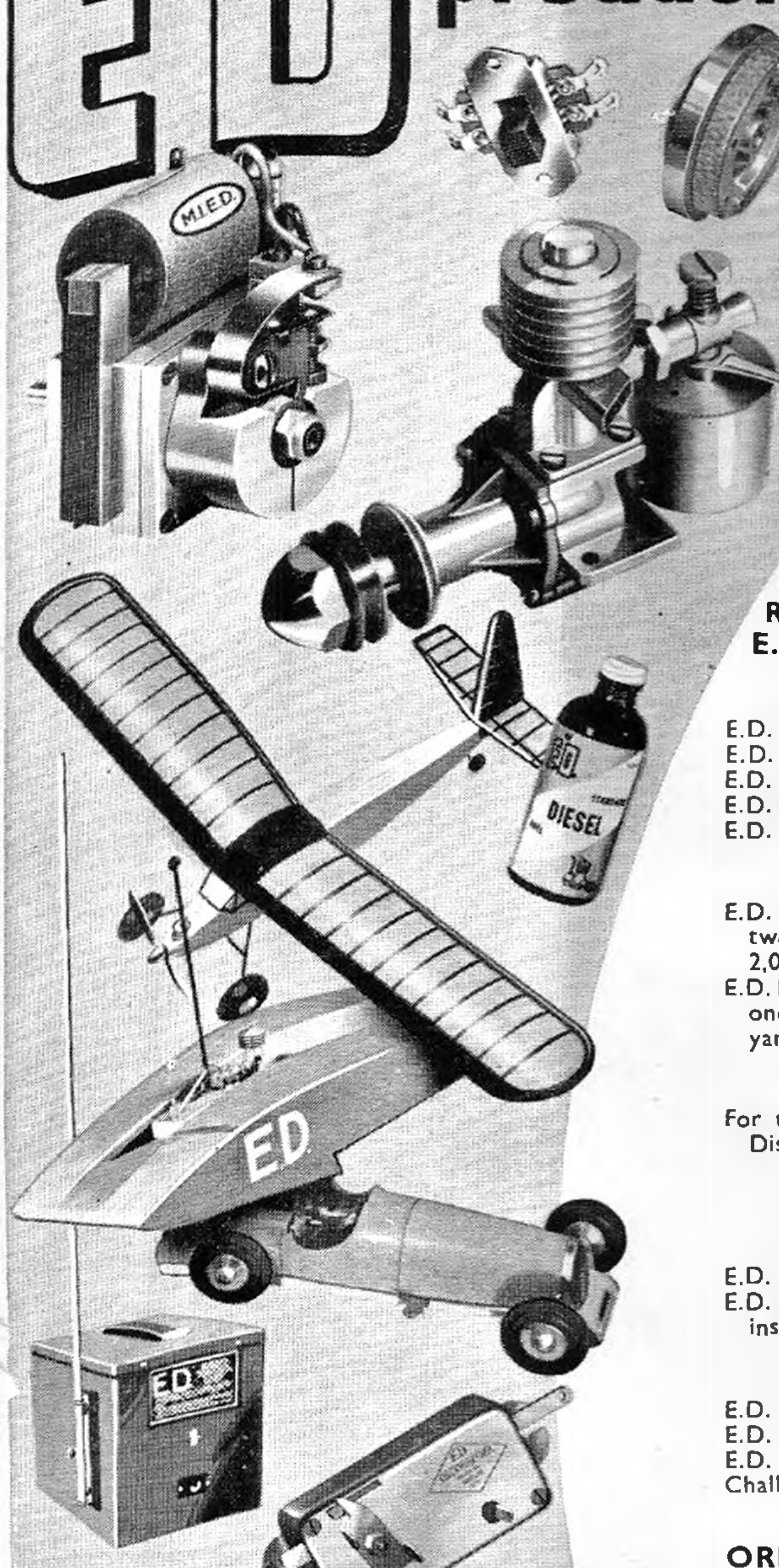
http://aerofred.com/index.php

Hip Pocket Aeronautics Gallery Free Plans.

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

Diligence Work by Hlsat.

E.D products are SOLD as they are MADE



The demand for E.D. Diesels, Radio Control Units, Kits and Accessories comes from all over the World. The E.D. factory is working day and night at full capacity to keep pace with this ever growing demand. Such is the reputation E.D. products have gained in a few short years !

Remember—only the BEST is good enough for E.D. and YOU !

DIESEL ENGINES

	£	s.	d.
E.D. Mk. I " Bee " I c.c. diesel engine	2	12	6
E.D. Mk. II 2 c.c. diesel engine	2	17	6
E.D. 2 c.c. competition special engine	3	0	0
E.D. Mk. III (Series 2) 2·46 c.c. racing engine	3	12	6
E.D. Mk. IV 3·46 c.c. diesel engine	3	15	0

RADIO CONTROL UNITS

E.D. Mk. I three-valve R/C unit ; three valve receiver ; two-valve transmitter, and clockwork servo. Range 2,000 yards plus. Complete (less batteries)	17	19	9
E.D. Mk. III " Miniature " R/C unit ; one-valve receiver ; one-valve transmitter and escapement. Range 1,000 yards plus. Complete (less batteries)	9	17	11

MI/ED MAGNETO

For two stroke or four stroke engines up to 30 c.c. Dispenses with the old coil and battery system.

Magneto complete	4	10	0
Unit Magneto	2	15	0

CLUTCH UNIT

E.D. Mk. III and Mk. IV clutch unit, complete	2	10	0
E.D. Mk. II C/S clutch unit complete as above plus taper insert	2	15	0

E.D. KIT SETS

E.D. " Radio Queen " aircraft kit set	4	5	0
E.D. " Challenger " hydroplane kit set	2	12	6
E.D. " Aerocar " kit set	2	12	6
Challenger C/L aircraft fuselage complete (engine extra)	1	19	0

PRICES INCLUDE PURCHASE TAX

ORDER THROUGH YOUR MODEL SHOP

E.D. ELECTRONIC DEVELOPMENTS (SURREY) LTD

DEVELOPMENT ENGINEERS

KINGSTON-ON-THAMES 1223 18, VILLIERS ROAD, KINGSTON-ON-THAMES, SURREY, ENGLAND

S.M.A.E. UNITAS

VERON

INTRODUCING THE NEW

"MINIBUSTER"

SLEEK AND FAST . . . .

The Little 'plane with LOTS of character ! !

ANOTHER OF PHIL SMITH'S GOOD LOOKING MODELS WITH TOP PERFORMANCE

CLASS "A" TEAM RACER
19" span

A "VERON" VALUE KIT

Containing ALL the parts you need—Sorbo wheels with metal hubs, Spinner, Hardware and a brilliantly composed plan showing engine installation for E.D. Bee 1 c.c. Allbon Arrow, Javelin, Elfin 1·49 and Elfin 1·8 (alternative radial mount).

SPECIFICATION: Span 19 in. Area 84 sq. ins. Weight 6½ oz. (without engine). For use with all motors up to 2·5 c.c., radial or beam mount.

KIT PRICE 15/- PLUS 3/4 P.T.

LOOKS GOOD... The "PHILIBUSTER" ...IS GOOD!

Good looks and performance usually go hand in hand. This 28½ in. span model has EVERYTHING !—including top-line VERON quality. A super racer thoughtfully designed upon practical experience. Will take all GLOW-PLUG and DIESEL MOTORS up to 5 c.c. (inverted) such as E.D. Mk. IV, Frog 500, Amco 3·5, D.C. 350, etc. Kit has plastic cockpit cover, Super-sonic spinner, Sorbo unpuncturable rubber wheels, Hardware 30 in. × 40 in. illustrated plan.

KIT PRICE 23/6
(PLUS P.T. 5/2)

TEAM RACER TO S.M.A.E. CLASS "B" SPECIFICATION.

★ WATCH NEXT MONTH'S "AEROMODELLER"
BRINGING YOU TWO BRAND NEW KITS FOR "JETEX" 50
"SABRE" AND "ATTACKER"

The "VERON" 1951 CATALOGUE
OBTAINABLE FROM ANY "VERON" DEALER OR DIRECT FROM US . . . PRICE **6D.**

FESTIVAL OF BRITAIN 1951

DID YOU KNOW ? . . . . that VERON models have been chosen for inclusion in the SOUTH BANK EXHIBITION as representative of QUALITY BRITISH MODEL AIRCRAFT KITS.

AUSTRALIAN DISTRIBUTORS: Scientific Hobby Distributors, 350 Queen Street, Brisbane, AUSTRALIA

MODEL AIRCRAFT (Bournemouth) LTD. Norwood Place. BOURNEMOUTH

Telephone: SOUTHBOURNE 2783

There's a place for YOU

By volunteering now for part-time service with the Royal Air Force you will be helping to meet one of Britain's most urgent needs: a trained reserve of men and women on whom it can count in an emergency.

If you want to fly, here is your opportunity to get the best possible training. If your interests are in ground jobs, you will find you are able to do vital work that gives you useful new skills or improves old ones. But whether you choose to serve in the air or on the ground the close association with the Royal Air Force will give you new experiences and fresh companionship that you can gain in no other way. And you will have that supreme satisfaction of knowing that you, at least, have shown your awareness of the urgency of the times we live in. Send for full particulars now.

. . . in the part-time R.A.F.

TO: ROYAL AIR FORCE (A.M. 67) VICTORY HOUSE, LONDON, W.C.2.

Please send particulars of part-time service with the R.A.F.
(Applicants from British Isles only)

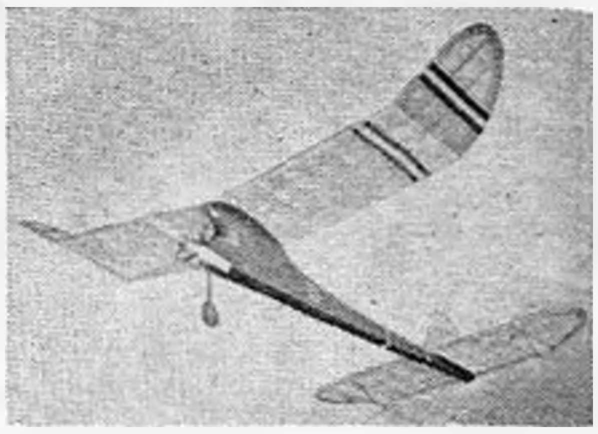
NAME..

ADDRESS..

.... AGE..............

(If ex-R.A.F. or W.A.A.F. please give rank, trade and number).

★ *If you are between 14 and 17 — and keen — join the AIR TRAINING CORPS* ★

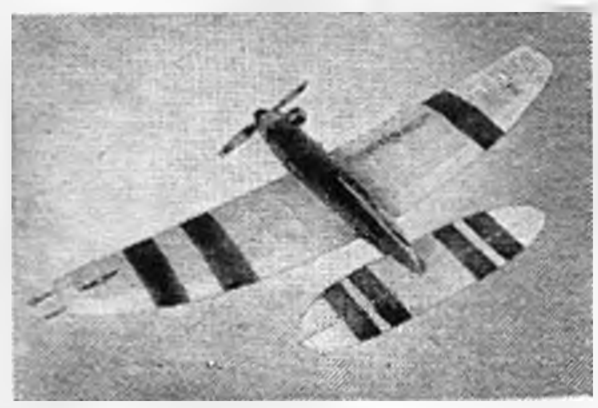


Mercury Mallard 22/4

Raeburn

"ALWAYS AT YOUR SERVICE"

WE STOCK A FULL
RANGE OF ENGINE KITS AND ACCESSORIES



Mercury Musketeer ... 24/9

Terms for C/L Planes and Engines

	Cash Price	Dep.	20 Wkly. @
E.D. Bee—Challenger ..	91/6	16/6	4/-
Bee—Phantom Mite ..	66/7	12/6	3/-
Bee—Bee-Bug ..	66/6	12/6	3/-
Mills P.75—Phantom Mite ..	75/3	16/6	3/6
Elfin 1·49—Skyskooter 26 ..	71/-	16/6	3/-
E.D. Mk. II.—Midget Mustang	80/8	17/-	3/6
E.D. Comp.—Spitfire 22 ..	88/7	15/-	4/-
Elfin 2·49—Spitfire 22 ..	104/1	20/-	4/6
D.C. 350—Mk. Team Racer..	106/9	22/6	4/6
E.D. Mk. IV.—Focke Wulf	99/-	18/6	4/3
Mills 1·3—Jnr. Musketeer ..	112/6	18/6	5/-
E.T.A. 29—Musketeer ..	174/2	31/-	7/6
E.D. Mk. IV.—Musketeer ..	99/9	15/6	4/6
D.C. 350—Scout Team Racer	125/-	30/-	5/-

Terms for F/F Planes and Engines

	Cash Price	Dep.	20 Wkly. @
Bee—Slicker Mite	64/1	10/-	3/-
Bee—Southerner Mite ..	65/4	11/6	3/-
Mills S.75—Southerner Mite	80/1	16/-	3/6
Mills S.75—Slicker Mite ..	78/10	15/-	3/6
Elfin 1·49—Mallard	81/9	17/-	3/6
Mills 1·3—Mallard	114/-	19/-	5/-
Mills S.75—Streaker ..	91/4	16/-	4/-
E.D. Bee—Streaker.. ..	76/7	12/-	3/6
Elfin 1·49—Streaker ..	83/6	14/-	3/9
Elfin 2·49—Slicker 50 ..	100/6	21/-	4/3
E.D. Mk. IV.—Radio Queen	168/5	36/6	6/9
E.D. Bee—Skyskooter ..	83/-	13/6	3/9
D.C. 350—Junior 60 ..	135/9	31/-	5/6
D.C. 350—Super Slicker ..	130/3	26/-	5/6

Terms for Latest Combinations

	Cash Price	Dep.	20 Wkly. @
Bee—Ladybird	75/2	11/6	3/6
Mills S.75—Ladybird ..	89/11	16/-	4/-
Allbon Dart—Junior Mallard	79/6	15/6	3/6
Allbon Dart—Stinson ..	91/9	17/6	4/-
Mills S.75—Stinson	93/10	19/6	4/-
Elfin 2·49—Monocoupe ..	130/-	27/6	5/9
E.D. Comp.—Monocoupe ..	126/-	22/6	5/6
Elfin 1·49—Ranger	72/3	12/6	3/3
Yulon Eagle—Musketeer ..	111/7	17/6	5/-
Frog 500—Panther	99/3	15/6	4/6
E.D. Mk. IV.—Philibuster ..	103/8	19/6	4/6
D.C. 350—Wyvern.. ..	116/2	22/6	5/-
Yulon Eagle—Panther ..	117/4	23/-	5/-
D.C. 350—Philibuster ..	116/2	22/6	5/-

SEND FOR FULL LISTS AND H.P. FORM, OR RING, COLNE 996

Raeburn Model Service, 9 Arcadia, Colne, Lancs.

R.S. FOR RELIABLE SERVICE

SEND S.A.E. FOR COMPLETE LISTS AND SIMPLIFIED AGREEMENT FORM

COMET MK. I. R/C UNIT

Months of testing under actual flight conditions are at the back of this new R/C unit and I am confident that every owner will have superior performance and ease of operation with a "COMET" unit.

RECEIVER: XFG-1 Valve, Siemens 73 Relay Unit construction, crash proof ... 75/-

TRANSMITTER: 3A5 Valve, 4 watt Input, portable, highly efficient 75/-

ACTUATOR: 2 pawl, self neutralising 21/-

COMPLETE UNIT 169/6

DESCRIPTIVE LEAFLET ON REQUEST

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AGENCIES

I am agent for all the leading manufacturers and carry a comprehensive stock of their products: KEILKRAFT, VERON, MERCURY, ELFIN, DAVIES-CHARLTON, ELECTRONIC DEVELOPMENTS, AMCO, REEVES, FROG, MILLS, JETEX, HALFAX, TRUCUT, BARON, ROADWAY.

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ENGINE EXCHANGE SCHEME

My offers for second-hand engines are always enthusiastically accepted and I now have hundreds of customers who wouldn't dream of sending their engines "elsewhere".

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RADIO SERVICE

My Radio Staff will overhaul your set including wiring check-over—relay setting—bench test. Service charge 5/-.

Siemens 73 Relays available at 15/- each. Faulty parts replaced at cost.

HIRE PURCHASE TERMS AVAILABLE ON ALL GOODS VALUE £2 OR OVER.

ANY KIT CAN BE INCLUDED WITH AN ENGINE.

	Cash or C.O.D.	Deposit	20 wkly. pymts.
ENGINES			
Mills P ·75 c.c. Diesel	60/9	12/6	2/8
E.D. Bee 1 c.c. Diesel	52/6	9/-	2/4
Mills Mk. II, 1·3 c.c. Diesel ...	91/8	16/8	4/-
Elfin 149. 1·49 c.c. Diesel ...	59/6	12/-	2/7
E.D. Comp. Special 2 c.c. Diesel	60/-	11/-	2/8
Reeves 1·8 c.c. Diesel	62/6	12/6	2/9
Elfin 249. 2·49 c.c. Diesel ...	70/-	14/6	3/-
Frog 250. 2·5 c.c. Diesel	72/6	15/-	3/3
E.D. Mk. III Series II, 2·46 ...	72/6	15/-	3/2
E.D. Mk. IV, 3·46 c.c. Diesel ...	75/-	15/-	3/3
D.C. 350. 3·5 c.c. Diesel	87/6	15/6	3/10
Amco 3·5 c.c. Diesel	97/6	17/6	4/3
Yulon "Eagle" 5 c.c. Glow Plug	86/10	15/6	3/10
Yulon "49" 8·2 c.c. Glow Plug ...	124/5	24/5	5/3
Eta "19" 3·2 c.c. Glow Plug ...	124/5	24/5	5/3
Eta "29" Series III, 5 c.c. G.P. ...	149/5	29/5	6/3
RADIO CONTROL			
E.D. Mk. III Complete R/C Unit	197/6	40/-	8/3
E.C.C. International Transmitter	168/9	38/9	6/9
Comet Mk. I Complete R/C unit	169/6	39/6	6/9
Comet Mk. I Receiver only ...	75/-	12/6	3/4
E.D. Mk. III Receiver only ...	75/-	12/6	3/4
"Ivy" Receiver	87/6	15/6	3/10
E.C. 950A Receiver	87/6	15/6	3/10
KIT			
Radio Queen 84" span	95/6	15/6	4/3
Junior 60 60" span	48/3	10/-	2/1
Monocoupe L7A 64" span ...	66/-	13/3	2/11
Southerner 60 60" span	48/11	10/6	2/1

ROLAND SCOTT
185, CAMBRIDGE RD., ST. HELENS,
LANCS.

JAP SILK

Supplies of this superior covering material are once again available in limited quantity.

Complete Parachutes £3
Panels containing 1¼ square yards ... 4/-

Order now while stocks last.

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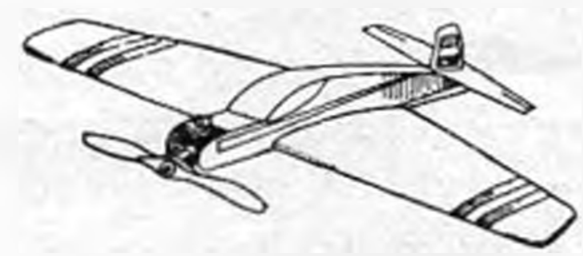

THE "ELF KING"

A modern type stunt control line kit for engines 1 c.c. to 2 c.c. but designed especially for a complete stunt performance with all 1·5 c.c. engines. Flying speed 65 m.p.h. Building time 8–10 hours. Kit includes:—**ALL** parts cut to shape—ready made tank, etc., etc. PRICE 12/6

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SELECTED SECOND-HAND ENGINES

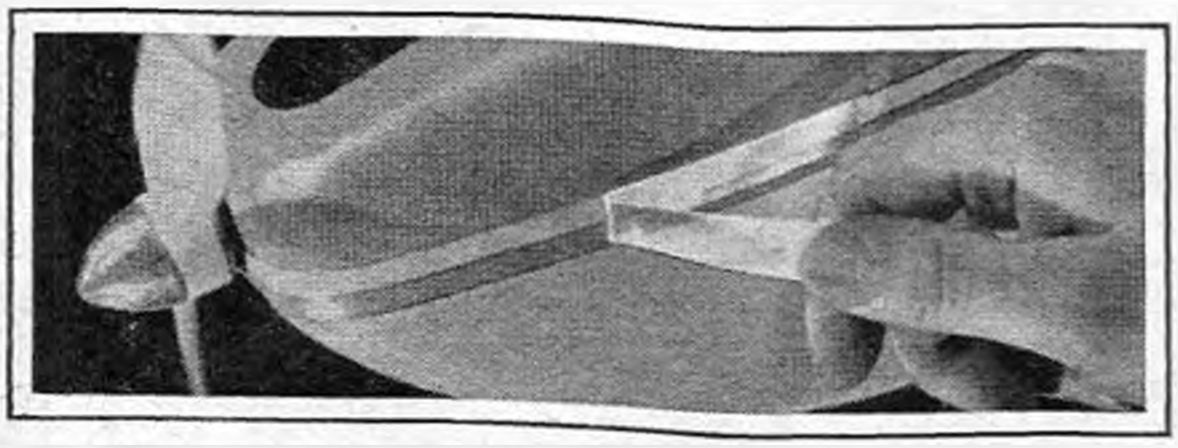
E.D. Comp. Special 2 c.c.	35/-
E.D. Mk. III 2·49 c.c. Diesel or Glow ...	37/6
Mills 1·3 c.c. Mk. II Diesel	45/-
Mills 2·4 c.c. Diesel	52/6
Amco 3·5 c.c. Diesel	60/-
Yulon 29. 5 c.c. Glow Plug	52/6
Yulon 49. 8·2 c.c. Glow Plug	67/6

Also many Americans

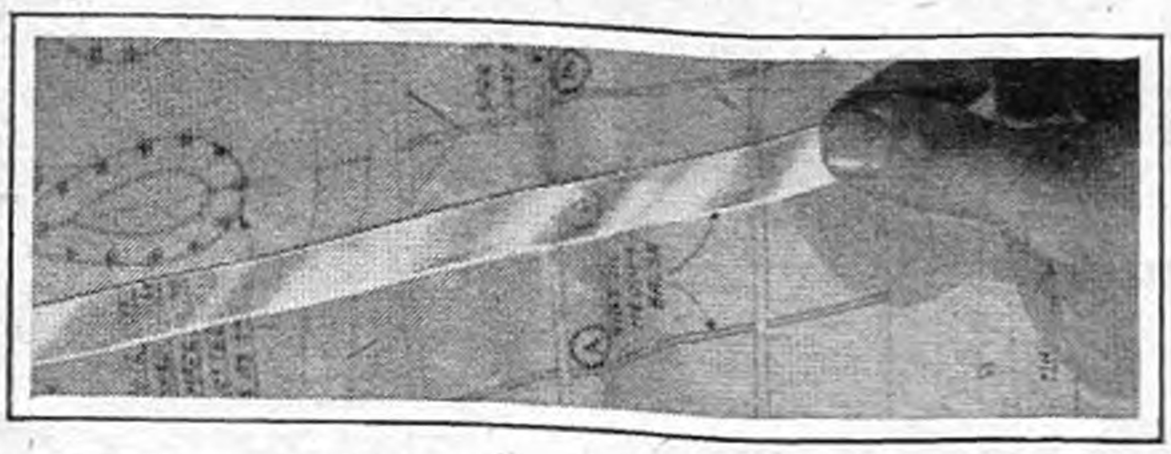
—FULL LIST ON REQUEST—

All S/H Engines are completely checked and Test Run before despatch. If any Engine is not satisfactory I will give full refund.

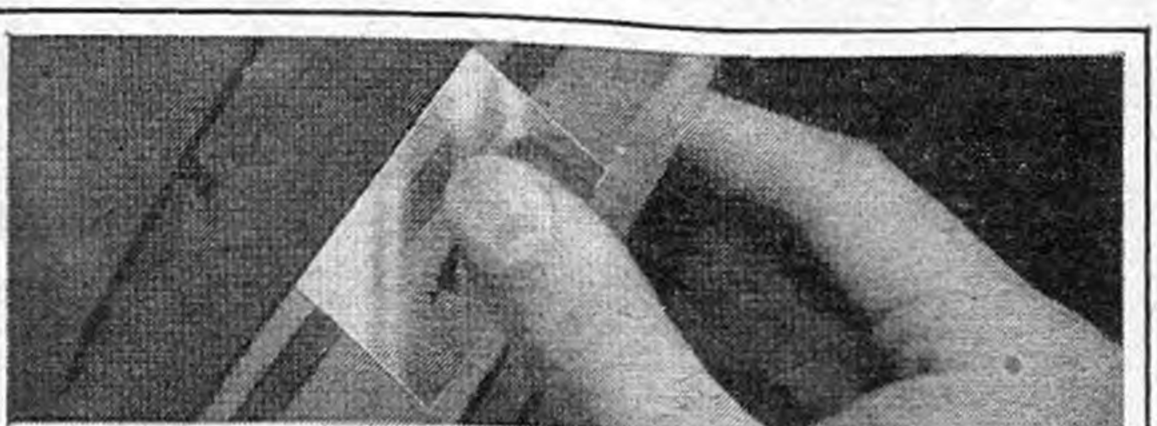
MASK...MAKE...



MEND...WITH



Sellotape



In the field and in the workshop, Sellotape is your greatest ally. For masking paintwork, for protecting plans, for on-the-spot repairs—for a thousand and one jobs—it's Sellotape every time. It sticks at a touch without moistening. It fits evenly on a curving surface. There's coloured Sellotape for identification and decorating. You just can't do without it. Get some today—and remember, if it doesn't SAY Sellotape—it isn't!

Stocked by all Stationers

G&G

Bud Morgan

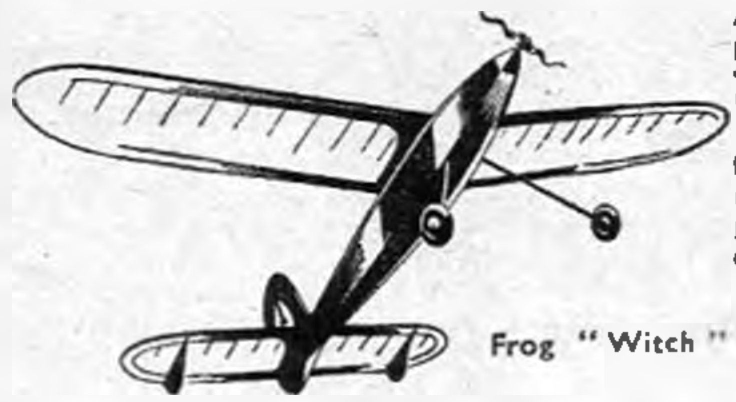
THE MODEL AIRCRAFT SPECIALIST

The **NEW E.D. 2·46 RACING ENGINE** can be run as DIESEL, GLO-PLUG or SPARK IGNITION. Weight only 5 ozs., develops over ¼ b.h.p. at 14,000 r.p.m. plus.

Price **72/6**

Delivery by return

FREE —MY NEW 1951 No. 2 PRICE LIST. This list contains the latest prices of the following firms' Kits, Engines and Accessories: Keilkraft, Veron, Frog, I.M.A., Mercury, E.D., Jetex, O'My Dopes and Cements, etc. PLEASE SEND 1d. stamped addressed envelope for your copy.



Frog " Witch "

Another new and complete **KIT by I.M.A.,** the **" WITCH "** is a nice-looking semi-streamliner with an excellent performance. Kit includes rubber, semi-shaped propeller and all sheet die-cut to shape.

Price **12/9**

Postage 10d.

COMPLETE RANGE OF KEILKRAFT FLYING SCALE MODELS IN STOCK. Globe Swift, Auster Arrow, Chipmunk, Fokker D.8, Luscombe Silvaire, Fairey 17, Piper Super Cruiser, Piper Family Cruiser, Cessna, Bonanza and Fairey Junior, all at 3/8, *postage 6d. extra.* Each kit includes plastic propeller.

AEROMODELLERS, there is NO PURCHASE TAX on SECOND-HAND ENGINES. WHY NOT SEND FOR ONE OF THESE ? All Engines personally guaranteed. Money returned if not perfectly satisfied. Send for latest Second-hand Engines List. A small selection as follows:—E.D. Comp. Special, 30/–; Amco 3·5 c.c., 60/–; Frog 500, 50/–; E.D. Bee, 35/–; Kestrel, 30/–; Ohlsson 23, 60/–; Ohlsson 60, £5.

POWER F/F DURATION		RUBBER DURATION	
Frog Fox 40" pylon ...	21/–	Frog Stardust 37" ...	12/9
Powavan 47" ...	25/–	Venus 38" streamlined ...	17/6
Firefly Biplane 36" ...	22/6	Goblin 24" cabin ...	5/6
Frog 45 precision ...	27/6	Veron Goblin 20" ...	3/11
Mallard 48" ...	22/4	Veron Rascal 24" ...	5/6
Stinson 42" scale ...	26/7	Veron Sentinel 34" ...	12/2
Jnr. Mallard 33½" ...	14/4	Maybug ...	9/6
Skyskooter 48" R/C ...	30/6	Keilkraft Ace 30" ...	6/1
Javelin 50" ...	27/6	Playboy 20" ...	4/–
Monocoupe 64" R/C ...	66/–	Orion 23" ...	4/3
Falcon 96", radio control ...	131/5	Achilles 24" ...	4/11
Junr. 60", radio control ...	48/3	Eaglet 24" ...	5/6
Pirate 34" E.D. Bee...	14/8	Ajax 30" ...	7/4
Bandit 44" ...	22/8	Competitor 32" ...	8/7
Outlaw 50" ...	27/6	Senator 32" ...	6/9
I stock full range of Keilkraft Kits; see Keil advert. on back page for prices, etc.		Gypsy 40" ...	12/10
		Contestor 45½" ...	28/8
		Pixie 23" semi-scale...	4/11

GLIDERS		JETEX MODELS	
Frog Diana 36" ...	9/–	Thunder Jet 18" ...	6/8
Halfax Roma 40" ...	9/–	Sea Hawk 18" ...	6/8
Frog Prince 60" ...	25/–	Min-o-Jet ...	3/8
Frog Fairy 30" ...	9/–	Fouga Cyclone ...	5/6
K.K. Chief 64" ...	22/8	Vampire ...	7/–
Coronette 26" ...	3/11	Meteor ...	10/7
Verosonic 46" ...	11/7	Jeticopter ...	7/–
K.K. Cadet 30" ...	4/11	All the above to be used with JETEX 50 MOTOR.	
K.K. Cub 20" ...	3/1		

22/22a CASTLE ARCADE, CARDIFF

Telephone: CARDIFF 8085

"That's a good idea"

FOR TAPERED WINGS WITHOUT TEARS TRY THESE—

R.A.F. 15	S/1	GOTTINGEN 387	S/25
R.A.F. 19	S/2	GOTTINGEN 398	S/26
R.A.F. 30	S/3	GOTTINGEN 413	S/27
R.A.F. 31	S/4	GOTTINGEN 426	S/28
R.A.F. 32	S/5	GOTTINGEN 436	S/29
R.A.F. 33	S/6	GOTTINGEN 532	S/30
CLARK Y	S/7	GOTTINGEN 602	S/31
CLARK Y-H	S/8	SIKORSKI GS-1	S/32
N.A.C.A. 97	S/9	N.22	S/33
N.A.C.A. 98	S/10	N.60	S/34
N.A.C.A. 4309	S/11	C.72	S/35
N.A.C.A. 4409	S/12	MARQUARDT S-2	S/36
N.A.C.A. 4412	S/13	N.A.C.A. 0018	S/37
N.A.C.A. 4415	S/14	CURVED PLATE 417a	S/38
N.A.C.A. 6409	S/15	DAVIS (A=9; B=1)	S/39
N.A.C.A. 6412	S/16	SIGURD ISAACSON 53009	S/40
N.A.C.A. 6512	S/17	SIGURD ISAACSON 53507	S/41
N.A.C.A. 6712	S/18	DAVIS (A=·93; B=·17)	S/42
U.S.A. 5	S/19	JOUKOWSKI	S/43
U.S.A. 27	S/20	DAVIS (A=1; B=2)	S/44
U.S.A. 35B	S/21	LDS-2	S/45
EIFFEL 400	S/22	60% CLARK Y	S/46
EIFFEL 431	S/23	N.A.C.A. 4612	S/47
GRANT X-8	S/24	60% R.A.F. 30	S/48

Here are airfoils for every type of model, accurately printed, to simplify your wing production.

Sheets 1 to 36 give 31 profiles from 3 in. to 9 in. chord, sheets 37 to 48 having 41 sections from 4 in. to 12 in.

Price 6d. per sheet. Complete set of 48 sheets 20/-

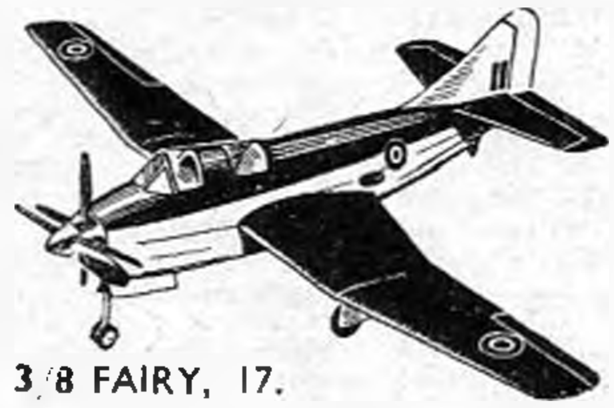
AEROMODELLER PLANS SERVICE

THE AERODROME, BILLINGTON RD., STANBRIDGE, Nr. LEIGHTON BUZZARD.

K.K's 3/8 Range is at RAYLITE. *Send Now*

AUSTER ARROW 3/8

KEIL KRAFT — QUALITY FIRST



3/8 FAIRY, 17.

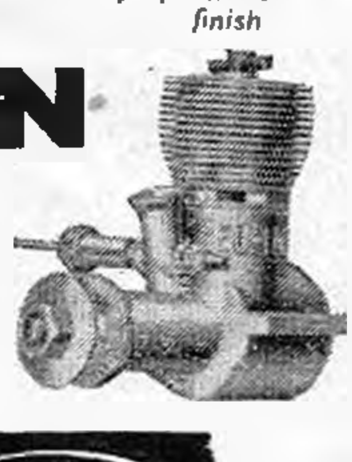
As Keilkraft stockists we can supply all K.K. kits and accessories. If it's K.K. we have it, so watch the K.K. ad. and send to Raylite.

RUBBER

K.K. Playboy 4/-. K.K. Achilles, 4/11. K.K. Eaglet, 5/6. K.K. Ajax, 7/4. K.K. Ace, 6/1. K.K. Competitor, 8/7. K.K. Senator, 6/9. K.K. Gypsy, 12/10. K.K. Pixie, 4/11. Mercury Maybug, 7/6. Veron Rascal, 4/6. Halfax Jaguar, 25/8. Mercury Magpie, 3/9. Frog Stardust, 12/9.

1950 ELFIN

Improved in design performance and finish



1·49 c.c.

59/6

Inc. P.tax

We regret, due to increased postage and packing costs we are compelled for the first time to charge nominal postage as follows:— All orders under 5/-, 6d; 10/-, 9d. and above 10/-, 1/-. Orders over £1 are still post free.

ENGINES

D.C. 350, £4-7-5. Frog 500, £3-18-9. Elfin 1·49, £2-19-5. Elfin 2·49, £3-10-0. Yulon Eagle, £4-5-10. Mills ·75, £3-0-9. Mills 1·3, £4-11-1. E.D. Bee, £2-12-6. E.D. Mk. IV., £3-15-0. Eta 29, £7-9-5. Eta 19, £6-4-5. Frog 250, £3-12-6.

CONTROL LINE

K.K. Phantom Mite, 14/1. K.K. Phantom, 22/8. K.K. Scout Bi-Plane, 27/6. K.K. Stunt King, 22/8. K.K. Stunt Queen, 25/8. K.K. Skystreak, 26, 11/7. Veron Sea Fury, 22/6. Veron Midget Mustang, 25/8. Veron Philibuster, 23/6. Veron Bee-Bug, 11/6. Mercury Mk. I Team Racer, 17/6. Skyleada Auster, 9/-. Veron Spitfire, 27/6. Frog Vandiver, 13/6. K.K. Ranger, 12/10. Veron, F.W.190, 24/-. Mercury Musketeer 24/9.

POWER

K.K. Bandit, 22/8. K.K. Junior 60, 39/6. K.K. Ladybird, 22/3 K.K. Outlaw, 27/6. K.K. Slicker Mite, 11/7. K.K. Southener, 43/11. K.K. Falcon, 131/5. Frog Firefly, 22/6. Frog Strato. D., 15/-. Frog Fox, 21/-. K.K. Slicker 50, 30/6. K.K. Pirate, 14/8. Mercury Junior Mallard, 13/9. Veron Skyskooter, 30/7.

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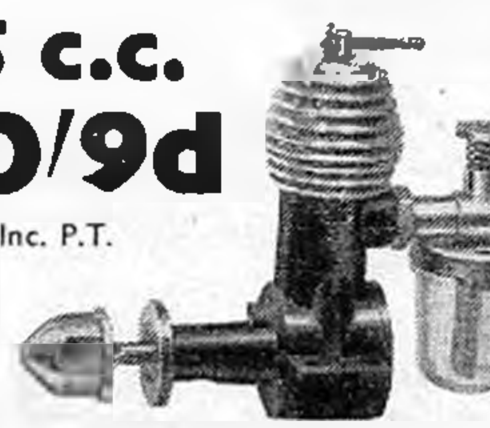

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IMPORTANT ANNOUNCEMENT

For the first time since the inception of this famous Service it has become necessary to increase the prices of certain plans in our range. Cost of basic materials has risen so considerably that we are reluctantly forced to stabilize prices as per the following complete list to apply from 15th June, 1951·

A.B.C. Robin	FSR 239	3/-
Aegeus	G 106	2/6
Aeolus	G 102	2/9
Air Cadet	D 101	1/3
Airacobra	FSR 100	3/6
Airspeed Envoy	FSR 126	3/-
Albacore	FSR 104	6/6
AM Cabin Duration	D 116	1/6
AM Wakefield	D 288	4/-
AP 6	G 103	4/6
Aquarius	WP 423	5/6
Archangel	G 368	5/6
Ariel	CL 325	4/-
Aristocrat	D 311	3/6
Arnhem Glider	G 263	1/6
Ascender	U 436	4/-
Atlanta	G 105	3/6
Auster	FSR 195	2/6
A.V. 10	TG 240	3/-
Avro 504K	FSP 343	5/6
B. A. Swallow	FSR 110	2/6
Baby R.O.G.	I 109	1/6
Bad Pyrmont Int.	G 358	3/6
Baby Micros	I 108	2/6
Bazooka	D 348	3/6
B.D. 12	G 320	4/-
Beginners' Bipe	D 113	1/6
B.E. 2 c.	FSR 215	7/6
Big Stuff	D 114	6/6
Binkie	PET 432	4/-
Biplane Sports	D 112	2/6
Bittern	D 259	3/6
Black Magic	PET 268	5/6
Bleriot Monopl.	FSR 275	6/6
B.M.I	WR 365	3/6
Boeing XL 15	FSP 395	5/6
Boomerang	CL 433	4/-
Bowden Contest	PET 225	7/6
Bristol Bullet	FSR 226	3/6
Bristol F 2b	FSR 111	2/6
Bristol 77 Racer	FSR 216	4/-
Bucks Duck	PET 337	7/6
Bumblebug	CL 437	4/-
Buzzard	PET 236	9/6
Buzzard II	TG 298	2/6
Cabin Biplane	D 115	1/9
Candy II	CL 269	5/6
Canellard 3b	D 335	2/6
Celestial Horseman	G 118	8/9
Cheetah	CL 331	3/6
Chilton DW I	FSP 340	3/6
Chipmunk	FSP 290	5/6
Chrislea Ace	FSP 331	5/6
Cloudline	D 122	2/9
Clubman	PET 419	3/6
Cobra	G 317	3/6
Copland's Wakefield	D 121	4/6
Coquette	PET 384	3/6
Crackerjack	CL 303	3/6
Cracow	G 119	3/6
Crewfly	TG 241	3/-
Curlew	G 120	2/9
Cygnet	SS 123	2/-
Dactyl	TG 326	3/6
Daedelus	D 124	2/6
Demon King	CL 347	3/6
D.H. 100 Vampire	J 250	4/6
D.H. C2 Beaver	FSP 388	5/6
Diasphere	D 125	1/3
Diesel ·8 c.c.	267	3/6
Diesel 5 c.c.	235	3/6
Dizzy Diesel	PET 276	3/6
Dizzy	I 249	2/-
Dolphin	PET 315	7/6
Don Quixote	G 356	2/-
Dorland	RSS 248	3/-
Dream Bogey	G 330	5/6
Dryad	WR 230	5/6
Dude	PET 149	7/6
Dusty	D 233	3/-
Elec. Modif's	E 255	2/6
Elmirs	G 127	3/6
Elfin	PET 289	3/6
Ercoupe	CL 385	5/6
Eros	PET 280	7/6
Ethereal Lady	PET 291	3/6
Evander	G 224	3/6
Fairchild Argus	FSR 272	3/-
Farthing Glider	G 228	2/6
Farthing '47 Lightweight	D 227	2/6
Farthing Microfilm	I 223	1/9
Featherweight	I 309	2/6
Fighter Glider	G 107	2/9
Filibuster	D 257	2/6
Fillon Champ.	G 260	16/6
Firebrand	CL 380	3/6
Firefly	D 128	2/6
Flamingo	PET 377	5/6
Flanders Flier	PET 354	3/6
Flap Happy	D 333	3/6
Flash	CL 375	2/6
Flicka	CL 363	3/6
Floating Kidney	G 251	3/-
Flying Bomb	G 357	3/-
Fokker DVII	FSR 297	2/6
Fokker DVII	CL 403	3/6
Fokker DVIII	FSR 131	1/3
Fokker D23	RSS 130	3/-
Fokker Tripe	CL 307	3/6
Foxstunter	CL 406	3/6
Frankenstein	PET 346	3/6
Fugitive	G 258	3/6
F.W. 190	FSR 129	3/6
Gamecock	FSP 410	5/6
G.B.2 Flying Bt.	WR 134	5/6
George	D 132	2/3
G.H.20	D 217	2/6
G.H.27b	D 281	3/6
Ghoul III	U 435	4/-
Gladiator	FSR 133	1/3
Glenelg	PET 229	9/6
Goliath	RC 312	18/6
Gossamer	PET 327	3/6
Gull	WR 137	4/-
Gutteridge	D 138	3/6
Gypsy Moth	PET 135	8/9
Hadrian	G 219	2/9
Halifax	FSR 140	6/-
Happy Harold	CL 342	3/6
Harvard II	FSR 139	4/6
Heinkel 51	FSR 141	2/9
Helides 7	PET 401	4/6
Henschel 126	FSR 143	3/-
Hereward	D 416	3/6
Hi-ball	PET 271	3/-
Hopit	CL 417	3/6
Hoppity	D 220	1/9
Horsa	G 145	8/9
Horsa II	PET 332	5/6
Hotspur II	G 144	4/-
Hoverking	G 379	4/-
H.V. 450	PET 262	7/6
Icarus, Snr.	CL 422	5/6
Icarus, Jnr.	CL 421	4/6
Igo	G 222	3/6
Invicta	G 270	3/-
Iolanthe II	G 296	5/6
Isis	D 146	3/-
Itzme III	D 147	3/6
Ivory Gull	G 148	2/3
Jackdaw	RSS 150	8/-
Jaded Maid	PET 427	5/6
Jay	D 151	1/9
J.B.3	D 149	1/9
Jeep	D 152	1/9
Jet Trainer	CL 318	3/6
Jet Vampire	E 254	4/-
Jinx	G 314	5/6
Juggler	CL 389	3/6
Kapitan	PET 247	3/-
King Falcon	G 154	5/3
Kirby Kite	G 155	3/6
Kolibrik	PET 245	3/-
Kingfisher	FSR 218	4/-
K.R.56	G 359	3/6
Ladybird	D 287	3/6
Ladybird Special	PET 408	5/-
Lavengro	G 405	7/-
Lazybones	I 157	1/6
Lazybones III	CL 387	3/6
Leander	G 156	3/6
Leprechaun	G 370	11/-
Lightning ¼"	FSR 158	3/-
Lightning ½"	FSR 159	4/-
Lil Zowie	CL 339	2/6
Lindy	CL 412	2/6
Little Stinker	J 413	3/6
Lulu	G 338	3/6
Lysander 50"	FSR 161	4/-
Macclesfield Marvel	D 163	2/3
Man o' War	CL 383	2/6
Manx Arrow	U 407	2/6
Manx Monarch	RC 386	11/-
Merlu	D 344	4/-
Mermaid	WP 162	7/6
Meteor	J 293	2/6
Meteor	CL 397	5/6
Mew Gull	FSR 170	1/6
Miles Hawk	FSR 434	5/6
Miles Kestrel	FSR 165	3/-
Miles M.48	FSR 243	4/-
Minerva	D 166	1/3
Missel Thrush	FSP 404	5/6
Miss Farnboro'	PET 266	7/6
Moby Dick	G 310	8/6
Mosquito	FSR 279	6/-
Moth Minor	FSR 168	2/9
Natsneez	PET 221	3/6
Navion	FSR 264	3/-
Nieuport 17C	FSP 285	5/6
Nimbus	G 304	7/6
Nord II	G 409	5/6
Nordic Tern	G 374	5/6
Overlander	PET 299	7/6
Pegasus	U 396	3/6
Percy III	D 171	2/9
Peres	G 242	6/6
Pete	D 172	2/9
Pete's Plank	U 429	3/6
Petrol Lysander	PET 160	7/6
Petrol Spitfire	PET 194	8/9
Phoenix	PET 414	7/-
Phoney Tony	D 261	2/6
Pinochio II	PET 351	2/6
President	PET 393	3/6
Prestwick Pioneer	FSP 425	5/6
Pterodactyl	D 173	2/9
Puss Moth	FSR 256	2/-
Pylonius	PET 402	3/6
Queen Bee	RC 376	3/6
Raff V	D 253	3/-
R.A.H. 37	D 177	2/9
R.E. 8	FSP 418	4/6
Rebel	PET 349	5/6
Revenge	G 415	5/6
R.F.L.G. 53	G 175	1/9
Roamer	D 176	3/6
Rocketeer	D 234	3/6
R.T.P. Autogyro	I 117	1/6
R.T.P. Canard	I 203	1/6
R.T.P. Comp. Ptero.	I 181	2/6
R.T.P. Helic Ornith	I 178	2/6
R.T.P. Push Strem.	I 180	2/6
R.T.P. Spar & Fuse.	I 179	2/6
R.T.P. Tandem	I 202	1/6
Rudderbug	RC 366	11/-
R.W.D. 8	PET 174	8/9
Saint	G 302	3/6
Satu	G 400	5/6
Scalded Kitten	PET 352	2/6
Scion	FSR 193	4/-
Scylla	U 246	3/-
S.E.5	FSR 374	3/6
Seabee	FSP 319	7/6
Seagull I	WR 190	3/6
Shrimp	PET 300	2/-
Silver Patrol	G 277	3/-
Sirius	CL 328	3/6
Skylark	RSS 273	2/-
Smokey Joe	J 399	2/6
Snorky	PET 424	3/6
Sokol	G 199	7/6
Son of Trike	D 244	2/-
Sopwith Pup	FSP 305	5/6
Sopwith Tripe	CL 361	2/6
S.P.A.D.	FSP 373	5/6
Spencer Larsen	FSR 183	5/3
Sporty	PET 367	3/6
Stability Gremlin	D 252	3/6
Stothers Glider	G 189	2/6
Strikiplank	TG 345	3/6
Stuntster	CL 362	3/6
Sugarfoot	PET 381	3/6
Sunbeam	D 191	2/6
Sunclipper	G 192	3/6
Sunstar	D 184	1/9
Sunspot	G 283	8/6
Swallow	U 265	3/-
Swiss F.19	PET 353	7/6
Talisman Mk. II	D 382	3/6
Tass 130	D 355	3/6
Taurus	CL 360	5/6
Taylor Cub	FSR 196	2/6
Tempest II	CL 335	3/6
Thermal Queen	D 378	5/6
Thermalist I	G 306	13/6
Thistledown	I 278	2/6
Tipsy Jnr.	CL 321	4/6
Tipsy Jnr.	CL 322	5/6
Tipsy Jnr.	CL 323	6/6
TK.4	CL 411	3/6
Tomboy	PET 398	3/6
Toots II	D 198	1/9
Topsy	D 420	5/6
Tribute XPS-841	G 200	5/6
Trump Card	D 430	4/6
Twin Gull	D 201	4/-
Typhoon	FSR 205	6/6
Typhoon Ib	FSP 372	5/6
Tyro Trainer	CL 295	2/6
Unlimited	CL 369	2/6
Vagabond	PET 136	3/6
Velivole	U 231	3/-
Venture	PET 391	5/6
Viking R.T.P.	E 237	5/6
Viking Motor	E 238	5/6
Viper II	RSS 207	5/3
Virago	CL 350	3/6
Vulcan	PET 206	9/6
W.A.D. 20	D 208	3/-
Walthew A2	G 426	3/6
Walthew Glider	G 341	2/6
Walthew Rubber	D 390	3/-
Warring's Light	D 294	3/6
Wattie	D 209	1/9
Widgeon III	FSR 211	3/6
Wildfire	CL 364	2/6
Windy Ain't It	PET 329	5/6
Winged Serpent	RSS 286	3/6
Witch Mk. I	D 371	3/6
Wren	PET 308	3/6
Wyvern	PET 431	4/-
XFS-I Co-axial	D 212	3/6
Xernes	U 394	3/6
Yoicks	CL 334	3/6
Zaunkoenig	FSP 392	5/6
Zephyr	J 292	2/6
Zeus	G 213	2/6
Zombie	D 316	5/6

AEROMODELLER PLANS SERVICE *The Aerodrome, Billington Road, Stanbridge, Nr. Leighton Buzzard.*

ESTABLISHED 1935

AEROMODELLER

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"Covers the World of Aeromodelling"

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Your Balsa in Jeopardy!

Hey You! Bill Bloggins of the Bermondsey Balsa Bashers—don't turn the page! You may think that the imposition of Purchase Tax on model aircraft kits, accessories and supplies, has not yet had much effect on *your* modelling activities, but it has you know, and will certainly affect them more so in the future.

Naturally, at the time when Purchase Tax was imposed many model aircraft dealers throughout the country had useful stocks of " pre tax " kits, and so for a while the aeromodeller has been able to purchase his supplies bearing little or no increases. However, once these stocks were exhausted it was inevitable that selling prices must be increased.

To lessen as much as possible the impact of these increases, manufacturers throughout the trade have worked on smaller profit margins, with a view to passing on as little of the tax as possible to the retail model aircraft trader.

Nevertheless, the imposition—and it is an imposition in our opinion—of Purchase Tax on model aircraft supplies has inevitably resulted in increased prices. Not only does this hit the home trade, but the export also.

What has export trade to do with you? Everything, for the whole of your future supplies of balsa are jeopardised. For every £1,000 worth of balsa imported, the trade must export £6,000 worth of model goods otherwise no import licences can be granted.

Why has the profit on home sales been so drastically reduced? As we have told you previously, *Purchase Tax* and nothing else. Manufacturers, to counteract the burden of Purchase Tax, have deliberately reduced their profits and in turn those of the retailer so that you, the modeller, do not have to pay in full the excessive prices resulting from the tax. And so it goes on . . .

It was never intended that model aircraft or their accessories should be liable for tax and when judgment was given in the Keil v. Customs and Excise case in the autumn of last year, the learned Judge gave judgment solely on the wording of the act " that model aircraft came under the heading of amusements ".

Purchase Tax is not payable on gliders, light planes and full-size prototypes, why should the unfortunate aeromodeller, the " little man " as we said to Mr. Gaitskell, be singled out by bureaucracy.

What can you do about it? Join with us, The Trade, and the S.M.A.E. in unceasing protest, until this iniquitous tax is removed for ever from all aeromodelling goods.

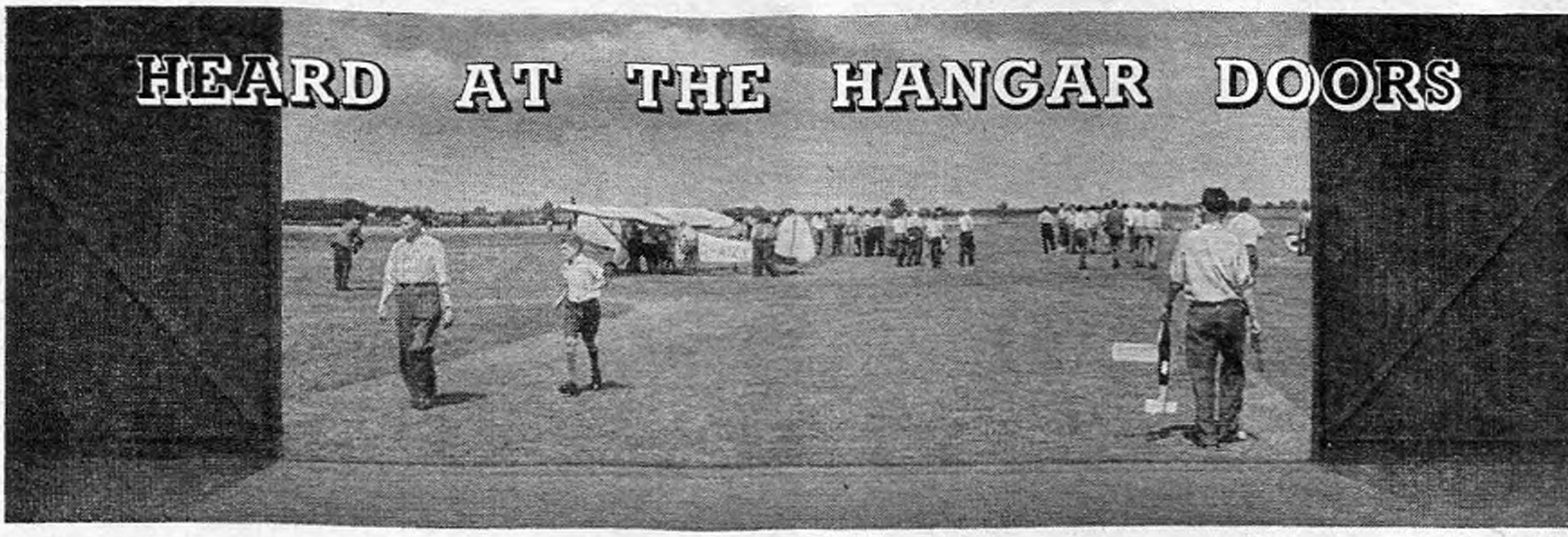
Write to your M.P. Keep on writing to your M.P.! asking him to raise the matter in the House of Commons. This journal has already written direct to the Chancellor of the Exchequer, Mr. Gaitskell, deploring the imposition of Purchase Tax on model aircraft supplies . . . and so far has received only the usual two line formal acknowledgment.

We hope that by the continued and increasing pressure of ALL modellers throughout the country, something may yet be done to relieve the model aircraft industry and movement in this country from the yoke of oppression under which it now suffers!

Cover Photograph . . . .

P. Landray flying in the Festival of Britain Model Aircraft Demonstrations, at the South Bank Sports Arena on Whit. Sunday, the 13th May. Control-liners will note the short lines, 20 ft. to be precise, which was all the Arena permitted. In the background can be seen the Skylon and on the left the new Festival Concert Hall. ***(Photo by Ed. Stoffel)***

HEARD AT THE HANGAR DOORS



United Kingdom Challenge Match

PLANS are already being made for the selection of the Northern Ireland Team for this new—and which should prove to be a most interesting—contest in the National Calendar.

A joint meeting of the Northern Ireland clubs was held on the 22nd April to decide on a means of elimination acceptable to all, and it has been agreed to hold a contest at Maydown Aerodrome on August 4/5th as a final qualification, this meeting also to serve as the First Ulster Nationals. Our old friend, Norman Osbourne of Belfast, has undertaken the secretarial duties connected with the Irish Team selection, etc., and we look forward to seeing the Pats battling it out with the Jocks, Taffies and Sassenachs, at Heathfield Aerodrome in October.

The International that Wasn't

The only S.M.A.E. meeting granted International status this year was that staged at Radlett Aerodrome, Herts., on the 13th/14th May, and we sadly report that the only international flavour to this meeting was provided by three non-competing visitors, two from South Africa and one from Sweden ! It is not possible at this juncture to discover the reason for the lack of international support for the three contests staged, though full information was distributed to the F.A.I. member countries some time ago.

When the lack of International support was reported at a Council meeting on the 5th May, it was agreed that in order to prevent the contests becoming confined to a mere handful of British competitors, the meeting be thrown open to all and a special circular to this effect was rushed out at the earliest opportunity. As a result a fair number of spectators—but far too few competitors—turned up at Radlett, and it will be interesting to see which quarters the blame is apportioned for the publication of misleading information which lead to a very large number of would-be contestants putting in an appearance at Fairlop, under the mistaken impression that the contests were to be held at that venue ! (Fairlop has never at any time been proposed as a suitable site for the contests, it being the opinion that a field with control of spectator entry was essential for an International meeting, and for this purpose, the owners of Langley Airfield were approached for permission. Facilities not being granted, arrangements were speedily concluded through the good offices of Sir Frederick Handley Page for the use of Radlett, and this fact was made known through various mediums some time ago).

Festival of Britain Model Flying Championships

Sponsored jointly by the S.M.A.E. Ltd., and Wembley Stadium Ltd., the above championships will take place at Wembley Stadium on Saturday July 14th, 1951. The ground will be open to competitors for test flying from 8 a.m. and at 10 a.m. the contest proper will commence. Public admission is from 1 p.m. to 5.30 p.m. Adults 2s. 6d., children under 16, 1s. 6d.

Events include seven classes of speed including jets, A and B Team Racing, Acrobatic and Scale Aerobatic. There will also be demonstrations of Radio Control Flying, Combat Flying and novelty items. Seven circles will be in operation, one for special demonstrations and the others for the contests themselves, and in the event of prangs there will be workshop accommodation available.

Modelling visitors are reminded that after the show the South Bank Exhibition is open until 11.30 p.m. and is easily reached from Wembley Stadium. It may also be possible to obtain overnight accommodation for out-of town visitors in the Camden Town Deep Shelter, if sufficient numbers wish it.

Special Souvenir Programmes are available from Wembley Stadium with advance tickets. Applications should be made to the Box Office, Empire Stadium, Wembley.

Take Care of the Pence

When even our morning paper at last costs 1½d. we must reluctantly admit that everything has gone up in price. In this issue we announce the storming of the last two bastions against price increase in our own aeromodelling world. For the first time since aeromodelling became a national hobby, Aeromodeller Plans Service and Plantation Wood publish their necessary increases in the cost of plans and balsa wood respectively. This by no means indicates that there has been any sudden crippling rise in costs, but rather that a whole series of comparatively small additions have by now mounted to an extent when the unfortunate trader can no longer bear the whole brunt of them, if he is to enjoy even a moderate living.

We are quite sure that no building programme will be abated on this account by our readers, for the additional cost per model is to be measured in pence rather than shillings, but we do expect to learn of more conscientious installation of d/t's, and a more general use of waxed paper twixt plan and wood in the hopes that it will last for a second model !

And We Grumble

An interesting letter from Harald Orvin, well known Norwegian aeromodeller, throws some interesting light on conditions met with in that somewhat rocky and rugged country. With the exception of a small area around Oslo, the country has no spaces suitable for flying, and having had much trouble with the farming community during the growing and harvest periods, the majority of contests are held from January to March on frozen lakes.

Band Waggers

Reports continue to come in of Radio Control enthusiasts who are working off frequency, particularly around the Fairlop area.

A well known amateur transmitting enthusiast confirmed no less than three R/C transmitters operating in the Amateur 10 meter band (28·3 mc/s) just recently, one of them completely blotting out signals that the amateurs were trying to receive. There are also reports from three other amateurs who have definitely logged R/C transmitters outside the permitted wavelength.

This interference with amateur radio communications is not so serious as the interference that is likely to be caused to commercial channels. Furthermore the second harmonic from 27 mc/s falls very near the Television (London) channel and would cause considerable interference to television sets near the flying field.

There have been several recent cases of inexplicable prangs at Fairlop due to aircraft going into a dive with the rudder hard over and a subsequent check of the operating transmitters revealed that they were working in the 28 mc/s Amateur band. There are no less than 20 Amateurs operating in areas around Fairlop with power up to 150 watts and highly efficient beam aerials ; which would indicate to most sensible R/C modellers that they are " sticking their necks out " by working anywhere near this band. Possibly a great number of the offenders are not aware that they are off the permitted frequency in which case they would be advised to have their transmitters checked. Recent tests we have carried out with a large number of commercial transmitters failed to produce a single example that was off frequency which indicates that home built equipment is causing most of the trouble. We have every wish to encourage home built equipment as readers know from a study of our " Radio Control Notes " feature, but surely when a modeller goes to the trouble of constructing his own transmitter it is not unreasonable to expect him to have it accurately calibrated ?

Radio Amateurs must needs pass a City and Guilds technical examination in Radio Communications and Morse Code test, (send and receive at 12 words a minute) in order to obtain their transmitting licences and would lose these licences immediately were they found to be operating off frequency. Furthermore their transmitters are either crystal checked or crystal controlled to within 0·01 per cent. of frequency. All of which only goes to prove how fortunate we aeromodellers are, to have frequencies allocated with no restrictions other than keeping to the frequency and a 5 watts output.

We appeal to radio fliers everywhere on this important question for it is they who suffer by " band wagging ". Either they are spun in by powerful Amateur stations or will ultimately lose the " freedom of the air " which at present they enjoy.

Vanwed !

1951 appears to be the aeromodeller's mating year, for the latest of our fold to plunge into matrimony is that clever designer from International Model Aircraft, J. R. Vanderbeek, famous for his "Van" series of designs and wartime government projects. We know that our readers will join us in wishing Van every success in his new venture, which began on June 2nd.

Shell Aeromodelling Film Released

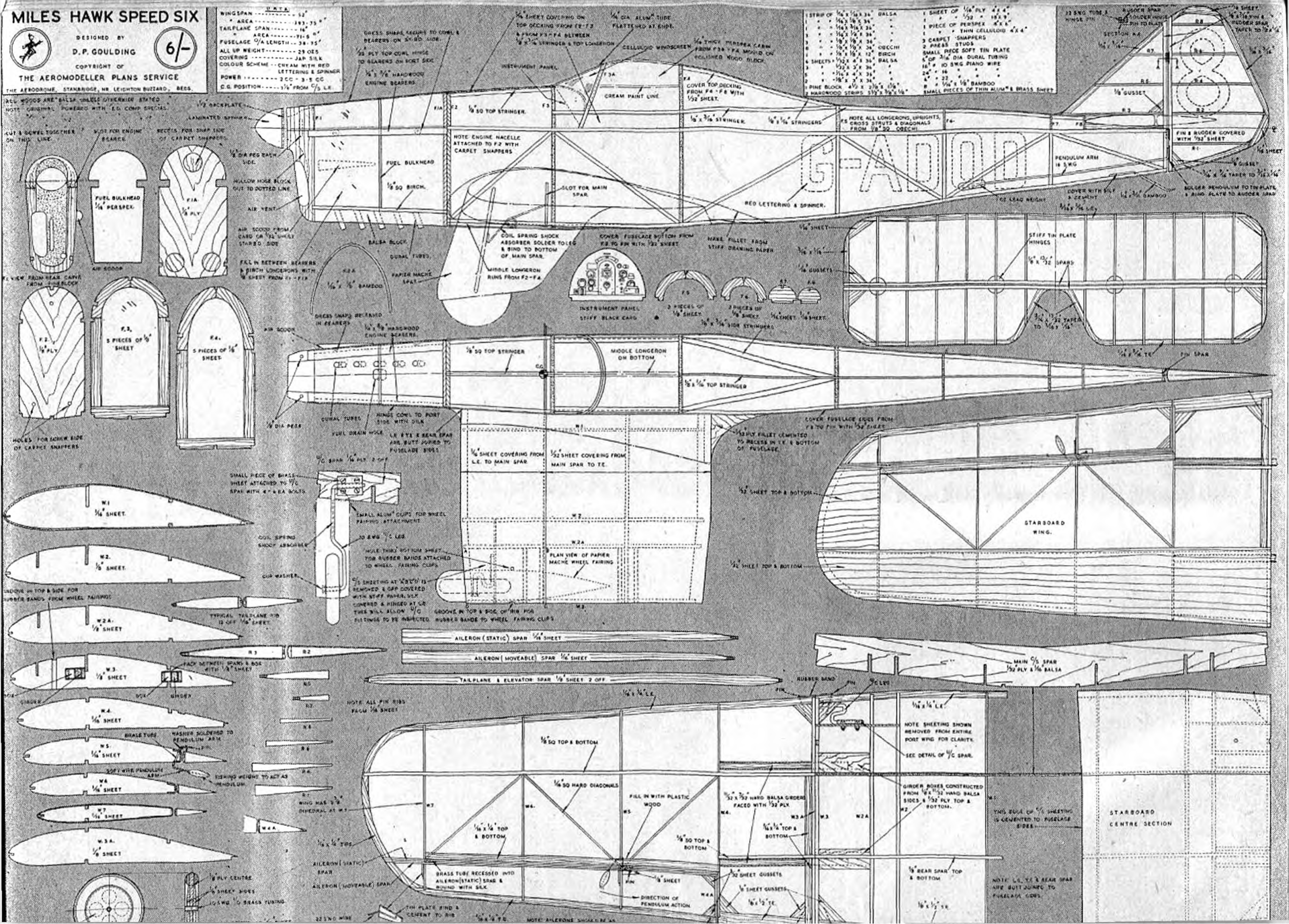
Now completed, after 10 month's filming by the SHELL Film Unit, " Model Flight " has been selected for showing at the Telecinema in the South Bank Festival site. After the Festival, the film will be available in both 16 m.m. and 35 m.m. versions from the SHELL Film Library, and, if you want it, you will be able to have the commentary in any of the world's popular languages.

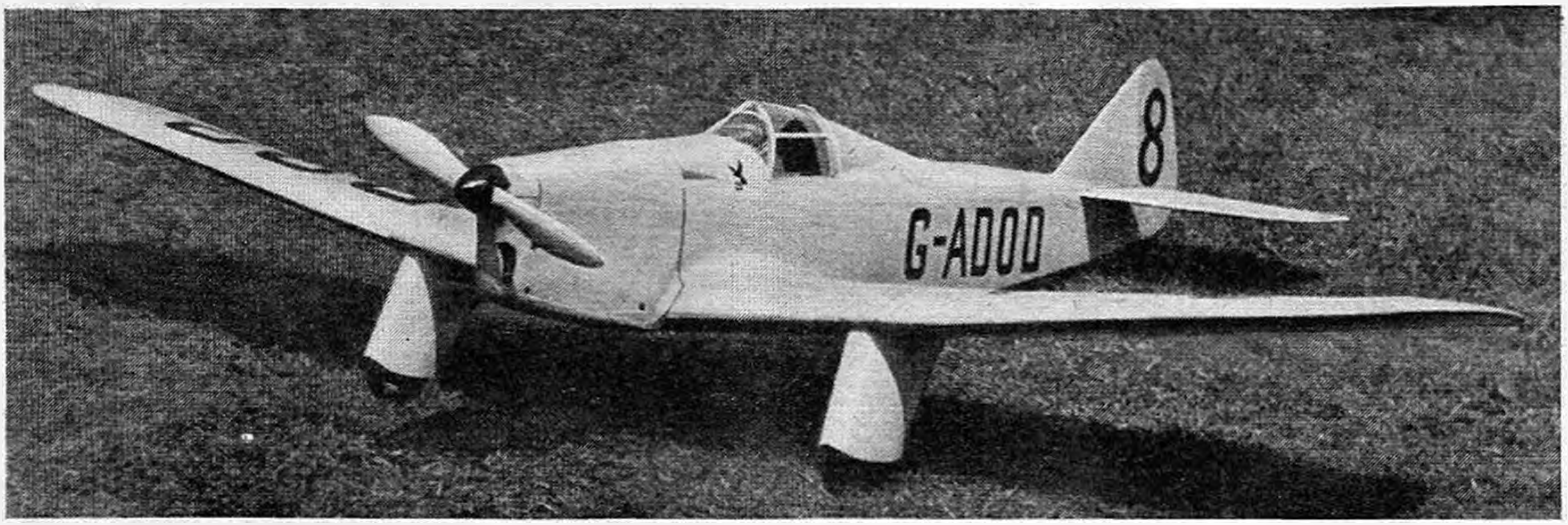
Running for 11½ minutes, the film has been expertly directed by Alan Pride and his assistant, Ian Brundle. Fairlopian regulars and those who braved the elements to attend the 1950 All-Herts Rally will have noticed the team at work, with Alan Fabian and Stanley Rodwell wielding those huge cameras wherever modellers could be located, even from the centre of the team race circle.

Their efforts are now cleverly sewn into this neat documentary which covers Glider, Rubber, F/F Power, Radio Control, Stunt, Speed, Jet, Scale F/F, Team Racing and clubroom activity in the St. Albans " barn ". Mainly the accent is on power flying, with some perfect shots that should be a lesson to all modellers. Cyril Mayes' Glider release, Johnny Nunn's scale Dynajet/ Vampire in flight, pioneer John Sumpter's beautiful R/C spot landing and a 10 second team race pit stop by Ken Muscutt are unfaked scenes that reflect the care and attention to the finest detail which has gone into the film. And interleaved with views of aeromodelling activity, there are some humorous sequences taken at various stages during the chase of a sailplane which flies for the duration of the film, and is eventually recovered by Cyril Mayes, the West Essex all-rounder.

The film is designed to put the best possible " view " on aeromodelling to the lay public ; it should create a most favourable impression, and owes a lot to the co-operation of many renowned modellers, and the untiring coercion of the P.R.O. of the S.M.A.E., Ken Brookes.

This close-up of a demonstration start of an Ohlsson 23 is a "still" from the " Model Flight " film.


MILES HAWK SPEED SIX
DESIGNED BY
D.P. GOULDING
6/-
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR. LEIGHTON BUZZARD, BEDS.
DATA
WINGSPAN 52"
AREA 393·75 □"
TAILPLANE SPAN 16"
AREA 71·5 □"
FUSELAGE O/A LENGTH 38·75"
ALL UP WEIGHT 29 OZS
COVERING JAP SILK
COLOUR SCHEME CREAM WITH RED LETTERING & SPINNER
POWER 2 CC - 3·5 CC
C.G. POSITION 1⅛" FROM C/S L.E.
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED
1 PIECE OF PERSPEX
THIN CELLULOID 4"X4"
3 CARPET SNAPPERS
2 PRESS STUDS
SMALL PIECE SOFT TIN PLATE
SMALL PIECES OF THIN ALUM. & BRASS SHEET
NOTE ALL LONGERONS, UPRIGHTS, CROSS STRUTS & DIAGONALS FROM ⅛" SQ OBECHI
G-ADOD
CREAM PAINT LINE
RED LETTERING & SPINNER
INSTRUMENT PANEL
FUEL BULKHEAD
NOTE ENGINE NACELLE ATTACHED TO F2 WITH CARPET SNAPPERS
LAMINATED SPINNER
PENDULUM ARM
FIN & RUDDER COVERED WITH 1/32" SHEET
SECTION AA
INSTRUMENT PANEL STIFF BLACK CARD
MIDDLE LONGERON ON BOTTOM
STIFF TIN PLATE HINGES
FIN SPAR
STARBOARD WING.
PLAN VIEW OF PAPIER MACHE WHEEL FAIRING
AILERON (STATIC) SPAR 1/16" SHEET
AILERON (MOVEABLE) SPAR 1/8" SHEET
TAILPLANE & ELEVATOR SPAR 1/8" SHEET 2 OFF
TYPICAL TAILPLANE RIB 12 OFF 1/16" SHEET
NOTE ALL FIN RIBS FROM 1/8" SHEET
MAIN C/S SPAR 1/32" PLY & 1/16" BALSA
NOTE SHEETING SHOWN REMOVED FROM ENTIRE PORT WING FOR CLARITY.
SEE DETAIL OF U/C SPAR.
FILL IN WITH PLASTIC WOOD
STARBOARD CENTRE SECTION
DIRECTION OF PENDULUM ACTION



52 in. Span Miles Hawk Speed Six

BY D · P · GOLDING

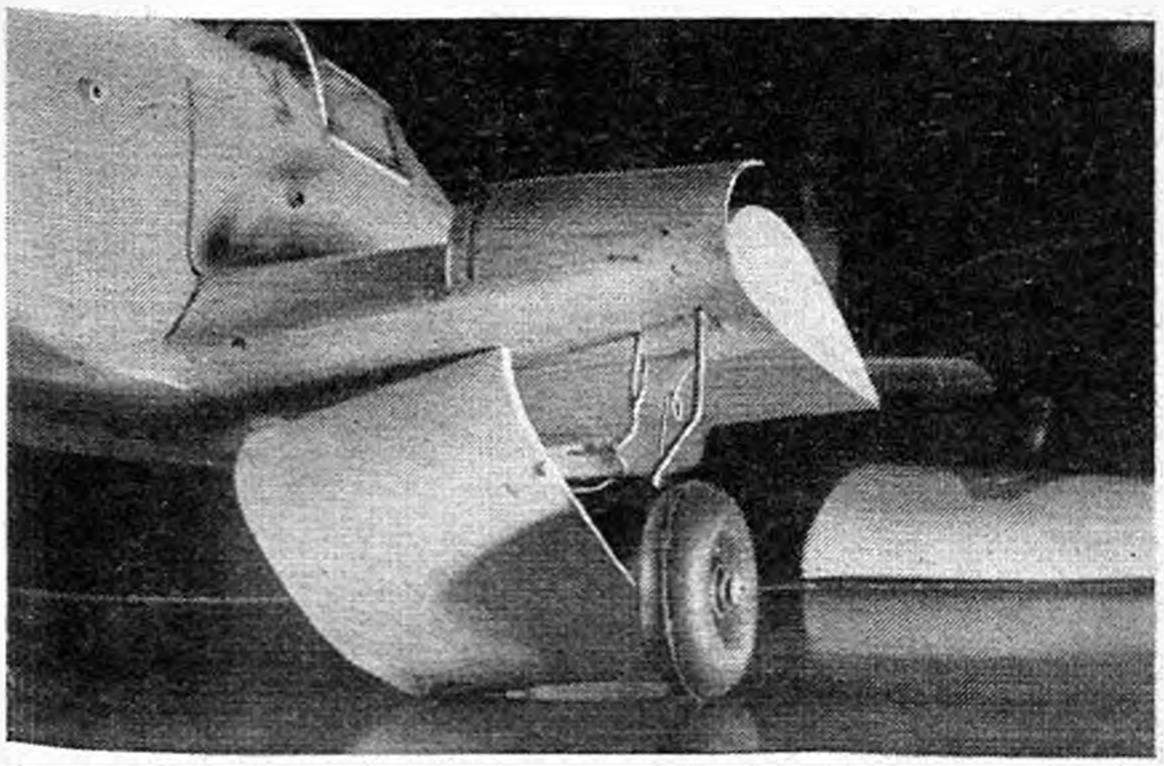
Artist by profession . . . . aged 34, married, one son . . . . a regular Epsom Downs flier . . . . . has been making scale models for 15 years . . . . also keen on photography.

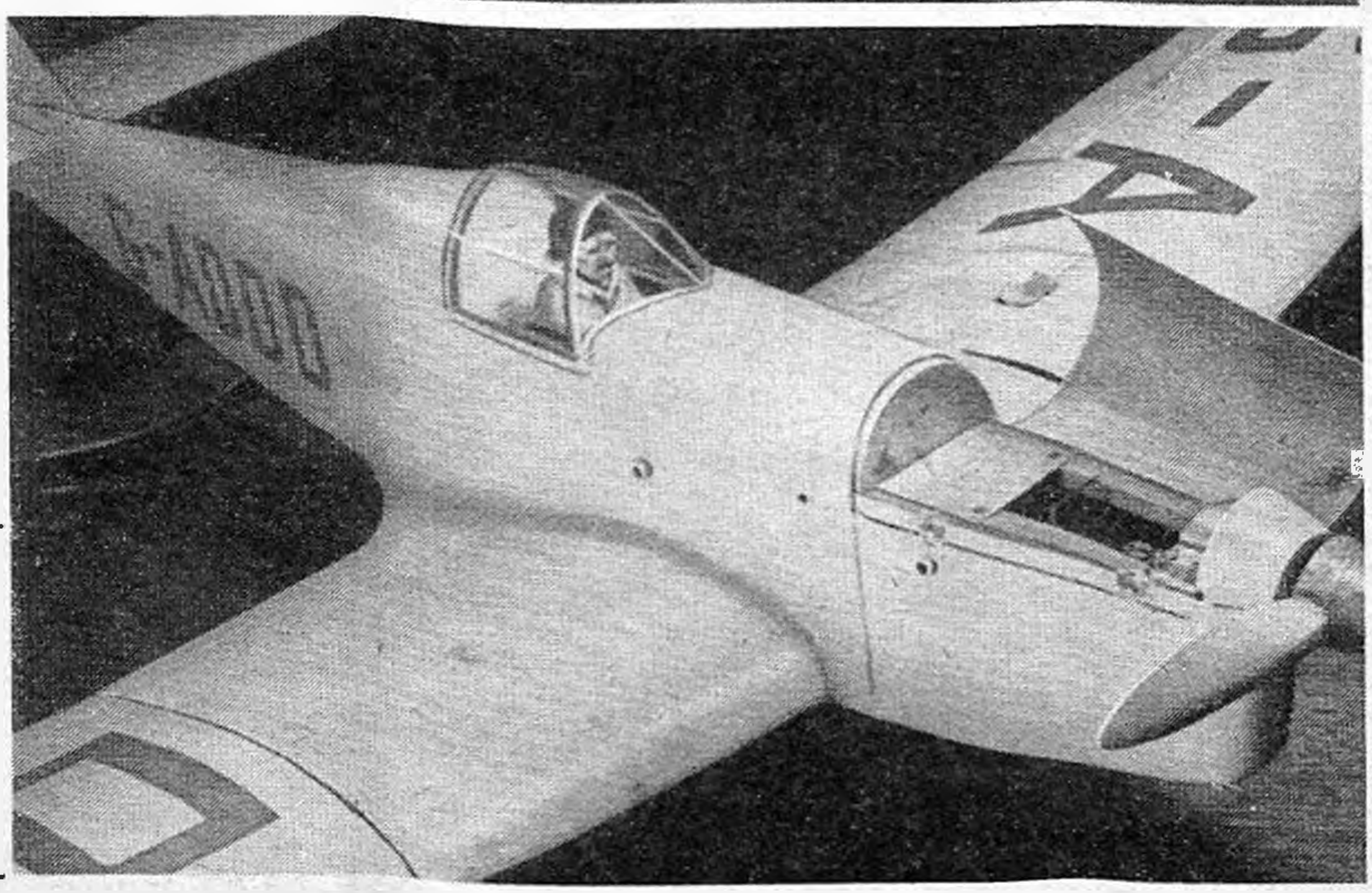
ALTHOUGH it is now some seventeen years since the Hawk Speed Six was new, it has, nevertheless, won a great reputation as a pure racer in post-war years. Generally considered as the most potent entrant in events since air racing restarted in this country, this aircraft has only just been rivalled in this field by the recent resurrection of the sole surviving Mew Gull.

Modellers may choose between three sets of registration letters for their planes; G–ADOD which D. P. Golding has modelled was accompanied by G–ACTE and G–ADGP and it is the last named of these that is still flying and is to be seen this summer at meetings and races. G–ADOD was first flown with an open cockpit by Ruth Fontes, but was later fitted with a new decking and a cockpit canopy. In this form F./O. Clouston flew it in the 1936 Johannesburg race, but engine trouble resulted in " DOD " being written off in Rhodesia.

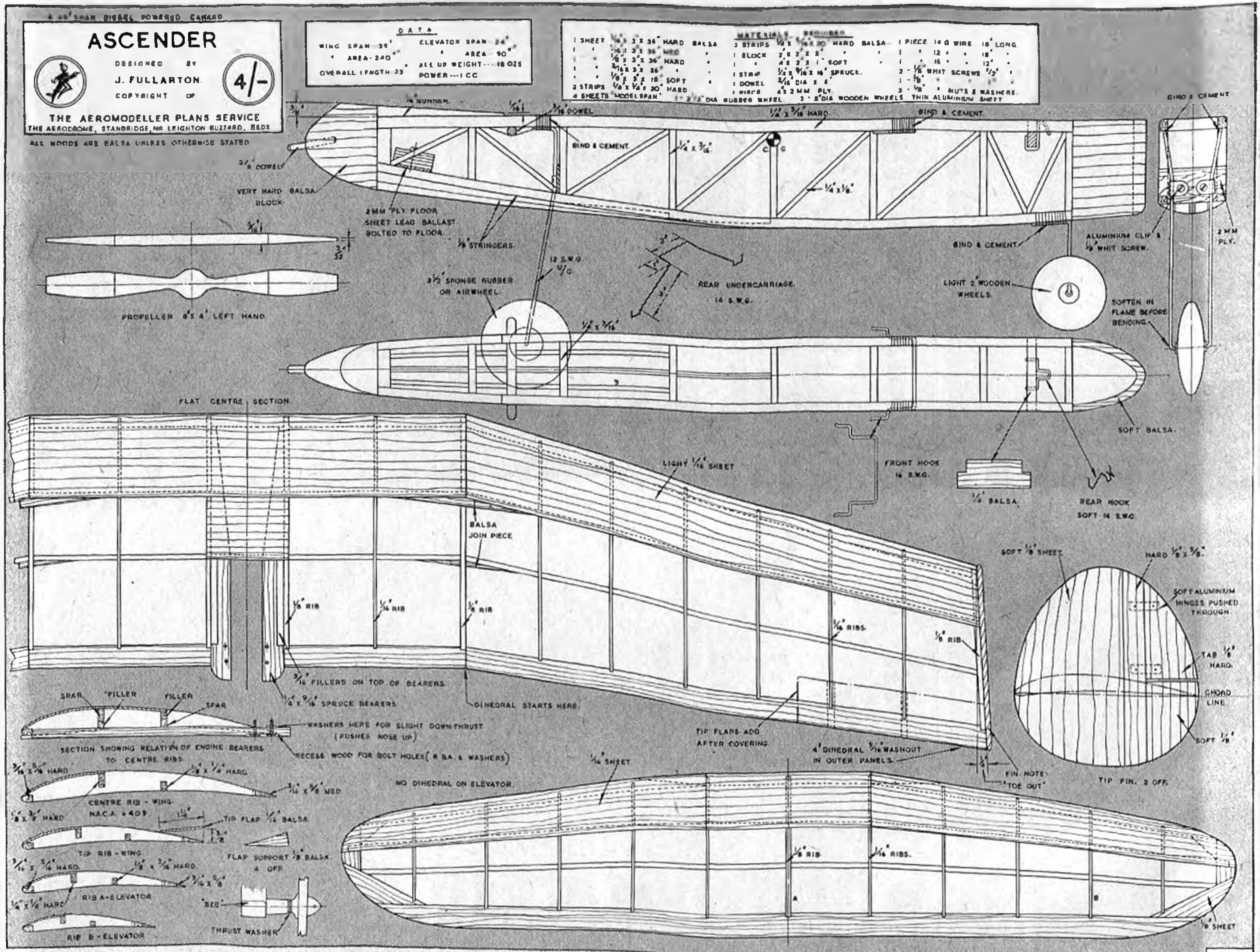
This model, originally powered by E.D. Competition special 2 c.c. diesel, features pendulum control for both the Ailerons and the Rudder. In addition, the elevator may be adjusted for trim, thus providing a neat scale appearance with separated control surfaces, and at the same time using them to ensure stability. Detachable wings make it an easy model to transport.

Complete building instructions are issued with each full size drawing, which can be obtained price 6/–, post free, from the Aeromodeller Plans Service. Plans opposite are 1/5th full-size.





Top photo shows the finished model, coloured cream and red. Only the plastic prop. identifies it as a model. Centre photo gives undercarriage detail, the trouser fairing is removable, wings plug into the centre section. Bottom photo shows access to the E.D. 2 c.c. motor.

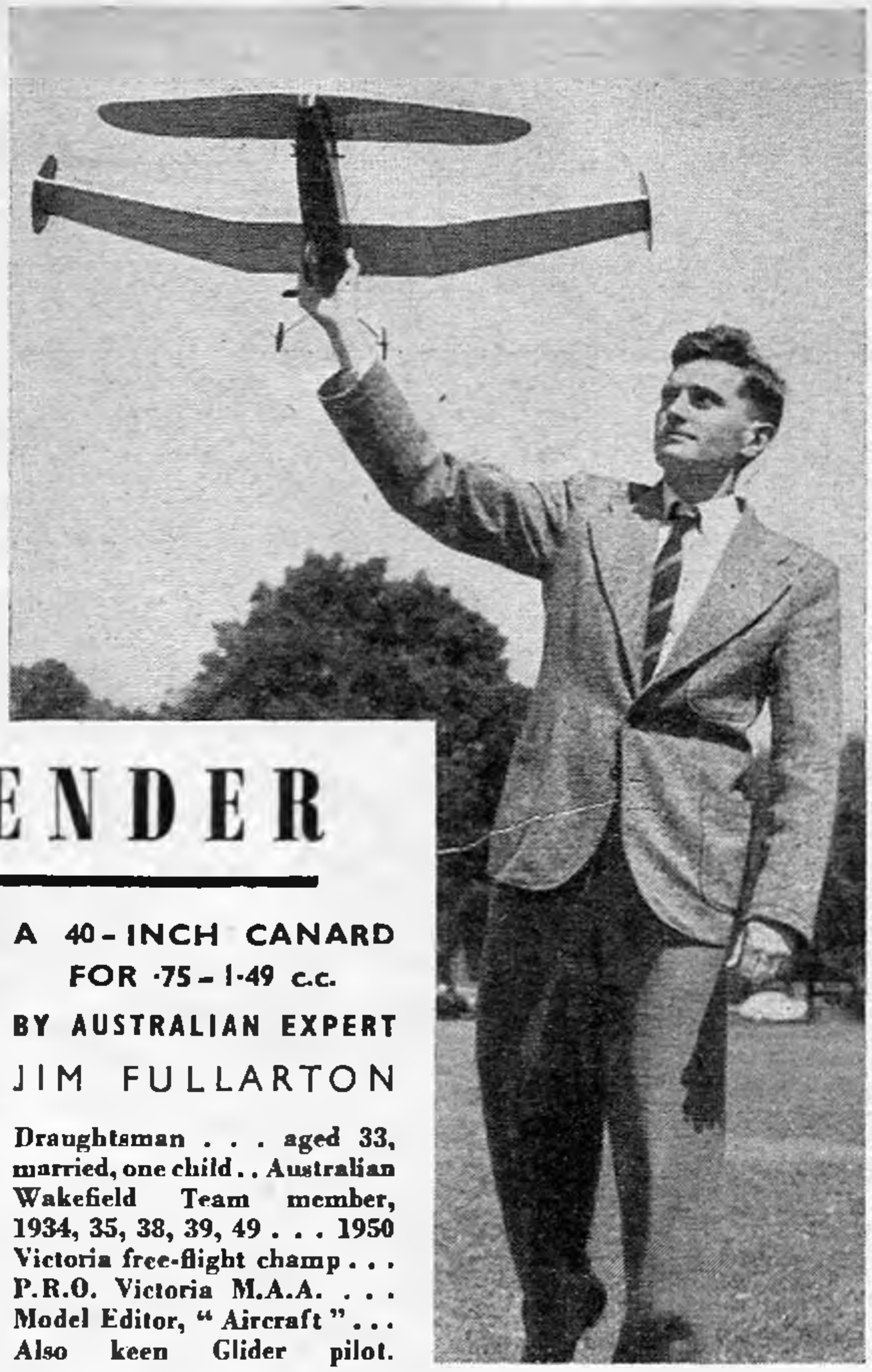

ASCENDER
DESIGNED BY
J. FULLARTON.
COPYRIGHT OF
4/-
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANDBRIDGE, NR LEIGHTON BUZZARD, BEDS
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED
DATA.
WING SPAN 39"
" AREA - 240 sq"
OVERALL LENGTH 33"
ELEVATOR SPAN 24"
" AREA - 90 sq"
ALL UP WEIGHT --- 10 OZS
POWER --- 1 CC
MATERIALS REQUIRED
4 SHEETS "MODELSPAN"
THIN ALUMINIUM SHEET
BIND & CEMENT
1/4" x 3/16"
C G
1/2" x 3/16" HARD
VERY HARD BALSA BLOCK
2 MM PLY FLOOR SHEET LEAD BALLAST BOLTED TO FLOOR
1/8" STRINGERS
12 S.W.G. U/C.
2 1/2" SPONGE RUBBER OR AIRWHEEL
REAR UNDERCARRIAGE 14 S.W.G.
LIGHT 2" WOODEN WHEELS
ALUMINIUM CLIP & 1/8" WHIT SCREW
2 MM PLY
SOFTEN IN FLAME BEFORE BENDING
PROPELLER 8" X 4" LEFT HAND
SOFT BALSA
FRONT HOOK 14 S.W.G.
1/2" BALSA
REAR HOOK SOFT 14 S.W.G.
FLAT CENTRE SECTION
LIGHT 1/16" SHEET
BALSA JOIN PIECE
1/8" RIB
1/16" RIB
1/16" RIBS
3/16" FILLERS ON TOP OF BEARERS
1/4" x 9/16" SPRUCE BEARERS
DIHEDRAL STARTS HERE
TIP FLAPS ADD AFTER COVERING
4" DIHEDRAL 3/16" WASHOUT IN OUTER PANELS
FIN NOTE "TOE OUT"
SOFT 1/8" SHEET
HARD 1/8" x 3/8"
SOFT ALUMINIUM HINGES PUSHED THROUGH
TAB 1/8" HARD
CHORD LINE
SOFT 1/8"
TIP FIN. 2 OFF.
SPAR
FILLER
WASHERS HERE FOR SLIGHT DOWN-THRUST (PUSHES NOSE UP)
SECTION SHOWING RELATION OF ENGINE BEARERS TO CENTRE RIBS
RECESS WOOD FOR BOLT HOLES (8 BA. & WASHERS)
CENTRE RIB - WING N.A.C.A. 6409
TIP FLAP 1/16" BALSA
TIP RIB - WING
FLAP SUPPORT 1/8" BALSA 4 OFF
RIB A - ELEVATOR
RIB B - ELEVATOR
"BEE"
THRUST WASHER
NO DIHEDRAL ON ELEVATOR
1/16" SHEET
1/8" SHEET

THIS design started back in 1944, when the disclosure of such types as the Miles "Libellula" and the Curtiss "Ascender" inspired me to attempt a semi-scale prototype for a canard lightplane. Two different designs were built before the "Bee" version, which has been lost in a creek for some months, placed second at our Nationals, and is still going strong, attracting great interest and causing much amusement at every appearance.

CONSTRUCTION is quite simple, but weight distribution needs to be watched, trying to keep the rear end as light as possible. Fuselage construction follows the usual practice, and must be extra strong, as a nose down landing with so much weight aft sets up severe stresses. Double cement all those joints !

Before inserting the nosewheel assembly in the fuselage, bolt it to the piece of ply, then cut the bolts off short and rivet them over. Bind the top of the legs very firmly with strong thread, and cement heavily.

For the wing, prepare leading and trailing edges first, the latter being planed and sanded to a triangular section, and notched in 1/16 inch rib positions. Pin these edges down flat, and cement the ribs in place. The tapered ribs for wing and elevator are best made by sandwiching between two templates.



ASCENDER

A 40-INCH CANARD FOR ·75 - 1·49 c.c.

BY AUSTRALIAN EXPERT

JIM FULLARTON

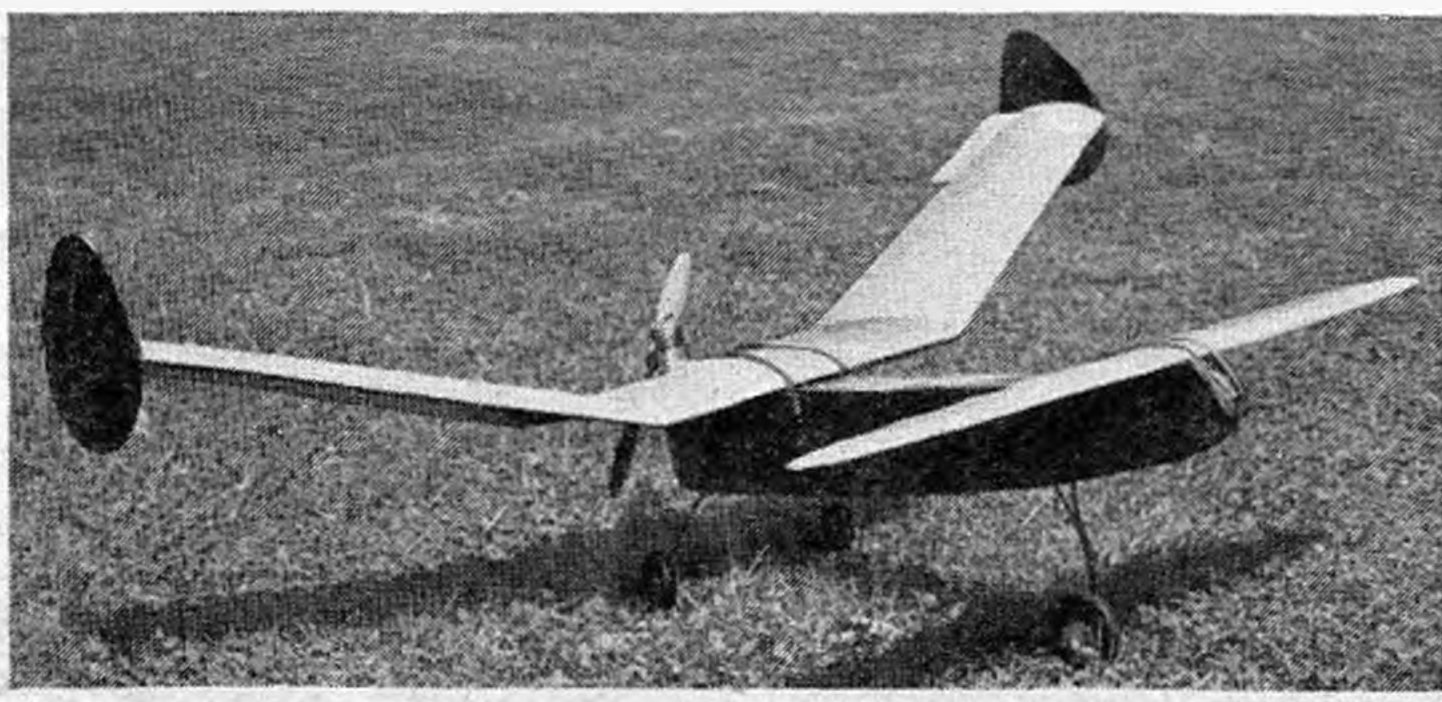
Draughtsman . . . aged 33, married, one child . . Australian Wakefield Team member, 1934, 35, 38, 39, 49 . . . 1950 Victoria free-flight champ . . . P.R.O. Victoria M.A.A. . . . Model Editor, "Aircraft" . . . Also keen Glider pilot.

When dry, prop up the tips to the correct dihedral and washout, and add top main spar. The double angle at the joints necessitates special splicing pieces, carved from 1/8 inch hard balsa. Next, turn the wing over and add the lower spar. Cement the tip fins on very securely ; it will be noted that they are splayed out ¼ inch, a trick which I borrowed from tailless practice to improve directional stability. The motor bearers are attached to the wing, as it was found that the cylinder head was very prone to damage the centre of the wing when the motor was mounted in the fuselage. The front hold-down hooks are designed to permit the wing to move off forwards in a crash, and for this reason the motor bolt heads must be recessed into the bearers. Elevator is made in a similar manner to the wing.

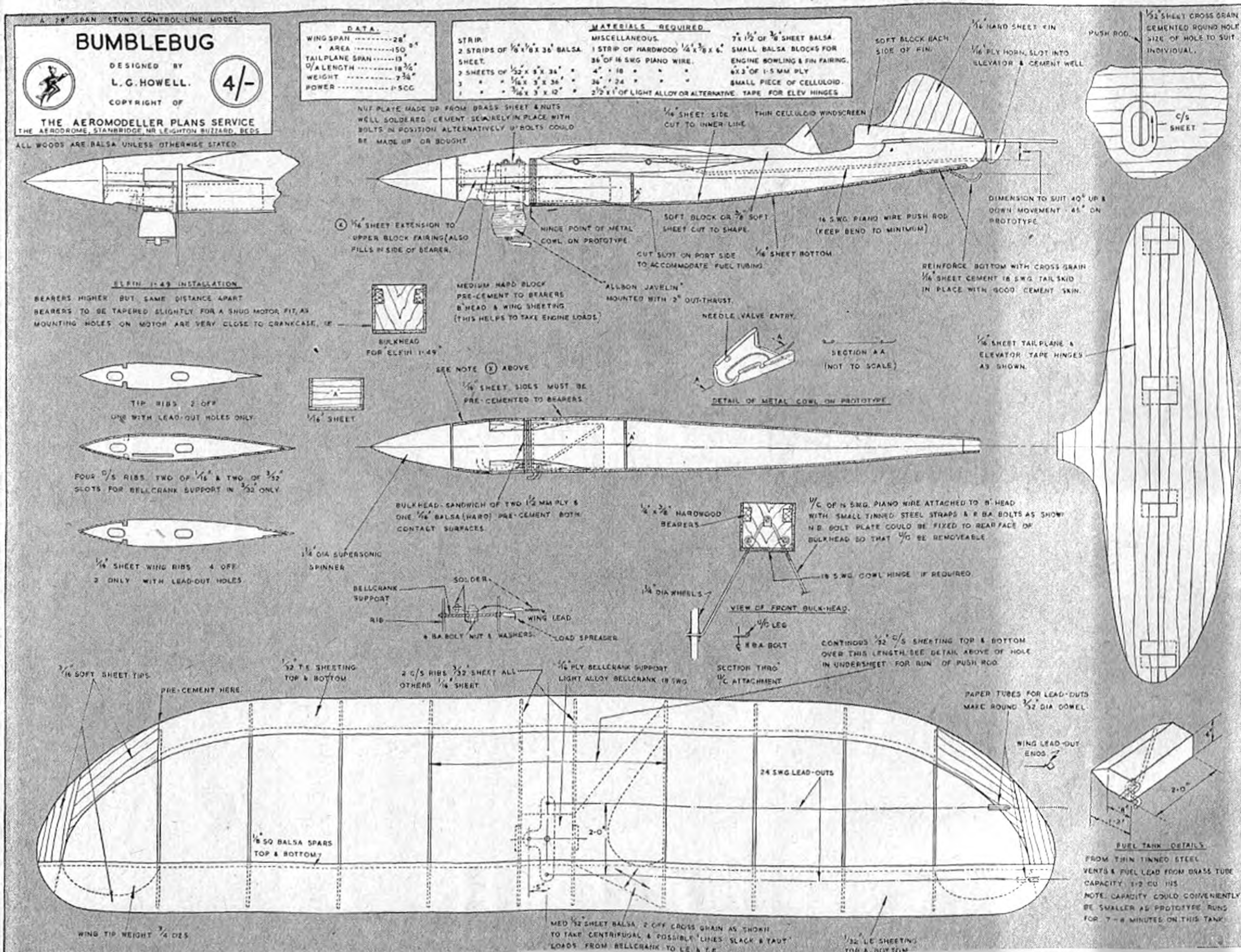
The correct positioning of the C.G. is vital, and for this purpose, nose ballast almost equal to the engine weight is needed. This has to be determined before the fuselage is covered. Wings and elevator should be completely covered, doped and painted, and the engine and propeller installed, before attaching them to the fuselage with rubber bands for a trial balance. Determine the amount of sheet lead needed to bring the C.G. to the point shown, and bolt it to the ply floor in the nose. The fuselage may then be covered and finished off.

Trim should be first investigated by glide testing down a hill, varying the elevator incidence until the flattest possible glide is obtained without stalling. Rudder adjustment is very sensitive, and these should be left alone at first. If it is necessary to move them, use only the tab on one side, setting it outward 1/16 inch at a time.

This model is definitely not intended as a contest type, but has a gradual, realistic climb, and may be flown on fairly long motor runs without fear of losing it. Added advantages are that propeller breakage is reduced to zero, and there is no risk of the motor being damaged or filled with dirt. To the modeller who is a trifle browned-off on the regular run of skyrocketing free flighters, I can recommend this model as a refreshing diversion.



Without dihedral on the elevator, or leading plane, Ascender is an unusual, and most successful tail-first design. In the upper photo, the designer demonstrates the mode of hand launching. Left, the E.D. Bee powered prototype is a natural prop-saver. Engine is mounted on the wing, and completely crash protected.



A 28" SPAN STUNT CONTROL-LINE MODEL
BUMBLEBUG
DESIGNED BY
L. G. HOWELL.
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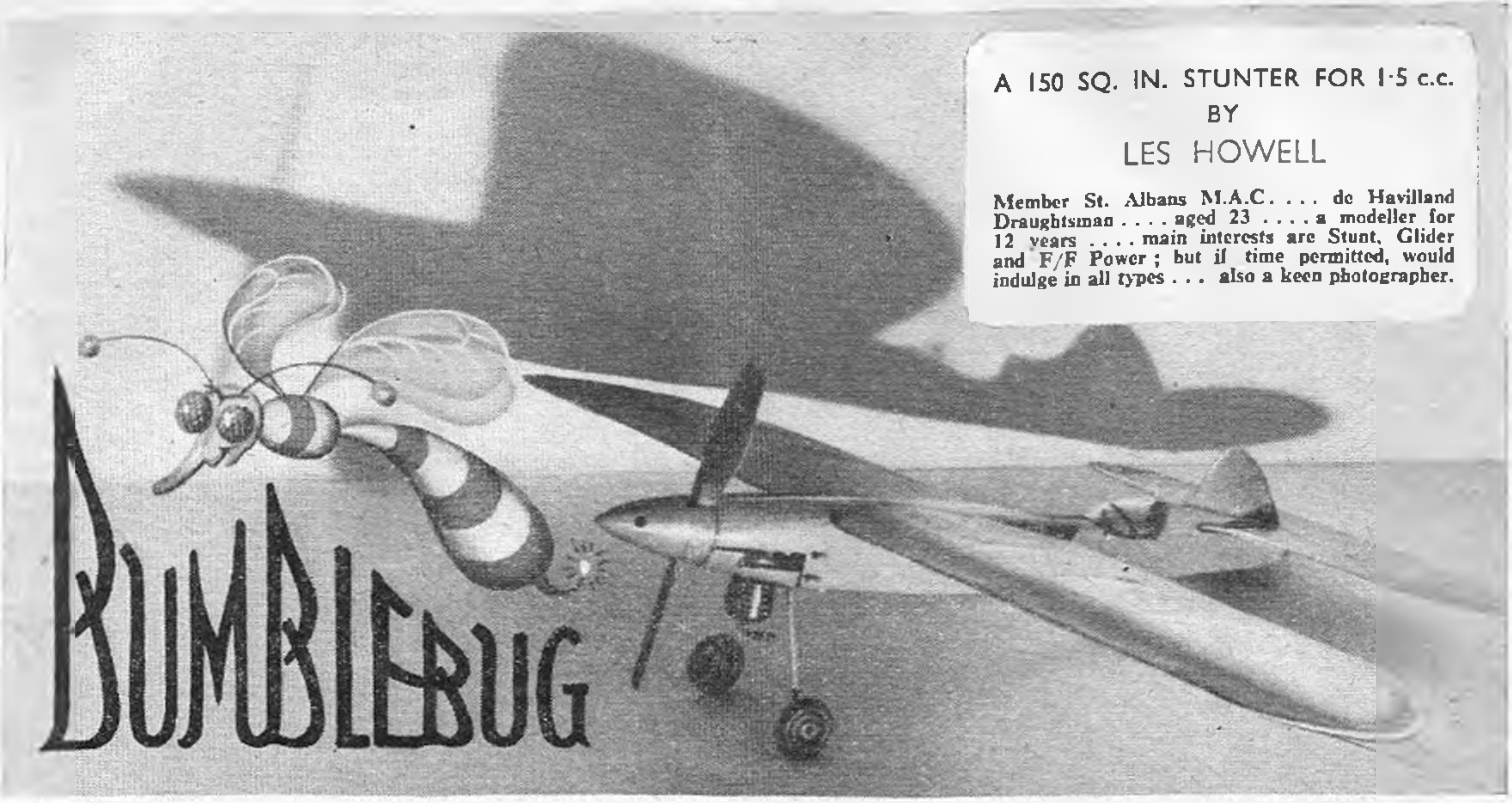
THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS
4/-
DATA.
WING SPAN ---------- 28"
" AREA ---------- 150 □"
TAILPLANE SPAN ------ 13"
O/A LENGTH ---------- 18 3/4"
WEIGHT ---------- 7 3/4"
POWER ---------- 1·5CC
MATERIALS REQUIRED
STRIP.
2 STRIPS OF 1/8" x 1/8" x 36" BALSA
SHEET.
2 SHEETS OF 1/32" x 3" x 36"
1/16" x 3" x 36"
3/16" x 3" x 12"
MISCELLANEOUS.
1 STRIP OF HARDWOOD 1/4" x 3/8" x 6"
36" OF 16 SWG PIANO WIRE.
4" 18
36" 24
2 1/2" x 1" OF LIGHT ALLOY OR ALTERNATIVE.
7" x 1 1/2" OF 3/8" SHEET BALSA.
SMALL BALSA BLOCKS FOR ENGINE COWLING & FIN FAIRING.
6 x 3" OF 1·5 MM PLY
SMALL PIECE OF CELLULOID.
TAPE FOR ELEV HINGES
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.
NUT PLATE MADE UP FROM BRASS SHEET & NUTS WELL SOLDERED. CEMENT SECURELY IN PLACE WITH BOLTS IN POSITION. ALTERNATIVELY U-BOLTS COULD BE MADE UP, OR BOUGHT.
1/4" SHEET SIDE CUT TO INNER LINE
THIN CELLULOID WINDSCREEN
SOFT BLOCK EACH SIDE OF FIN.
1/16" HARD SHEET FIN
1/16" PLY HORN, SLOT INTO ELEVATOR & CEMENT WELL
PUSH ROD.
1/32" SHEET CROSS GRAIN CEMENTED ROUND HOLE. SIZE OF HOLE TO SUIT INDIVIDUAL.
C/S SHEET
DIMENSION TO SUIT 40° UP & DOWN MOVEMENT. 45° ON PROTOTYPE.
16 S.W.G. PIANO WIRE PUSH ROD (KEEP BEND TO MINIMUM)
SOFT BLOCK OR 3/8" SOFT SHEET CUT TO SHAPE.
1/16" SHEET BOTTOM
HINGE POINT OF METAL COWL ON PROTOTYPE.
CUT SLOT ON PORT SIDE TO ACCOMMODATE FUEL TUBING.
REINFORCE BOTTOM WITH CROSS GRAIN 1/16" SHEET. CEMENT 18 S.W.G. TAIL SKID IN PLACE WITH GOOD CEMENT SKIN.
① 1/16" SHEET EXTENSION TO UPPER BLOCK FAIRING (ALSO FILLS IN SIDE OF BEARER.
MEDIUM HARD BLOCK PRE-CEMENT TO BEARERS B'HEAD & WING SHEETING (THIS HELPS TO TAKE ENGINE LOADS)
ALLBON JAVELIN MOUNTED WITH 2° OUT-THRUST.
ELFIN 1·49 INSTALLATION.
BEARERS HIGHER BUT SAME DISTANCE APART. BEARERS TO BE TAPERED SLIGHTLY FOR A SNUG MOTOR FIT, AS MOUNTING HOLES ON MOTOR ARE VERY CLOSE TO CRANKCASE.
BULKHEAD FOR ELFIN 1·49
NEEDLE VALVE ENTRY.
SECTION A.A. (NOT TO SCALE)
DETAIL OF METAL COWL ON PROTOTYPE
1/8" SHEET TAILPLANE & ELEVATOR. TAPE HINGES AS SHOWN.
TIP RIBS 2 OFF
ONE WITH LEAD-OUT HOLES ONLY.
1/16" SHEET
SEE NOTE ① ABOVE.
1/16" SHEET SIDES MUST BE PRE-CEMENTED TO BEARERS.
FOUR C/S RIBS. TWO OF 1/16" & TWO OF 3/32". SLOTS FOR BELLCRANK SUPPORT IN 3/32" ONLY.
BULKHEAD- SANDWICH OF TWO 1/2 MM PLY & ONE 1/16" BALSA (HARD) PRE-CEMENT BOTH CONTACT SURFACES.
1 1/4" DIA SUPERSONIC SPINNER
1/4" x 3/8" HARDWOOD BEARERS
U/C OF 16 SWG. PIANO WIRE ATTACHED TO B'HEAD WITH SMALL TINNED STEEL STRAPS & 8 BA BOLTS AS SHOWN. N.B. BOLT PLATE COULD BE FIXED TO REAR FACE OF BULKHEAD SO THAT U/C BE REMOVEABLE.
18 S.W.G. COWL HINGE IF REQUIRED.
1/16" SHEET WING RIBS 4 OFF
2 ONLY WITH LEAD-OUT HOLES.
BELLCRANK SUPPORT
SOLDER.
RIB
WING LEAD
6 BA BOLT NUT & WASHERS.
LOAD SPREADER
1 1/4" DIA WHEELS
VIEW OF FRONT BULK-HEAD.
U/C LEG
8 BA. BOLT
SECTION THRO' U/C ATTACHMENT
CONTINUOUS 1/32" C/S SHEETING TOP & BOTTOM OVER THIS LENGTH. SEE DETAIL ABOVE OF HOLE IN UNDERSHEET FOR RUN OF PUSH ROD.
3/16" SOFT SHEET TIPS
PRE-CEMENT HERE.
1/32" T.E. SHEETING TOP & BOTTOM
2 C/S RIBS 3/32" SHEET ALL OTHERS 1/16" SHEET
1/16" PLY BELLCRANK SUPPORT LIGHT ALLOY BELLCRANK 18 SWG
PAPER TUBES FOR LEAD-OUTS MAKE ROUND 3/32" DIA DOWEL.
WING LEAD-OUT ENDS.
24 SWG LEAD-OUTS
2·0"
1/8" SQ BALSA SPARS TOP & BOTTOM.
FUEL TANK DETAILS.
FROM THIN TINNED STEEL. VENTS & FUEL LEAD FROM BRASS TUBE. CAPACITY 1·2 CU. INS.
NOTE. CAPACITY COULD CONVENIENTLY BE SMALLER AS PROTOTYPE RUNS FOR 7 - 8 MINUTES ON THIS TANK.
WING TIP WEIGHT 3/4 OZS.
MED 1/32" SHEET BALSA, 2 OFF CROSS GRAIN AS SHOWN TO TAKE CENTRIFUGAL & POSSIBLE 'LINES SLACK & TAUT' LOADS FROM BELLCRANK TO L.E. & T.E.
1/32" L.E. SHEETING TOP & BOTTOM



A 150 SQ. IN. STUNTER FOR 1·5 c.c.
BY
LES HOWELL

Member St. Albans M.A.C. . . . de Havilland Draughtsman . . . . aged 23 . . . . a modeller for 12 years . . . . main interests are Stunt, Glider and F/F Power ; but if time permitted, would indulge in all types . . . also a keen photographer.

POPULARITY of the smaller 1·5 c.c. diesels now exceeds that for any other engine capacity. This fully aerobatic and very slick stunter is especially designed for either the Allbon Javelin or Elfin 1·49, and will go through every manoeuvre in the stunt schedule at almost 60 m.p.h.

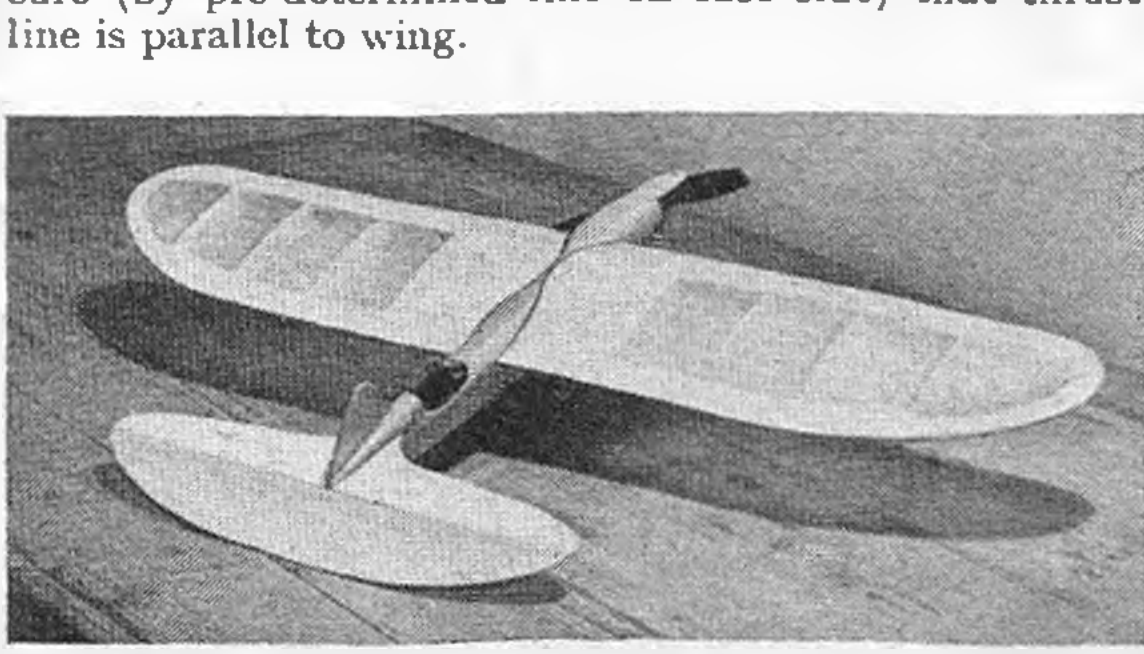
Built with a fixed wing, its 28 inch span is not over-large for transport, and the rigid structure provides a tough job that will withstand the occasional prang. Why not make one for your 1·5, and fly it next week-end ?

Construction:

Wing. Build up ribs on 1/8 square spars dry. Add trailing edge sheets making sure structure does not twist in the process. Glue spars. Glue one leading edge sheet to respective spar and leave to dry. When dry, glue to ribs. Repeat for other sheet. One or other of sheets to be chamfered to make good fit at leading edge.

Add control system and complete centre-section sheeting. Add tips and paper tube lead outs. Form attachment ends or lead out wires. Sand smooth. Add tip weight securely.

Fuselage. Make bulkhead and bearer assembly first. Pre-cement fuse sides to this assembly, making sure (by pre-determined line on fuse side) that thrust line is parallel to wing.



Tailplane and Elevator. Make up as a complete assembly—sanded, covered, doped and hinged. Now assemble fuselage as such : wing ; and tail/elevator assembly, making sure all components are square and true in all views. Particularly note to make sure that a " rig " is not present in incidence setup. (A simple jig may be made up for this operation using the fact that top of wing is an undisturbed flat surface at spar).

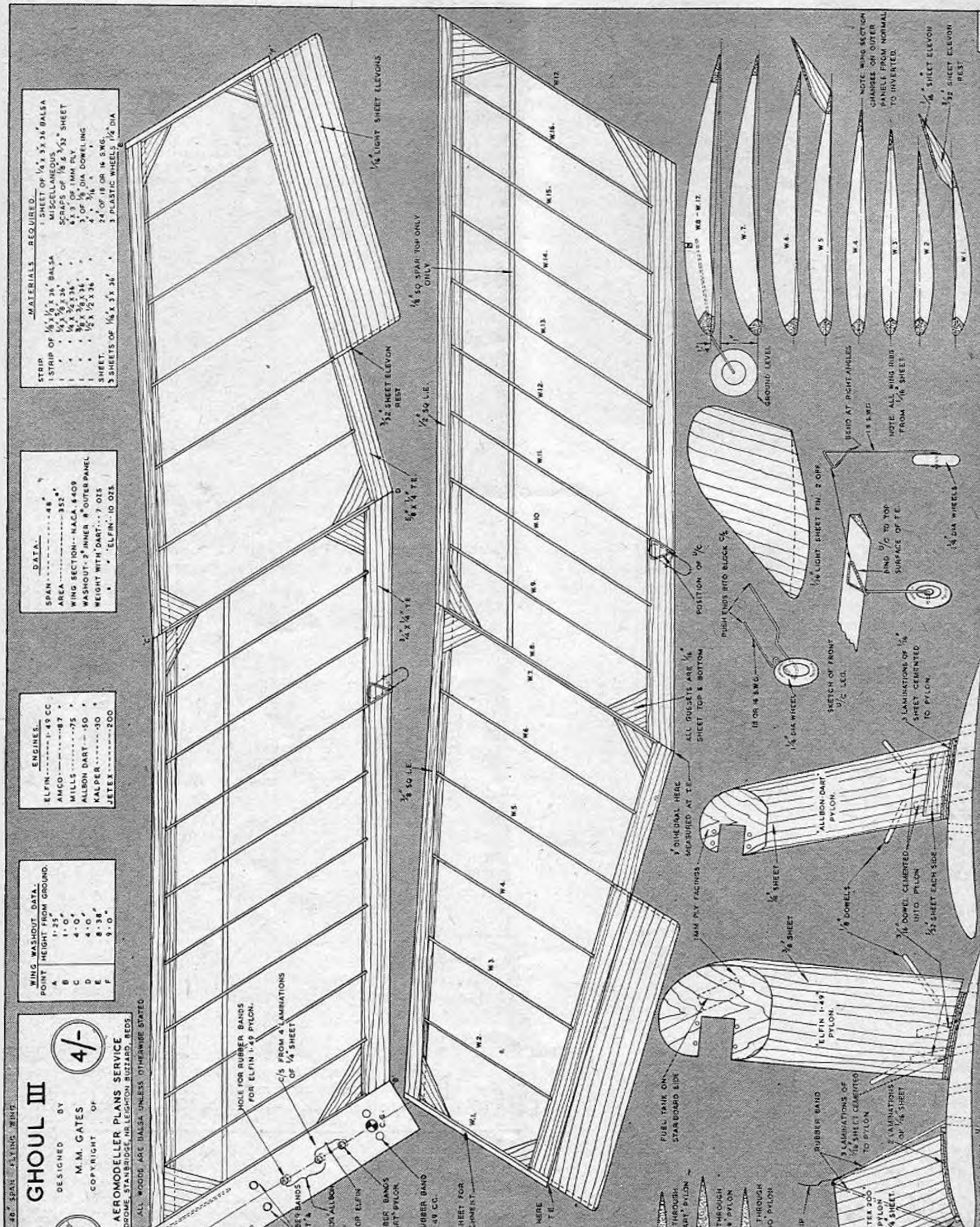
Complete control system at elevator horn, obtaining required movement. Install undercarriage. Install tank and add fuse bottom. Complete fuse top fairings, and fin, noting particularly reference to front block on plan re-precementing. Add tailskid canopy, engine at 2 degree out-thrust. Make and attach cowl after sanding, covering and doping. Cowl may be alternatively made from hollowed block balsa held in place by press-studs to top block.

Model should be flown on a calm day for first time, 40 foot lines are reasonable for a start. On an 8 × 6 inches P.A.W. cut down to 7 × 6 inches the prototype flies at 55–60 m.p.h.

Note.—Metal cowl to be made of thin aluminium sheet. 22 s.w.g. or thinner prototype cowl was made from a flattened aluminium cigar tube. This is a convenient supply if you know anybody who smokes expensive cigars !

Simple enough ? Building time should be no more than ten hours, and any keen aeromod should be able to muster that amount of spare time during a week. Cost is cheap too, even with the new balsa prices, 9/- meets the bill, excluding engine.

The arty heading photo displays Les Howell's prowess as a photographer as well as modeller. Photoflood illumination has caricatured Bumblebug outline, while the natty bug sketch is Les' own decoration which is now painted on top of the port wing. View from above at left shows the attractive lines of this 150 sq. ins. stunter. Colouring is Crimson and Yellow.



THIS IS A 1 SCALE REPRODUCTION OF THE FULL SIZE PLANS

A 352 SQ. INS. FLYING WING FOR POWER UNITS WEIGHING UP TO $2\frac{3}{4}$ OUNCES

BY

M. M. GATES, B.Sc.

Aero Engine design Student . . . aged 21 . . . single . . . a specialist in high performance, tailless design . . . always incorporates an unusual feature in his models . . . also keen on photography, especially of aircraft.

Arrowhead shape of Ghoul III is plain in this view of designer M. M. Gates and the Allbon Dart version. Note temporary trim tabs on elevons for preliminary flight tests.

EASY to fly, and simple to build, Ghoul III is the latest design by our well-known specialist contributor on tailless types—M. M. Gates. Why not try one for your baby class diesel or Jetex unit ? Its high performance is equal to the best of orthodox designs.

Construction : The wing centre sections are constructed by cutting out the ribs and cementing them to the $\frac{1}{8}$ in. square spar, then add L.E.'s and T.E.'s which are first roughly shaped. Outer portions are made similarly.

The centre section block is made from laminated sheet, shaped to give the correct dihedral. Only the inner ribs of the outer sections need be set to allow for dihedral. All five sections of the wing should be very carefully cemented together, and the joints gussetted as shown on the plan.

Sew the rear undercarriage legs to the trailing edge and cement firmly. The nosewheel legs are pushed into the centre section. Cover with rag tissue, well doped and fuel proofed. Note that before covering, the washout will be insufficient, the tissue will induce further washout into the outer sections quite naturally. Final adjustments should be made to the washout after doping ; but before fuel-proofing. Fins and elevons should be cut from lightweight $\frac{1}{16}$ in. sheet and added after covering. Care must be taken in setting both elevons to the same angle.

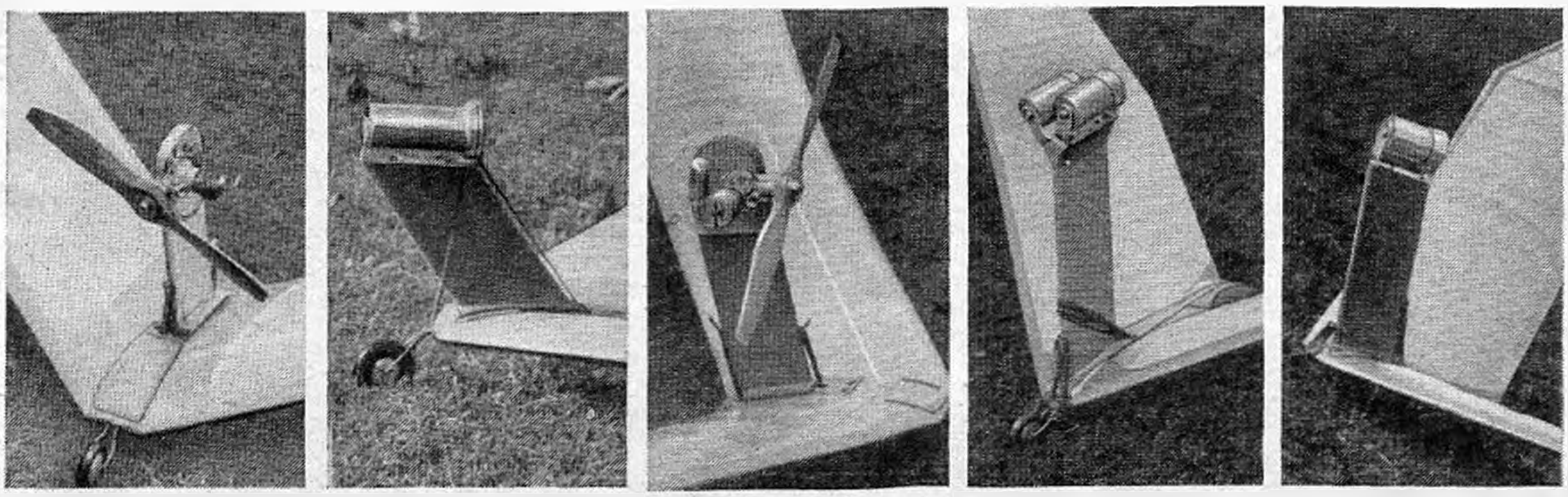
The method of pylon construction will depend on the motor to be used. This may be anything from a Jetex 200 to an Elfin 1·49—in other words anything up to $2\frac{3}{4}$ ozs. in weight which will give over 2 oz. thrust.

The dihedral shown on the plan is selected to give good stability with high thrusts. Especially with the small power units, it will give a certain amount of " Dutch rolling " on windy days.

Trimming : Trimming presents no difficulty if carried out systematically. First check the wing for warps, check the C.G. and rectify any faults that may be apparent. Stick temporary trim tabs to the elevons, then glide test the model. If the glide appears nose heavy, raise the trim tabs until the glide is correct. If there is a tendency to stall, add some lead to the nose.

After checking that the pylon is correctly aligned—according to the power unit used—try low power tests. The model should have a slight left turn under power, with a suitable glide. Gradually increase the power by raising compression until full power is obtained, making slight trim tab adjustment if necessary. The tabs can later be dispensed with by resetting the elevons.

***VARIETY IN POWER** is evident in these five views of different power units. The popular choice will probably be the Allbon Dart 0·5 c.c. shown at extreme left. **Left to Right:** the next is a lightweight Jetex 200 installation, then the Elfin 1·49 c.c. unit (not for beginners !). Fourth is another tricky high power unit, with twin Jetex 350's, and last, with a single lightweight Jetex 350.*



AEROMODELLER INTERNATIONA

W. H. C. "Funf" Taylor, winner of the trophy, winds his actuator before taking off for the second part of his flight. Below, "Funf" launches for clubmate Sid Sutherland who placed second. Centre, a Brighton clubmate launches Perelli's "Rudderbug".

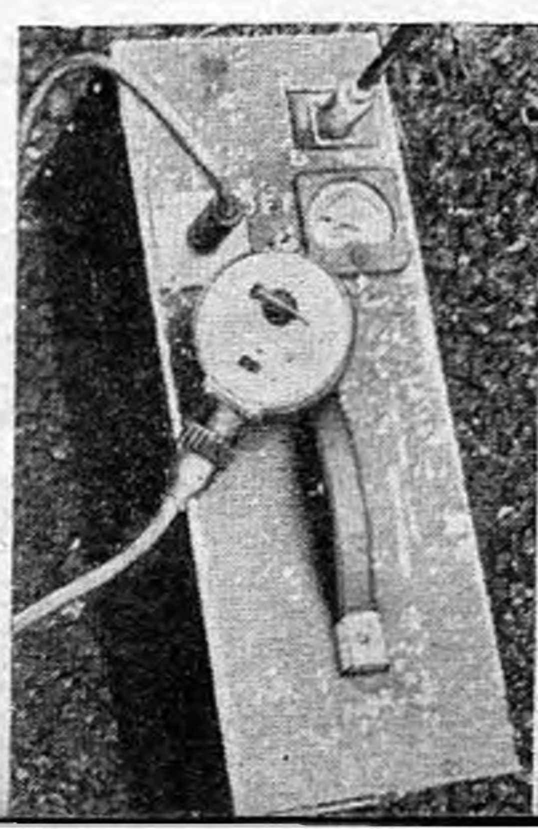
THE fact that this contest, like the Bowden was originally intended as an International contest of restricted entry, and then thrown open to all at the last moment, probably accounted for the small entry of twelve contestants. In addition, misleading information had also been given out in regard to the venue, as we mention in "Heard at the Hangar Doors". However, the twelve who did fly put up a good show in spite of inclement weather.

Of those who flew on Sunday afternoon, Sid Sutherland was undoubtedly the best. He completed the schedule without difficulty, and had it not been for his first spot landing, which lost him 80 points, might well have won the contest. Earlier on Hemsley battled unequally against the wind with his two-speed engine-control, and both Alfie Hook and Chuck Doughty retired with radio trouble. Honnest-Redlich had his motor cut at take-off and the results did not improve his radio. At this moment a large black storm cloud which had been looming menacingly upwind, produced one of those sudden squalls which blew Harry Hundleby's model clean out of the aerodrome. Max Coote, who did a very praiseworthy job of judging, then postponed the contest until conditions improved. It was resumed later in the afternoon, when the wind died down almost as rapidly as it came up, and we witnessed some excellent high altitude flying by Sam Collins who completed the course, but lost out on his spot landings.

On the Monday conditions deteriorated slightly, and not until the late afternoon when the wind died down did King Sol appear. Perelli of Brighton was the first away after a magnificent take-off with his Rudderbug which demonstrated that a tricycle undercarriage is the surest way of getting a radio model off the ground. Unfortunately, he went out of range and was soon lost in the distance.

Then followed Lewis, flying a small D.C. 350 powered model equipped with an E.C.C. receiver and an E.D. transmitter. He provided spectators with the one and only complete write-off in the contest, strewing pieces all over the runway. Next, came the winning performance by W. H. C. "Funf" Taylor of West Essex who completed the course with the exception of a loop, his two "spot-on" spot landings giving him a comfortable lead over nearest rival Sutherland. Johnny Clemmet of Bolton suffered a motor cut at take-off and also from ramming the front of the official Monitor's car which was very foolishly parked upwind of the take-off area. Incidentally, this same Monitor from the Radio Controlled Models Society, succeeded in finding almost the entire field of transmitters off frequency in spite of the fact that most of them were crystal checked. We respectfully suggest to the I.R.C.M.S. that they check most carefully any future

George Honnest Redlich starts his Electron 9 which is equipped with E.D. 2·46 Racer. Top right, the Hook brothers search anxiously for a radio "bug". Right, Perelli's Tx which uses an on-off switch for re-synchronising when necessary.



RADIO CONTROL TROPHY

RADLETT AERODROME HERTS. MAY 13 & 14 1951

The Aeromodeller trophy presented to the S.M.A.E. for annual international contest, was designed and constructed by well known aeromodelling artist P. E. Norman.

Monitoring equipment used at S.M.A.E. contests if their professional reputation is to be maintained. Last to fly was Roly Scott of St. Helens whose model was definitely of the "sneeze-and-turn" variety which came to grief as he neared the completion of his course flying.

Technicalities

One of the most interesting parts of a centralised radio contest is seeing what the other man is using for even non-competitors turn up with bits of radio in their pocket. Vagaries of the weather disperse the competitors making it impossible to visit them all, but here are a few details that were picked up.

The winner, "Funf" Taylor was using a hard valve quench type receiver, and a Flight Control transmitter. "Sir Kitt" was the next model we noticed, and owned by the Comet man Johnny Clemmet from Bolton. The receiver was experimental and used an XFG1 followed by a IS4 in a circuit on the lines of the one described in the May issue "Radio Control Notes". The current change of the XFG1 was from ·8 ma. down to 0 on receipt of signal, and this produced a rise of anode current in the IS4 from 0 to 4 ma. It does not need a particularly sensitive relay to respond to such an urge. Roland Scott's model was alongside with Mills 2·4 c.c. engine and XFG1 receiver.

The next model had bits of cotton from the rudder to the elevators, working them differentially. When the rudder was pulled to the right the right elevator went down, and the left elevator went up, the elevator giving a rolling moment to counteract the bank produced by the turn. This scheme is reputed to have originated from our old friend C. A. Rippon according to the owner Mr. R. J. Goodman of Bushy Park. The design of the model was based on the Rudderbug and the receiver was the prototype of the new E.D. miniature three valve, and the actual one used for many months with great reliability by George Honnest-Redlich. The transmitter was a very neat home-made affair with 2-volt accumulator and vibrator and used a single D.C.C. 90-valve self-excited and modulated, contained in a small attache case.

George himself was using his trusty Electron 9 with the new E.D. miniature three-valve receiver which is fitted with all-plug-in type connections for the convenience of the non-radio man. With this arrangement it is easy to take out a damaged receiver for return to the makers, there being no connections to unsolder.

Mr. G. Owen of Bushy Park (whose R/C model car is soon to be described in the "MODEL MAKER") also used the new E.D. miniature 3-valve receiver in a model designed with one eye on "Eros".

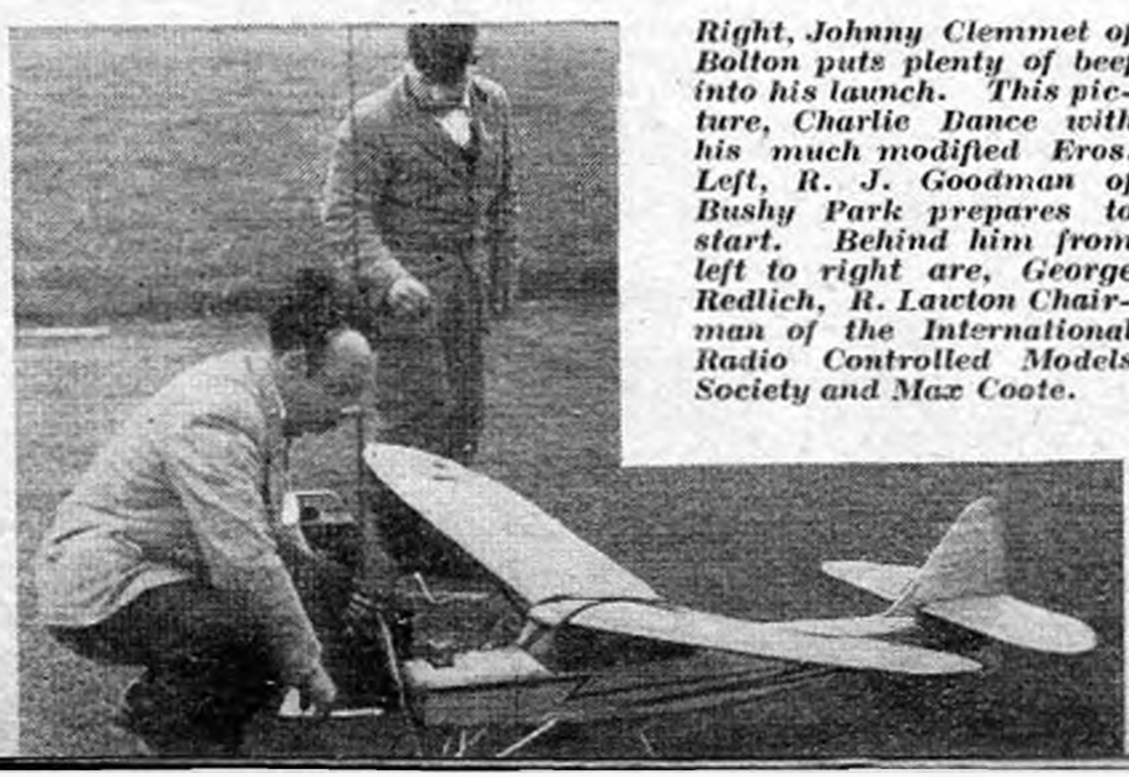
Mr. O. E. Hemsley also used the E.D. miniature with two-speed engine in addition to the usual rudder control.

Charlie Dance of the Kentish Nomads had a modified Eros with tricycle undercarriage and strut braced wing Nordec 10 c.c. engine and all-up weight nine pounds. The receiver was the Hook, and the Hook Brothers were always available for assistance if required.

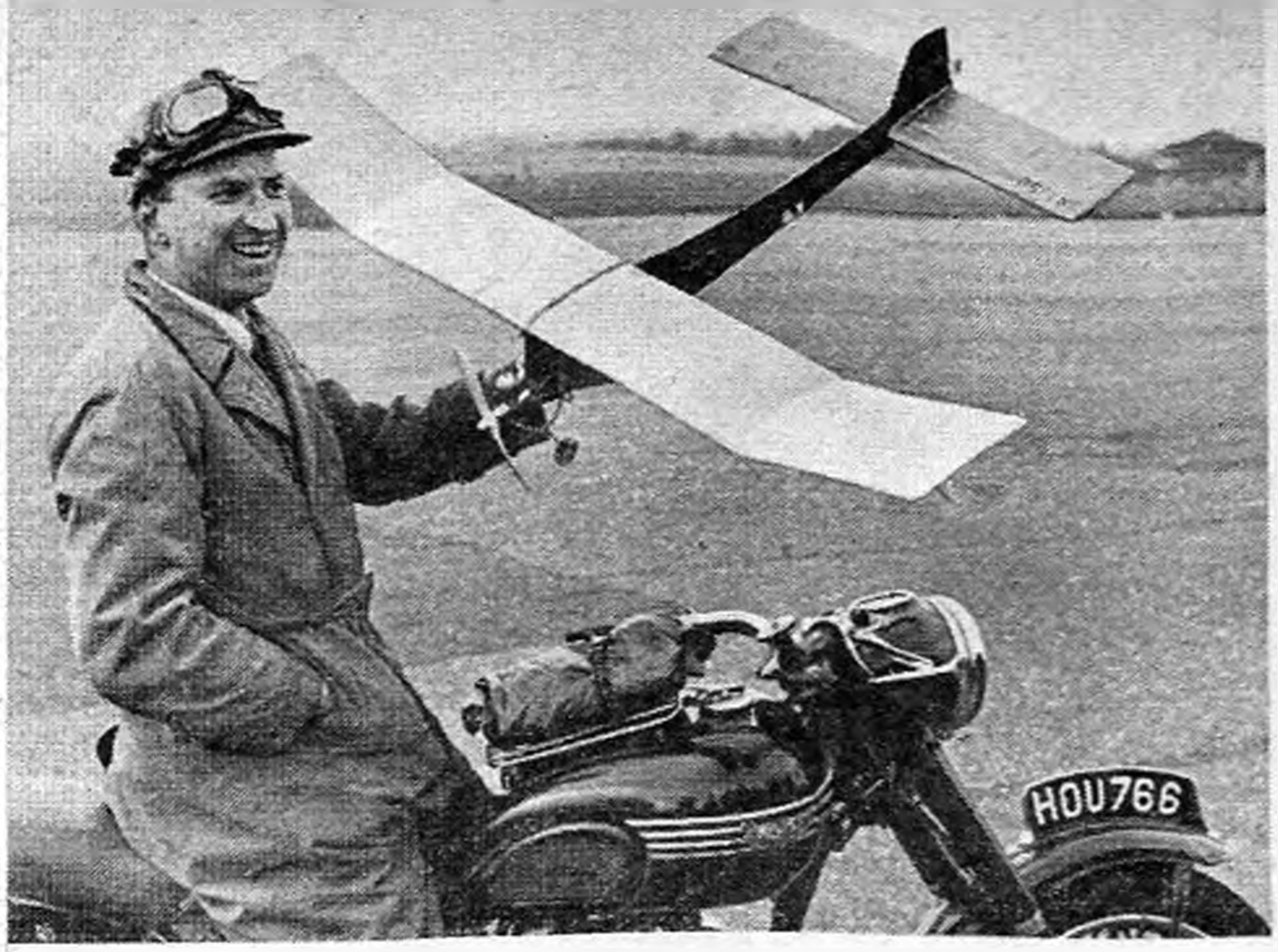
Harry Hundleby was using E.C.C. equipment which has proved very reliable. The receiver is as sensitive as any single valve type so far tested, and the transmitter output is well above average.

"Chuck" Doughty had a most interesting innovation and wonders why nobody thought of it before. This is a solenoid operated fuel cut-off valve which is operated in conjunction with the actuator. A four position non-self centering escapement is used and every time the transmitter is keyed the fuel is cut off as long as the key is held down. Of course it only takes a moment to operate the escapement to put the rudder right, left or central so the fuel is only stopped momentarily for this. For flying, the transmitter is arranged to be on all the time and the transmission is keyed off (opposite from the usual working). If then something should go wrong with the transmitter, or the model go out of range, the fuel is cut off and the rudder held half way over. The receiver used is home-made using a 3S4 valve and is basically the Ivy. It is mounted in a box which plugs in from underneath the fuselage, this box also containing the batteries, the only connection to the rest of the model being a plug to the actuators. Sam Collins had an Ivy type receiver with quite the most beautiful home-made relay yet seen. It was a miniature version of the very reliable SCR 522, weighing not much more than ½ oz.

Tommy Ives had an experimental receiver in his pocket with plug-in connections. Ivy circuit of course, but a little different layout, and home-made relay.



Right, Johnny Clemmet of Bolton puts plenty of beef into his launch. This picture, Charlie Dance with his much modified Eros. Left, R. J. Goodman of Bushy Park prepares to start. Behind him from left to right are, George Redlich, R. Lawton Chairman of the International Radio Controlled Models Society and Max Coote.



Jack North (Croydon) appears happy at having successfully recovered his winning entry in the F/F power event. Strong winds necessitated mechanical transport; most flights ended out of 7,000 ft. airfield.

W. Holland of Apsley sported a nice line in chin-wear and a novel low C.L.A. design known as Hi-cust. (As opposed to Locust!)

Barry Venville prepares to launch his 'Grenville Special', which has already achieved a considerable reputation in the Midlands.

Below: M. B. Pankhurst and Pete Wright compare their Dooling 29 class II entries that produced a very close finish with only ·5 second difference.

Below: Ken Marsh (W. Essex) who will fly this flapped stunter at Knokke. Fully cowled motor is a McCoy 29. Flying speed is in the region of 75–80 m.p.h.

Below: Stunt winner Alan Hewitt (S.B'h'm) compares his 'Blue-Nom' streamliner and its old type Yulon 30 with those Macclesfield experts, H. Ridgeway and G. Eifflander who placed 3rd and 4th respectively.

OTHER CONTESTS

International Power Duration

The Free Flight Power event staged on the Monda attracted a slightly higher entry of 31, and as was to b expected, flight times were generally higher. This even proved to be rather a ding-dong affair with the lead changin hands several times during the day. The very first flight se up a maximum for F. E. Howkins of Birmingham; two o three maximums were scored during the course of the day and some spectacular flying was witnessed from time to tim particularly by the Gorham-designed "Lil' Aud" machine from Ipswich. Croydon again came into the picture throug Jack North, who made three very good flights to total 13 : 3 placing him well ahead of Howkins the Birmingham junio who scored 10 : 44, just 10 seconds ahead of "Tubby" Jacob of Ipswich. The expected threat from Gorham failed t materialise after he had a spectacular prang on his firs attempt to take-off, but his subsequent flying following hast field repairs was very good.

Crowd control was rather poor in the free flight area an something must be done about the squad of motor cycl "retrievers" who still further clutter up the take-off area t the detriment of a properly run contest. The writer ha great difficulty on occasion in correctly timing the power ru of a competing model, being deafened by the simultaneou starting up of three or four motor cycles. Surely one retrieve is enough per machine.

Control Line Eliminators

Stunt. Entries were fortunately low, with a total of contestants from which judges Bill Tickner and Ron Moulto had to find a top pair to represent Britain at the Knokk Internationals. Judged for precision, there is little doub that any of six of the entrants could go to Knokke and giv a first class show. But, with the F.A.I. 1951 points scheme and the new shape "eights", plus a rigid adherence t judgement of variation in consecutive manœuvres, th calmly flown, smooth performances of Alan Hewitt and Ke Marsh were ahead of the field. If spectacular performance were required for Knokke then the Macclesfield men Ridgeway and Eifflander would have reversed the results.

All of the first four suffered minor handicaps. Hewitt ha a rough motor for the first part of his flight. Both Eifflande and Marsh ran out of fuel during their special manœuvres, an Ridgeway over-ran his time limit and lost landing points Nevertheless, these performances were made without previou test flights and under true Knokke conditions; we ma expect the same standard of flying in Belgium on July 29t and also hope for high Concours d'Elegance points, since bot winning models are well finished and very original designs.

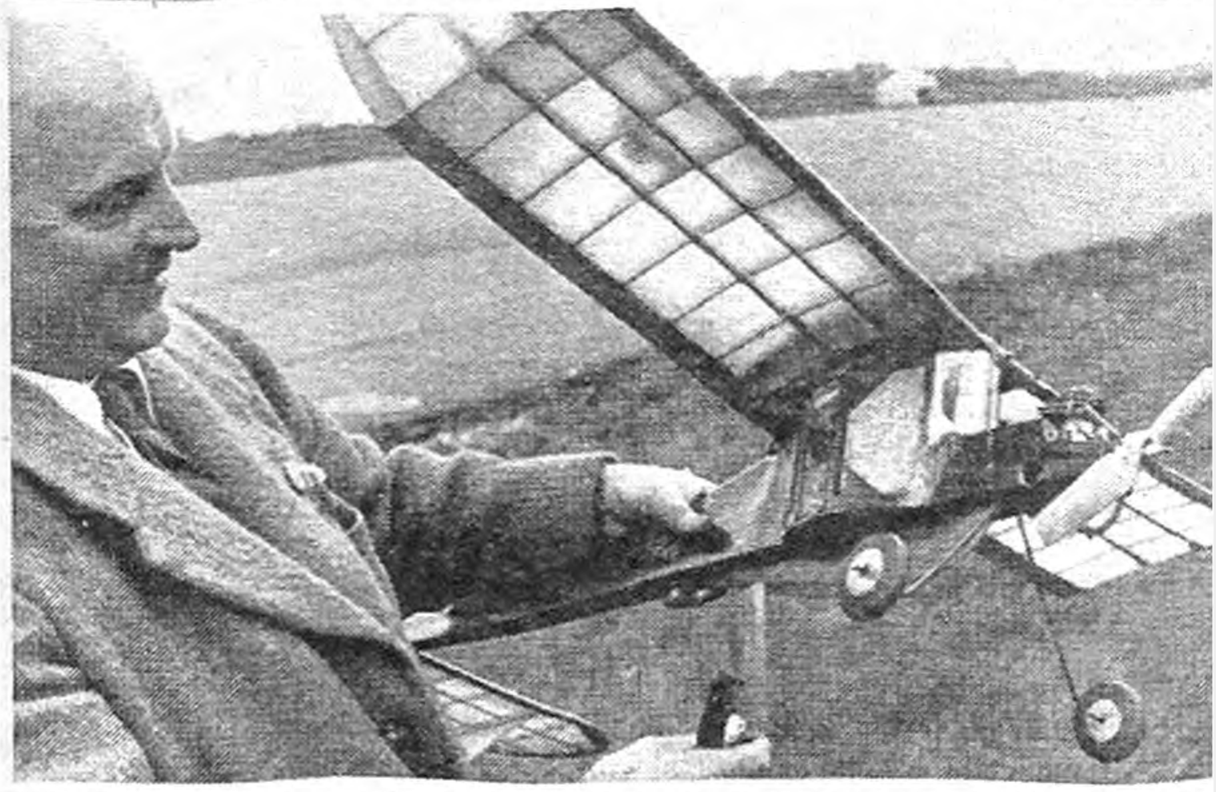
Speed. Contests were run for F.A.I. classes II (up to 5 c.c and III (up to 10 c.c.) the omission of Class I may be regret table for the 2·5 c.c. contest is now arranged for Knokke, and w have a very good chance of winning in this class if the prope representative could be sent. Similarly with the Jet class.

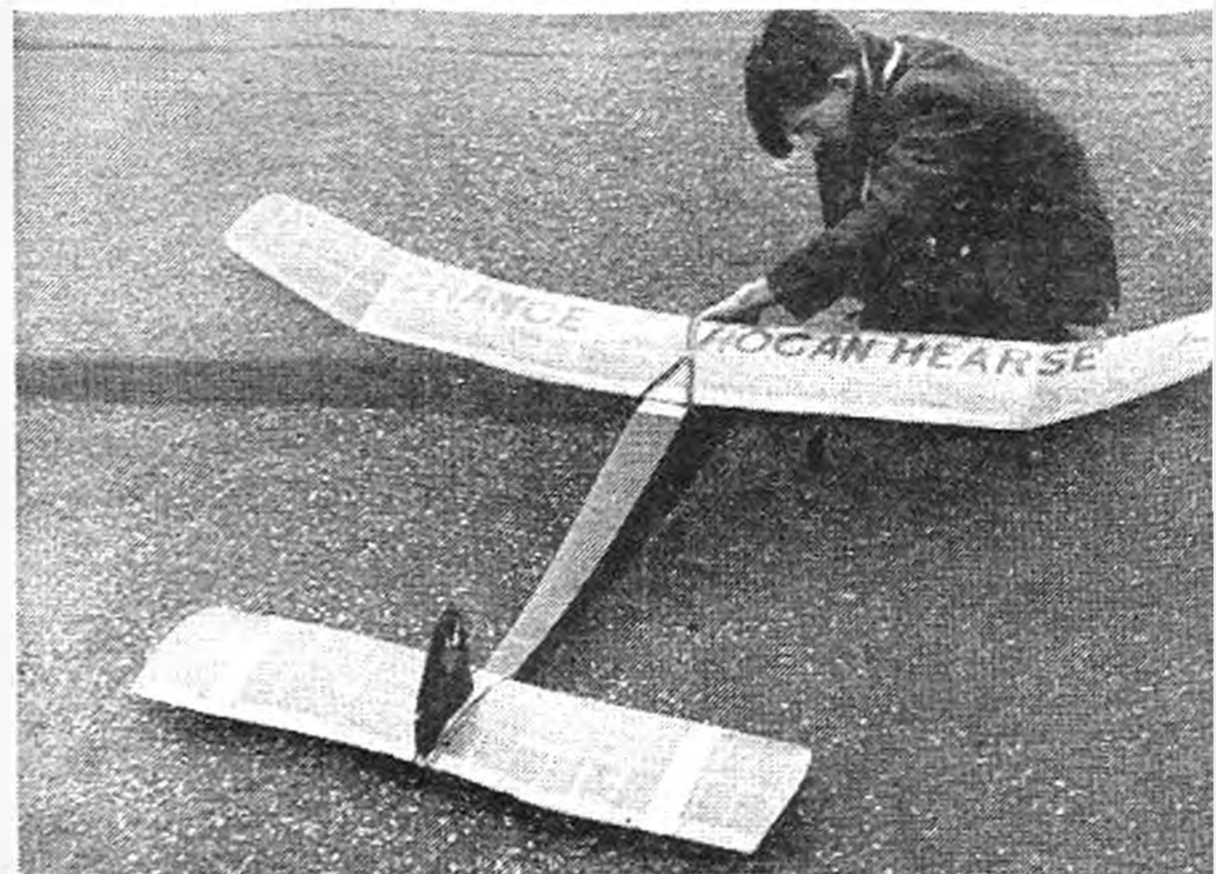
Rarely have we been able to remark upon consistency a applied to speed fliers; but in L. P. Wright (St. Albans) an M. Billington (Brixton) we have at last found men who ca fly, as and when required, and always return an exceller flight with speeds better than the rest of the British field.

Class II might well have been called the Dooling 29 class and the close results provided by models using this power plant, made the contest quite exciting. Each entrant fle three separate runs, and the average speed of all three wa taken for the results. Only ·5 second separated L. Wright an M. B. Pankhurst (Bushey Park) and this small differenc decided which of the two will go to Knokke.

We hope that *someone* will take a fast 2·5 c.c. model t Belgium, for our best in Class II is 11 m.p.h. behind, an Class III as much as 32 m.p.h. behind last year's winning speeds

AT RADLETT MAY 13/14





Bowden Contest

The "Bowden" Contest, held for the first time to the increasingly popular P.A.A. load rules, attracted 22 competitors, most of whom were flying American designs or modifications thereof. It seems to us a pity that some original British thought had not been brought to bear on this new type of machine as we have no doubt that now the abilities of a load-carrying aircraft have been demonstrated this type of design will receive more and more attention. R. Scott of St. Helens lost a potential winner during a test flight, the model having a phenomenal rate of climb, but owing to timer trouble the motor carried on for some 50 seconds and the model disappeared away up into the blue! R. Ward of Croydon performed well to win, closely followed by Ian Lucas of Brighton, the third man being fairly well behind these two leaders. The general opinion of this contest was that the deadweight carried made very little difference to the performance of a power model, and the take-off attributes in the majority of machines were most praiseworthy.

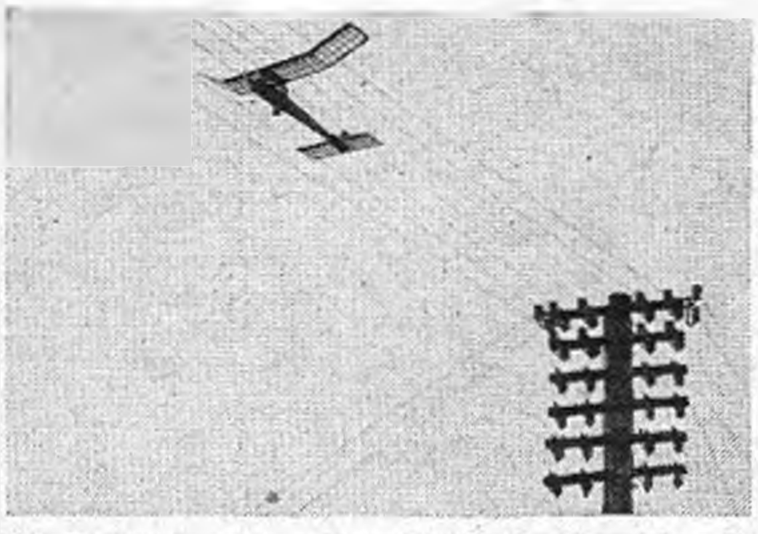
CONTEST RESULTS

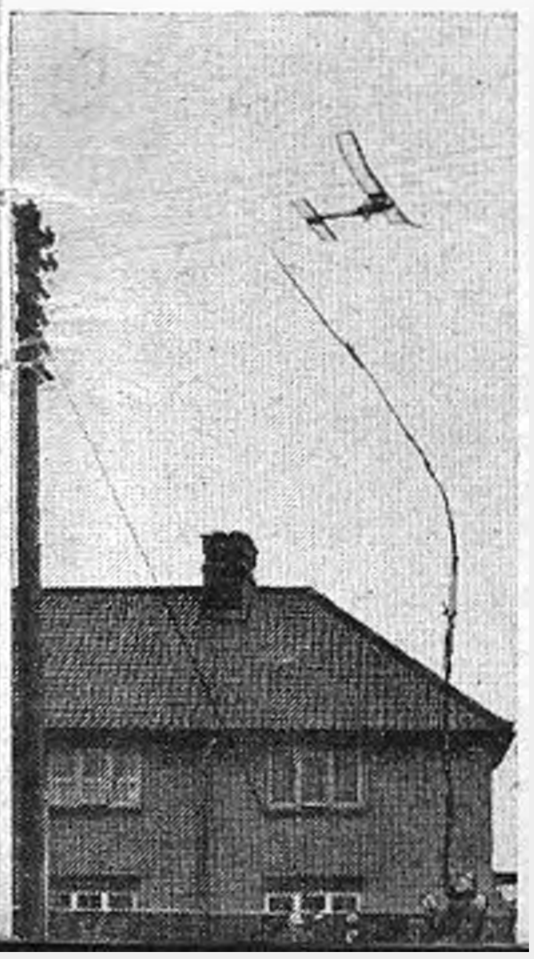
BOWDEN CONTEST			mins.	secs.
1.	R. Ward	(Croydon)	7	32
2.	I. C. Lucas	(Brighton)	7	17
3.	R. Meanwell	(Northampton)	4	07
INTERNATIONAL POWER				
1.	R. North	(Croydon)	13	36
2.	F. E. Howkins	(Birmingham)	13	3
3.	P. Jacobs	(Ipswich)	10	34
AEROMODELLER R/C TROPHY				
1.	W. H. C. Taylor	(West Essex)	550 points	
2.	S. Sutherland	(West Essex)	517 ,,	
3.	S. Collins	(Northern Heights)	514 ,,	
STUNT ELIMINATORS				
	A. Hewitt	(S. Birmingham)	265 points	
	K. Marsh	(West Essex)	247½ ,,	
	H. Ridgeway	(Macclesfield)	243½ ,,	
	G. Eifflander	(Macclesfield)	235 ,,	
SPEED ELIMINATORS				
Class II	L. P. Wright	(St. Albans)	111·9 m.p.h.	
Class III	L. Billington	(Brixton)	109·1 m.p.h.	

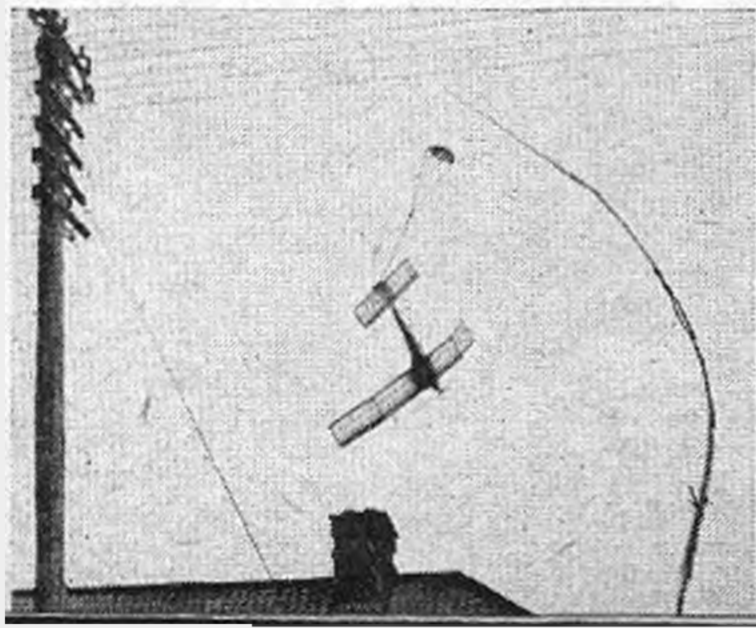
Top right: I. Lucas (Brighton) at extreme left, placed 2nd in the P.A.A. load event with his Arden ·199 replica of the 1950 American winner, "Crowbar 56". Centre: Col. Yates displays his mods to a standard 'Mallard'; the swelling and windscreen house the P.A.A. load man. Right: Mr. Waters of Grange club, utilised the flying surfaces of a well-known American design to lift his Hogan Hearse.

Bottom Right: 1951 Bowden trophy winner, R. Ward of Croydon, explains to his son Christopher that the smart Pan-American Airways souvenir trophy was very hard to get. Fortunately unscathed after its recovery from telephone wires over the busy A5 highway, the model is an original design, though not without Transatlantic influence.

These three stages in model rescue illustrate the tricky situation. D/T parachute was NOT effective during the descent!







CZECH REPORT 1951

by

Leo Lichtblau

"FROM model aeroplane to sailplane and from sailplane to aeroplane" is the aviation maxim in Czechoslovakia.

Every boy interested in aircraft and flying has the opportunity of joining a school modelling group or using the workshop of the local Aero Club. Qualified instructors are always available to give advice and to lecture on every phase, from the elements of aerodynamics upward. Before passing as a pilot of either sailplanes or power aircraft, the aspiring Czech must build his models and complete his course of lectures. This arrangement has increased interest in full-scale aviation and has evolved many successful young aeromodellers.

At the beginning of this year, a "Commission for Aeromodelling Research" was formed, to carry out theoretical and practical research, with the object of raising the standard of the Country's model aircraft design and flying to that of those who have been most successful in the international field.

The following is a short review of Czech models and motors with few words about the modellers themselves.

Sailplanes

The lines of these models are generally clean, one of the more popular types being pod and boom, utilising slab-sided form for the pod. A typical example of this layout is shown in Fig. 1, being the "Flying Boot", designed and built by the brothers Cihelka. Fig. 2 illustrates an experimental slope-soarer, designed by Kantor, winner of the Tatran Competition, while Fig. 3 introduces the most popular Czech slope-soarer of the day, Rad Cizek's "Kite". This design is well-known for its regular appearance at contests in its original or modified form. Best time to date was put up at the competition at Zehrovice, being 28 mins. 45 secs.

Rubber Models

Figs. 4, 5 and 6 show typical models in this category, that of Kumor with the airfoil section fuselage, being all balsa construction with the motor housed in a tube of 0·4 m.m. ply. This type of design with the "lifting fuselage" has been found to have slow flight characteristics, and the reason for this has been explained by 15 year old modeller, Zd. Hamouz of Kladno. He says: "Modellers believe that 'lifting fuselages' really lift but they are mistaken. A fuselage of this type is equivalent to a wing of a very small aspect ratio and the resulting effect is an increase in induced drag with the attendant reduction in the performance of the whole model." Fig. 6 shows the result of this young designer's theories, "Bat II".

K2-47, a very successful model, designed by S. Kopacik of Bratislava, is shewn in Fig. 5.

The heading photograph was taken at a typical meeting at Otrokovice Airport on a very hot day. Although heads are well protected against the sun the exposed rubber motor seems to have been forgotten.

Fig. 1. **Flying Boot** Span: —78·7 ins. Length:—53 ins.

Fig. 2. **Tatran** Span:—63 ins. Lgth.:—39·4 ins.

Fig. 3. **Kite** Span:—75 ins. Length:—51·3 ins.

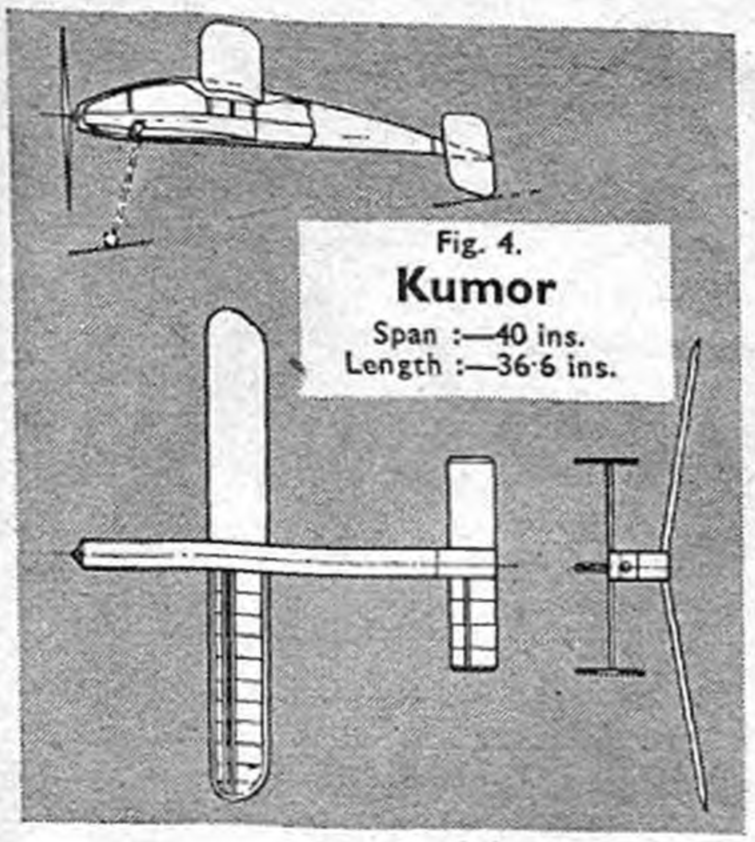


Fig. 4.
Kumor
Span :—40 ins.
Length :—36·6 ins.

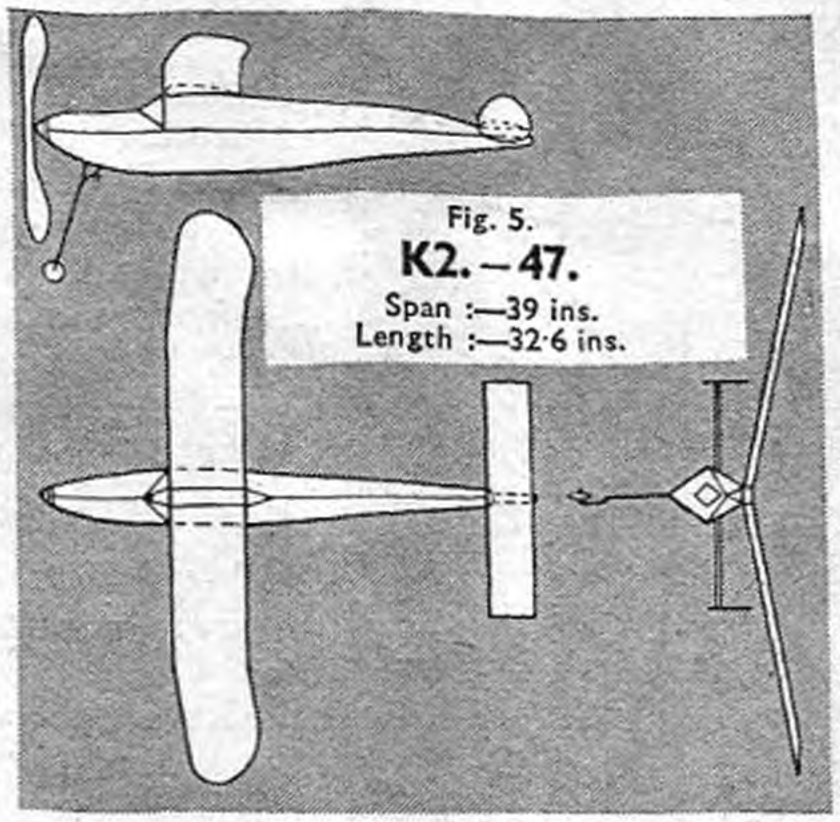


Fig. 5.
K2.—47.
Span :—39 ins.
Length :—32·6 ins.

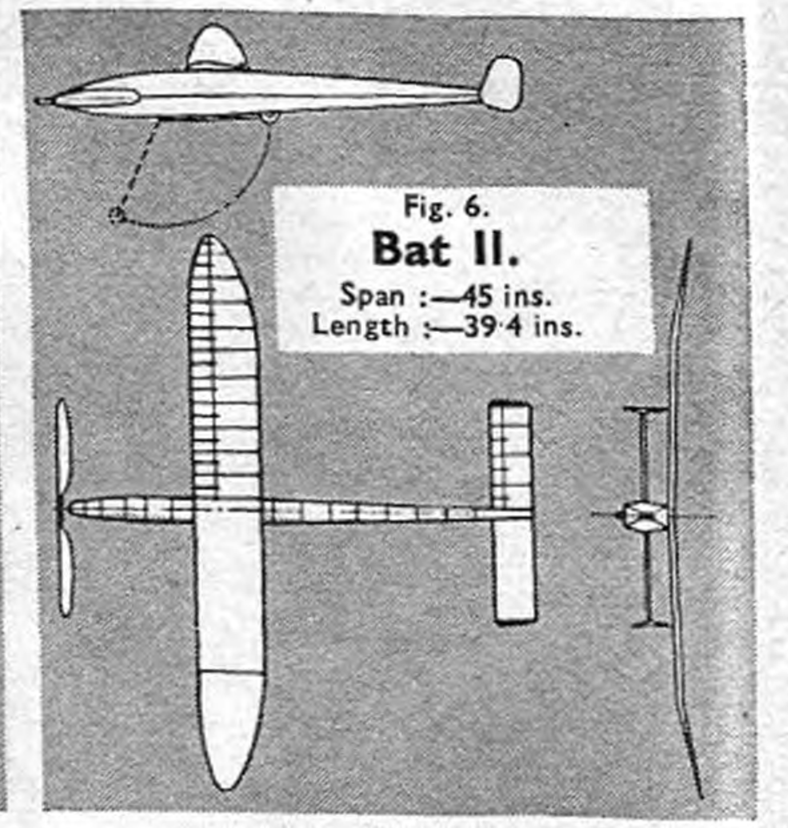
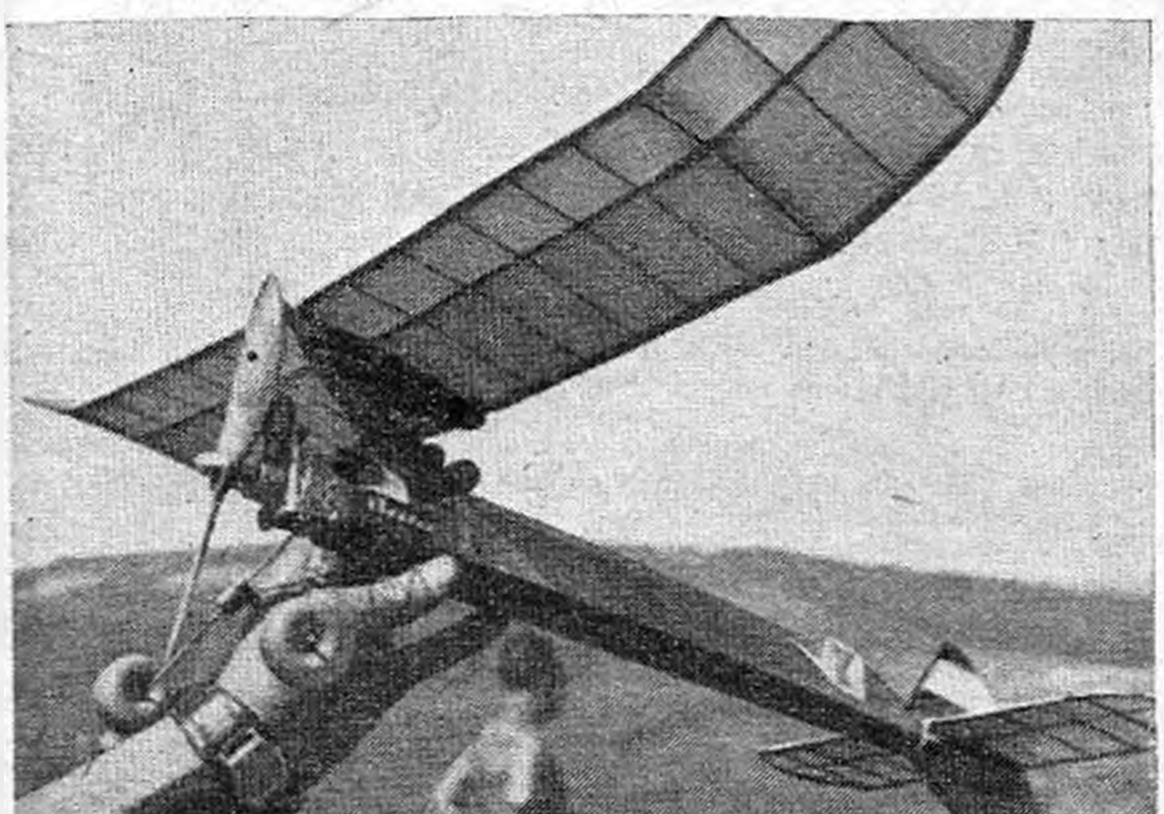


Fig. 6.
Bat II.
Span :—45 ins.
Length :—39·4 ins.

Free Flight Power Models

Functional types are preferred, as can be seen in the two sketches and the photograph of pylon designs, Fig. 7 shows Manka's Record holding IMM-5 best time of which was 30 mins. 32 sec. at the Swiss International Contest last year. Folding airscrews, retractable under-carriages and semi-dihedralled wings are favoured, but airdraulic timers are rarities.



Czech pylon power model is shown in photo, left, having orthodox layout with triangulated fuselage and large sub-fin. What we take to be a D/T hatch can be seen on the port side of the fuselage rear end.

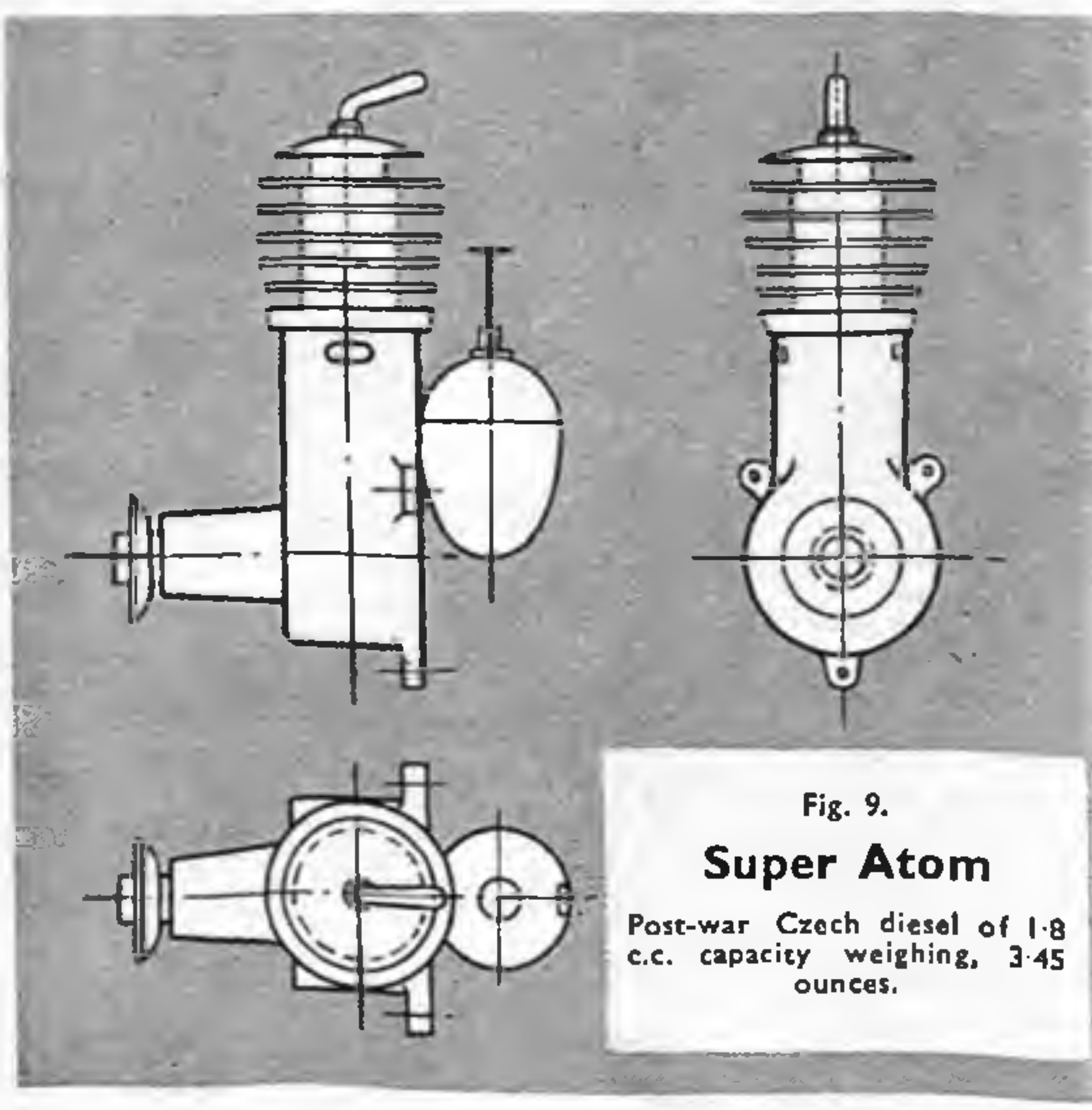


Fig. 9.
Super Atom
Post-war Czech diesel of 1·8 c.c. capacity weighing, 3·45 ounces.

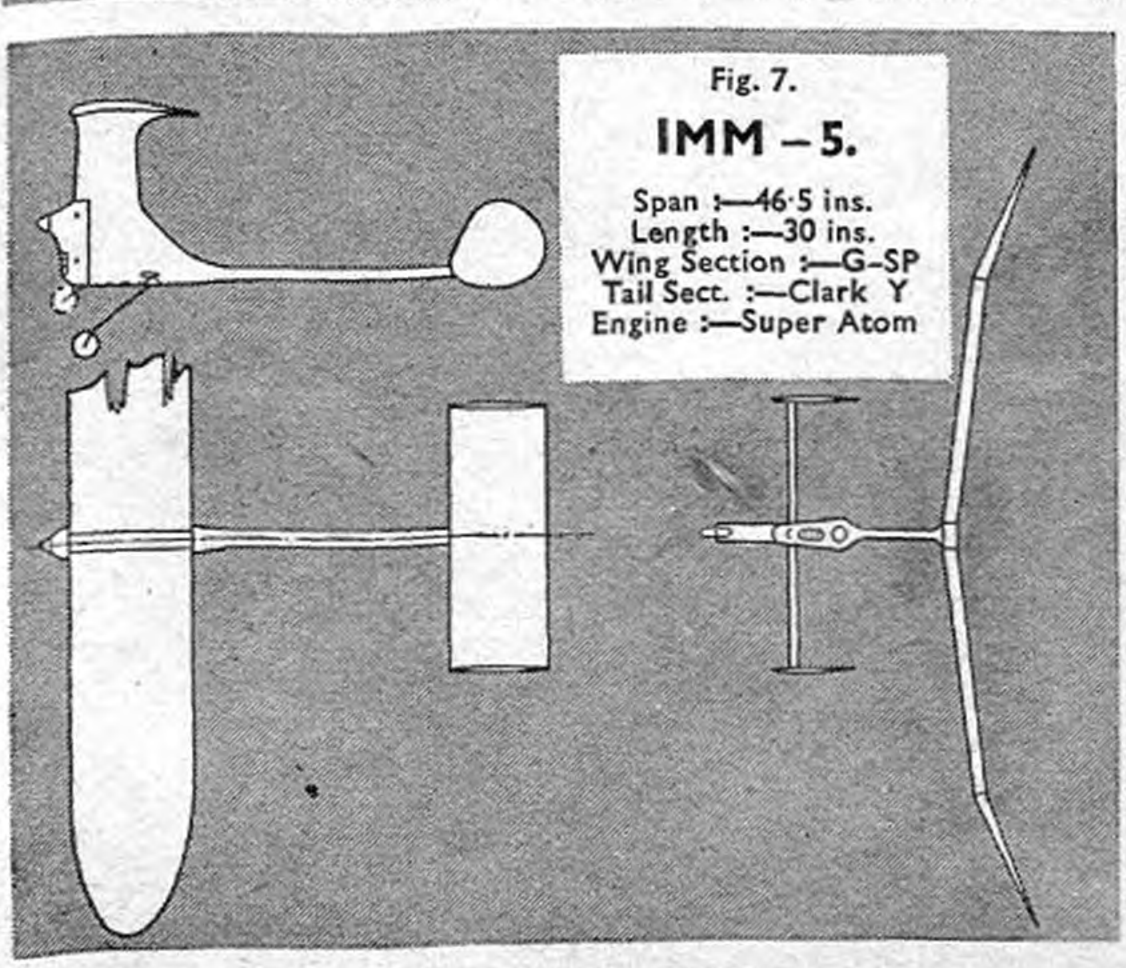


Fig. 7.
IMM—5.
Span :—46·5 ins.
Length :—30 ins.
Wing Section :—G-SP
Tail Sect. :—Clark Y
Engine :—Super Atom

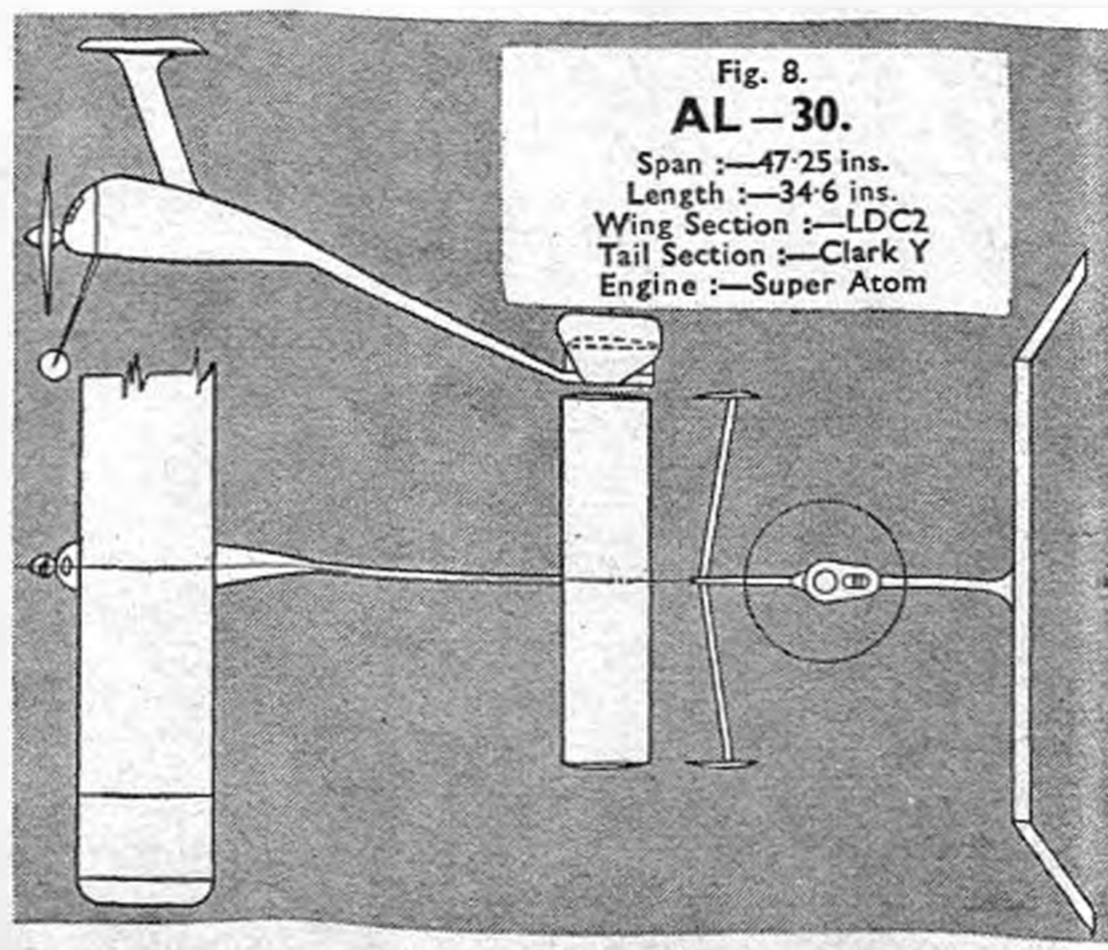


Fig. 8.
AL—30.
Span :—47·25 ins.
Length :—34·6 ins.
Wing Section :—LDC2
Tail Section :—Clark Y
Engine :—Super Atom

In connection with the use of Laminar flow sections, as on the writer's model in Fig. 8, an interesting experiment is being carried out, the object of which is to draw off a boundary layer. Fig. 10 shows the simplicity of the method, which utilises the air intake of the motor, a length of plastic tubing and a small channel below the upper surface of the wing. The air is sucked off the upper surface of the wing through pinholes in the covering, travelling along the channel, and so down to the engine. The model has a very good climb and the writer is sufficiently encouraged to continue the experiment.

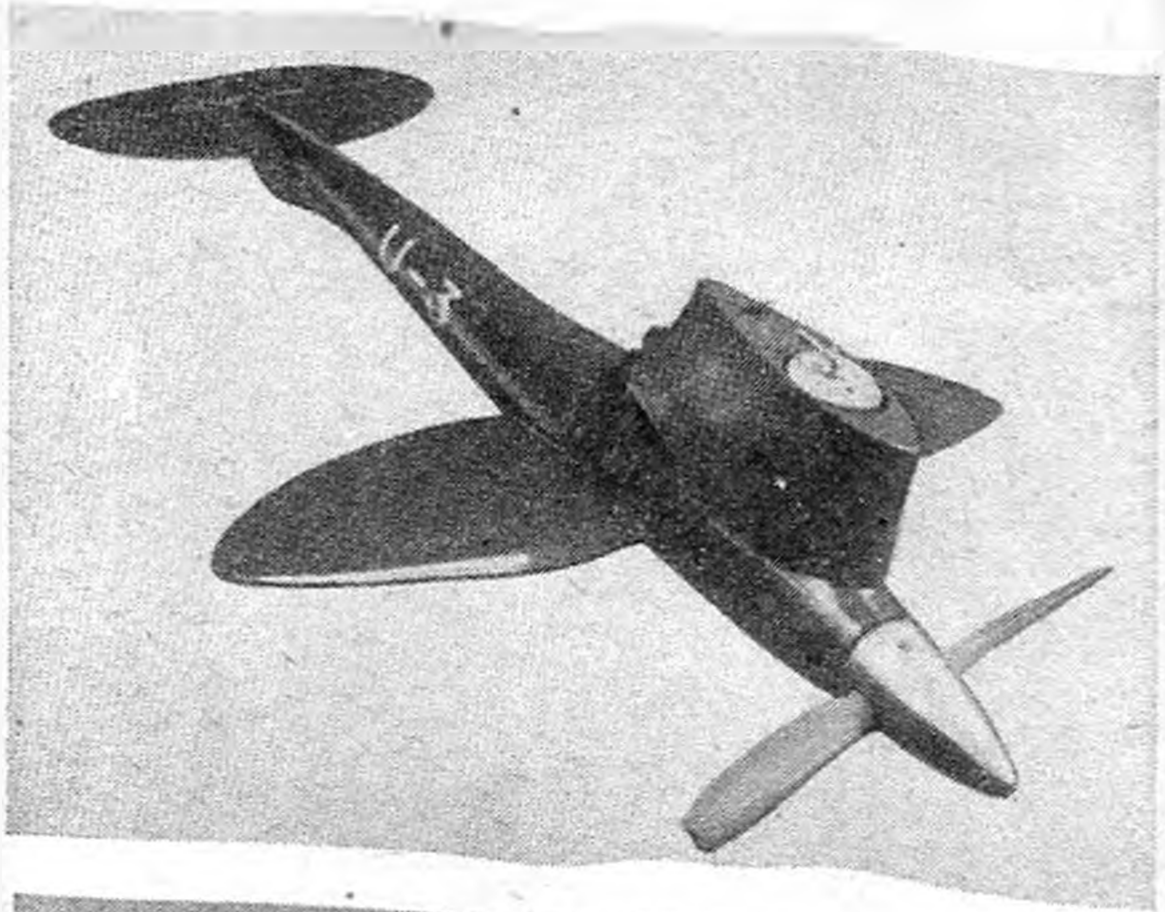
Control Line

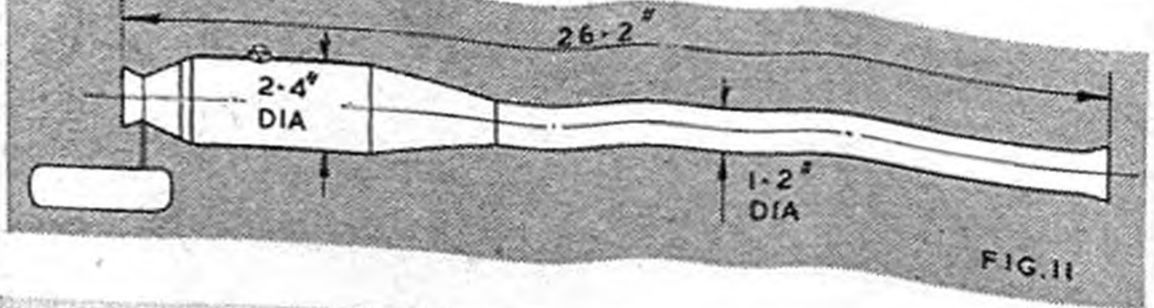
In this sphere most attention has been given to speed, a fact which has some bearing on Zdenek Husicka World Record of 65·7 m.p.h. His model, U.3. powered with a MD.2·5., 0·16 cu. ins. Letmo diesel, of which he is also the designer, is shewn (top left) and Fig. 12. Various modifications are evident by comparison with the earlier U-2, see centre photo.

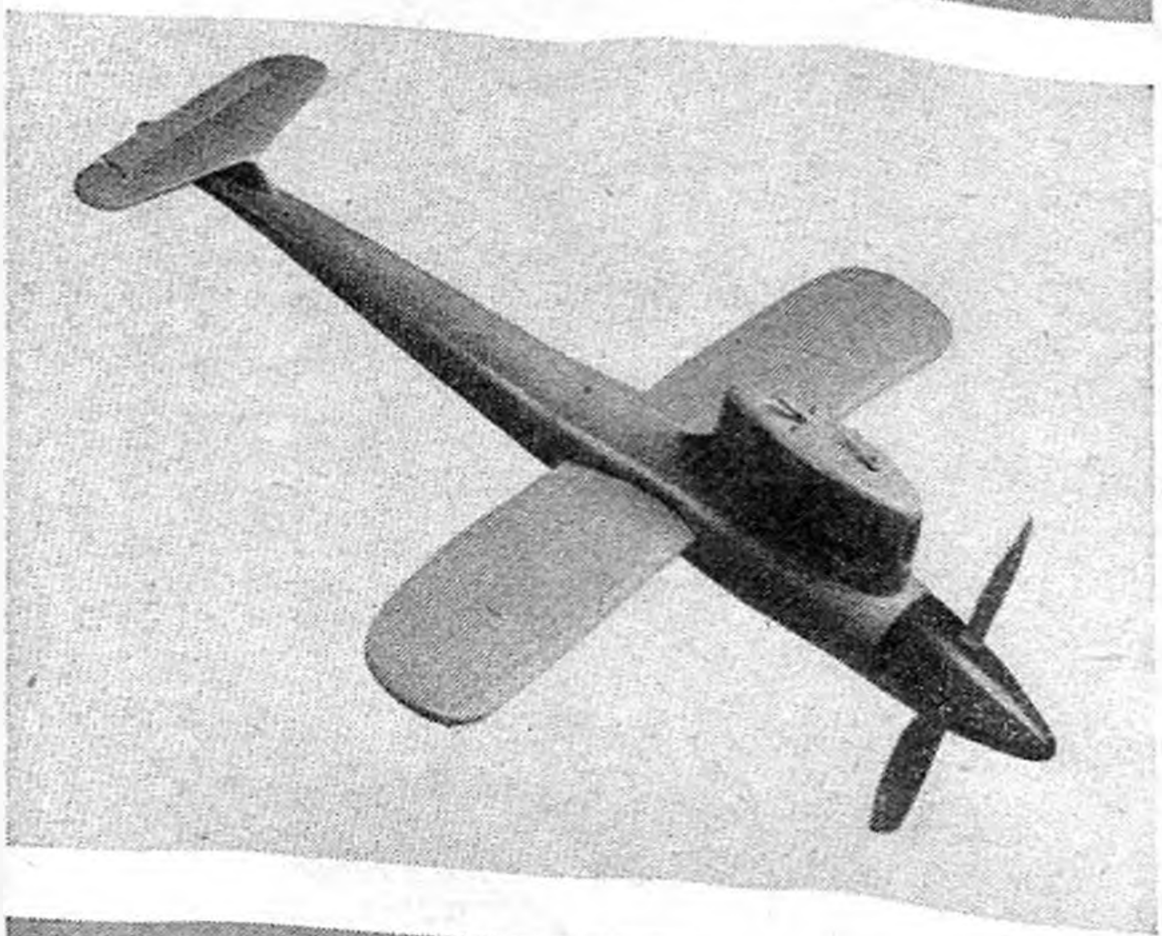
Finally, on the subject of motors, it is noteworthy that diesels are used, almost exclusively in Czechoslovakia, high revving glo-plug engines being quite rare. The original Czech diesel, the " Atom ", has been followed by the " Super Atom " (Fig. 9) of 0·11 cu. ins. capacity, developing 0·1 b.h.p. and weighing 3·45 ounces. In addition to the MD. 2·5. in the Letmo range, are the MD. ·6, of the 0·038 cu. ins., 0·05 b.h.p., weighing 1·4 ounces, and the MD. 3, 0·17 cu. ins., 0·18 b.h.p., 4·2 ounces.

Husicka is also the designer of the one jet available, which is an easy starter and reliable runner. A pulse jet with 53 ounces static thrust, it is limited to one series by the shortage of suitable heat-resisting materials.

The writer hopes to follow up this brief introduction to Czech aeromodelling with a fuller and more detailed report in a future issue of the " Aeromodeller ".







Top left, Husick's World Record Holder, U3, powered with an MD 2·5 Letmo Diesel. This model clocked 65·7 m.p.h. Fig. 11 shows the Husicka pulse jet which develops a static thrust of 53 pounds.

Husick's earlier speed job, U2, is pictured on the left. It was cleaned up considerably in the development of the Record Holder. Fig. 12 is a three-view of the aforesaid U3.

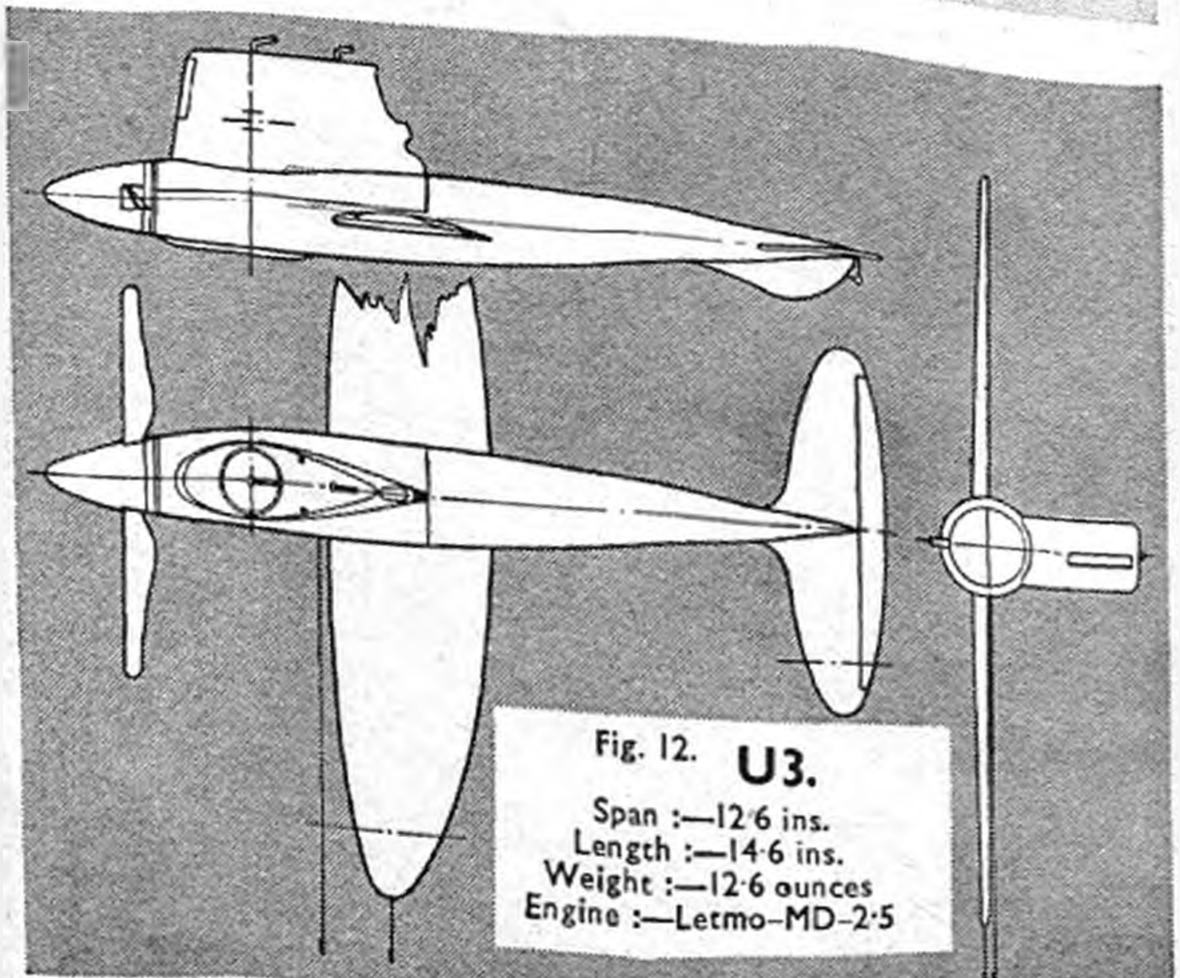


Fig. 12. **U3.**
Span :—12·6 ins.
Length :—14·6 ins.
Weight :—12·6 ounces
Engine :—Letmo-MD-2·5

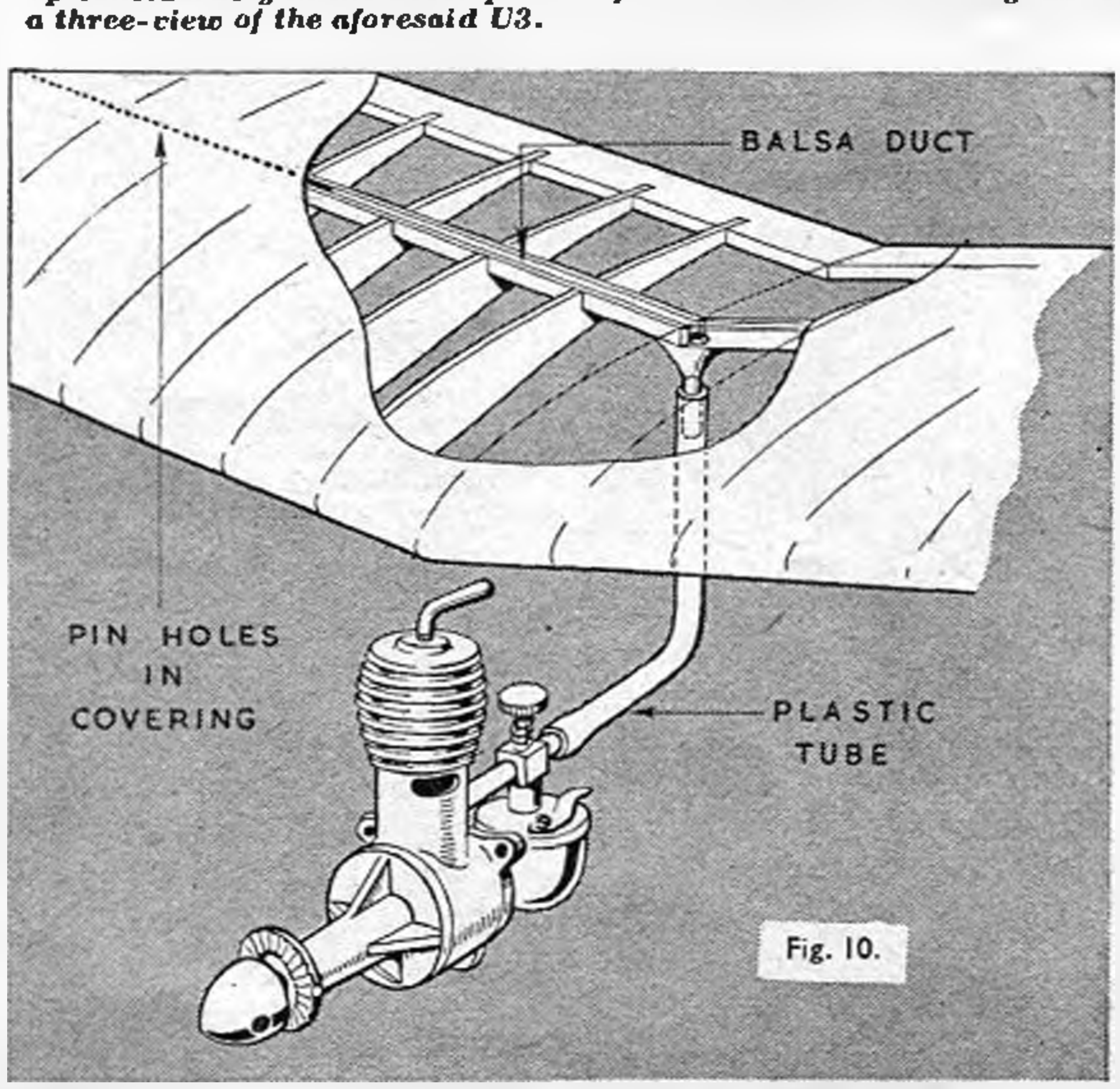


Fig. 10.

Weston & Halfax Trophies

AREA MEETINGS HELD 6th MAY, 1951

There is no doubt that the East Anglian Area is now a force to be reckoned with, although on this particular day they were lucky enough to be favoured by slightly better weather than the rest of the country.

"WESTON CUP"
(309 entries)

1. J. A. Gorham	Ipswich	13 : 43
2. R. Atkinson	Ipswich	12 : 11
3. R. H. Warring	Zombies	11 : 58
4. J. Tangney	Croydon	11 : 39
5. C. Mayes	West Essex	11 : 14
6. P. Vicary	Swansea	10 : 20
7. J. B. Knight	Kentish Nomads	9 : 59
8. R. Sallabank	Park M.A.L.	9 : 54
9. {R. Baldwin	Wigan	} 9 : 45
{H. W. Revell	Northampton	}
10. F. Holland	Swansea	9 : 31
11. R. Gamblin	Northern Heights	9 : 18

Best Junior :—
D. H. Rumley, Kentish Nomads 7 : 44

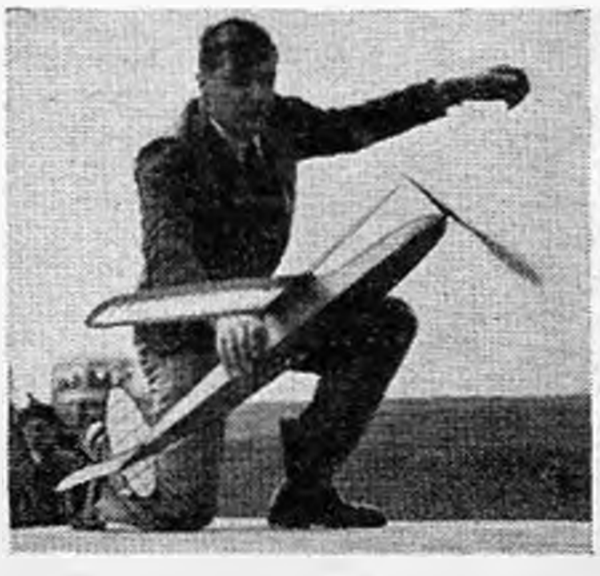
"HALFAX TROPHY"
(430 entries)

		Aggregate ratio
1. J. Chinn	Norwich	66·4
2. P. S. Jacobs	Ipswich	54·5
3. P. Wyatt	Ipswich	54·2
4. N. G. Marcus	Croydon	50·1
5. R. C. Monks	Birmingham	48·8
6. H. Warsnap	Odiham	47·4
7. N. Verney	Swansea	45·6
8. E. Bickerstaffe	Accrington	45·5
9. L. Noel	Wayfarers	43·9
10. J. A. Gorham	Ipswich	43·5
11. Cpl. Edwards	R.A.F., Binbrook	42·3
12. H. Rutter	Clacton	40·0

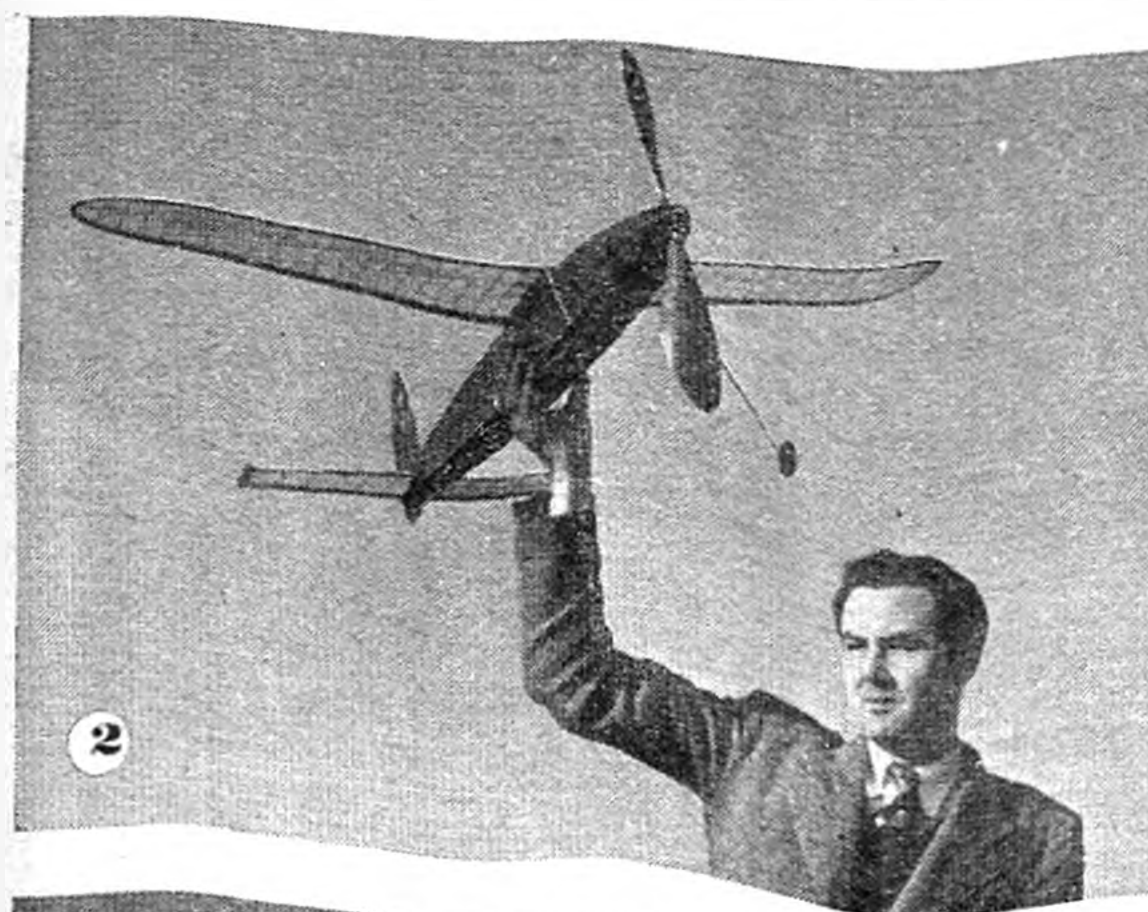
Best Junior :—
C. Marsh Ilford 38·5

From top to bottom :— P. Gilbert of Pharos with streamline Arden ·199 powered five footer. Bob Copland winds that familiar streamline design with which he won two national contests last season. Ronny Warring in characteristic pose, placed top in the London Area. Cyril Mayes assisted by L. Hanson uses twin fins and a new design folding prop. A. F. Moore of Blackheath launches his own version of a Jersey Javelin layout.

Top, Beeson of Reading uses a Korda style Wakefield. Centre, Norman of Chorleywood with his Minotaur. Bottom, E. Langley, Slough President, puts up his Mallard, and below, Eric Smith has difficulty in letting go !



MODEL NEWS
SELECTED ITEMS BY FLIAR PHIL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JUST to prove that those Bristolian bungee breakers, Messrs. Garnett and Woolls, have not completely eliminated the danger to life and limb when Wakefield winding, friend Phil discloses yet another masterpiece this month, with his mobile bod protector!

Fliar Phil had thought his other masterpiece, the Uniplane, was the last word in model aeronautics, but take a look, bods, at this month's "Model of the Month" (over at top left, next page) and its designer/builder, Arthur Marshall. Spanning 8 ft., this "Seabee" is powered by a 10 c.c. Super Cyclone which is fitted with a three-speed engine control. The ship takes off on full power, cruises on medium and comes in on low power. As a free flight proposition, that would appear to be enough; but this model is fitted with a Cossor radio receiver and has already been flown under perfect control at London's busy Fairlop. Congratulations to you, Mr. Marshall, that is a wonderful effort.

Many Fliar Phil followers will have heard and read about that expert model photographer, Ed. Stoffel. Ed. is also a keen Wakefield fan (remember his Aristocrat ?), and here (2) he displays his 1951 Wake., which has a 43 in. fuselage and neat end plates to its 55 sq. ins. tailplane. Ed. expects to be mighty busy during the coming contest season, clicking his camera, and does not anticipate being able to compete in contests.

From N. C. Wilson of Youlgrove, Derby, comes the photograph (3) of a steamlined slope-soaring sailplane. 400 sq. ins. wing area, with Gottingen 426 section and Gottingen 436 on the tail, make this a very handy size for transport to the soaring site at Gt. Hucklow. Originally started in 1946, the job has already collected one first prize in the Chesterfield Model Engineers Exhibition. Note the ingenious spoilers for dethermalising in this close-up of "Creus."

Yet another scale control liner from Italian Captain C. Milani of Kensington is (4), the Curtiss P.40 Warhawk, which he has powered with an inverted ignition Forster 29. Finished in desert colours and with sprung undercarriage, this model presents a most realistic appearance and has flown for many hours of enjoyable sports flying.

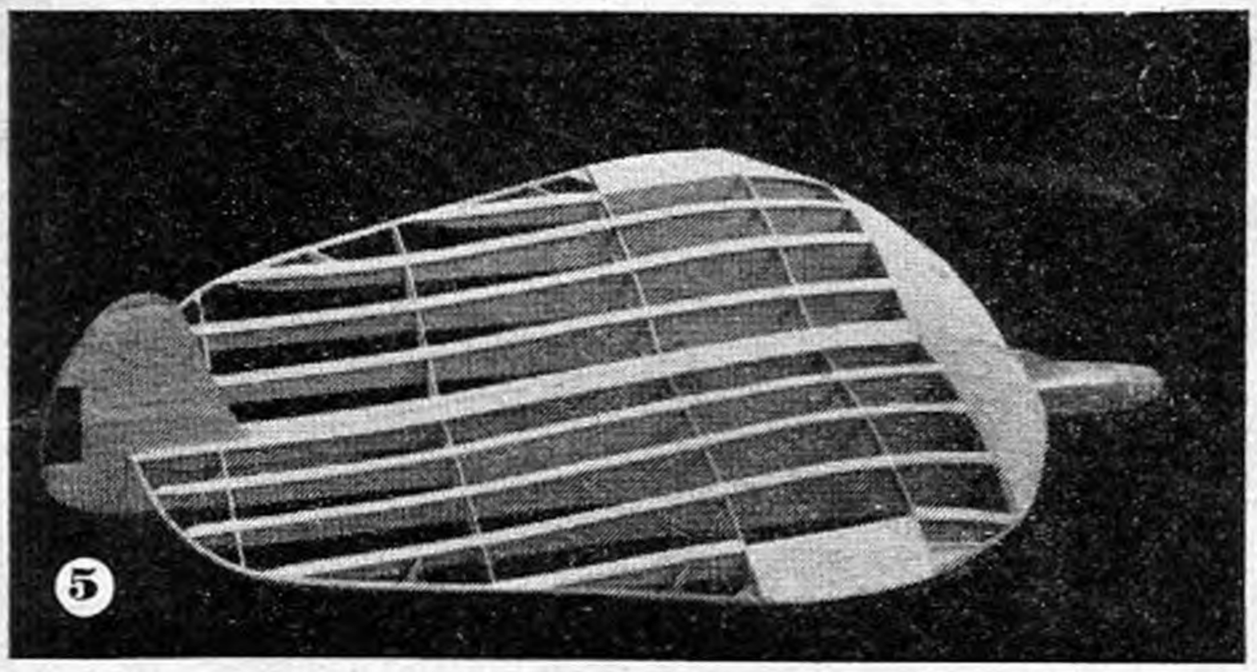
(5.) No, that's not a flying saucer; but just another A.P.S. Floating Kidney. Shown in the uncovered state to reveal its simple structure, this version is by R. Harvey of Ruislip. Note the clever use of a matt black background to emphasise the structure.

Sporting a nice line in sun-ray decorations is E. T. Rabbitt's Super-Cyke powered stunter (6) which he made last year. A member of the North Kent M.A.S., Mr. Rabbitt also made the tiniest stunter Phil has ever seen. You will find it nestling on Icarus Senior on page 210 of the April issue.

Jovial Ken Marsh of West Essex is seen admiring his Saint team racer (7), which used to lap regularly at Fairlop in the 85–90 m.p.h. speed range. Eta 29-powered, this model has been replaced by a later, more streamlined version, using the Dooling 29, and known as the Gay Deceiver.

Hoisting his 54 in. span Pterojet Mk. I is R. C. Poad of Darlington (8). Fitted with a low slung Jetex 350, this wing weighs 10½ ozs. and utilises the American N.A.C.A. 6.H15 wing section. Designer Poad reports that the glide is fast but flat. Tips are set at minus 6 degrees to the rest of the wing.

Back with more variety in news and views, next month—happy windings!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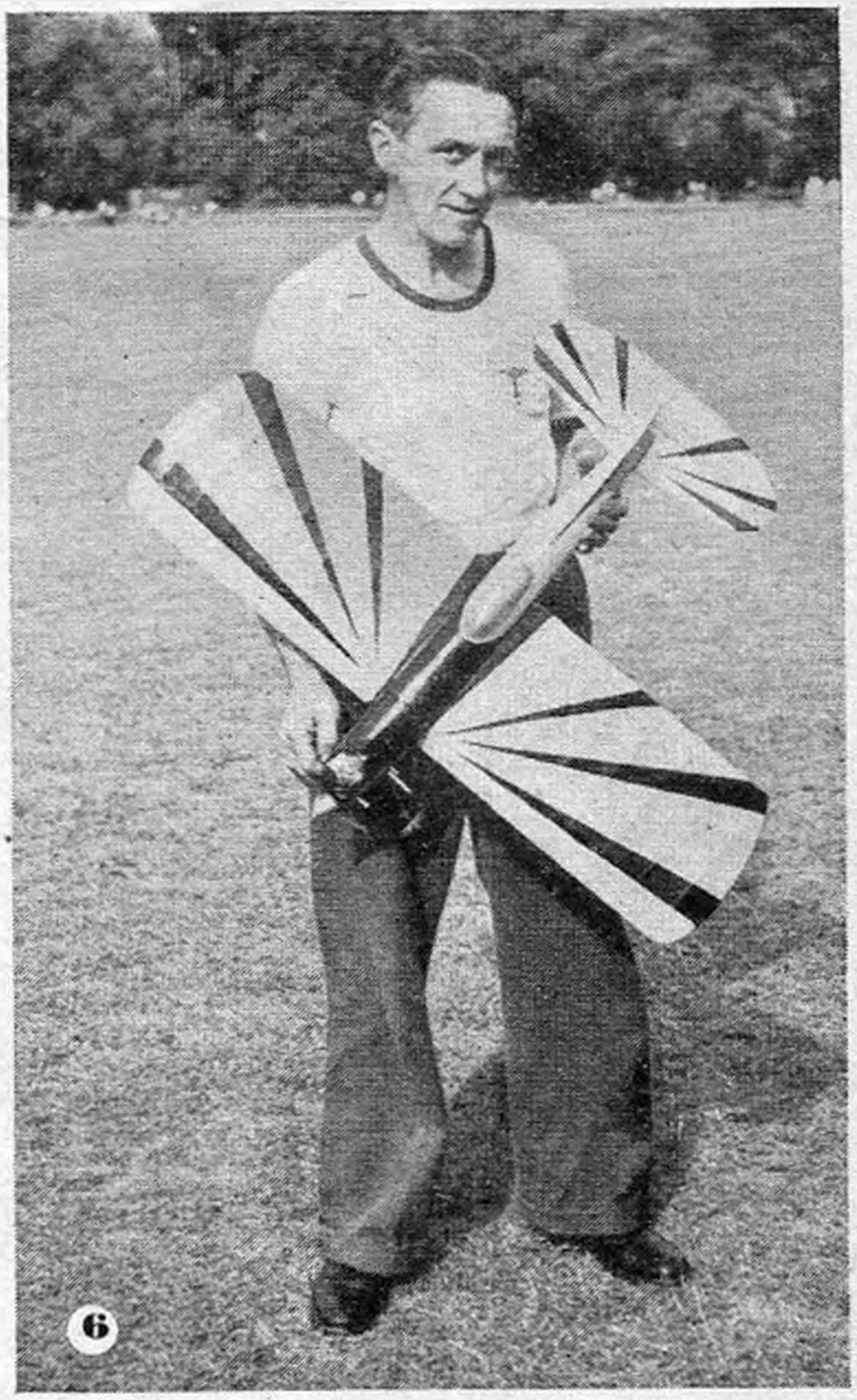
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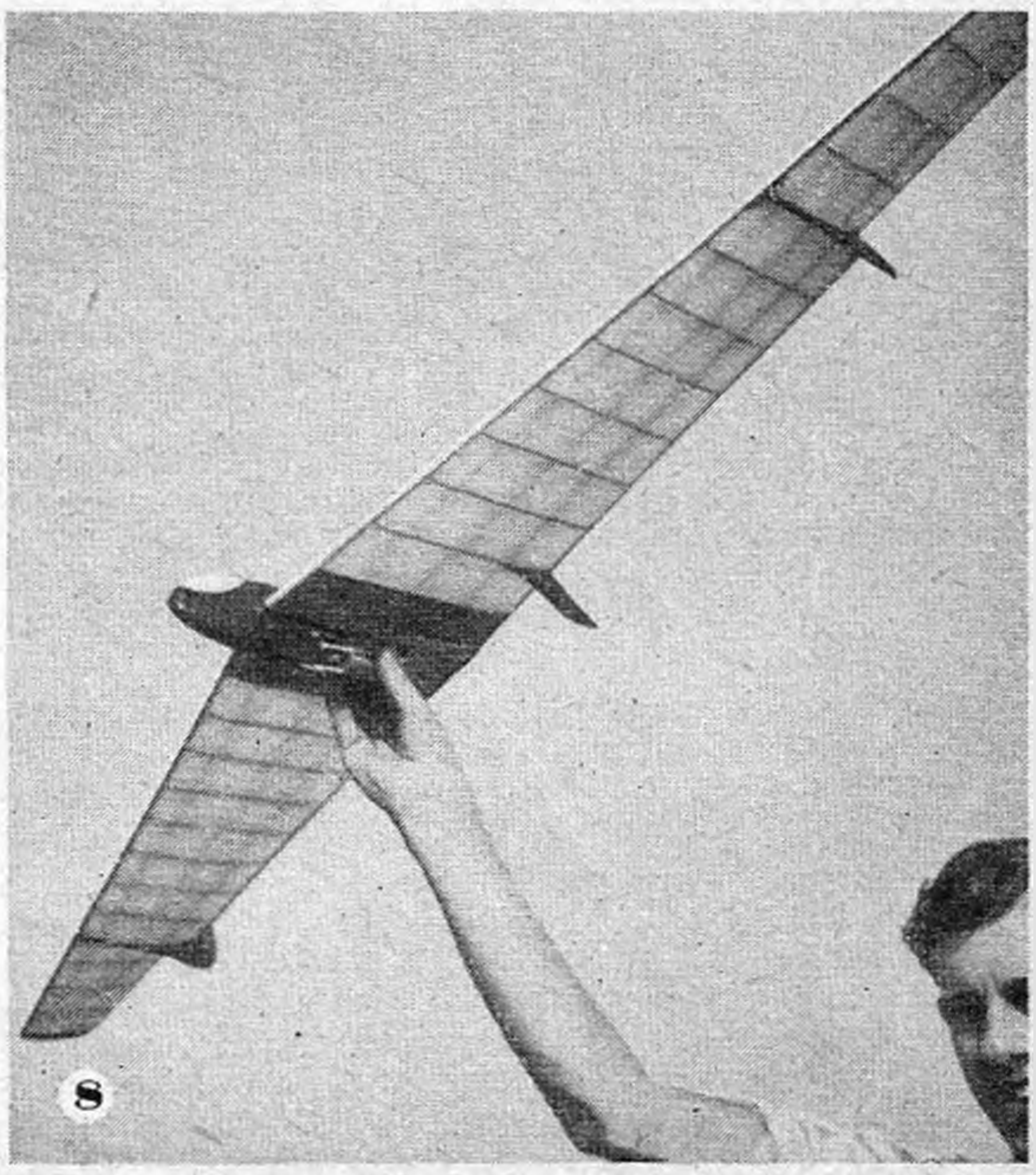
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SHALLUFA MODEL CLUB

ROYAL Air Force Station Shallufa, at the southernmost end of the Suez Canal, has long been the station to which bomber squadrons from the United Kingdom fly to carry out Bomber Command's monthly training exercise, " Sunray ".

It is a busy station and, for six days of the week, the skies over Shallufa are filled with Lincolns and Vampires from other Canal Zone stations, on various training operations.

On Sundays, however, the visiting bomber crews rest, and the roar of their four-engined aircraft is stilled. Not that all flying activity ceases at Shallufa; on the contrary, for it is on Sundays that the R.A.F. Model Flying Club comes into its own. Its members derive quite as much of a thrill from flying their models as do the bomber crews and Vampire pilots on weekdays.

Shallufa airfield, on Sunday mornings and on free afternoons is, indeed, the mecca of the thirty members of this very active club. Formed in August 1948, it has been growing and progressing steadily since then, thanks largely to the keen interest of the station commander, Group Capt. P. F. Canning, and the energy of its founder, Sergeant Benton.

Sergeant Benton, who lately returned to Britain, gave the whole of his spare time to furthering the Club's interests and to building and flying his own models. He is considered to be something of an encyclopædia on model aeronautics, having made an intense study of all types of model and of their construction and performance.

The Club has excellent premises and its equipment includes a lathe, buzz-saw and sanding machine, 16 work benches and many of the other bits and pieces so necessary to the aeromodeller. Some Club members extend their activities to full-size boat building!

When first formed, the Club's main activities were in the rubber-powered sphere, but the adverse effect of the Canal Zone climate on their motive power caused a conversion to diesels. Both Free Flight and Control Line have their supporters, the latter being favoured because of many fly-aways. Thanks to the terrific thermals over the desert, F/F models are soon away over the City of Suez or into the Ataqa mountains, which lie behin[d] Shallufa, or across the Canal, to disappear in the waste[s] of the Sinai Desert.

Only a short time before Sergeant Benton returne[d] home, his " Rebel " disappeared in the latter directio[n] and he was waving " goodbye " to a perfectly goo[d] diesel.

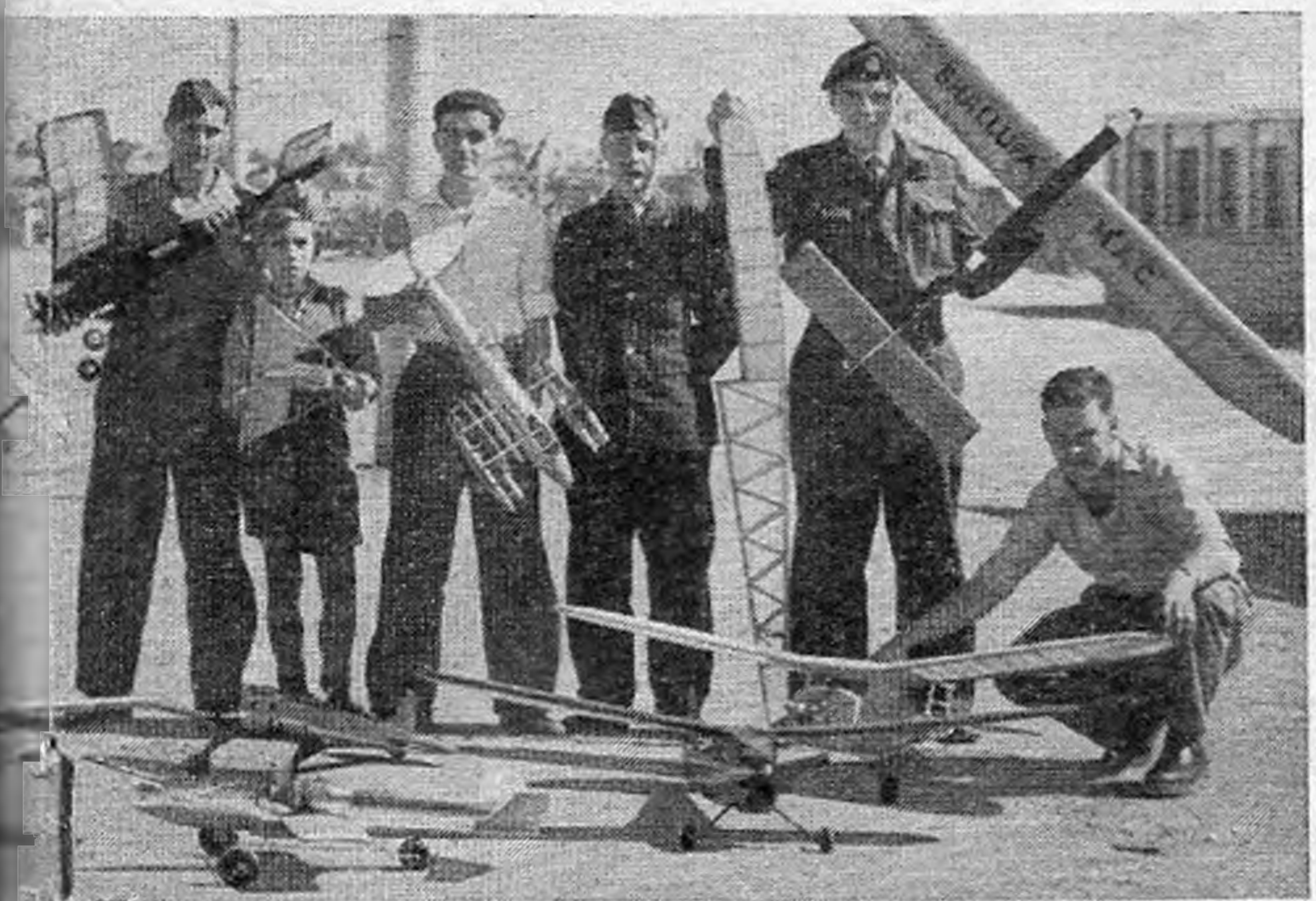
At first glance, Shallufa flying field would appear to b[e] perfect for model flying, surrounded as it is by vas[t] expanses of uninterrupted desert. It has, however various drawbacks, in addition to the mighty thermal[s] already mentioned. The sand, for example is of a hardness and has an abrasive quality which have a most damaging effect on models.

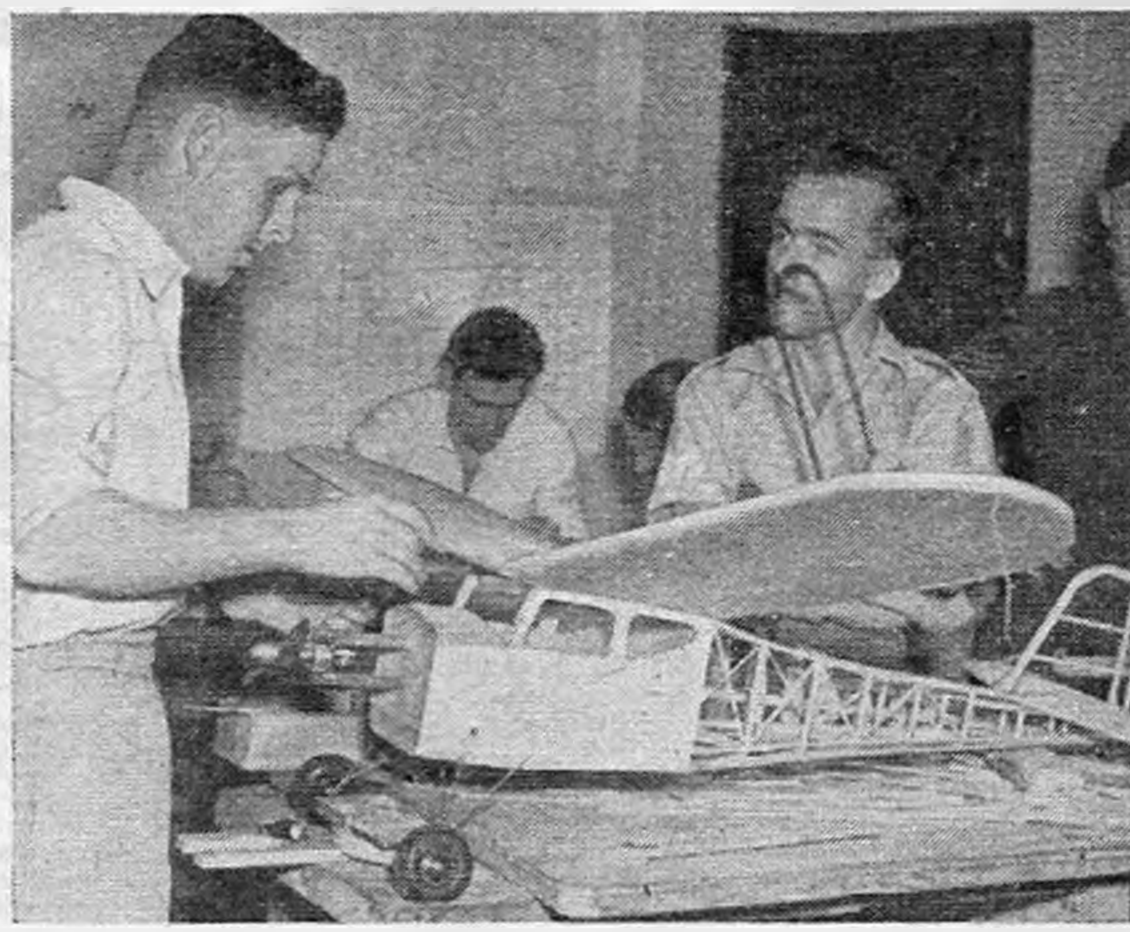
At the time of reporting, the highlight of the Club's building activities was a F/F one sixth scale De Havilland 9–A, under construction by Sergeant S. Thorpe of Northumberland. When finished, it will be complete in every detail down to signal pistols and cartridges and two colt revolvers for " pilot " and " observer ". Fully detailed Vickers and Lewis machine guns, the latter being mounted on a rotating scarffe ring, and an Aldis sight with lens and cross hairs will also add to the realism. The power is an Ohlsson 60 turning a 19 in. diameter prop.

Other scale models now building include a F/F Tiger Moth by L.A.C. Noblett, a C/L Mosquito by S.A.C.'s Joss, of Northamptonshire, and Middleton, of Leicester, a F/F Monocoupe by S.A.C. Broadhurst, of Portsmouth and a Miles M.20 by Sergeant Ross, of the Isle of Man.

Mrs. Canning, wife of the station commander, has presented the Club with a " Redhead Juggernaut ", which was originally installed in a model resembling the " Buzz-bomb ". This was destroyed by a backfire and the second jet model, also of V–1 type, constructed by Corporal Newton, of Chingford, awaits test flights. In February, a model meeting was held at Shallufa with two guest clubs, those of the Kasfareet and Abyad R.A.F. stations, with an eye to possible contests and regular meets in the future.

The prospects were good, as some 60 models were

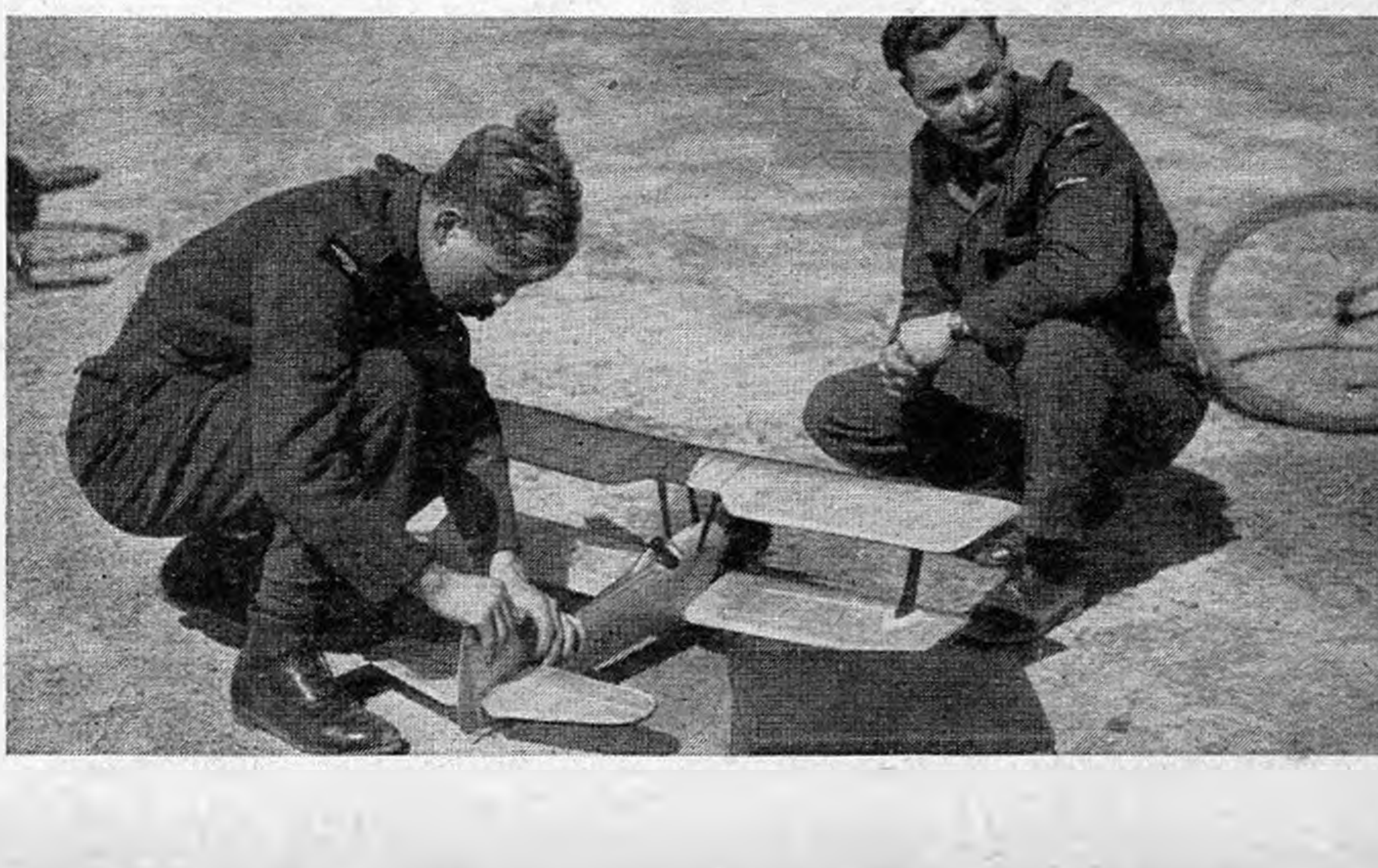




R.A.F. Canal Zone, Egypt

mustered and the visiting clubs are expanding; yet another club is being formed, at the Ismailia station.

As the flying weather improves and summertime working hours give the aeromodellers more spare time, an All Middle East R.A.F. Meeting is planned at Shallufa; another event in the history of the hobby and particularly in that of the growing support given to it by the Royal Air Force in all parts of the world.

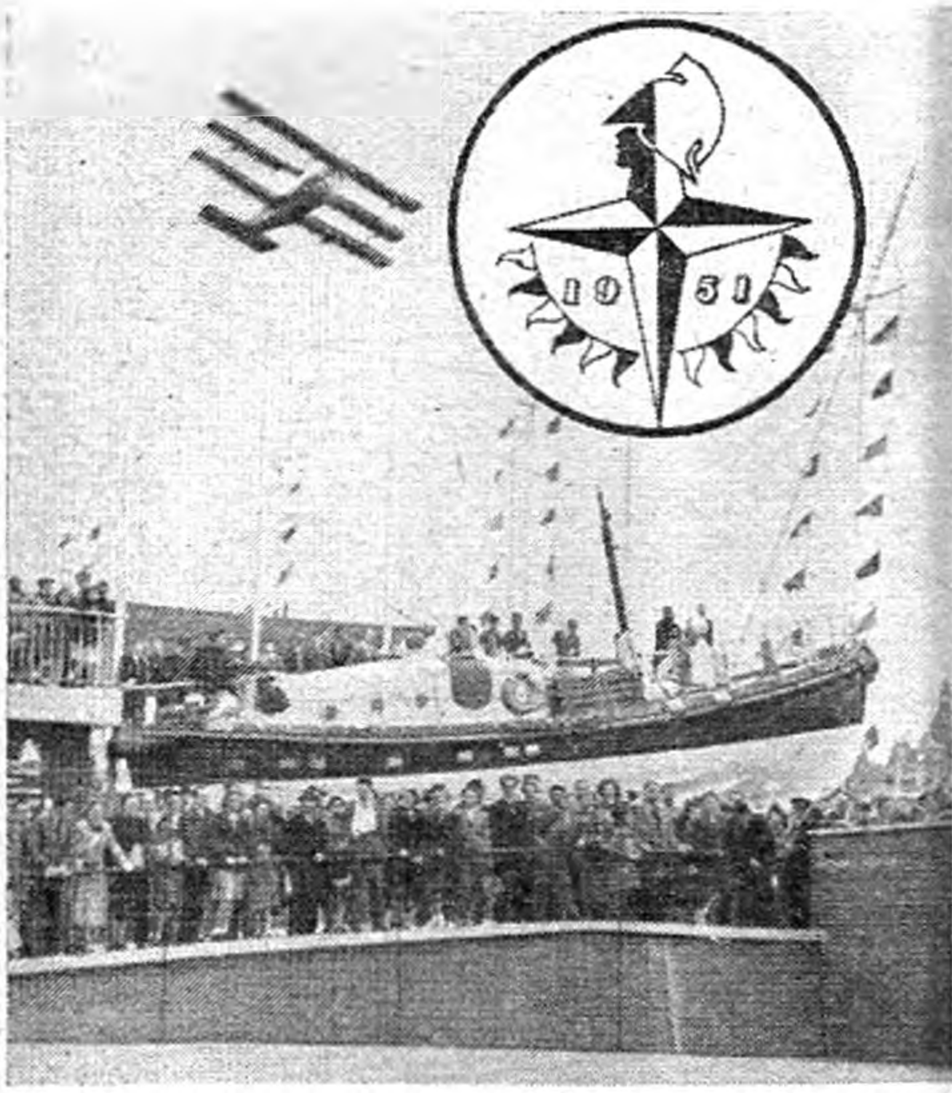


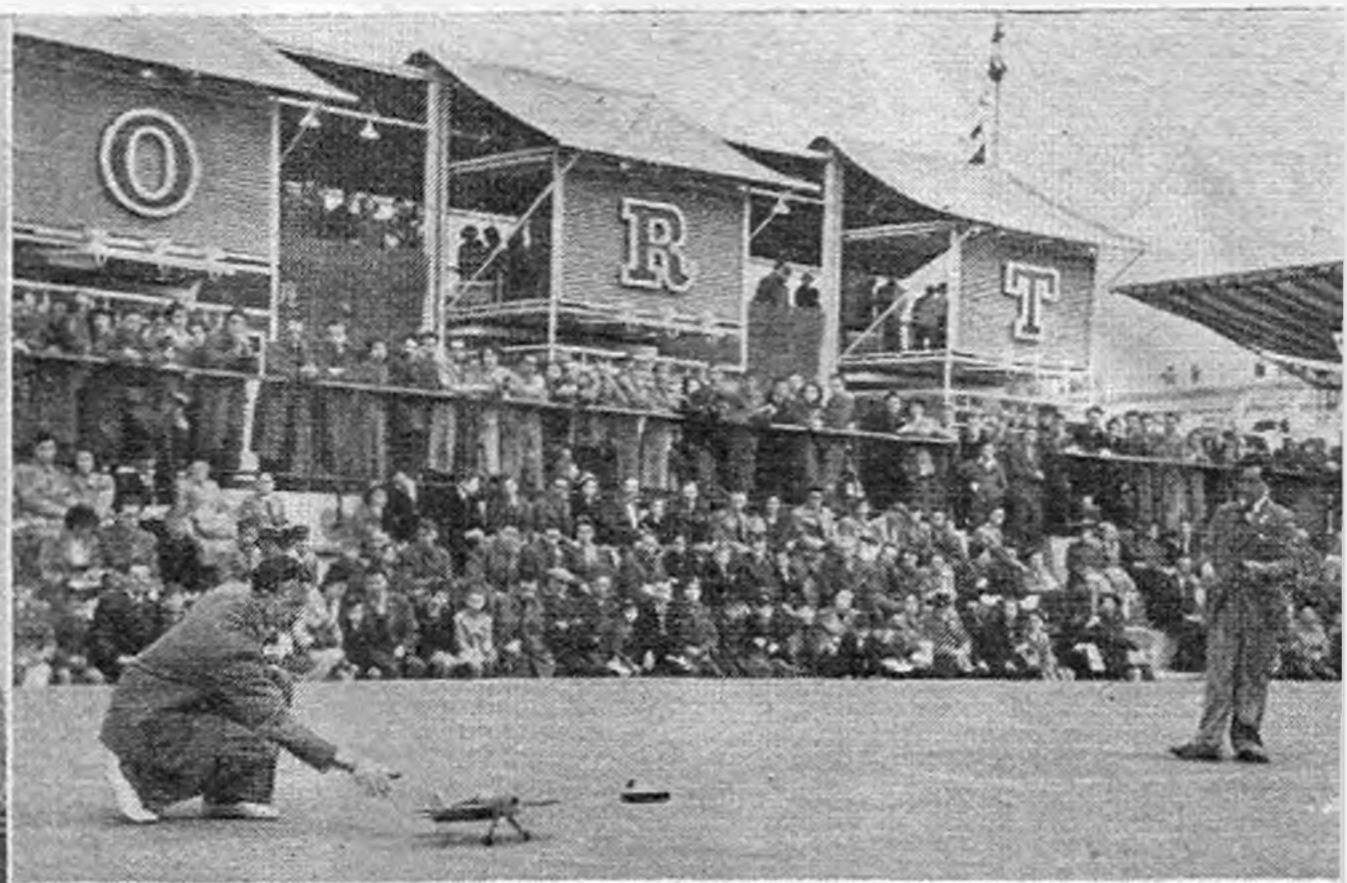
Photos from left to right. (1.) Sgt. S. Thorpe of Stockfield-on-Tyne, Northumberland together with Sgt. Denson on the right prepare "Skiook" for what proved to be her last flight. Caught in a Suez special thermal she was last seen some five miles away and probably crashed in the Gulf of Suez.

(2.) General panorama of Shallufa Modellers together with an interesting selection of their models.

(3 & 4.) Candid shots in the Shallufa workshop which is certainly very well fitted out and a credit to the organisers.

(5.) A/C Edwards of Windsor and A/C Noblett prepare their "Venture" bi-plane for a flight over the desert. Note the bicycle in the background all set for retrieving purposes.

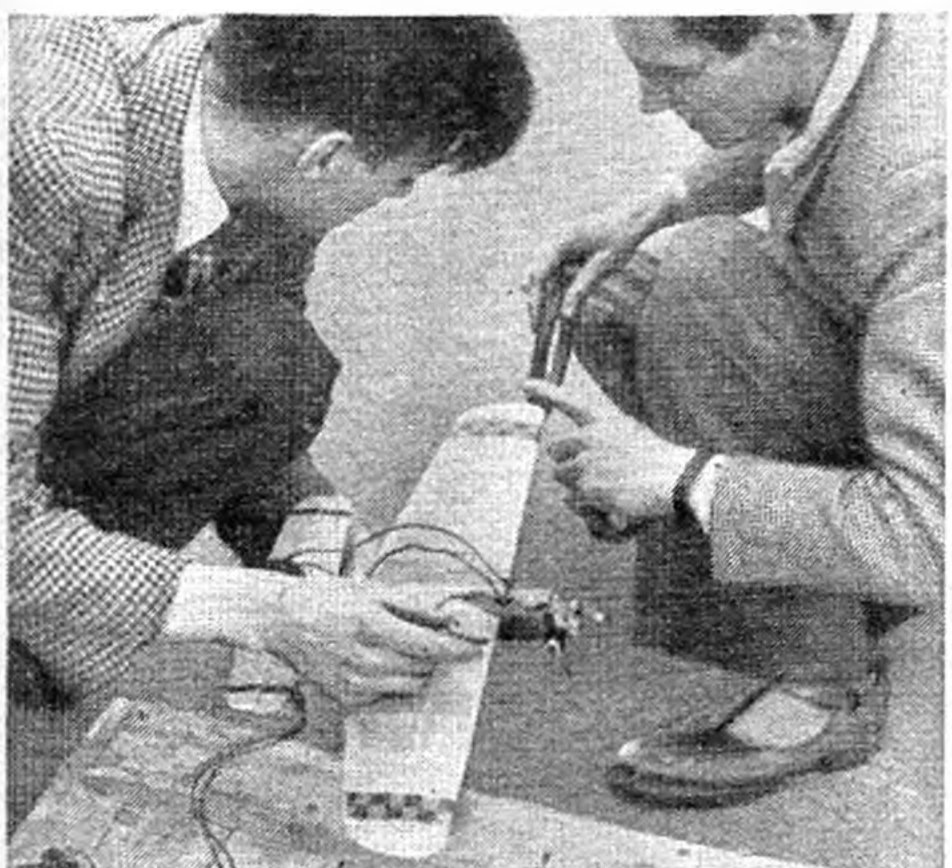




FESTIVAL DEMONSTRATIONS

Ed Stoffel visits the South Bank Site on Sunday, 13th May

Top left: S. C. Draper's Sopwith Tripe thrills the holiday crowd. Top right: P. Donavour-Hickie takes off for a solo exhibition. Below: Brian Hewitt makes final adjustments to his 15" span "Baby."



THE first of a series of control line demonstrations to be he at the Festival of Britain South Bank Sports Arena was r off on Whit Sunday, the 13th May.

The brilliant sunshine of the morning changed to overcast d grey skies by the time the exhibition commenced at 2.30 p.r but this proved no deterrent to the crowd, some 500 strong.

Ken Brookes, S.M.A.E. Public Relations Officer was in char of the organisation, with six modellers, Brian Hewitt, P. Landra J. Moore, S. Draper, J. Oliver and P. Donavour-Hickie.

First modeller into the arena was S. C. Draper of Brentford a Chiswick M.A.C. with his Kestrel 1·9 c.c. powered Sopwith Tripla who gave a good trouble-free display of scale control line flyi and set the whole show off on the right foot.

P. Donavour-Hickie and P. Landray followed, two in the circ with a team racing demonstration. Hickie's model proved mu the faster of the two and caused both models to crash land in t first circuit owing to crossed wires.

However, no damage was done and both models were back the air within three minutes.

Third entrant into the arena was J. Moore with his 1·49 El powered Ranger which had only been completed at elev o'clock Sunday morning, and the exhibition flight was its first.

At a quarter to four, Brian Hewitt arrived (rather breathless after a dash from Radlett. He brought with him a diminuti model of 15-inch span, powered by an Anderson Baby Spitfire.

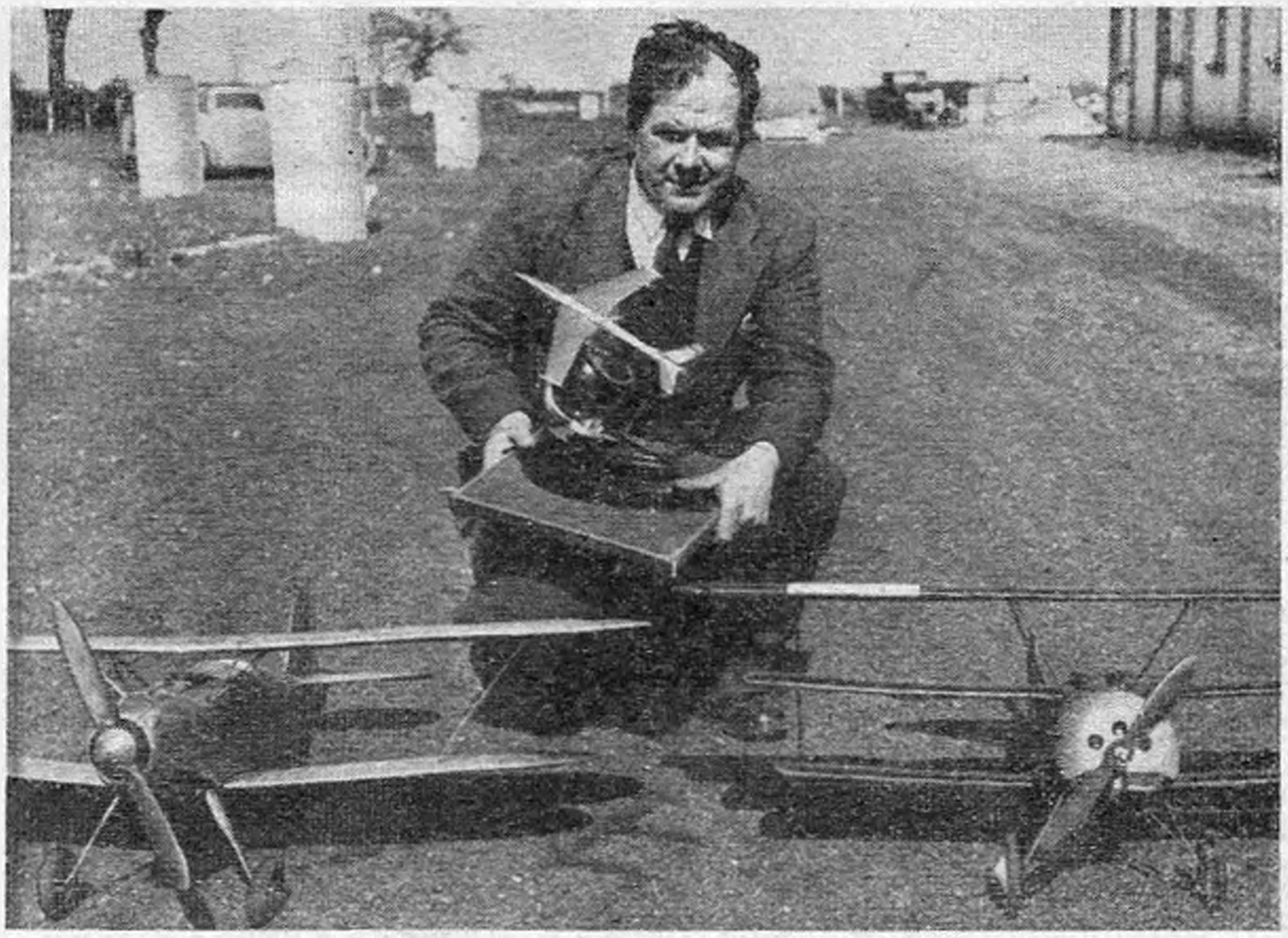
Within a quarter of an hour of arriving, he had the mo airborne and the crowd sitting up and gasping. This was th first taste of a stunt model and added to the exceptional speed certainly made an entertaining exhibition compatible with Bria established skill with this type of model.

The modellers were greatly limited by the size of the are and were all flying on twenty foot lines, but despite this and t fact that some must have felt very nervous in front of t spectators, there were far fewer crack ups than might be expect

This first demonstration being in the nature of an experime to try out line lengths, commentary, etc., gives us reason to lo forward to the future exhibitions with every confidence.

Ken Brookes on the right "gens up" for his commentary.

EATON BRAY NEWS



Well-known scale modeller P. E. Norman, paid a recent visit to Eaton Bray to deliver the AEROMODELLER Radio Control Trophy which he is seen holding here. In the foreground are two of his latest scale free-flight aerobatic models, the Hawker Fury II and Fokker Triplane. Plans for the Fokker (Elfin 2·49 power) will appear in a future issue.

WE were mighty pleased to welcome that most active exponent of free-flight scale aerobatic models, P. E. Norman, when he visited the 'Bray to deliver the superb AEROMODELLER Radio Control Trophy. An artist, and a sculptor, P. E. Norman was especially commissioned by the AEROMODELLER to design and construct a trophy that would appeal to modellers, symbolise the radio-control contest for which it is given, and be made of nothing but the very best of materials.

Those who have been lucky enough to get a preview already agree that P. E. has done a magnificent job. See page 407 for a close-up; that " solid " futuristic rocket plane is hollow, made of shim brass, silver plated then rhodium plated to prevent tarnish, and completely dismantles should that ever be necessary. Mounted atop of a lignum-vitae globe, and connected by radio mast and " wave-band " symbol to the ebony base, this model would put many a professional solid modeller to shame. P. E. tells us that the ebony used for the base must be the last piece available in this country—so much trouble did he have in getting a piece of sufficient quality and size.

After passing the goods over, P. E. then enjoyed a spot of flying with his remarkable Fokker Triplane (Elfin 2·49). The realistic flight of this crimson old-timer over the Sportsdrome soon had the scale enthusiasts on their toes, and arrangements were made to present this very attractive model in a future issue.

Free Parking for All

Big news for Eaton Bray visitors is the recent decision by the management to waive all parking fees for all types of vehicle, including bicycles. This undoubtedly popular move is but one more gesture of goodwill from the Sportsdrome owners, who are anxious to see that *everything* is done to make the 'Bray Britain's perfect aeromodelling 'drome. This despite the rise in maintenance costs and the huge outlay of thousands of pounds already spent in developing the 75-acre field and buildings.

Two Ancient Warriors

Among those who have already enjoyed flying with freedom from public interference at Eaton Bray this season we have noticed a couple of models of considerable historic interest. The grand old prototype of the well known Eros, thousands of which have been built since its first publication four years ago, was revived for a brief but glorious spell of radio control.

The fuselage, which had been resting in peace beneath a caravan, was literally de-loused and re-proofed after its exposure to every kind of weather possible. Wings were patched, an Italian Super Tigre 5 c.c. diesel installed, and an E.D. Mk. III receiver fitted in the cabin. Despite extra wing bracing, however, Eros put up an alarming display of flapping-wing flight during the first tests. Its rebirth was clipped short with a heavy stalled landing which proved too much for the aged structure . . . a true case of termites eating through the longerons!

The other model with a long background was Sid Miller's (Luton) famous Bowden Contest. In its time, this model has won no less than seven coveted Concours d'Elegance with its magnificent blue and white finish. In fact it became a regular exhibit at the Northern Heights gala concours and the Model Engineer Exhibition. Now equipped with E.D. Mk. I radio, Sid has redecorated the Bowden Contest in orange and managed some very neat flying over the Sportsdrome. The super finish is certainly no handicap to this job's flying ability.

Fly for Fun Days

Don't forget those dates for special flying, if you want to find out what your neighbour's up to in your particular branch of the hobby. Our next date is **July 8th** and that day is scheduled as a special get-together for radio-control enthusiasts. If you want a good day's flying with bags of co-operation from a staffed 'drome, bring your R/C job along and have fun.

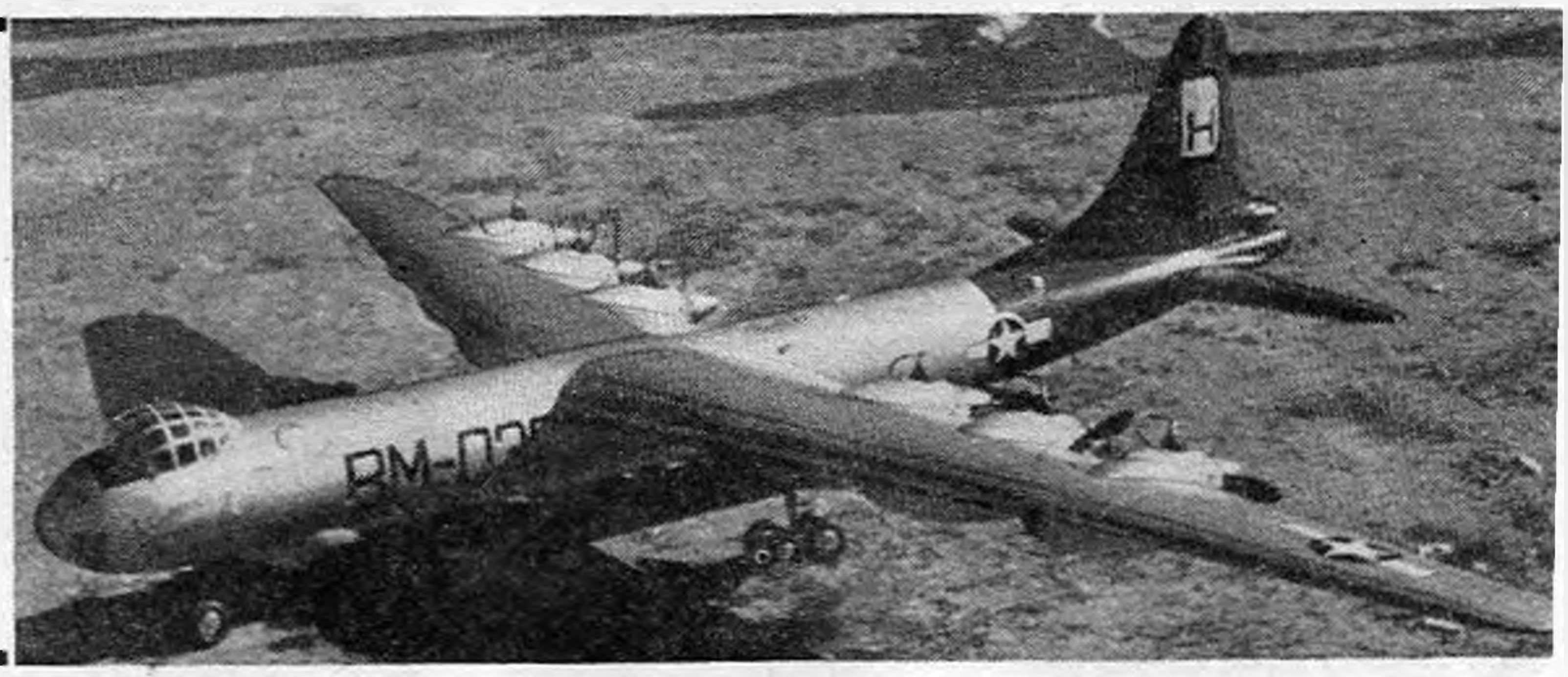
Other dates are :—

July 22nd	**Precision and Duration Power**
August 26th	**Experimental types**

WORLD NEWS

by

ARIEL



Belgium. The Third European Control Line Championships taking place once more at Knokke-sur-mer from 28th–30th July, bid well to eclipse even the success of their previous meetings, for this year the speed section ranks as the First World Speed Championship. Already entries have been received from the leading European countries, whilst first of all demands for entry forms came from Russ Nichols, executive of the American Academy of Model Aeronautics. It seems that a U.S. team may well be entered to fly by proxy, as the rules permit—though with so many American model flyers now in this country and serving with Occupation Forces in Germany, they should be able to field quite a crack team in the flesh without any necessity to make the expensive Atlantic crossing.

For the benefit of would-be supporters going over to encourage our own team, accommodation and meals from 3.0 p.m. on Saturday, 28th July, until 11 a.m. on Tuesday, July 31st, will cost 400 Francs—or just under £3, while fares from London, second class, with first class on the boat, amount to £7. 7s. 6d., including reservation of seat. There are two trains daily from Victoria: the 10.0 a.m. train connects with a boat docking at Ostend at 3.50 p.m., whence there is about an hour's tram ride to Knokke; or the afternoon train leaving at 2.30 p.m. gets them to Ostend about 8.20 p.m. The organisers can also arrange special holiday rates for those going over sooner, or staying on—so long as there is room at the hotels. We shall be happy to furnish details to anyone interested, who must then make formal bookings on the appropriate form, via the S.M.A.E.

Denmark. The 1951 National Championship Contest for A/2 gliders took place at Odense on May 3r the event also serving as a selection contest for th Danish team to go to Yugoslavia in August. Actual the three top men in the full test were not eligible f the international event, but the following three membe will represent Denmark in Yugoslavia.

Arne Hansen Borge Hansen Kai Hansen

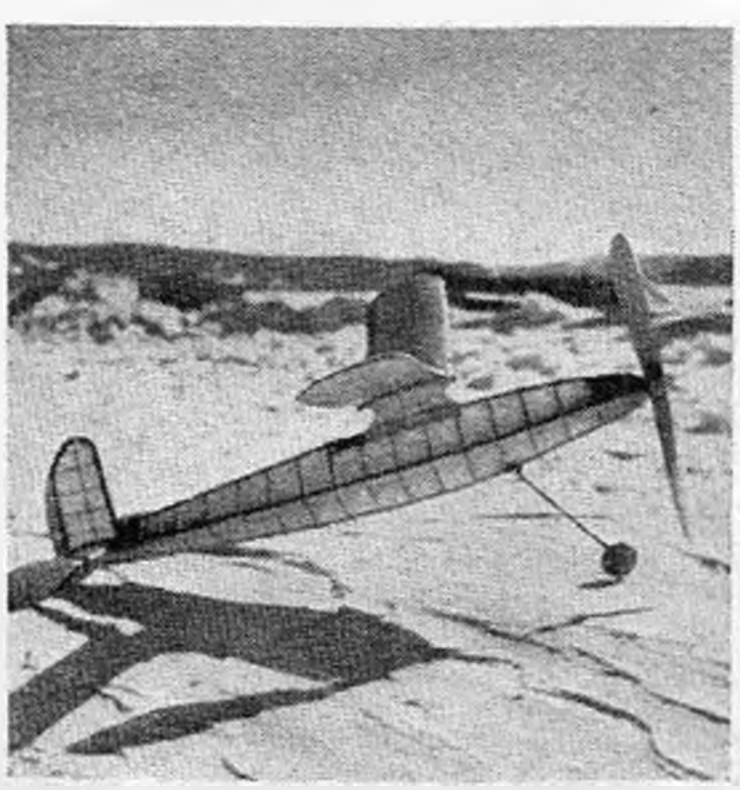
(This Hansen family is not in any way related.)

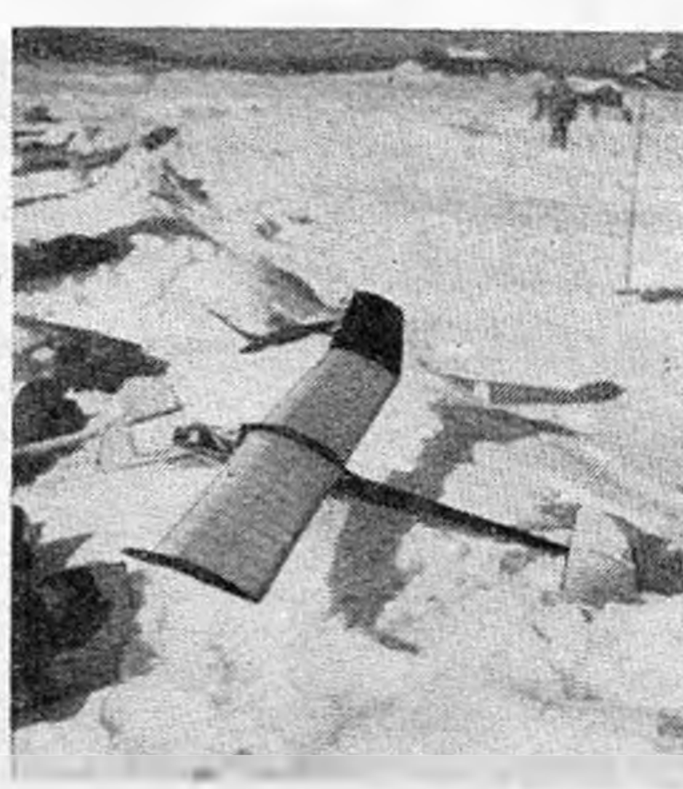
The National Champion this year was 17 year o Torben Ostervig from Odense. Well-known Host-Ar who has been in the Danish team for internatior contests for the last five years, was a competitor May 3rd, which day incidentally was his 60th birthda

One passage in our correspondent's letter causes regret for he states that Denmark will not participate the Wakefield Contest as planned " as no qualified ae modellers wanted to go ".

Sweden. Readers can now cool off with a report a winter contest held on a frozen lake, the Skrangsta-sj near Sundsvall, in March. Results and photos were se in by Sven Eriksson, an engineer, of Sundsvall.

An annual event and almost a " Nationals ", compotition was arranged by the Sundsvalls Flygsallsk Club and one of its neighbours and there were entrants, in four classes. These were G–int (Wakefiel S-int (Nordic Glider), F (Free Flight Power) and a fly wing class for fliers without certificates. These cert cates have been introduced to readers on a previ occasion; they are valid for a year, apply to one cl only and are essential for entry into official conte Their effect is to limit the number contestants to the really keen moc lers. However, this contest being h so far north, away from the m modelling centres, the certificate limited the entry rather more than





Heading photo, contributed by Hideya Ando, of Japan, shows an 8 ft. span B-36, built and flown by a well-known Japanese modeller. The model is 6 ft. 8 ins. long, weighs 24½ lbs. and is powered with six Hope B ignition motors of 4·5 c.c. (0·280 cu. ins.) each. Building cost was almost £50. The name of the constructor of this amazing model was not supplied. Extreme left is pictured the model which was flown into winning place in the Wakefield Class at the Swedish Contest near Sundsvall. The successful competitor was S. Sandberg. The sailplane on the snow won the Nordic A2 Class for L. Johansson of Borlange.

Roux van der Merwe, of Grahamstown, South Africa, is shown top right, with his Super Sunduster, powered in turn with a McCoy 49, an Ohlsson 60 and now, two twin Mills 1·3. The model is covered with maroon Jap silk and sports yellow trimming.
Canadian photo, lower right, shows Mr. A. Pow, First National Soaring Champion, full-scale, holding Bruce Lester's glider. This has proved so successful, that it is now power-assisted (Arden ·099) with Radio Control intentions for the near future.

expected. Flying conditions at 8 a.m., and throughout the contests were near perfect ; fine, with very little wind and no thermals. Best times were as follows :—G-int. class, S. Sandberg of Umea, 407 secs. ; F. class, B. Johansson, Karlstad, 348 secs. ; S-int class, L. Johansson, Borlange, 695 secs. The best flying wing performance was that of Heinz Salomon of Sundsvall, time 159 secs.

South Africa. Latest news from the Union has come in from Roux van der Merwe, well-known Grahamstown modeller, writing from Rhodes University.

He gives us a general picture of the hobby in the East London, Capetown and Port Elizabeth coastal areas, resulting from almost two thousand miles of travel during the past two months. We quote : " On the whole there have been no radical changes in the last year . . . that is, no changes which are not also taking place elsewhere. Team racing has made a big impression, and is rapidly gaining ground in popularity. Two and three in a circle is a rare sight . . . only in East London did I see a really confident display by Messrs. Els, Roberts and Kayton. Cliff Roberts, incidentally, flies a beautiful King's Cup D. H. Comet powered by two McCoy 19's. This model really glows around, even on one engine.

Speed is static, left to a few experts who every now and again knock a few more m.p.h. onto the records and then disappear into their workshops for long periods. Stunt is more popular with quite a few capable of the rather well-worn " book ". Radio control has a small, select following who, with a great show of resonant circuits, proportional control and other catch phrases succeed in impressing everyone but never get into the air. Chips Wannenburg of Cape Town is an exception, and obtains good flights with misleading ease from his Rudderbug fitted with Good Brothers control. Free flight is unchanged, the anti-pylon boys going to incredible pains with a multitude of gadgetry to achieve the same performance obtained by simply sticking the wing on a platform.

Here in Grahamstown we have just run our annual meet in conditions that would have seemed like home to any English modeller . . . high wind and driving rain ! The flying was good, but fatalities high ".

Accompanying this letter was a duplicated booklet/programme produced for the Grahamstown Model Aero Club Annual Rally, held in March. This is well thought out and gives an explanation of each type of event for the benefit of the non-modelling spectator. As the Foreword has it . . . " This little leaflet has been prepared especially to give the spectators some idea of the object of the seeming confusion confronting them, and to satisfy the curious with some details of the models competing ".

Malta. Our friends from the G. C. island can be classed as leading correspondents to " World News ", and yet another aeromodeller adds his name to the list. Member of the Lascari Air Scouts, J. Gerada of Sliema, tells us that there his Air Scout Section increases its numbers steadily. A squadron of Tomboys is under construction, the first two built having proved such excellent performers, and all of them will be coloured exactly as per the AEROMODELLER cover painting, for uniformity.

The Rover Leader, Mr. G. H. Ferro, has carried out successful tests with his R.C. " Buccaneer ", E.T.A. powered. The model, of pre-war construction has a proven free flight performance, and is of five foot span. We shall be glad to have further news of Mr. Ferro's group and of others.

New Zealand. Just in from Frank Bethwaite is the news that there will be no New Zealand entry in the Wakefield this year. He has been unable to discover any valid reason for this ; transport is certainly not the difficulty, as this has always been donated by generous airline companies. We suppose the reason will out, 'ere long !

Another snippet of news : the Provincial Associations have been re-formed (equivalent to the S.M.A.E. Areas, in the U.K.) to organise meetings throughout the season. A healthy trend, this means that contests will now be on more than a Club basis. Standard Contest Classes have been adopted, ensuring that the favourite types of model flying will receive equal support.

Of interest, also, is the fact that the Nordic A/2 has " caught on " in New Zealand, to such an extent, indeed, that it has raised records in classes other than its own. Adopted as *the* sailplane class, it is believed that it will virtually eliminate the older classes.

THRUST, REVS, & HORSE

BY LAWRENCE H. SPAREY

Our well-known contributor and conductor of AEROMODELLER Engine Analysis tests has been asked a question which at some time or another, puzzles every power modeller. Here is his answer to Mr. Joberns' query, "Why B.H.P. governs thrust, irrespective of R.P.M."

Some time ago I wrote a letter to you asking about the B.H.P. of engines, and what relation it had to the thrust. Your very interesting reply pacified me for a time. However I have again decided to write to you as I am unable once more to see the connection.

Take, for example, an engine turning at 6,000 *r.p.m., with a* 9 × 5 *in. pitch prop. The only things that I can see that govern the thrust of that propeller are the following :—* (1) *airfoil section,* (2) *air density,* (3) *revs. per minute,* (4) *diameter,* (5) *blade width,* (6) *pitch, and* (7) *shape of the blade from a front view.*

Now given the following items to be standard with two propellers—1, 2, 4, 5, 6, 7, *but* not three (3).

Supposing that the first propeller, " a ", *is turning at* 6,000 *revs. per minute. Another identical propeller in the same air conditions will give more thrust at a higher speed. The brake horse power, as far as I can see it, has nothing to do with it. You give in your tests the best speed as far as the brake horse power is concerned, very often though you also state that the engine will turn at a higher speed though no advantage can be obtained from doing so. I don't agree to this. If you were to state that the engine would not turn a* prop. *at the greater speeds I would see. The speed apparently does not depend on the B.H.P. The thrust depends on the speed and not on the B.H.P. So how how do you maintain that the thrust depends on the B.H.P. I can see no gain from quoting the B.H.P. to an aeromodeller as far as thrust is concerned ; revs., yes, but B.H.P., no. I know that a propeller is but a means of converting mechanical energy into thrust, but the B.H.P., surely, is not mechanical energy in this sense, as it is the* speed *which governs the thrust and not the B.H.P. I can believe that it is more easy to slow down an engine racing above its biggest B.H.P. speed, and the resistance to that attempt to slow it down increases as the best speed as far as B.H.P. is concerned is reached, and thereafter decreases until the engine stalls.*

I should be glad if you would clarify the situation to me, as I am not without slight training in mechanical mat[...] and the problem worries me !

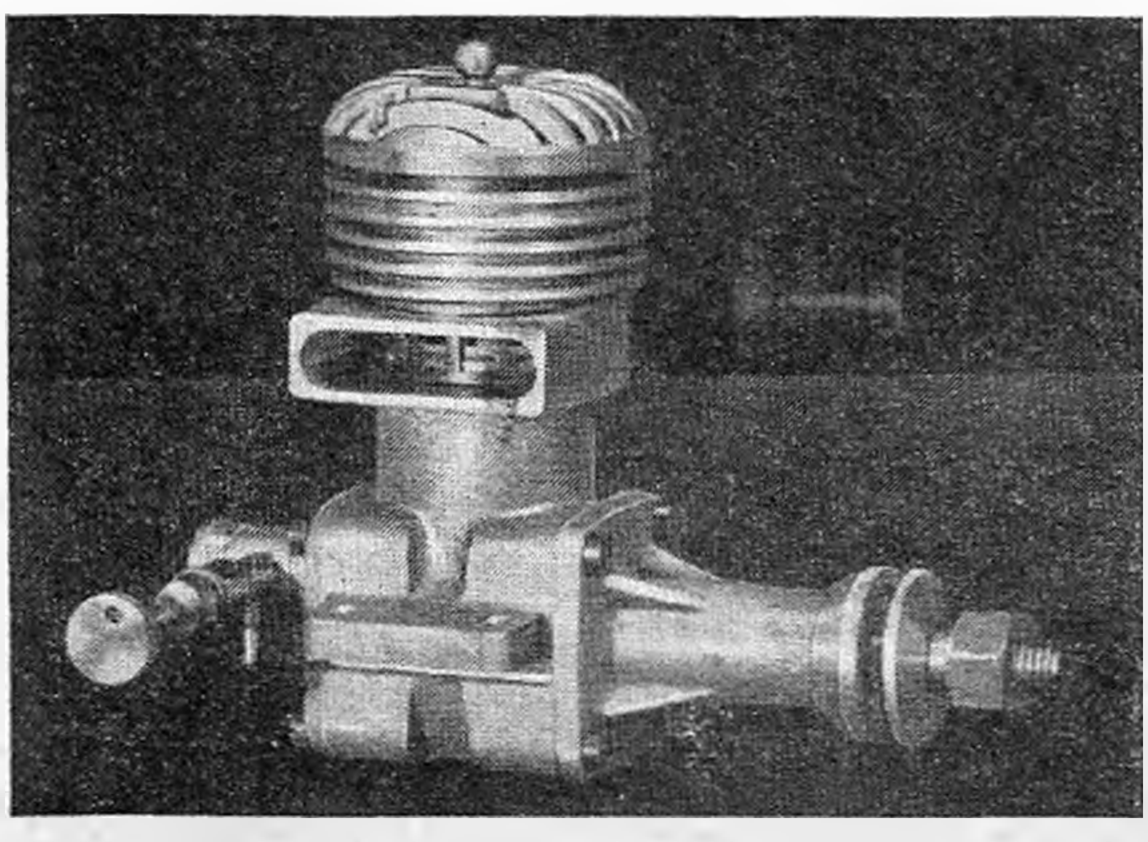
Aldridge, Staffs. *D. C. Joberns*

The letter from Mr. D. C. Joberns quoted above state[...] problem which seems to puzzle a great number of ae[...] modellers, and about which we receive a large numbe[...] letters. Stated briefly, the question is why the Br[...] Horse Power of an engine governs the amount of thr[...] obtainable from an airscrew coupled to it, irrespect[...] of the number of revolutions per minute at which i[...] possible to run the engine under certain conditions.

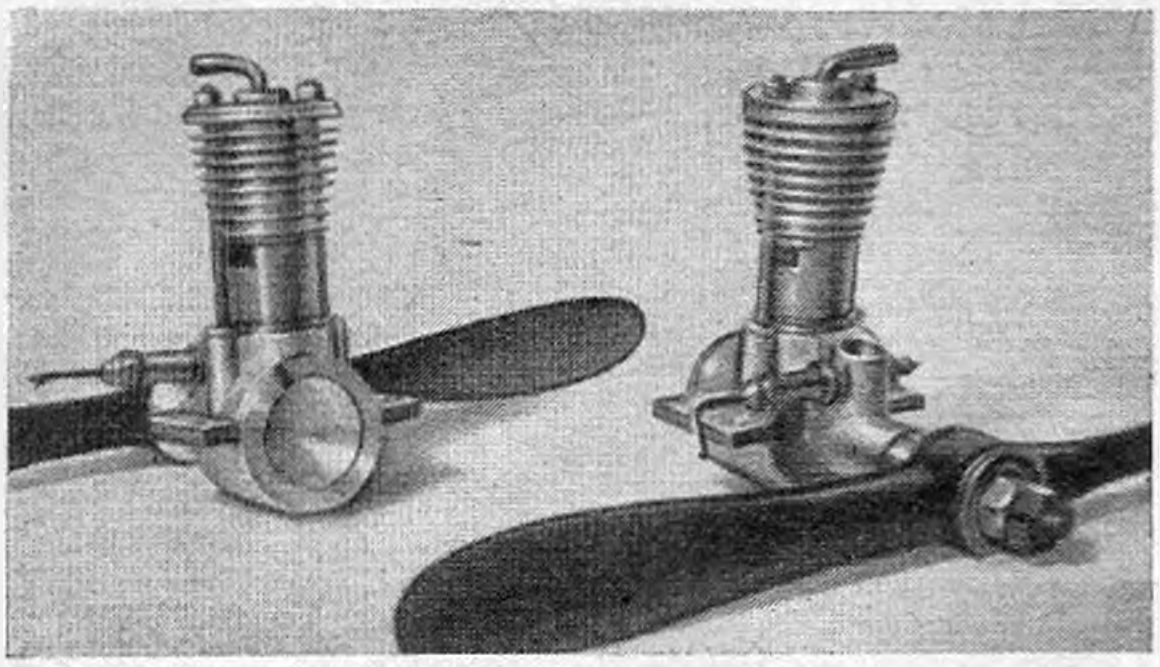
It seems rather strange that the question should a[...] only with aircraft, because, so far as I am aware, no [...] has yet suggested that a motor car should be able [...] thrust itself along the ground at its greatest speed wh[...] the engine is not developing its maximum outp[...] Obviously, if the engine power of a motor car is lesse[...] its speed will lessen also, and no amount of juggl[...] about with gearing will bring the speed up to maxim[...] As our correspondent states, an airscrew is simply [...] mechanism for converting engine power into thrust, a[...] an alteration of the pitch angle of the blades may [...] likened to gear-changing in a car. Thus, by no juggl[...] with pitch angles, blade shape, blade section, etc., [...] it be possible to obtain *maximum* thrust from an eng[...] that is not developing its full power. It is one of [...] unfortunate laws of mechanics that it is not possible [...] obtain something for nothing, and, other things be[...] equal, the amount of thrust which we can obtain fr[...] our small aero engines is in direct proportion to [...] power that they will give.

In resolving any question it is always better to [...] rid of all the irrelevant matter that has no true bear[...] on the problem ; so we may first rid ourselves of [...] considerations of blade shape, blade section, projec[...] area, etc., as these are concerned only with using [...] *available power* in the best possible way. We m[...] substitute for these just a simple air-brake, consisting [...] a plain strip of metal, with a hole in the centre [...] attachment to the engine. The pitch angle of the bla[...] may be altered by simply bending the metal strip to [...] required amount. This is exactly the type of air-bra[...] which I use in my engine tests, and the thrust from t[...] might be calculated by the amount of slipstream, or [...] amount of air which it displaces in a given time.

Before proceeding further, it may be as well to [...] why an engine does not develop its maximum powe[...] it is running too slowly or too fast. An engine may [...] made to run slowly in several ways ; one, by restrict[...] the fuel supply ; two, by mal-adjustment (retarding [...] ignition spark, or wrongly adjusting the compression



The French Micron 29 Glow-plug ignition racing engine is very popular on the Continent for F.A.I. Class II speed flying. It develops maximum B.H.P. at high R.P.M. and is well suited to the small airscrews used for speed control-line work.



These baby diesels are hand-made ·4 c.c. 'specials' by L. Gabriels of Oldham. Maximum B.H.P. is obtained at 13,000 R.P.M., with a 5" ×2½p" perspex prop. The motors are destined for a 1/15th scale Miles Gemini either control-line or free-flight.

a diesel) or by loading it. In the first two instances it is easy to see why maximum power is not developed. By overloading an engine, its rate of revolution is artificially restricted, so that an insufficient number of firing strokes is obtained in a given time. Obviously, 1,000 power strokes a minute will develop more power than 500 per minute.

At the other end of the scale, the power from an engine will drop if it is running too fast. There are several reasons for this also; the chief ones are (*a*) excessive internal friction; (*b*) inability to take in a full charge of fuel in the time allowed per cycle of operation; (*c*) inability to fully discharge the burnt gases in the available time; (*d*) incomplete burning of the fuel charge in the available time. We thus see that power cannot be measured in terms of revolution per minute.

The Slipstream Test

We will assume that we have found by test that our engine develops its maximum power at a speed of 10,000 r.p.m.; so we will now affix our metal strip, and, with suitable equipment, proceed to measure the thrust, or, what is the same thing in this instance, the air displacement. Knowing that the maximum power is developed at 10,000 r.p.m. we will proceed to load the engine by bending the metal strip to form an airscrew, until this speed has been attained. Now we can measure the volume of the air displacement per minute; *i.e.* the thrust.

We will now speed the engine up by lessening the external load; that is, we will bend the propeller blades to a more acute angle, thus decreasing the pitch. On restarting the engine it will immediately revolve at an increased speed, but on measuring the slipstream, or thrust, it will be found that this has dropped. This is because more power has been absorbed by internal friction; also the carburation may not be so efficient, nor the scavenging so effective. Thus, although we have increased the speed of revolution, less power is available for creating thrust, because, in order to obtain this increased speed, and to compensate for the internal power losses, we have had to set our blades at *too fine a pitch for ideal results.*

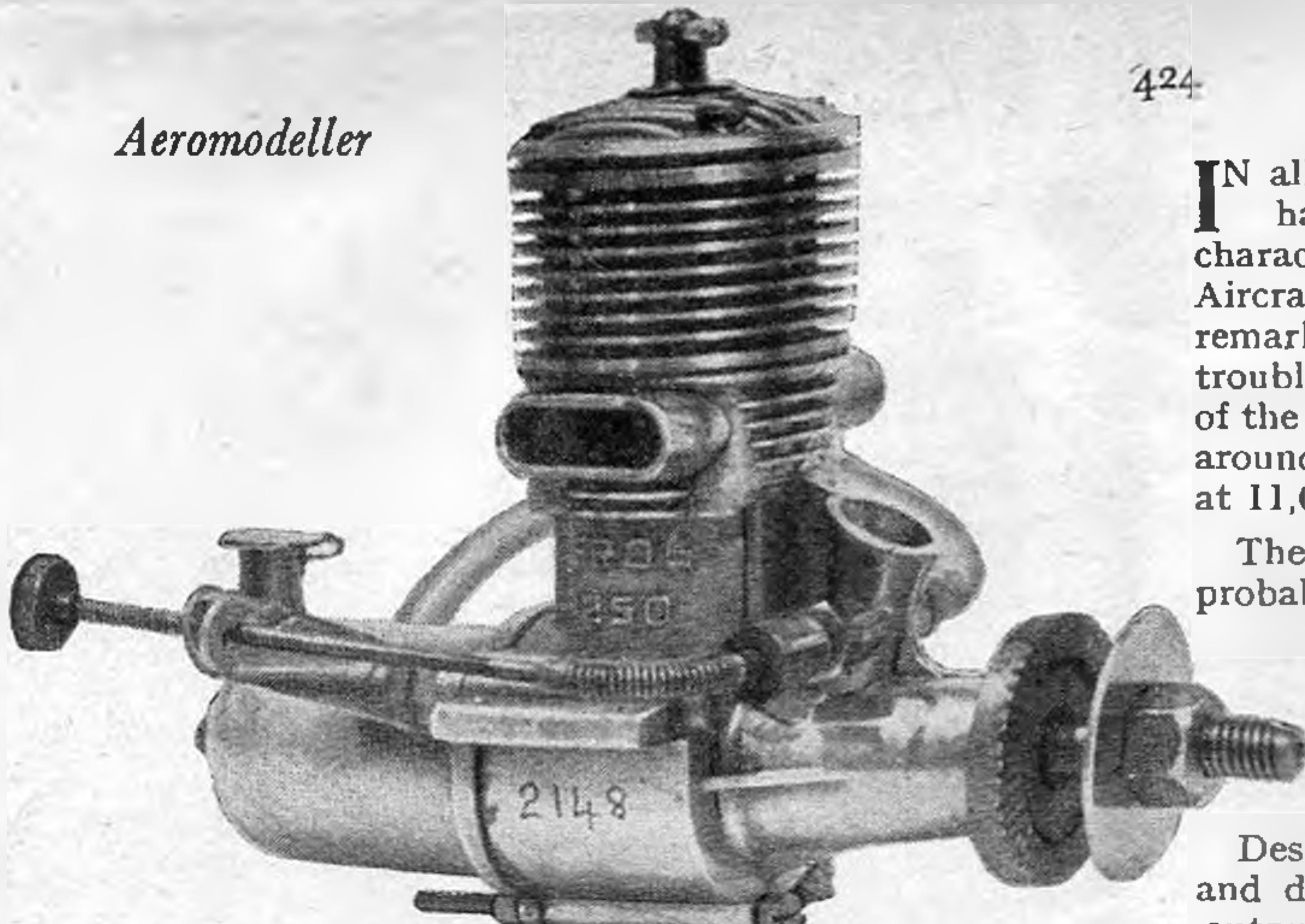
Let us now again try the experiment, and still further decrease the pitch. All the evil factors which we have enumerated above immediately spring into operation, but this time with still greater effect, for even a slight increase in speed may double the power losses. So we may go on, successively decreasing the pitch until in the end we are presented with just a flat strip of metal, with " blades " having no angle of incidence whatever. True, the engine may then be screaming away at around the 20,000 r.p.m. mark, but there will be no slipstream and no thrust. Every bit of available power will be absorbed in simply turning the crankshaft; that is, in overcoming the enormous internal friction, the inertia of the reciprocating parts, and in overcoming the air resistance of the thin edge of our revolving metal strip. Furthermore, owing to the carburation and exhaust troubles, there is a lessened amount of power available to combat the mechanical resistances just mentioned.

You now see why the pretty little engine power curves which are published so regularly in the AEROMODELLER fall away, like a brick from a housetop, once the maximum b.h.p. point has been passed.

Doubtless this long explanation could have been covered by a couple of formulæ which would have left most of us as wise as when we started; but I think that we can now see that what we have in effect been doing is to match our airscrew to our engine, so that we may utilise its power in the best possible way.

Finally, it is interesting to reflect that if, when our engine is screaming its head off on the bench, we seek to obtain a little more thrust by bending the propeller blades to an increased angle, the engine will automatically slow down to a point nearer to that of maximum power output. I should hate to think that these little engines know more about the laws of mechanics that we do . . .

" AN ENGINE MAY BE MADE TO RUN SLOWLY — IN MANY WAYS."



ENGINE ANALYSIS

NUMBER 37 BY L. H. SPAREY

The FROG "250"

IN all my tests of the engines from the Frog range have always had to remark upon at least tw characteristics which Messrs. International Mode Aircraft Ltd. seem to build into their products. Namel remarkable flexibility of running, and freedom fro trouble of any kind during the tests. As for the flexibilit of the Frog " 250 ", I can state here that it ran at spee around 2,000 with the same ease and steadiness as it di at 11,000 r.p.m.

The characteristic freedom from trouble is du probably, to the fact none of the engines which I ha so far handled ran at speeds much in excess about 11,000 r.p.m. so that the maximum pow output was developed at a comparatively lo speed, without the necessity for those last. fat screaming revs. around the 15,000 mark.

Designed as they are for moderate speeds, easy starti and durability, it cannot be expected that the pow output should reach the very high figure found in the high efficiency racing type engines designed for grea r.p.m. Nevertheless, the Frog " 250 " has a quite go power output, considering that it runs below the 11,0 r.p.m. range. A maximum of ·192 b.h.p. was reached 10,700 r.p.m.

By having a comparatively lower r.p.m. figure maximum b.h.p. the " 250 " is able to utilise its ent output when applied to Free Flight, Sport and Ra Controlled models. For example, one " 250 " is alrea in use as the power unit of a 5 ft. span Radio mo carrying a heavy load of equipment. As an excell "slogger" it should be especially applicable to 4 ft. 6 ft. span slow flying machines.

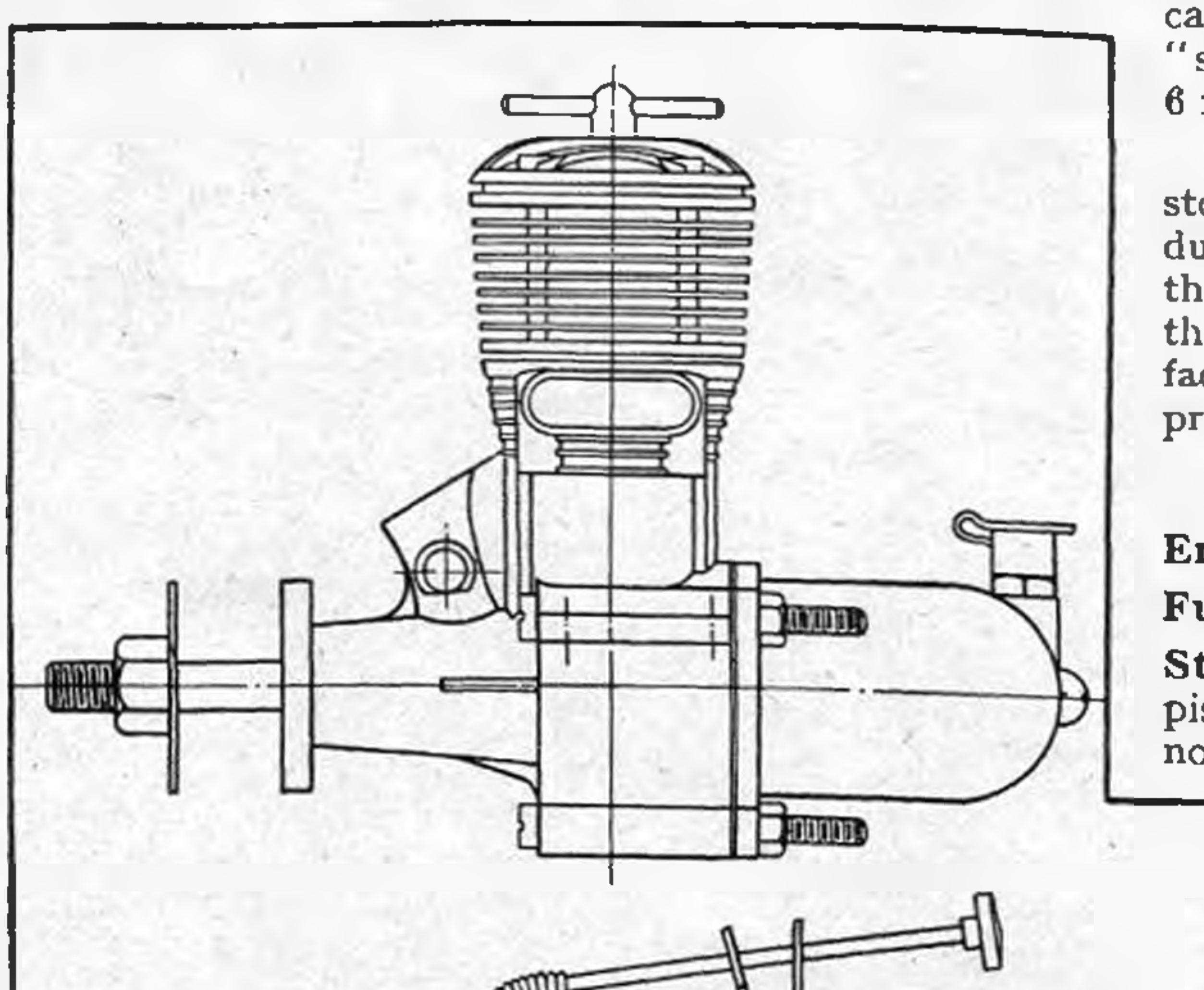
The engine, which was bought direct from a deal stock, did, however, seem to suffer from a slight leak due to a loose contra piston, and it is quite probable t the figures obtained could have been bettered had this trouble existed. It may also have accounted for fact that the engine seemed to start more readily w primed with a little fuel through the exhaust ports.

TEST

Engine : Frog " 250 " ; 2·49 c.c. diesel.

Fuel : Mercury No. 8.

Starting : In spite of the slight leakage past the con piston the starting qualities of the engine were good, no real difficulty was found. When primed with



through the exhaust ports, starting was really excellent. Carburettor suction seemed remarkably efficient; so much so, that care was needed not to flood the crankcase.

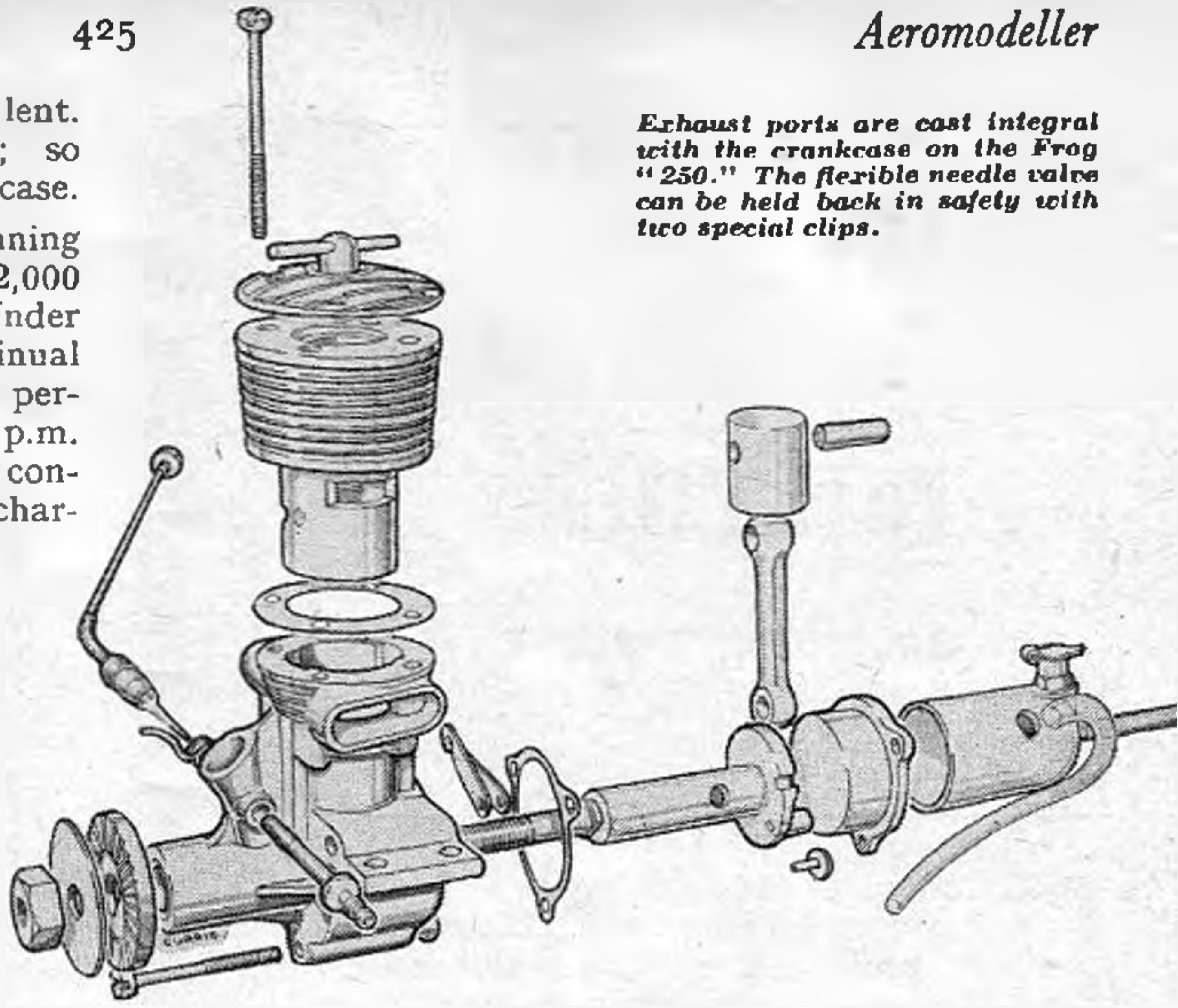
Running: The great flexibility of this engine, running smoothly and evenly over a range of speeds from 2,000 to 11,000 r.p.m., made the testing a real pleasure. Under a wide range of loadings no " fiddling about " or continual adjustments were necessary to maintain a steady performance. Although only tested down to 2,300 r.p.m. there was no doubt that even running would have continued much lower down the scale—a remarkable characteristic with little practical value in the very low range. The steady running between 8 and 11,000 r.p.m. is valuable, however, as it means that a good performance can be obtained between these speed ranges without undue trouble with needle settings.

B.H.P.: The curve shows that at 2,300 r.p.m. an output of ·04 b.h.p. was available, which rose steadily to a maximum of ·192 b.h.p. at 10,700 r.p.m. Down to 8,000 r.p.m. the engine may be said to be doing very well, so that it may be seen that, coupled with the great flexibility, the engine is in no way critical.

Checked Weight: 5·6 ozs. including tank.

Power/Weight Ratio: ·55 b.h.p./lb.

Remarks: Considering that the engine develops its maximum power at 10,700 r.p.m. it is rather strange that the manufacturers claim that the speed range is only 2,000 to 10,000 r.p.m.! In considering the power/weight ratio it must be remembered that most modern engines are supplied **without** tank, so that the high power/weight ratios sometimes shown are not truly related to that of the Frog engine. An excellent general purpose unit.



Exhaust ports are cast integral with the crankcase on the Frog "250." The flexible needle valve can be held back in safety with two special clips.

GENERAL CONSTRUCTIONAL DATA

Name: Frog " 250 ".

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

Retail price: 72s. 6d.

Delivery: Ex-stock.

Spares: All spares from Spare Parts Dept.

Type: Compression ignition.

Specified Fuel: Frog " Powa-Mix ".

Capacity: 2·49 c.c.; ·151 cu. ins.

Bore: ·580 in.

Stroke: ·575 in.

Weight: Complete with tank 5·5 ozs.

Compression Ratio: Infinitely variable.

Mounting: Beam or radial.

Recommended Airscrew: 9 × 6 ins. pitch.

Recommended Flywheel: 2½ ins. dia.; 4 ozs. weight.

Tank: Pressure die cast. Held by one screw. May be easily rotated for any position.

Cylinder: Hardened steel turning complete with fins, ground and honed.

Cylinder Head: Pressure die cast. Held by 4 steel screws.

Contra Piston: Mehanite, ground and lapped.

Crankcase: Pressure die cast Aluminium Alloy.

Piston: Mehanite: flat top, ground and honed.

Connecting Rod: Hiduminium RR 56 alloy.

Crankpin Bearing: Plain.

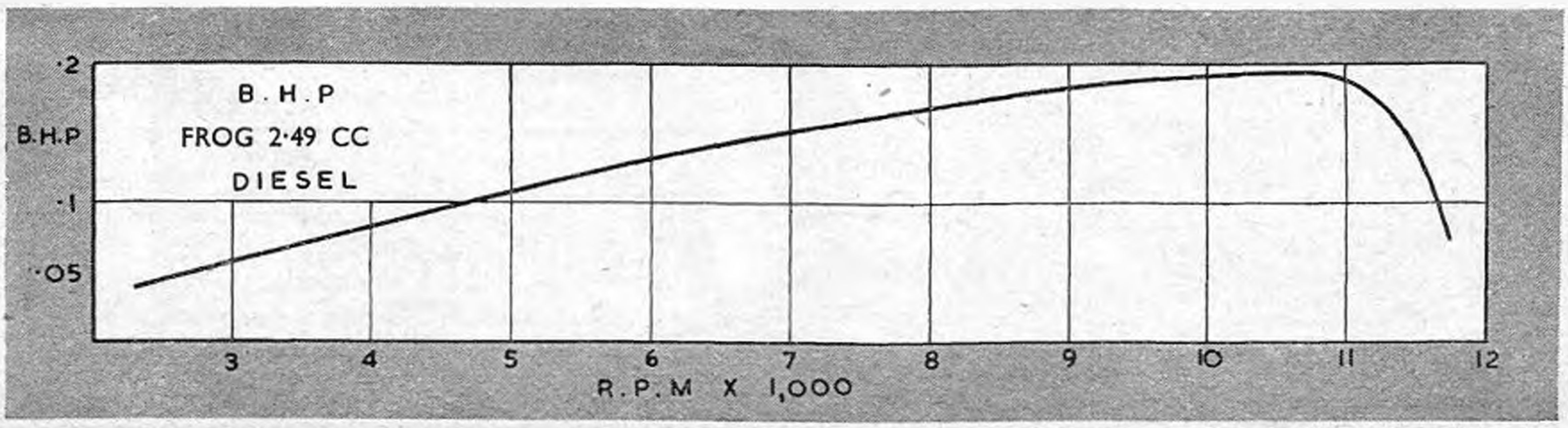
Crankshaft: Hardened steel, ground and honed.

Main Bearing: Phosphor Bronze.

Little End Bearing: Plain.

Induction: Shaft rotary valve.

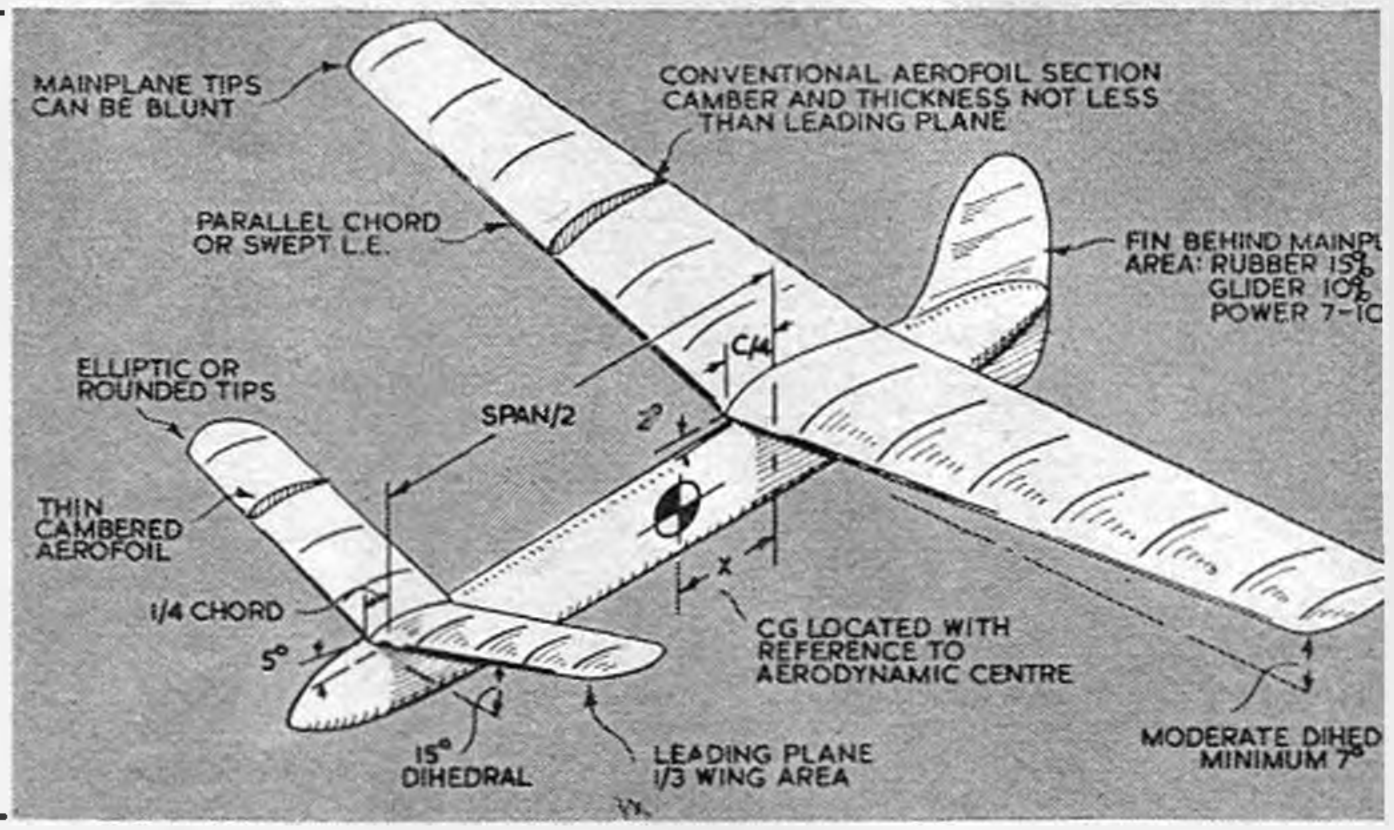
Special Features: Designed primarily for Radio Control or Free Flight. Full advantage is taken to use die cast parts where possible for exceptional strength and neat appearance. One-piece cylinder barrel complete with fins ensures freedom from distortion, coupled with controlled expansion when hot.



It's DESIGNED for YOU

NUMBER TWELVE

CANARDS



THE Canard or tail-first layout is a neglected design and yet one which holds considerable promise of excellent results—theoretical, if not always achieved. Like all the other relatively neglected types, however, successful canards are in the minority, mainly because they are under-developed. Few designers have ventured into this realm and so there is very little data available on proportions, shapes and sizes for other would-be designers. The last of the American CO_2 records was held by a canard layout (the CO_2 classifications have now been abandoned: motors of this type now come into Class ½A) and there have been successful canard rubber power models, gliders and free flight power designs—to say nothing of control line.

The simple theoretical advantage of the canard layout is that by placing the tailplane in front of the wing and arranging it at a greater incidence, it will always stall before the wings; and thus such a layout should virtually stall-proof, or at least have very satisfacto longitudinal stability—Fig. 1.

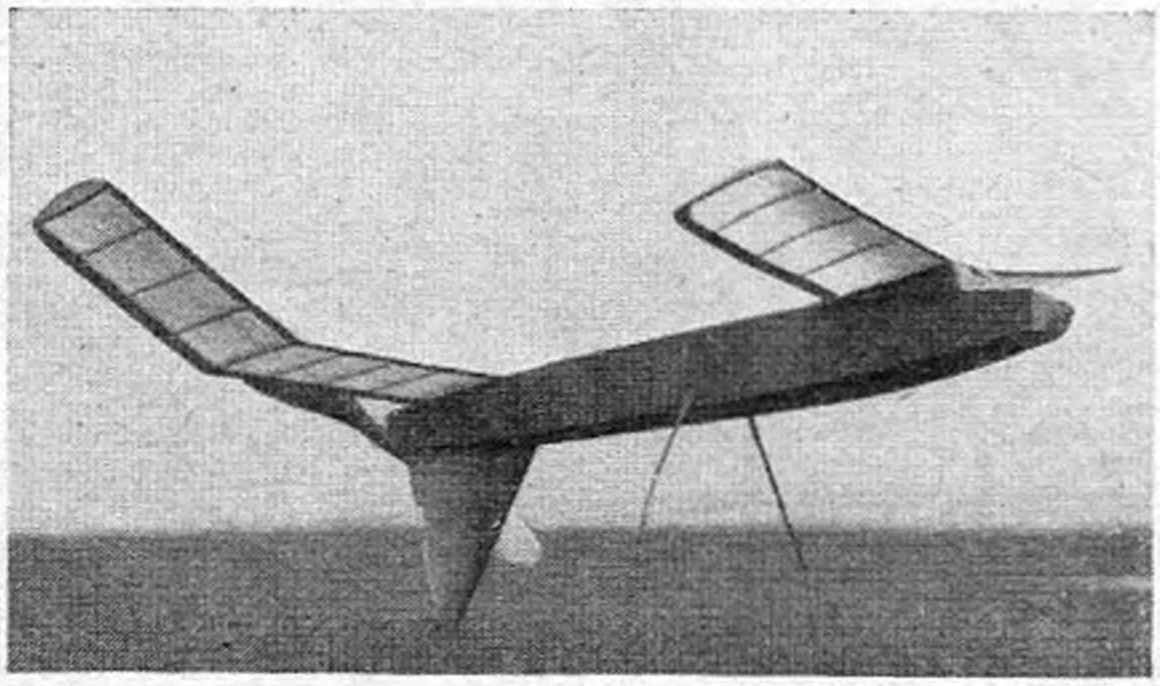
A second theoretical advantage is that, logically, t canard arrangement goes hand-in-hand with a pusl propeller on a powered model and a pusher propeller or should be, slightly more efficient than a simi tractor propeller—Fig. 2.

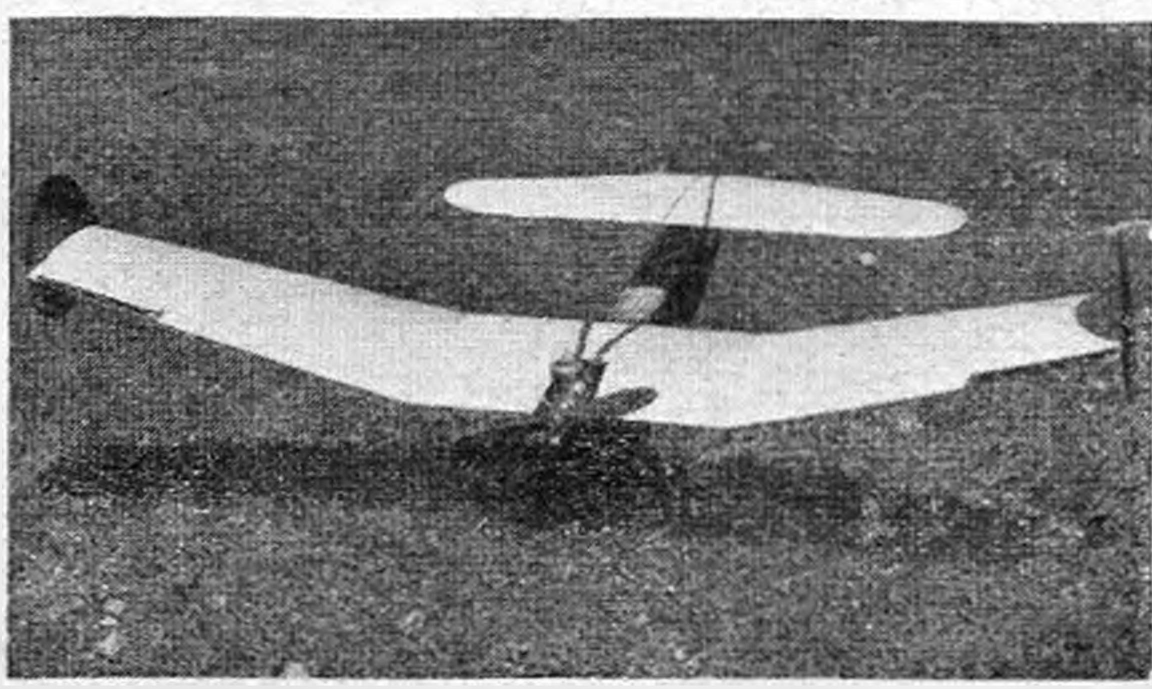
However, it is an unfortunate fact that the ultima performance of a model aeroplane is not always as theo would predict. Almost all the major problems have be worked out the practical way—trial and error—a almost all successful designs are evolved by the simp process of basing their layout on proportions, et proved successful on previous models. Rather th analyse the canard layout from the theoretical stan point, therefore, we are likely to get far better resu from a study of what successful canard designs ha already been built and flown. In our design survey shall endeavour to combine the two.

Canard Gliders

The canard glider should be the simplest design tackle. Unfortunately there is considerable doubt as whether anything is to be gained from such a layout, longitudinal stability is seldom critical on gliders. canard glider would be an unusual model, rather th one with outstanding performance. The fact that mode of this type have been produced with satisfactory towli stability shows, at least, that such a project is feasib

An early attempt with a canard glider is shown Fig. 3. The idea behind this model was to use a wi with an efficient soaring section and only modera sweepback (on the leading edge only) and then use short fuselage and forward mounted tailplane to g longitudinal stability. In other words, it was an attem





Left, Upper: Like a mysterious insect, R. Woodhouse's British record holding canard, rests between flights. Capable of 2 mins. 50 secs. H.L. and holding the record at 2 mins. 13·1 secs. R.O.G., the model is only 30 inches span and weighs 5·5 ozs.

Lower: Reproduced in planform on page 400 of this issue, Ascender is a powered canard from far-away Australia. Lack of leading plane dihedral and tip mounted fins are unusual features.

to stabilise a flying wing which, itself, would not have been stable, but was more efficient that a flying wing design pure and simple, of similar size.

Unfortunately the results obtained did not justify the experiment. Longitudinal stability was far from satisfactory. The small leading plane or elevator with its short moment arm would not always damp out a stall. Also, another peculiar flight characteristic was noted. The model had, virtually, two trimming attitudes. The normal glide was flat, with a low sinking speed. If stalled from this attitude, however, the model would, at times, find an entirely new trimming attitude with a glide path approximating almost to a dethermalised descent, and a correspondingly high sinking speed—Fig. 4. This second angle of attack for trimming was a stable one, for the model would continue such a flight path, once put into it. Often what started as a smooth, flat glide would change to this high rate of sink with near vertical descent, but never the other way round.

The one conclusion which was drawn from these early experiments was that the close-coupled canard was likely to be a source of trouble and that a normal moment arm would appear to be the best, for glider or power models. Given this, the proportions of wing and tailplane area should be somewhat similar to orthodox design practice and performance figures also somewhat similar.

A skeleton canard layout is sketched in Fig. 5. A positive difference in incidence between the leading plane and the wings is essential for longitudinal stability, for the leading plane must always stall before the wings. The centre of gravity of the whole model is located somewhere between the two planes so that, when trimmed out, leading plane lift, times moment arm, equals wing lift, times wing moment arm. If this were not so then the model would be out of trim and either loop or dive. In actual fact this simple equation may not be exactly true for there are various drag forces to consider which might demand slightly more " leading-plane power ", or " wing power " to cancel out. These, however, we can ignore.

Now with the set-up of Fig. 5, what is likely to be the best trim for maximum performance ? Obviously we have one limit. We cannot fly the leading plane at a higher angle of attack than its stalling angle and this, in itself is significant. The wings are rigged at a smaller angle of attack than the leading plane and hence, with the model trimmed with the leading plane just about to stall the wings will still be several degrees below their stalling point—Fig. 6. If *wing* angle of attack is increased by a further nose-up movement the leading plane will stall, down will come the nose and the wing angle of attack accordingly.

Canard Snags

This does not fit in well with duration requirements for it is an established fact that for maximum glide duration the model is trimmed so that the wings are operating at near their maximum angle of attack (just below the stall). A canard of similar proportions, therefore, would always be operating at a lower wing angle of attack and will have a higher rate of descent. On the face of it, therefore, the canard is not a good duration layout.

To minimise this difference it appears that the logical thing to do is to ensure that the wing is lifting as strongly as possible, *i.e.*, design for the most forward C.G. position

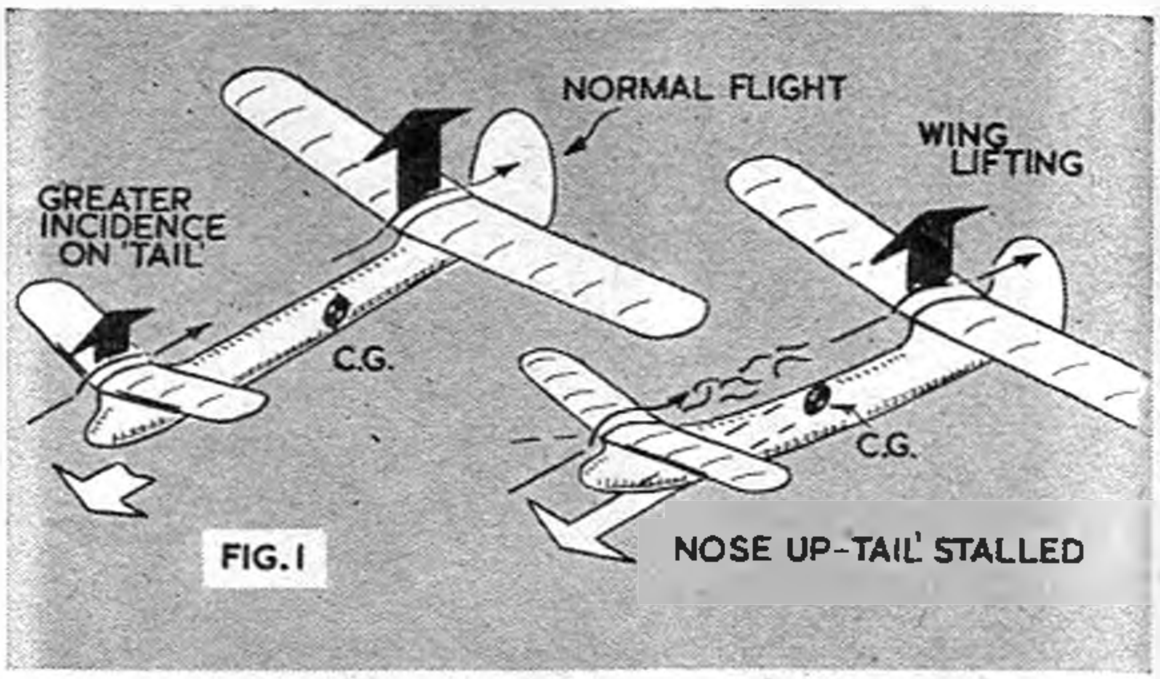


FIG. 1

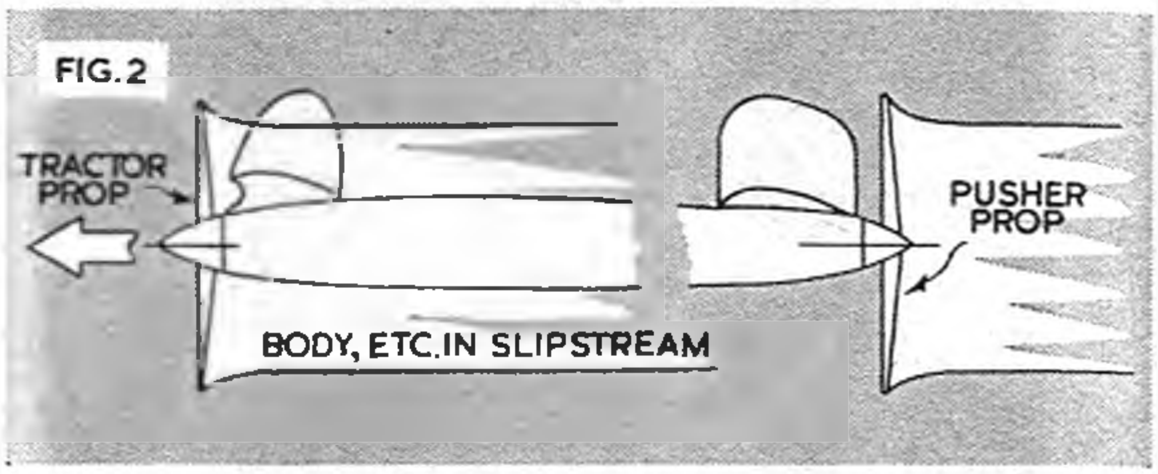


FIG. 2

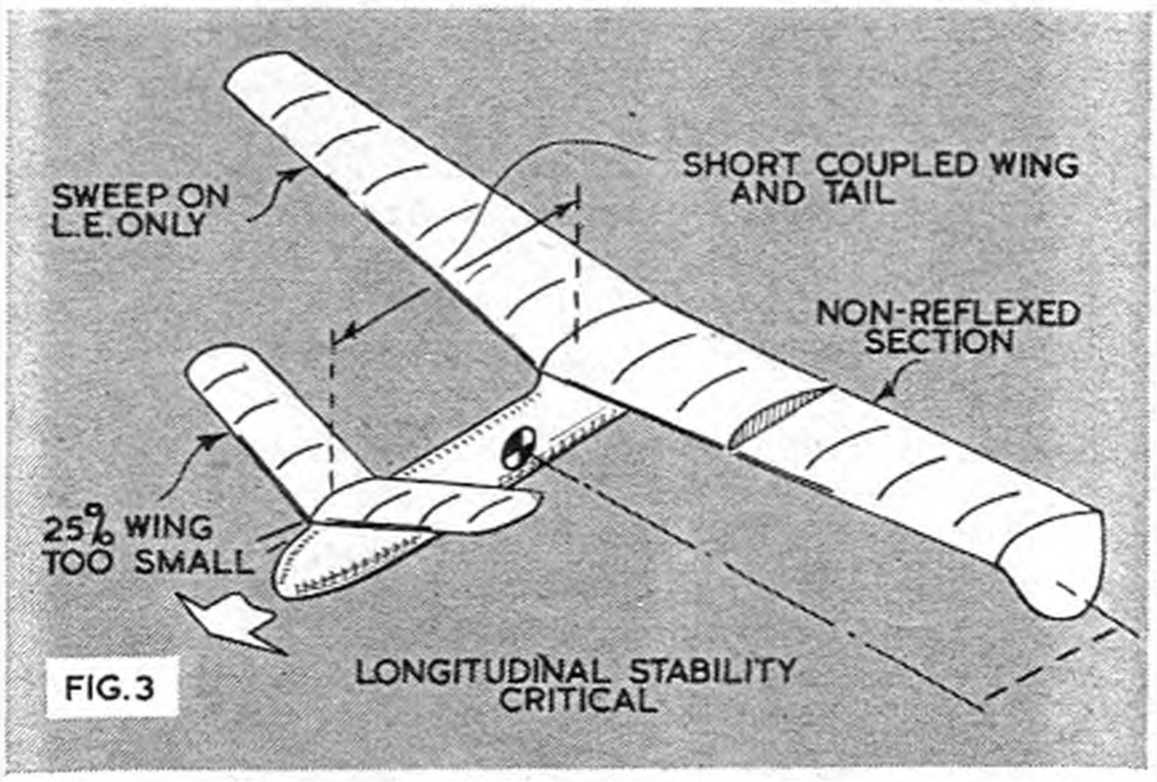


FIG. 3

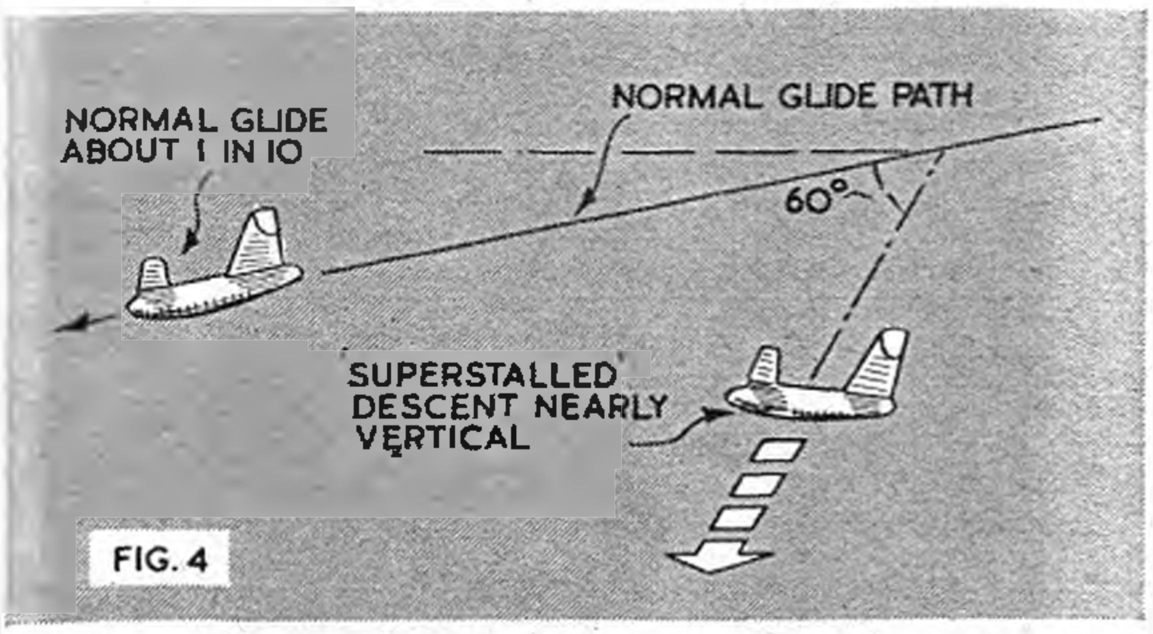


FIG. 4

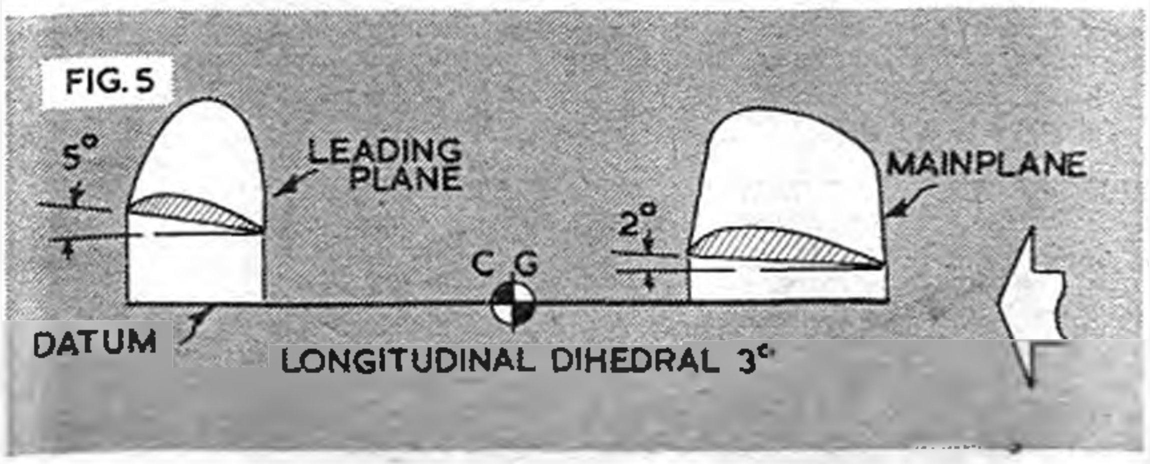
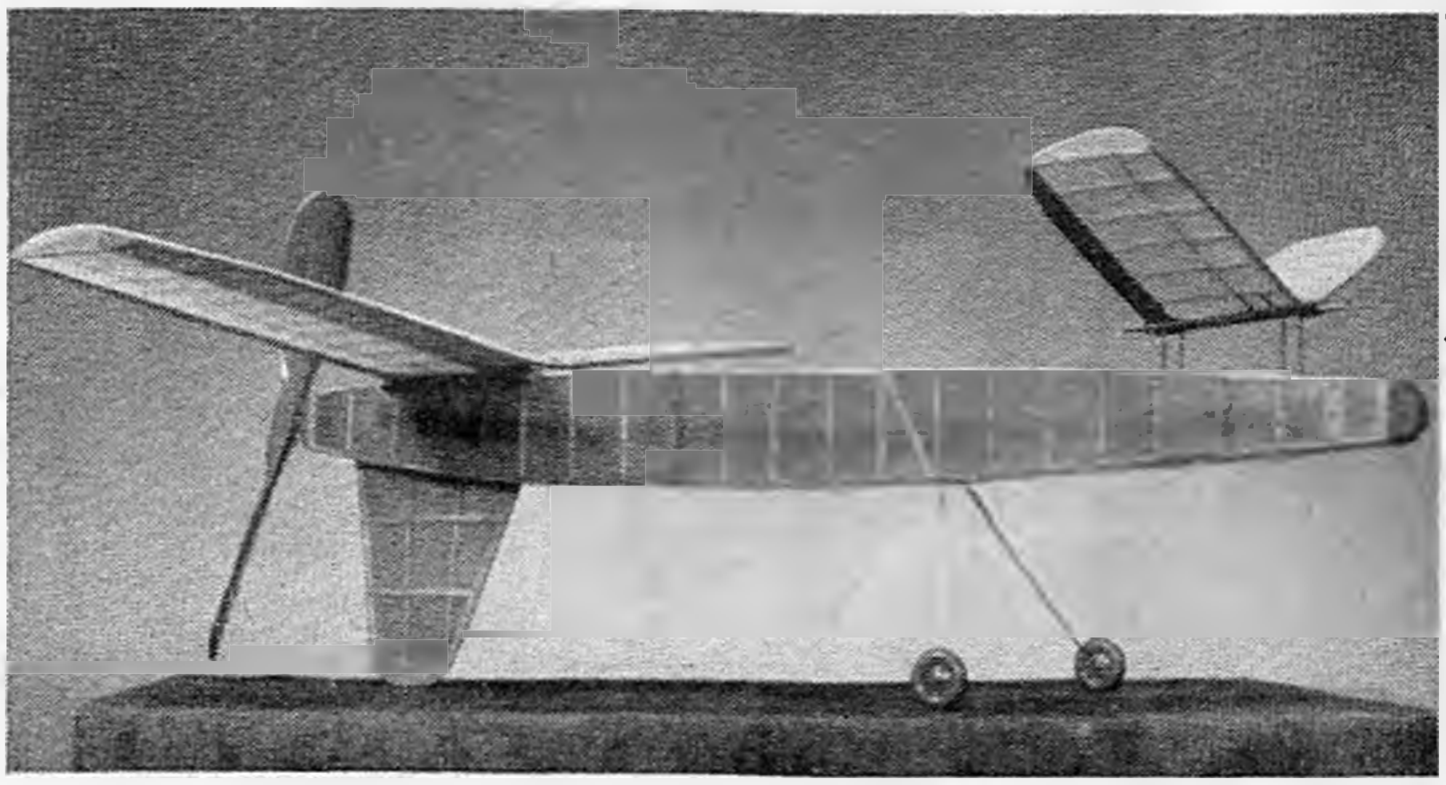


FIG. 5



***Left:** The appeal of a successful canard design has been proven by sales of the Aeromodeller Plans Service, full-size drawings for G. H. Harrison's PEGASUS. This model has frequently placed high in contests against conventional layouts, and regularly maintains 1 min. 40 secs.*

possible. This means a small difference in incidence between leading plane and wings and/or, a small leading plane. The latter approach is not satisfactory. It seems that a leading plane of less than about 30 per cent. of the wing is inadequate. Hence we have to rely on the former method.

Balance in Design

The relative position of the centre of gravity will be a critical factor in determining the stability of the model and something more than a cut-and-try method is desirable. Accordingly we recommend the graphical solution worked out by the American designer of unorthodox models—Henry Cole. This consists first of finding the aerodynamic centre and locating the final C.G. position 25 per cent. of the average (wing) chord forward of this point.

The recommended design layout for canards is shown in Fig. 7 and it is on this that the method of finding the aerodynamic centre will be described. The relative positions of the leading plane and wing are fixed relative to the quarter-chord lines of these two aerofoils, *i.e.*, a line at 25 per cent. of the chord from the leading edge. In the case of tapered aerofoils, the quarter-chord points referred to would be those of the *average* chord. Strictly speaking this should be the mean *aerodynamic* chord, although for all practical purposes the mean *geometric* chord is sufficiently accurate, and easier to compute.

The position of the aerodynamic centre of the combination of Fig. 7 is then given by :—

$$X = \frac{\text{leading plane area} \times \text{moment arm}}{\text{wing area}}$$

This gives the position of the aerodynamic centre forward of the quarter-chord line of the main wing. (In the case of an ordinary tractor layout, incidentally, the same method can be used for determining the aerodynamic centre, only in this case the measured distance "X" will be behind the quarter-chord line of the wing).

Strictly speaking a correction should l applied for aspect ratio, but for an initi design survey, at least, this can be ignore For more accurate results the graph Fig. 8 can be used, these being the facto computed by Henry Cole.

This method of approach should lea to a canard layout which is basical satisfactory as regards stability ar performance, and it is only necessary now to consid the various other detail requirements before completi the design layout. For example it has been found th lateral stability demands a generous dihedral angle on t leading plane whilst the mainplane needs only a modera dihedral angle. A very good general rule is to use minimum of 7 degrees dihedral on the mainplane wing and at least twice this figure on the leading plan Roughly speaking, the leading plane should always ha twice the dihedral of the mainplane.

The considerable side area in front of the centre gravity then presents something of a problem—Fig. 9- for this will have to be over-balanced by aft fin area f weathercock stability. The aft moment arm is invariab the shorter of the two and it may even be found necessa to extend the fuselage aft of the wings to get a fin moderate area far enough back. This applies partic larly to a rubber model design which needs more fin are proportionately, than a glider or power model.

This fact we can use to advantage on a rubber mod to balance out correctly, for if we proportion the rubb motor equally about the C.G. design position, we can use tractor propeller forwards. The weight of the propell assembly will then balance out the wing weight—Fig. 1 A pusher layout is not so satisfactory from this point view since grouping two of the major component weigh aft of the C.G. (wings and propeller assembly) ma demand an extended fuselage forebody for increas motor length to compensate, particularly if the push propeller has been located well aft of the wings to wo

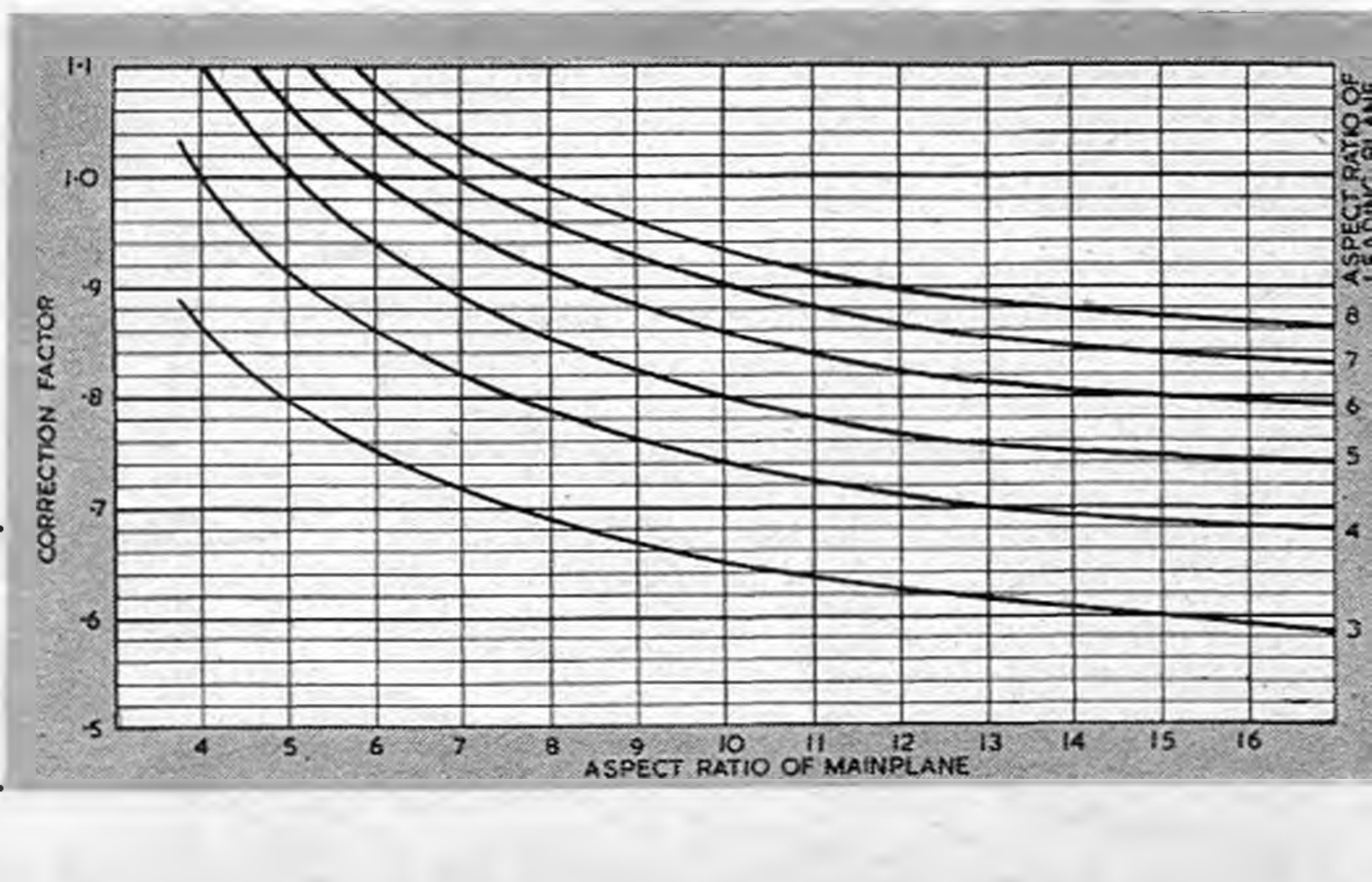


***Fig. 8:** American expert, Henry Cole, computed this graph for finding a correction factor which varies according to the aspect ratios of the Leading plane and Mainplane. This factor is then applied to find the correct distance of the Aerodynamic centre forward of the Mainplane.*

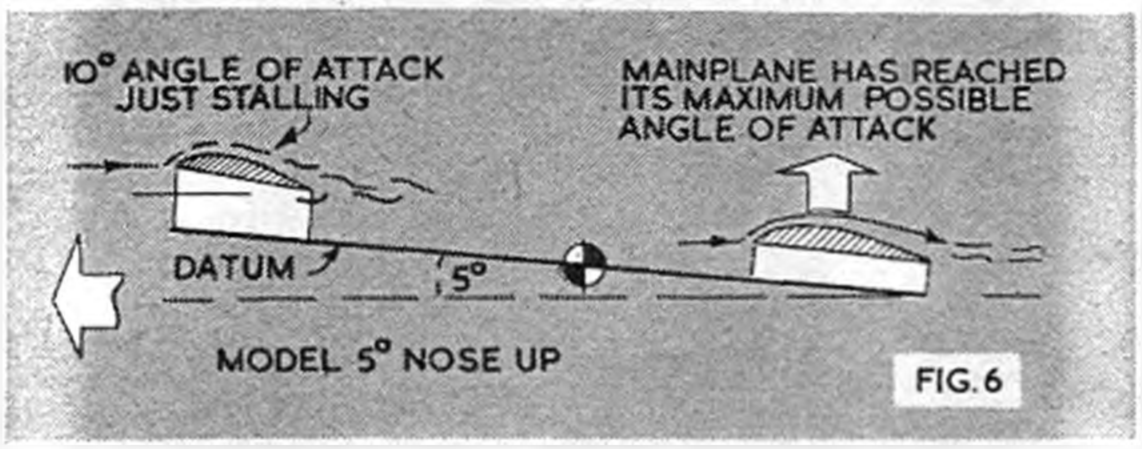


FIG. 6

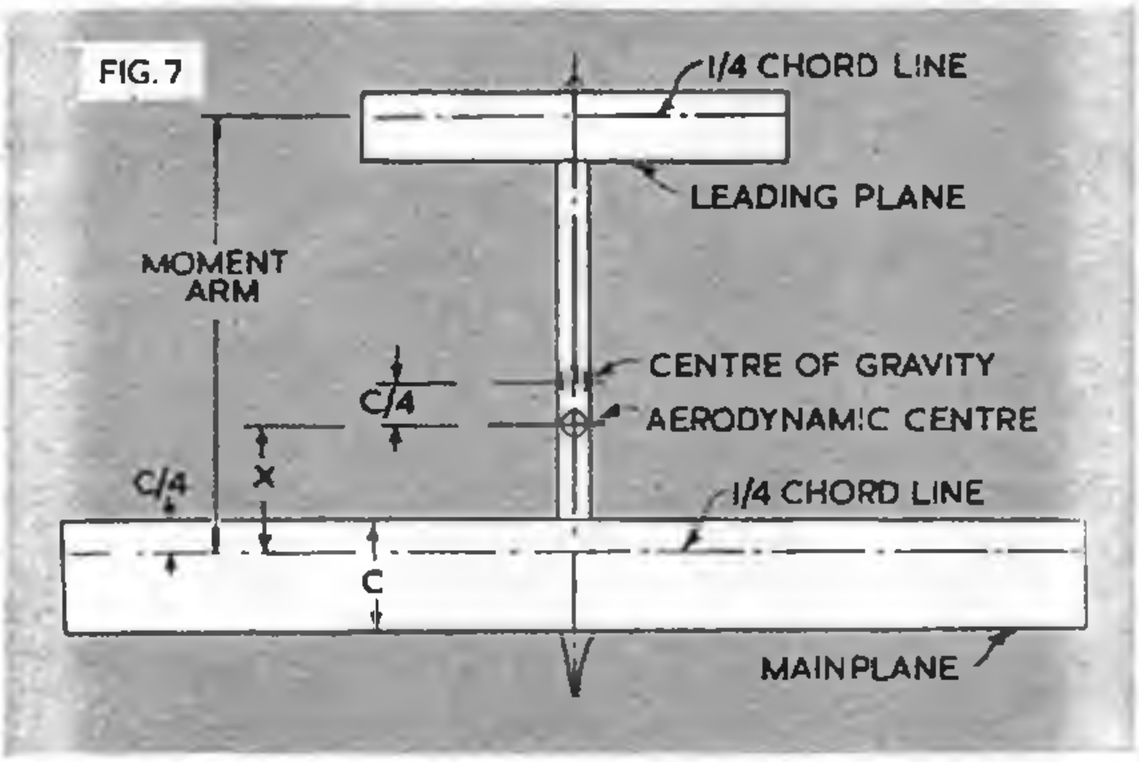


FIG. 7

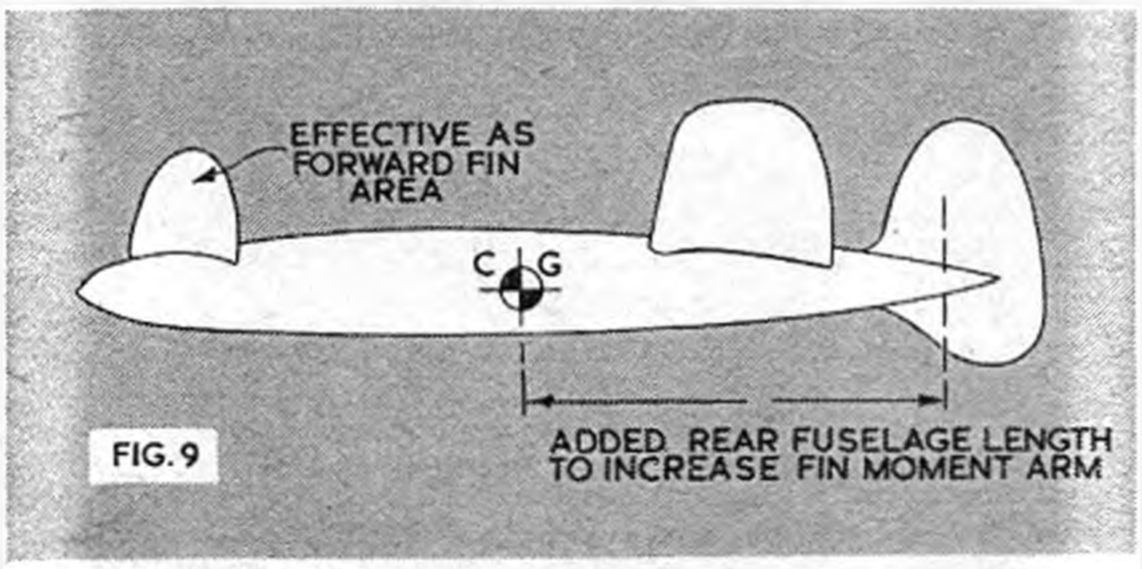


FIG. 9

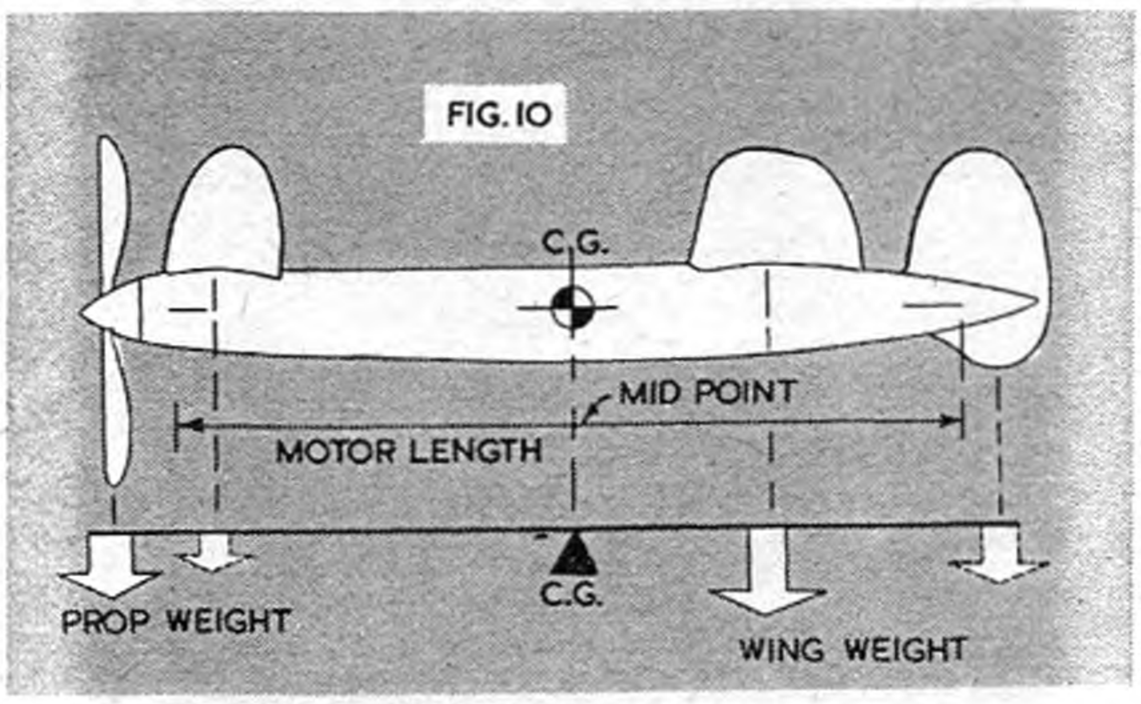


FIG. 10

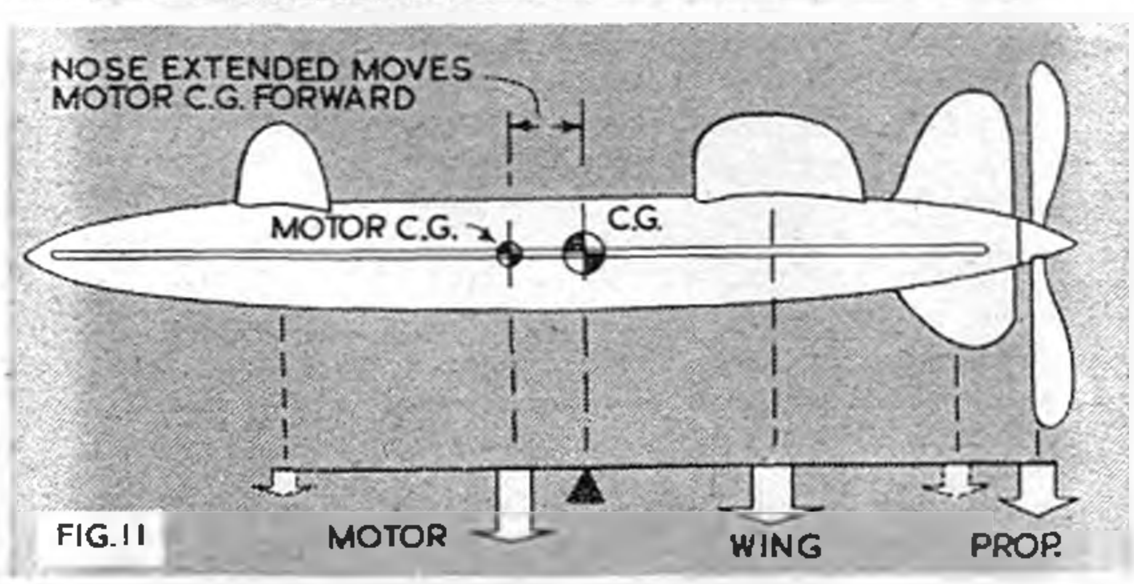


FIG. 11

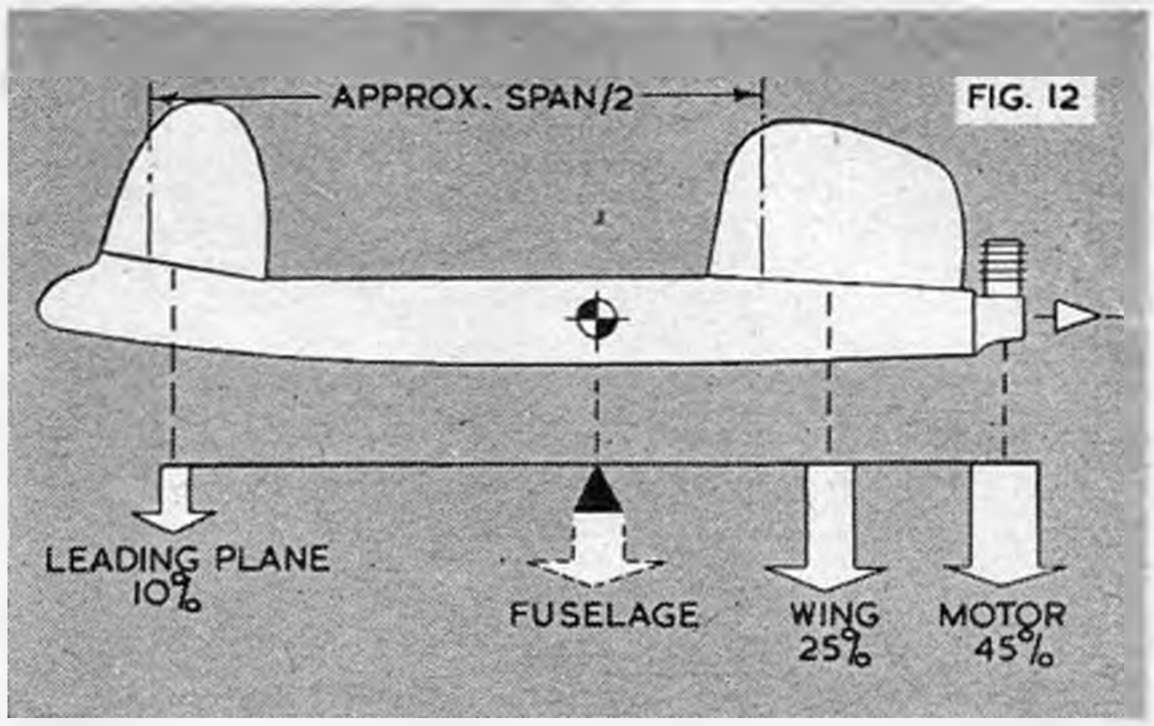


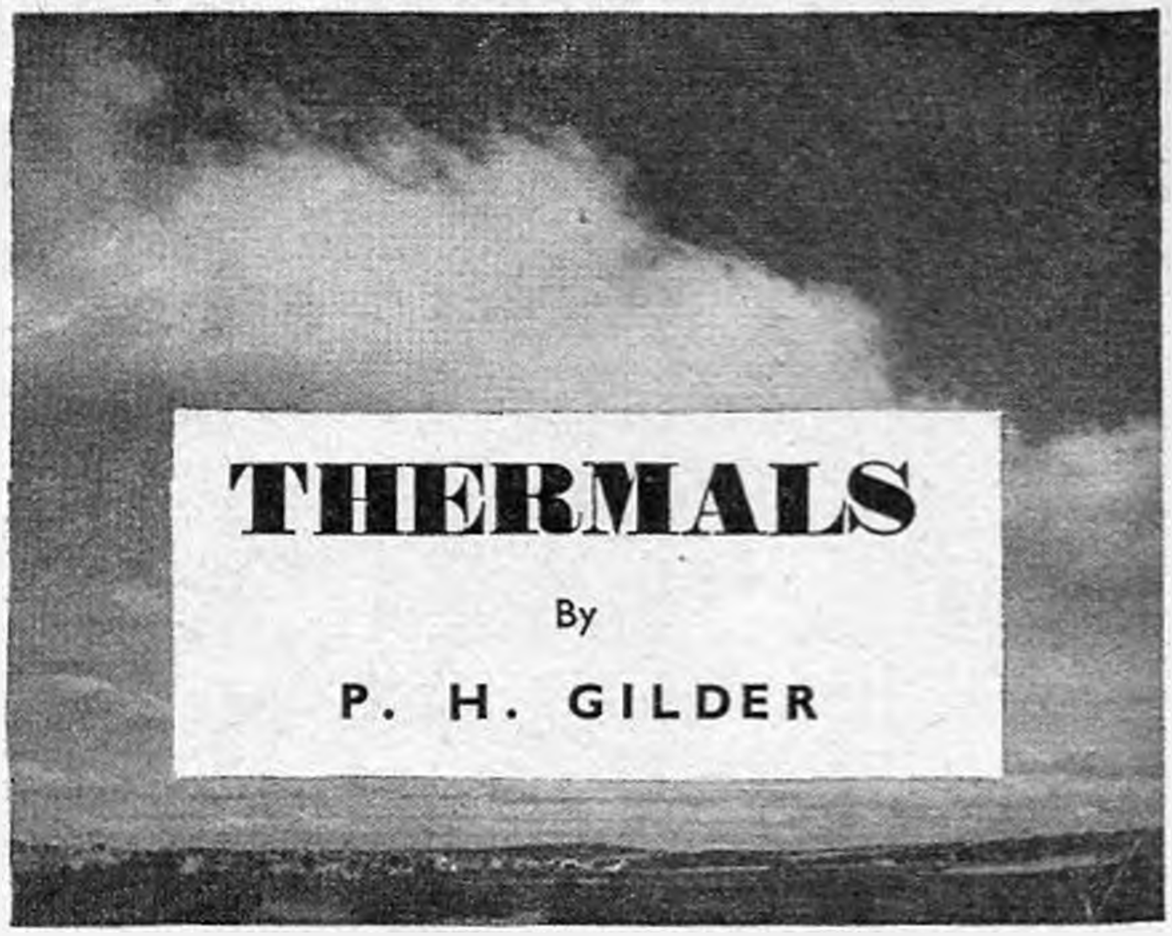
FIG. 12

in maximum fin moment arm. On the other hand, the long fuselage resulting (and the long motor), coupled with the slight increase in efficiency of the pusher propeller, may make the layout of Fig. 11 one to consider with some seriousness for duration work. A pusher propeller of this type could be feathered for drag reduction on the glide whereas the tractor arrangement, of course, fits in well with either feathering or folding propeller.

Gliders will be far less critical on this point for there are no major weights distant from the C.G. and ballast can always be added to get the final C.G. in the right position. The fin area required, too, will be smaller, but should again preferably be located aft of the wings. Wing-tip fins will not be particularly effective in providing weathercock stability due to their small moment arm. However, models with small weathercock stability will often tow quite satisfactorily, and there is the distinct possibility of deliberately employing small fin areas aft to produce a model which " wanders " in free flight, once released from the towline. Models with such a trim, circle first one way and then the other and always tend to take up a steady circle on entering a thermal. The danger is, of overdoing this undercontrol, to the point where the model flies for long periods straight downwind.

Power model canards present something more of a problem with regard to weight distribution. The completed model split up into component weights as in Fig. 12 shows that it may be difficult to balance out with the C.G. far enough forwards with a simple pusher arrangement, unless the motor is actually mounted above the wings. A tractor arrangement will be even more difficult to arrange to balance out the forward weight of the motor without, possibly, an extended rear fuselage. The pusher arrangement appears to be the best with the motor mounted as close up to the wing tailing edge as possible, or even above or under it. This will undoubtedly result in some sacrifice of fin power, but the canard arrangement is generally stable enough to absorb this. It is interesting to note that Australian expert, Jim Fullarton, found a lack of directional stability with his " ASCENDER " design, when the elevator had large dihedral angles. No dihedral gave excellent results; conflicting the results obtained by G. H. Harrison's rubber powered " PEGASUS ".

Summarising, then, provided certain basic proportions are adhered to, the canard should be an interesting, and perhaps profitable line of research for modellers who " like something different ". Stability should be comparable, at least, with that of similar tractor layouts and, indeed, some canard enthusiasts claim better stability.



WE often hear the term—" he's caught a thermal," but who of us knows what they really are, what causes them, and the best way to find them ? In fact who knows that there are thermals in winter as well as in summer. However, before going into these different topics more thoroughly, it is important that one knows how the air—or a certain mass of it—behaves under certain conditions and the terms to describe these conditions.

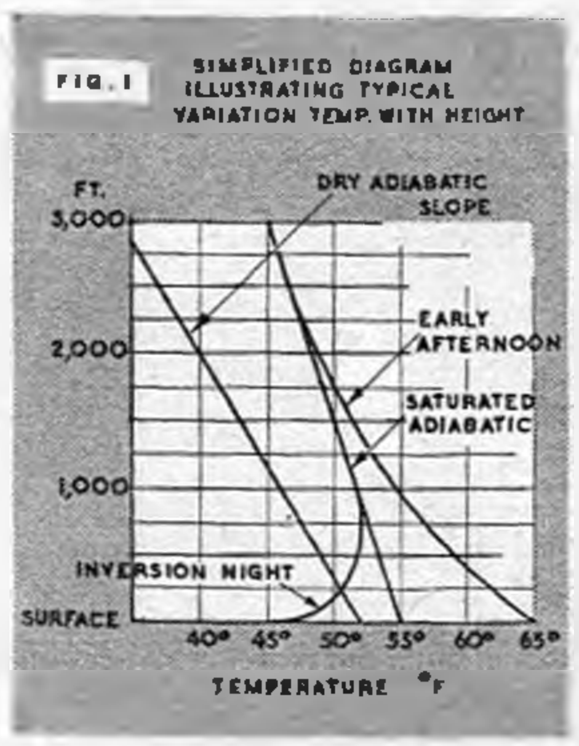
Firstly let us consider the terms stable and unstable as applicable to an air mass. One way of illustrating this is by taking the analogy of some water in a kettle which is being heated from below. The water in contact with the base of the kettle becomes warmer and therefore less dense, so its place is taken by colder denser water from above. This process is repeated until the water takes on a uniform temperature — boiling point. Thus it is easy to see that the boiling of a kettle of water depends on the fact that water is unstable when the denser liquid is above the lighter.

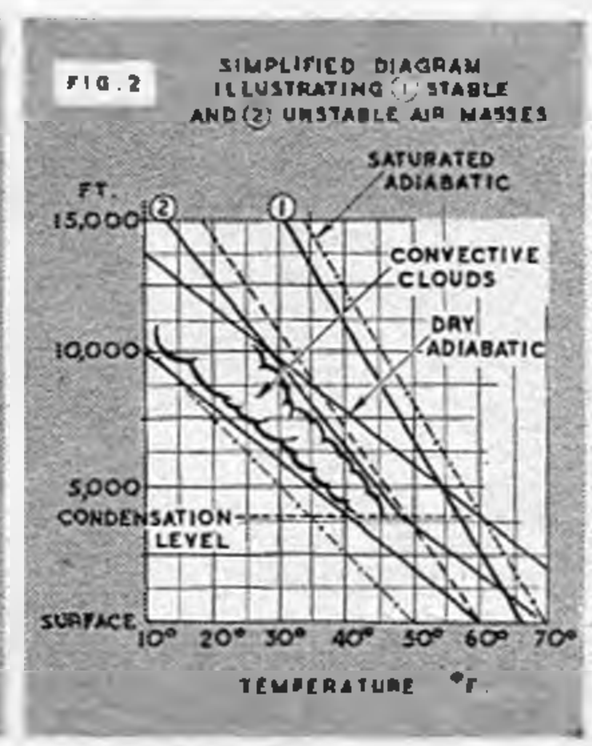
In the atmosphere, however, the condition for stability is not that the temperature shall increase with height, but that the temperature shall not decrease with height more rapidly than 5·4°F/thousand feet. If the decrease of temperature with height—or lapse rate—exceeds this value the air will be unstable. This lapse rate of 5·4° F/thousand feet applies only to dry air, for saturated air the value is 2·8° F/thousand feet. This difference in lapse rate between dry and saturated air, is due to the fact that saturated air gives up latent heat when condensing from a vapour into a liquid. This heat is used in preventing the temperature of the air from falling as rapidly as it otherwise would. Normally the terms saturated and dry lapse rate are known as saturated adiabatic rate (S.A.L.R.) and dry adiabatic lapse rate (D.A.L.R.). The word adiabatic means that the air neither receives nor gives out heat to its environment, so that when we take a mass of air and move it upwards or downwards in the atmosphere, all the temperature changes are induced by the pressure changes. Many people will appreciate this fact when having to inflate their bicycle tyres ; compression of the air in the pump necessary to force it through the valve, causes the air to become quite hot, which can quite easily be felt through the pump casing ; and conversely when air is expanded its temperature falls.

Up to now we have been considering temperature decreases with height ; but it is possible to have an increase of temperature with height, in which case there is said to be an inversion. The formation of a ground inversion is usually a well-defined feature of the temperature distribution on clear still nights. In the upper air—several thousand feet up in fact—inversions also occur, forming normally a cap to convective cloud.

How Thermals Form

Now let us consider what happens on a warm bright sunny day ; as the sun rises its rays become more direct and the surface temperature begins to rise. It should be remembered here that the direct radiation of the sun is absorbed only to a slight extent in the atmosphere leaving the greater percentage of the sun's radiation to be absorbed by the earth's surface. Since the earth is a bad conductor of heat the sun's radiation is accumulated in the very uppermost layers. The air in contact with the ground becomes heated and the lapse rate in the very lowest layer increases rapidly. When it reaches the dry adiabatic value this layer becomes unstable and vertical currents are set up—our thermals are at last born. The sun is therefore the cause of thermals, and thermals are simply bubbles of rising air. We must now consider what happens to our thermals on being released ; at first they will continue to rise and expand, cooling at the dry adiabatic lapse rate, until the condensation level is reached. This is the level where convective type clouds first appear, which also means that our " thermal " will now be saturated (N.B. cooler the air, the less moisture it can hold) and cool at the saturated adiabatic rate. Eventually our " thermal " will reach the stage of having the same temperature as its surroundings by penetrating a more stable layer. This will put a very effective cap or lid on further lift and will also coincide with the top of the convective cloud.





In the late afternoon the sun's rays will again become less direct and the surface temperature begins to fall. As a result the lapse rate falls below the dry adiabatic and cuts off any further thermal development, so that by about 5 or 6 o'clock all useful thermal activity has ceased.

A point worth remembering here is that besides thermal up currents, there are also similar down currents as illustrated in Fig. 3, which can bring your model aeroplane down as fast as a thermal would take it up. Stability or instability is therefore very important as most of our weather phenomena depend upon it, such as cumulus or cumulo-nimbus clouds, showers, squalls, thunderstorms, hail, wind gusts, bumpiness, etc. etc.

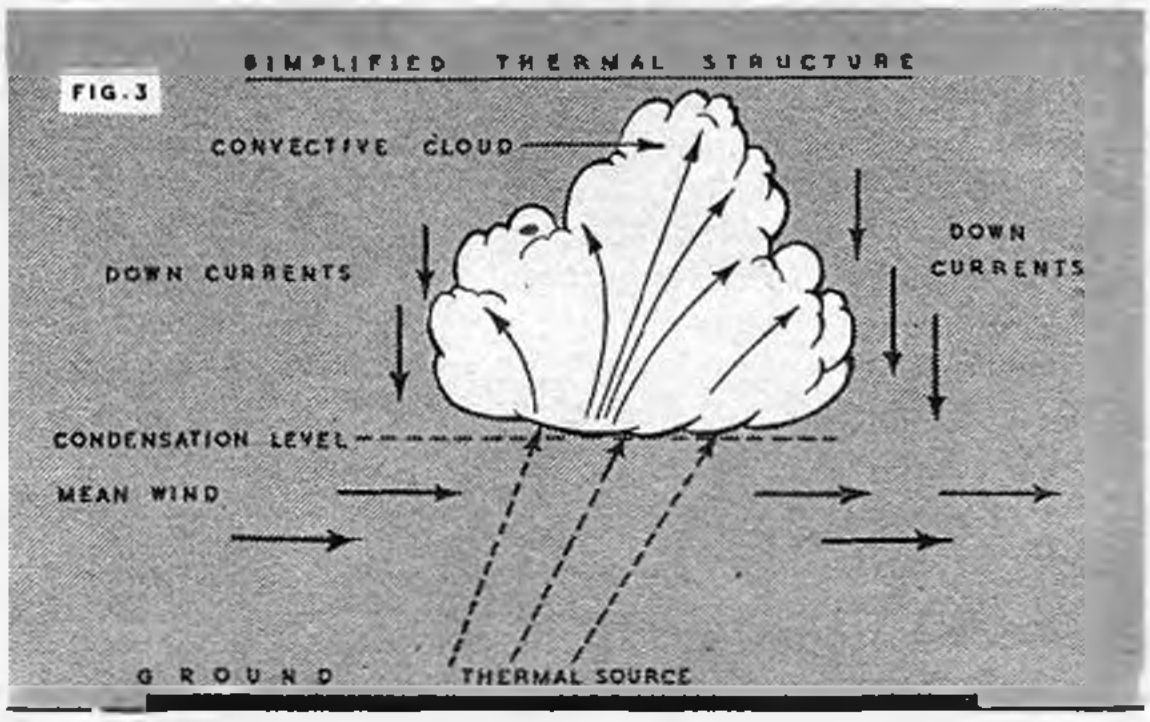
A rough idea of the height of the cloud can be obtained by multiplying the difference between the surface temperature and dewpoint by 230. For example if the surface temperature is 70° F and the dewpoint 60° F, then the height of the base of the cloud is (70—60) x 230 = 2,300 ft. (N.B. Dewpoint is temperature at which the air would become saturated).

Finding a Thermal

Much has been said about stability, surface temperature, etc., in the foregoing paragraphs, but how is the ordinary aeromodeller going to discover whether the air is unstable or not and if so what height ? Unfortunately at the moment, due to the closing of AIRMET, detailed information is not available. But a little information can be gleaned by intelligent listening to the B.B.C. weather forecasts, e.g. mention is often made of unstable w'ly airstream covering the British Isles ; a mention of showers also indicates good thermal prospects, as does high surface temperatures combined with light winds. Again pronounced " blueness " of the sky usually indicates air of marked instability. Whereas rising pressure—shown by clockwise movement of barometer arm—favours subsidence and therefore stabilisation.

In a previous paragraph it was stated that the sun heats the earth which in turn heats the air in contact with it. It is generally known that some surfaces heat up much more rapidly than others. In the first category we can place sandy soils, buildings, macadam surfaces, ploughed land, ripened fields and many other dry terrain, whilst the latter category covers marshy lands, lakes, green forested areas, etc. So here we have conditions which preclude thermal activity, a marked surface temperature contrast.

As the air above a good thermal source—sandy soils etc.—is heated, it expands and eventually this " bubble "



of air has enough buoyancy to break through the cooler air around it and escape into the upper air. These so-called " bubbles " are released from a thermal source at quite irregular intervals and can take any shape or form, the only definite rule one can make regarding their general behaviour is that their strength is inversely proportional to their diameter. In the British Isles the strongest up current likely to be encountered is probably in the neighbourhood of 25 feet/sec. and if you, or least-ways your model is unfortunate enough to get caught in one of these thermals you can safely say goodbye to it. Lift in the region of 3 feet/sec. would be sufficient to keep the average Wakefield model aloft and even perhaps carry it further skywards.

If one can observe a wind-sock prior to launching your model, there is a probability that when it blew out more strongly a thermal had just moved down-wind, the accelerated air flow being due to the rush of cooler air towards the updraught. Conversely when the wind-sock was limp a thermal might be collecting up-wind, so obviously this would be the time to launch your model. It is only a probability however, because turbulence can also cause a similar effect.

There is a definite time of day when it seems easier to be able to catch thermals. This is usually between the hours of 10 and 12 o'clock (noon). The reason for this is that in the afternoon they are much higher and more scattered due to the increased surface wind speed and turbulence, whilst in the forenoon they appear to be " bubbling " about all over the field. Some aeromodellers have been known to catch a thermal as low as 50 feet, but a more likely height is around 300 feet, initial height therefore is a big advantage.

Another useful point to remember is the relationship between thermals and cloud shadows, experiments have shown that the largest number of small up-currents appear just as a cold wave of air breaks in, and this happens in most cases in the neighbourhood of a cloud shadow.

When a model does catch a thermal its forward speed increases—the actual increase depending on the strength of the thermal—resulting in a much smaller diameter turn. So it is important that your model whether it be a glider, rubber driven or power, has good spiral stability, otherwise you'll soon find your plane on the ground and not in one piece either. And since the thermal has only limited dimensions it is essential that your plane should turn in relative small circles, a turn with a diameter of 100 feet is about right.

Whilst discussing this subject it is rather interesting to study the conditions which prevailed at last year's Wakefield held at Jami-Jarvi in Finland. The actual site consisted of a long sandy airstrip set in the midst of dense pine woods, in fact ideal thermal source country with marked surface temperature contrasts. The maximum temperature reached during the day was 75° F, which was sufficient to cause convective cloud to grow to a height of at least 16,000 feet, and thus air from the surface was rising to these heights. By the time however, the first round started at 19.00 hours, the surface temperature had fallen to around 67° F which appeared to be about a degree below the critical temperature for cutting off active thermals. So it seems rather a debatable point as to whether the contest was actually held under no-thermal conditions. None of the actual British competitors taking part have voiced any opinions on this subject, so how about it Messrs. Evans, Warring & Company ?

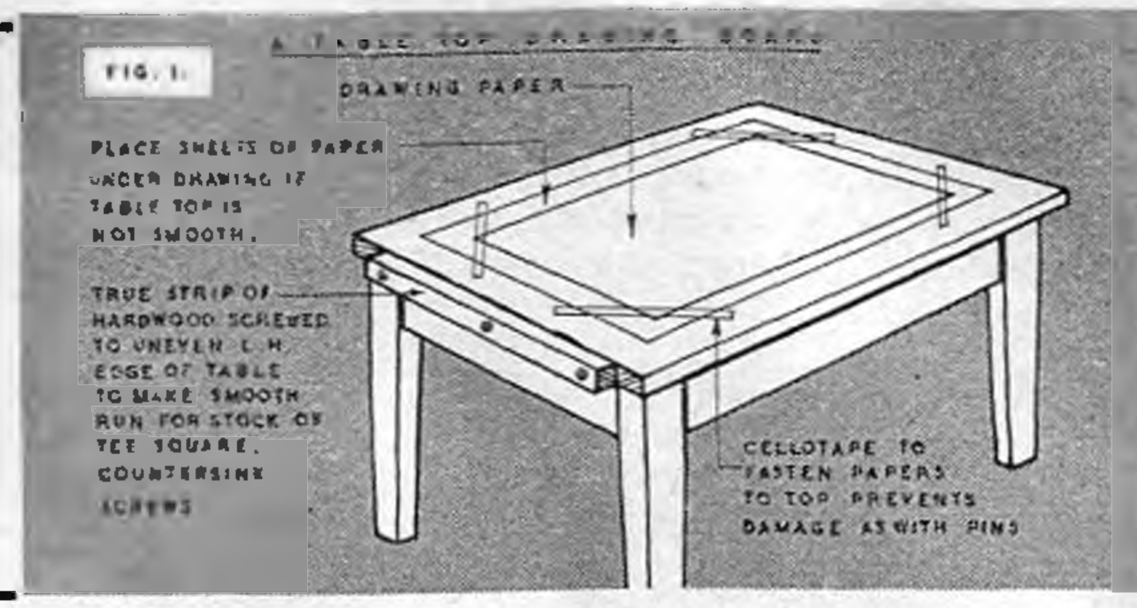
Summarising briefly then :

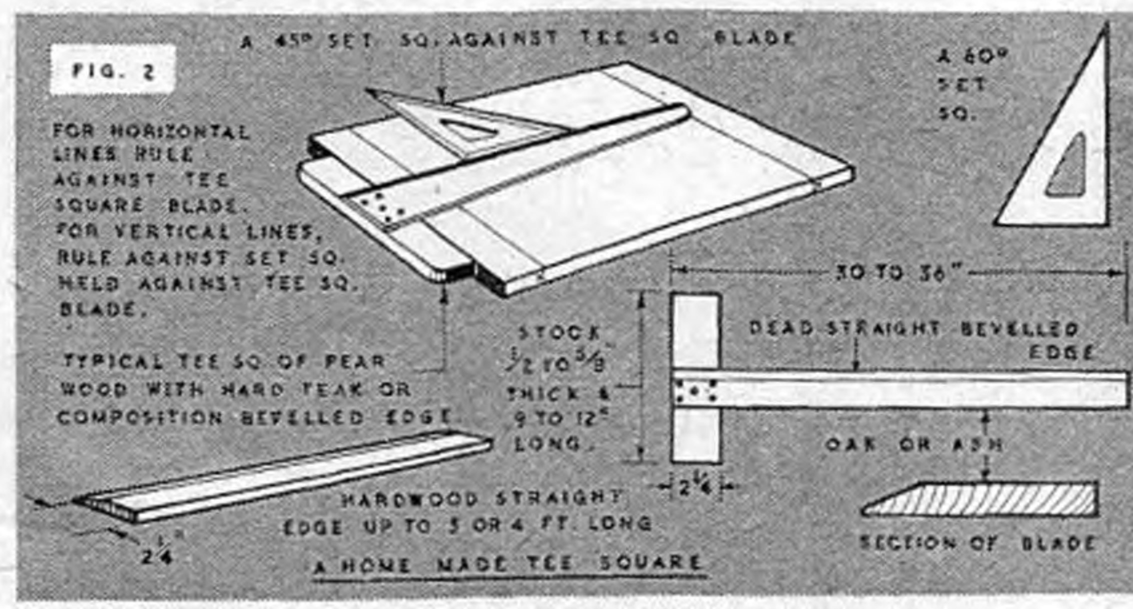
1. A/c must have good spiral stability.
2. A/c must circle in at least 100 feet diameter turn.
3. Initial height is a big advantage.
4. Best time is between 10 and 12 o'clock (noon).
5. Watch relationship (*a*) cloud shadow (*b*) possibly, lull in wind.
6. Pronounced " blueness " of sky indicates marked instability.
7. Appearance of convective cloud indicates thermal activity.

ESPECIALLY for the BEGINNER Part XVIII

BY RONALD COLMAN

Whilst the Reverend Callon has a " breather " the above author discusses in a three part article simple draughtsmanship for the newcomer to aeromodelling.





BEGINNERS, YOU TOO . . . . CAN DRAW the line wherever it is wanted, if you are true aeromodellers. Well, anyone who has the patience to build a model is a potential draughtsman. I do not mean the commercial artist type (or any other kind of " draughtsman " !) but it might be interesting to discover how many artists have been aeromods. or vice-versa . . . .

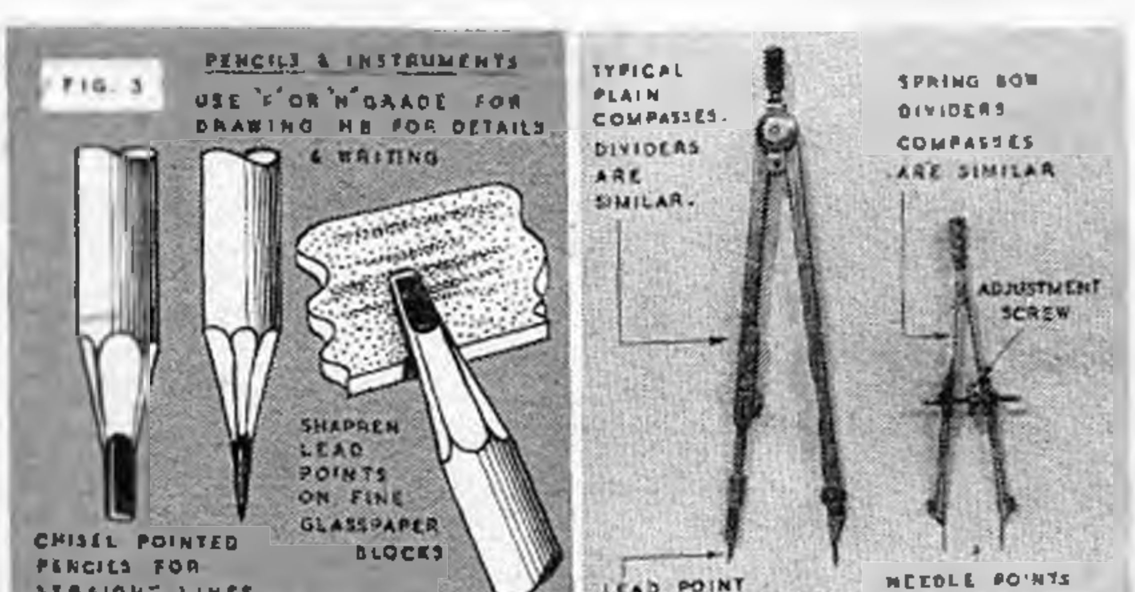
It is fairly safe to say that some folk, having grown tired of kits, " design " and build new models almost entirely by guesswork, without a drawing of any kind. If they do draw, it's last year's wallpaper with a barn door for a drawing board !

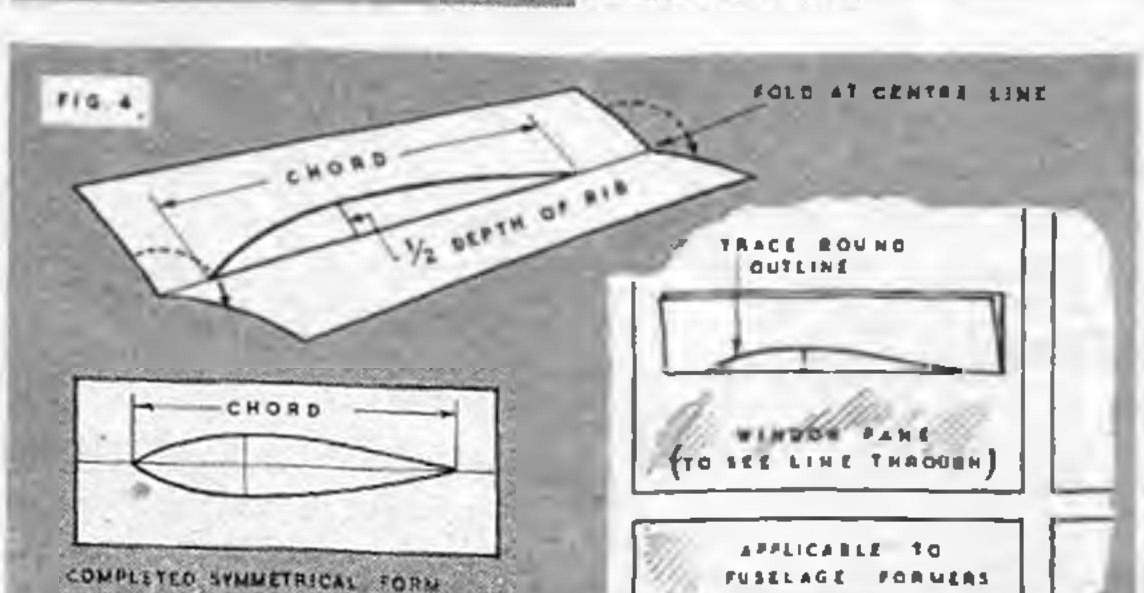
Despite this, they often make 'em fly—but it is generally recognised that drawing is an essential part of the hobby. Here then are a series of useful " bits and pieces " in the application of the pencil with simple geometry to the everyday beginners' design work. A sort of gadget review with a one-track mind ; i.e. drawing.

Text Books—Public Library

There are many books on engineering drawing that will yield much valuable information to the aeromodeller. One of the more pictorial kind giving the essentials of drawing office practice with exercises on plain and solid geometry could be purchased for a few shillings, or borrowed from a public library. The building construction and architectural drawing books should not be overlooked, for they have artistic tendencies also. One can never learn too much—something of value can be taken from every book to help in aeromodelling activities.

We are not concerned with producing elaborate drawings on card or tracing linen for reproduction, but with something workmanlike on decent paper from which to build a model ; and still have all the necessary information for future use—supposing the first job is a real winner and gets lost O.O.S. !





As in building a model, so in drawing one, accuracy pays dividends. Obviously if the drawing is out, or even if plotted accurately but shoddily done, the building process is likely to be hampered, and the results on the flying field may be painfully obvious. Let the approach be always questioning . . . is " near enough " really near enough ? Will an approximately straight line be good enough to indicate a rib position ? Can a curve of the fuselage there be guessed ? Will a freehand ellipse suffice for those fuselage bulkheads . . . ?

The Drawing Board

Can be an expensive item purchased from a drawing office centre or it can be a humble piece of plywood or even a large " lump " of plaster board ! There is no point in going to great expense unless the aeromod. has ideas of eventually doing professional work. Large boards needed to take the spread of wings and fuselages may cost a few pounds apiece, so let's think of the alternatives.

A piece of plywood, quite flat, about 3 ft. 6 ins. by 2 ft., having edges perfectly straight, will make a good board. Thickness at least a quarter-inch or better, half-inch. Any other kind of flat board having a smooth surface may be pressed into service providing that the left-hand edge may be made straight for the accurate run of a tee-square stock.

If no boards are available, a smooth-topped kitchen table may perhaps answer. If the edge is not straight, and you cannot plane it level, a strip of hardwood may be screwed to it, as in Fig. 1. If the top surface is a little uneven, place a few sheets of paper under the drawing to avoid ridging the pencil lines.

Drawing paper is normally fixed to a board with flat topped pins but unless you have a proper softwood board it may be impractical to use these—certainly if using a good table top! Fig. 1 shows adhesive "Sellotape" strips across the corner of the paper; effective, without damaging the table surface.

The Square—Other Instruments

Fig. 2 shows a typical tee-square and an inexpensive substitute. The edges of the strips of hardwood must be dead straight. If, after fixing the blade to the stock you find it is not quite square, there is no need to alter it because any horizontal lines will always lie parallel providing the edges of board and stock are running true.

Refer to a text book for other instruments. Do not go to great expense—but do purchase good instruments. A 10 inch 45° and a 10 inch 60° set-square are essential. An accurate scale rule is necessary, and other items besides pencils (see Fig. 3) are a pair of dividers, and compasses. Spring-bow compasses are essential for fine work. Inking-in instruments are not required unless you are going in for reproduction drawings.

A straight edge will be found useful—make one as shown at Fig. 2 when making the tee-square.

Drawing paper can be a costly item. For a finished black and white, one might use the best white "board" or cartridge paper, but for a pencil working drawing—to build on—thin cartridge at the best, and thin detail paper is useful. Blueprint paper is about the right weight.

Carbon Paper

Besides the normal way of using carbon paper there is the reverser method. Suppose a pair of wings have to be drawn out. Normally two drawings would be required: port and starboard. But two drawings will be unnecessary if, as one wing is being drawn, a piece of carbon paper is placed face-up underneath. Then as you draw, moving the carbon along as necessary, the opposite wing is automatically registered on the other side of the paper.

This kind of drawing is naturally for building purposes only; there is no need for double lines to indicate ribs, trailing and leading edges providing one remembers on which side of the single lines the pieces of balsa are to be laid down.

Other uses for carbon will suggest themselves. Remember that generally a softer grade is needed to trace outlines on to balsa wood.

Soft lead pencil is useful when completing the profiles of symmetrical forms such as tailplane ribs, fuselage formers, etc. Take a piece of paper and fold about the centre line of say, a symmetrical rib. Measure the half maximum thickness where required and through this point and L.E. and T.E. draw a smooth curve to make the top half of the rib. Now fold over and trace through from the back while holding up against a window pane—the bottom half of the rib will be marked out completing an exactly symmetrical form. See Fig. 4. The outline can be gone over with ink to make permanent.

Incidentally drawings which are inclined to smudge or fade can be fixed permanently with a spray fixative obtainable from an art shop.

Wings

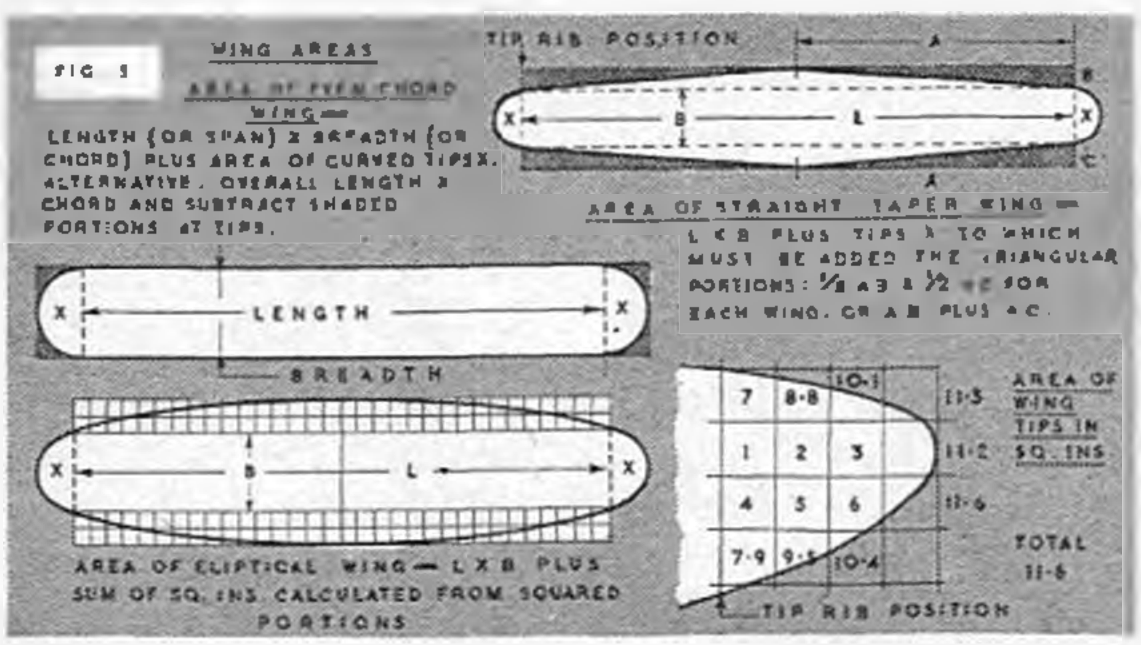
Straight chord wings are simply length × breadth for area, with allowances for curved tips as shown in Fig. 5. It often happens that straight tapered wings are not looked upon in this way, however. Tapered wings are easily calculated for area if it is remembered that two triangles make a rectangle or parallelogram. See Fig. 5.

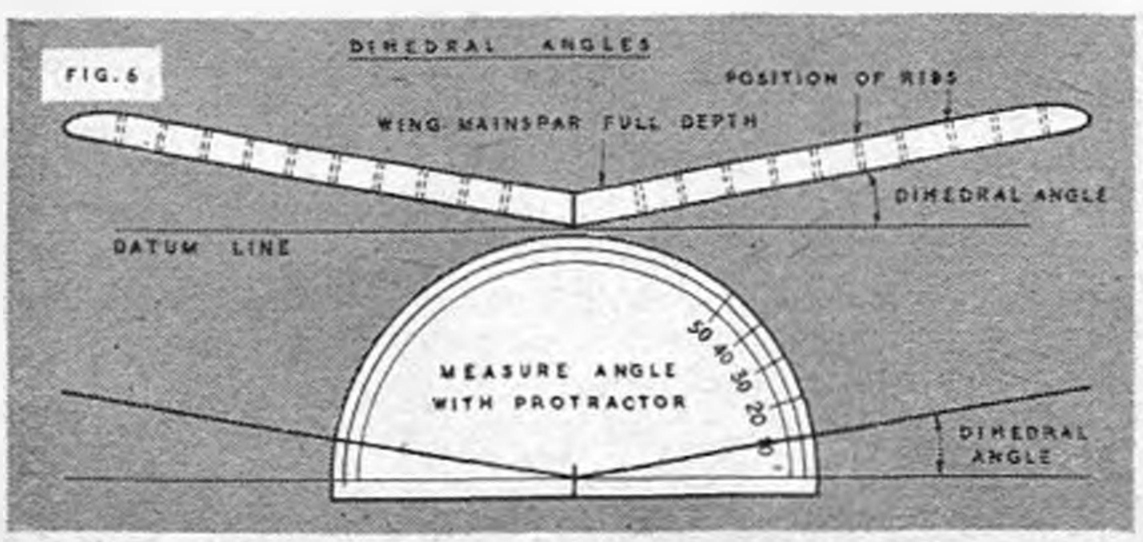
Some tapered wings have semi-elliptical tips which make area calculation more difficult. If the curved parts are broken up into inch squares the odd amounts of area can be added up to make approximately whole square inches quite accurately. This also applies to tailplanes, fins, fuselage side-views—in fact any irregular shaped component. Simpson's rule or Weddle's rule for irregular areas may be found useful—refer to any comprehensive book of mathematics.

Dihedral is a matter often reckoned as "so many inches under the tips". This assumes a straight datum line passing through the centre section, and most aeromodellers will have propped up wings on the building board with matchboxes, books and other items from the mantelshelf. A more convenient method is to set the dihedral in the mainspar beforehand, eliminating "propping up". If dihedral is calculated in so many degrees angle at the centre section, a finer appreciation of "amounts" of dihedral applied in different cases will result, getting away from the "propping up" idea. This also allows one to disregard the amount of wingspan to a large extent. It is handy to draw up a table of dihedral angles applied to known models and memorise.

Fig. 6 shows the mainspar for a duration model drawn out. Wings having no flat centre section, as in some parasol models, present least difficulty. The dihedral angle is measured on the drawing with a protractor between the datum line and lower surface line of wing.

In the next article it is proposed to deal with wings located in elliptical and circular fuselages, and the plotting of wing ribs, and the use of photography as an aid to tapered wings.





SPIRAL INSTABILITY

BY K. F. P. RUTTER

AN EASY TO READ ARTICLE WHICH EXPLAINS THE WHY'S AND WHEREFORES OF THAT ALL TOO FREQUENT "SPIN"

THE scene is a flying field at the height of the English summer. A rather gusty breeze of about ten knots is blowing, and drizzle is falling from low dark clouds scudding across the grey sky. A Wakefield is about to take off.

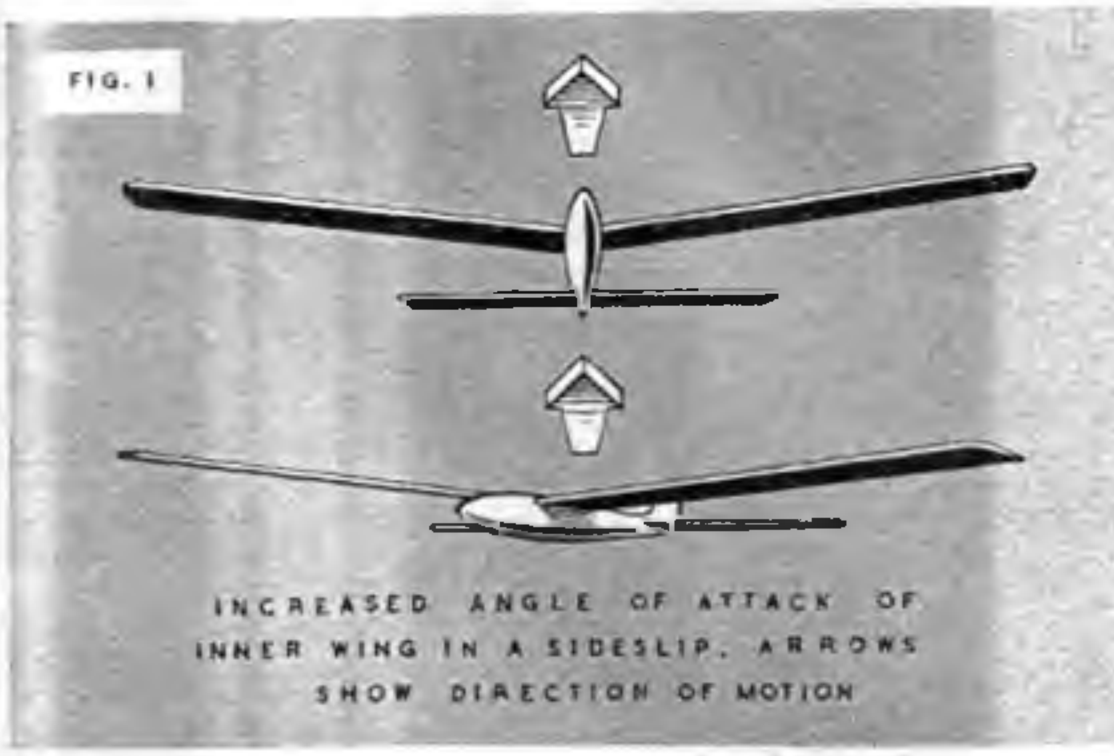
The Wakefield climbs steeply, hangs in a semi-stall, turns nicely out of it, and begins to climb away to the right. Then, for no reason at all the right wing drops, the nose drops, the turn increases, and accelerating into the turn all the time, the model dives. When it hits the ground it is moving at what is technically known as a " fair bat ". It flies to pieces. The onlookers, bystanders and what have you, are convulsed with mirth, " Har, Har " they bellow, " Old Charlie's spun in " !

This is not correct. Old Charlie has not spun in, and neither has his model. The writer has never seen a model in a spin since the dear dead days when he used to fly " aerobatic " models made of paper and bits of bamboo. It is understood however that some radio control enthusiasts can make their aircraft perform intentional spins and recoveries. But in any case a spin is a comparatively slow and gentle manoeuvre where all the flying surfaces are stalled. Charlie's model has carried out a spiral dive, which is a very different thing.

When the model took off it climbed steeply under the impetus of the initial burst of power. As the speed fell off the model increased its angle of attack to maintain lift, and lowered its nose. It turned, near the stall, and as the speed built up again it climbed away to the right. A disturbance in the air caused the right wing to drop, and the model, overbanked, slipped inwards. This was the crucial moment.

In the sideslip, two sets of forces were exerted. One was a correcting force, trying to lift the inside wing, due to the dihedral. You can quite easily see how this occurs. Take a piece of paper or balsa or anything flat, roughly the plan shape of a wing, and bend it in the middle so it has dihedral. Hold it level with the eye, as if it were coming towards you. The angles of attack on each wing half are equal. But if you turn it so that you are looking at it from ahead but a bit to one side, you will see that the angle of attack on the nearer wing is greater than it is on the other (Fig. 1). On the model in question therefore, during the sideslip the dihedral caused an increase of the angle of attack on the inner wing which gave more lift to this wing, tending to roll the model out of the sideslip.

FIG. 1



INCREASED ANGLE OF ATTACK OF INNER WING IN A SIDESLIP. ARROWS SHOW DIRECTION OF MOTION

FIG. 2

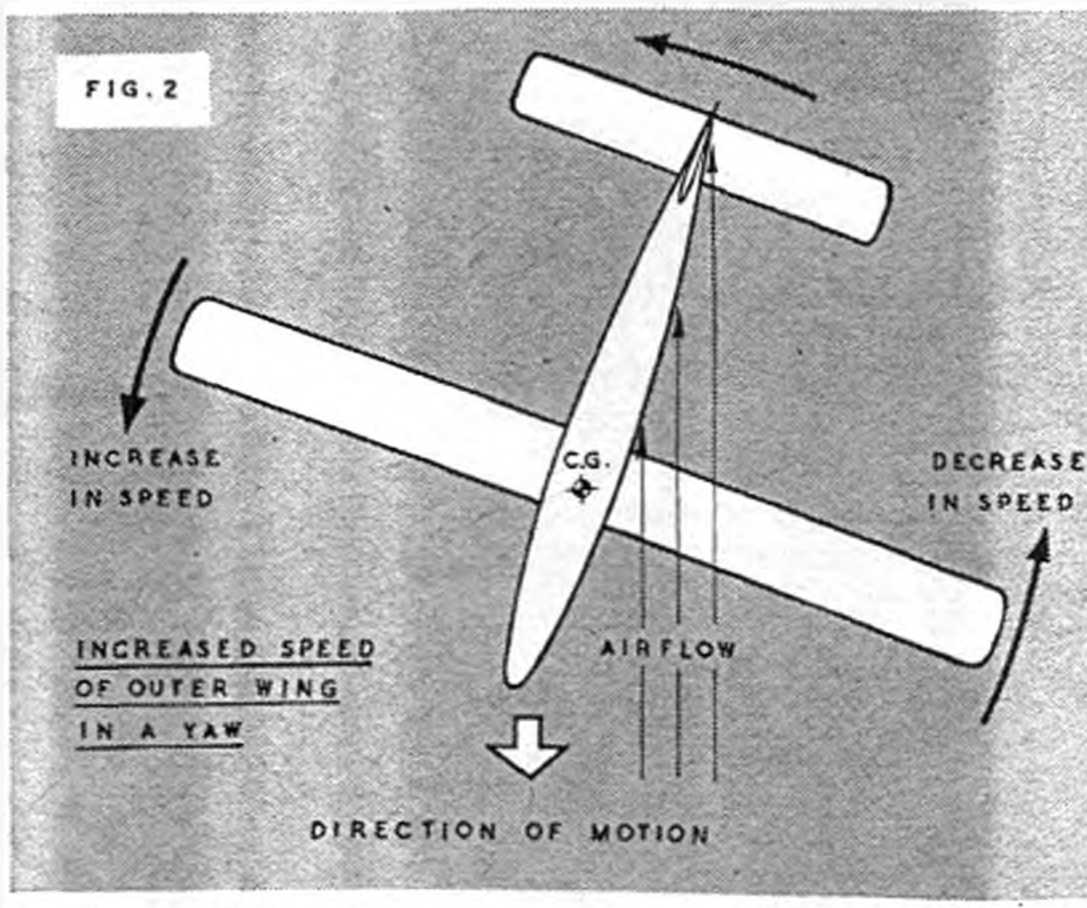


FIG. 3

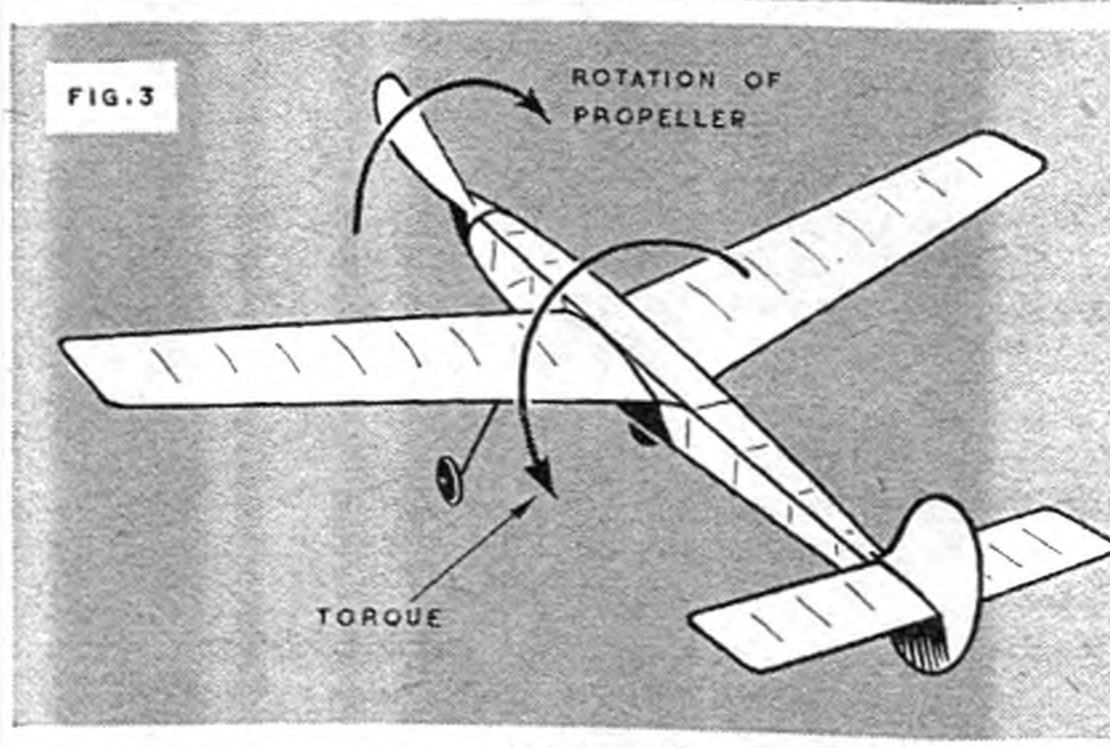
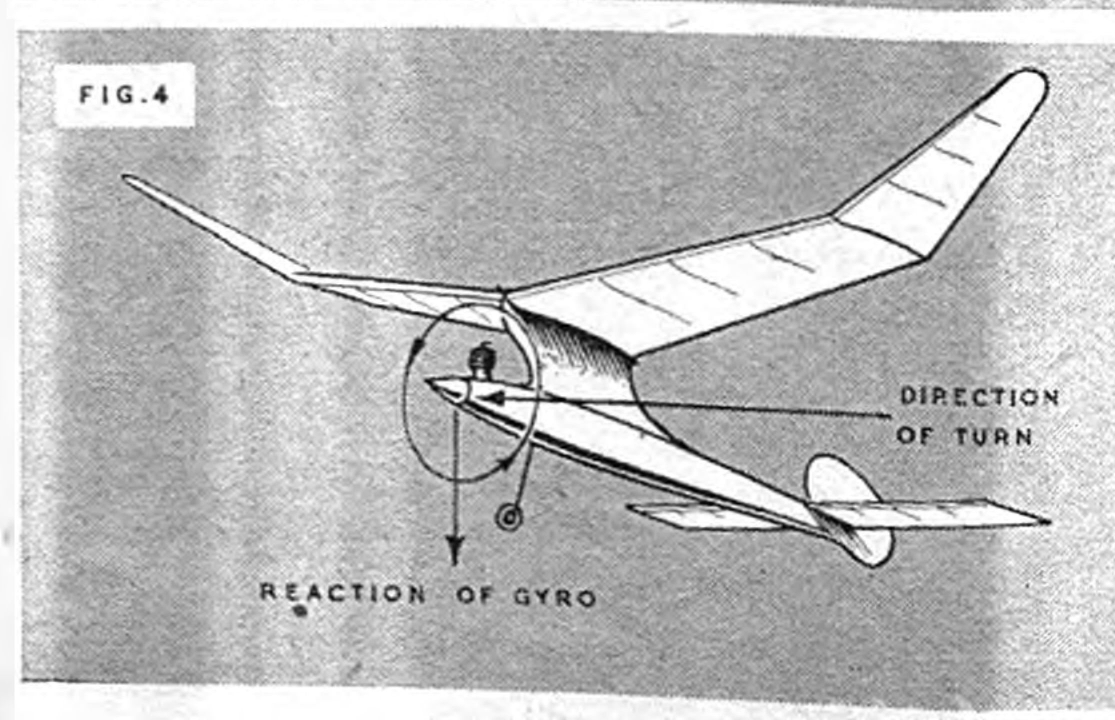


FIG. 4



The other force which arose was concerned with the side areas. When the model sideslipped of course it was going side ways relative to the airflow, and Charlie had built in a large fin, so there was a lot more side area behind the C.G. than in front of it. This made the aircraft act like a weathercock and turn into the sideslip, in opposition to the correcting force due to the dihedral.

In this case the weathercock tendency was stronger than the correcting force, and instead of rolling out of the sideslip the model weathercocked into it, and because of the bank the nose was depressed at the same time. The weathercocking or yawing action increased the speed of the outside wing, while decreasing the speed of the inner wing (Fig. 2). This caused extra lift on the outer wing, which raised it, and dropped the inner wing, causing a sideslip again, and the whole process built up with progressively increasing bank, sideslip and turn, into a diving spiral.

With full power on, the speed was rising rapidly and the gravity effect due to centrifugal force was increasing in consequence. When the model hit the ground it was going very fast, and all its components were, in effect, much heavier than they were normally. Wakefields are by nature somewhat flimsy, so it's hardly surprising that this one disintegrated. Had the ground not intervened the model would probably have broken up in the air anyway.

This spine-chilling series of events all started because of a sideslip, and once the model had failed to correct that first sideslip it was as good as matchwood.

But two other factors which may be described as mechanical as distinct from aerodynamic could have contributed. The first is torque, which is the tendency for the propeller to stay still and the model to turn around the longtitudinal axis (Fig. 3). With normal handed propellers, torque is responsible for a bank to the left. This produces a turn to the left which in most cases is quite innocuous and can easily be trimmed out with rudder or sidethrust or both. It is most marked on rubber-driven models immediately after take-off, and photographs taken at that instant show the left wing down, although the models are nearly always trimmed to turn right. It would of course be a contributory factor to a spiral dive to the left, but in the case under discussion it would be a correcting factor.

The second of these " mechanical " factors is the gyro effect of the propeller and other rotating parts. A gyro is a revolving mass, and it has certain rather comical characteristics. The most important of these from an aeromodeller's standpoint is that if you push a gyro it doesn't move the way you push it. Instead, it moves in a direction 90 degrees in the direction of rotation to the force you have applied. So if for instance you have a normally handed propeller on a model, and the rudder pushes the nose round to the right, as far as the revolving parts are concerned, the push will act at 90 degrees in the direction of rotation which adds up to downwards (Fig. 4). A bunched, or offset rubber motor will aggravate the gyro effect.

The effectiveness of a gyro depends on its speed of rotation and its weight. So if you have a model with one of the new hot engines and a plastic propeller, and you intend to fly it in right hand circles under power, you'd better include a spade in your tool kit. Practically all engine-driven models will spiral dive to the right if given half a chance.

This gyro effect on engine-driven models is paramount, whereas torque appears to have little effect, so most of these models climb to the left, with torque, and with the gyro tending to lift the nose.

On rubber jobs, however, because of the lightness and low r.p.m. of the propellers used, gyro effects are not so important. They are used in most rubber models to help to control the initial burst by giving a slight nose-down tendency, and that is why such models are usually trimmed to fly to the right.

It will be seen then that torque is not a very important factor. Gyro effects are most dangerous in engine-driven models, and can be eliminated by turning the model to the left under power. That leaves us back at the beginning with Charlie's Wakefield in a sideslip.

The root of all the trouble there lay in the fact that the side area force, weathercocking the model into the sideslip, overcame the dihedral force, which was trying to lift the dropped wing. All we have to do then is to make sure that in the first place we have adequate dihedral, and a tip rise of about one in five on each half of the wing will be quite sufficient. This will give a little over four inches under each tip of an average Wakefield. Engine-driven models frequently have more than this, and gliders usually have less.

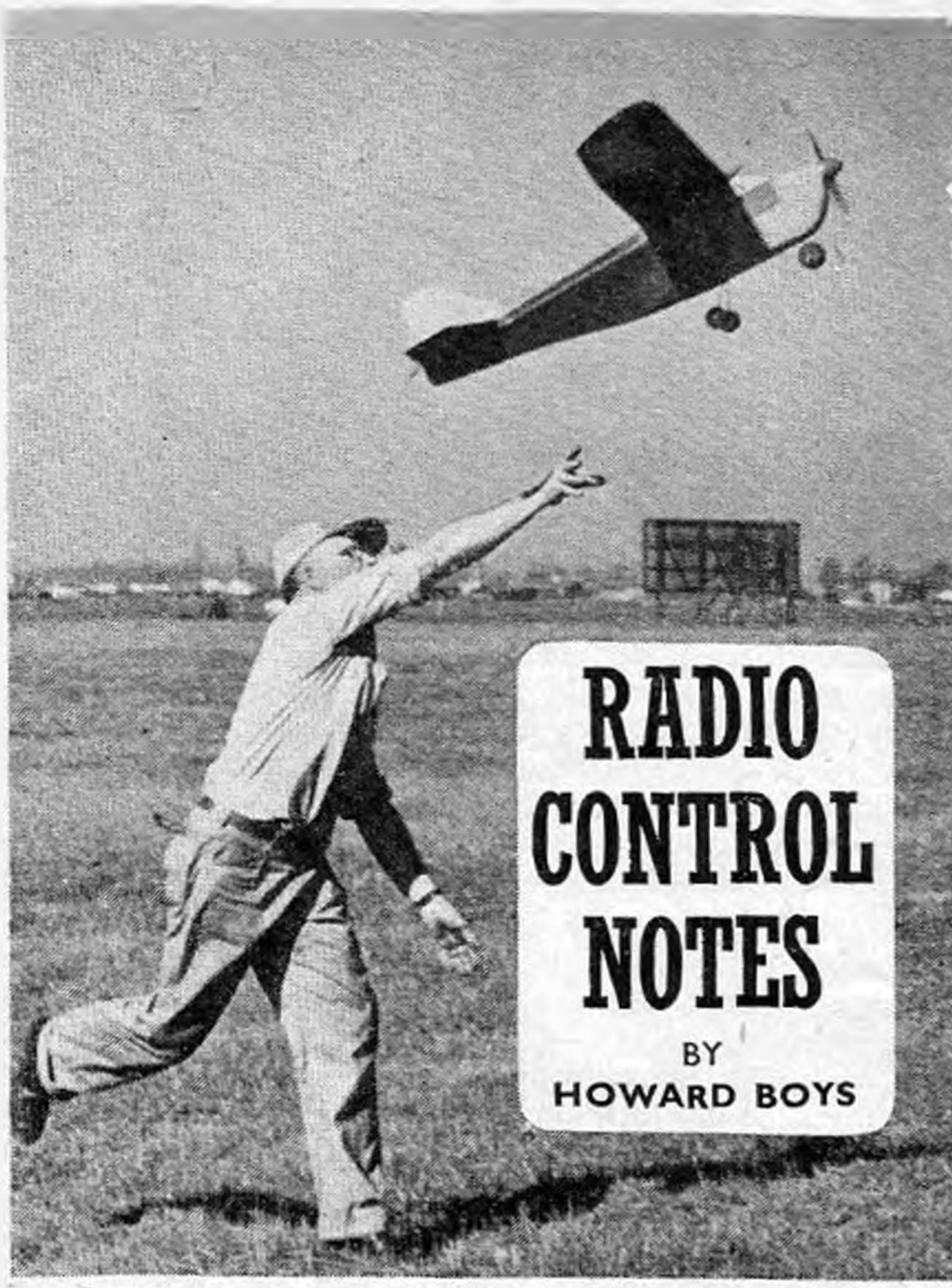
In the second place we have to make sure we do not use too much fin area. Unfortunately it is impossible to calculate the right fin area as it depends on a host of variables, many of them unknown. Some people like to think that cutting out a cardboard silhouette of the model and finding its centre of lateral are by balancing it on a pin and then arranging the fin area so that the C.L.A. is just behind the C.G. solves the problem. This is very cunning but not foolproof.

In the writer's opinion, it is best to work out the fin area by experience and keep it on the small size. Too little fin area gives a rather hair-raising waltz from side to side under power, with the nose questing hither and thither like a dog with two dinners, but this is rarely dangerous. One can then add little fins of flat balsa to the tail until the waltzing disappears. If the fin is too large, one usually has only the fin left to add anything to anyway, so if in doubt keep it small.

To put it in a nutshell, spiral instability is caused by too little dihedral, or too much fin, or a combination of both. In addition, especially with engine-driven models, gyro forces have their effect. Torque is not very important, and with normal tractor propellers it is counteracted by the gyro forces.

The writer is well aware that in some quarters small auxiliary fins are advocated to prevent spiral diving. These are quaintly entitled " anti-spin fins " but they have nothing to do with spinning. Where an aircraft has grossly more fin area in front of the C.G. than behind it, which is a very unusual layout indeed, the aircraft will invariably spiral dive most viciously under power. Only in these circumstances would increasing the rear fin area be beneficial. In the normal case a spiral dive is caused by too much rear fin area, and increasing this area can only aggravate the condition.

Finally, almost all full-size aircraft are equipped with overlarge fins and little dihedral, and will therefore indulge in spiral dives with the best of them if left to their own devices. For true-scale modellers therefore the only practical solution is the pendulum rudder.



Bill Butler, well known American West Coast modeller with his low C.L.A., high thrust line radio control model which is Arden 199 powered. Radio equipment is Aerotrol receiver and Ruderator. Bill says above set-up gives 80 degrees bank without loss of altitude.

RADIO CONTROL NOTES

BY HOWARD BOYS

FIRSTLY the writer wishes to refer to the letter from Mr. Sinfield in the May " Notes ". This letter was not seen before publication so comment could not be made earlier. Mr. Sinfield criticises the circuit given by Mr. Bovey in the March " Notes ". Mr. Bovey's circuit is similar to one published by the International Radio Controlled Models Society on which they state the following about the frequency stability. " On test the Tx held its frequency within a 400 c/s band at 27 m/cs over 10 minutes. However, it is recommended that the frequency be checked against the Monitor each time a run is started, *i.e.*, each time the Tx is switched on. The frequency remains within a narrow band over reasonable variations of L.T. and H.T. volts." The writer has used a similar circuit over a long period, and the frequency has remained as constant as could be measured with the wavemeter recommended by the I.R.C.M.S. for that purpose. What this means is that the circuit given by Mr. Bovey is good enough for the job. However, the circuit recommended by Mr. Sinfield is better, as stated in his letter. In fact, that type of circuit is practically as stable as a crystal controlled one.

Mr. Halliwell of Bishops Waltham writes:—

" I was very interested in the letter from Mr. Sinfield in the March AEROMODELLER. I have been trying to get two sets working in the narrow band using straight circuits without much success. However, I have tried Mr. Sinfield's receiver circuit with the XFG1 and R.F. amplifier, which worked very well on initial trials.

I have a change-over switch on my transmitter for alternate frequency transmission and on the bench test I found the receiver entirely non-responsive from transmissions A-32 mc/s off tune. This with the transmitter in the same room, a truly remarkable performance, and one which will solve my problems. I have further tests to do to narrow the separation, and will let you know the results. Congratulations to Mr. Sinfield ".

Mr. Sinfield says he is pleased to hear of the good results obtained by Mr. Halliwell and considers it proof of the advantage of the R.F. stage. He would be pleased to hear of any other readers who have tried the transmitter and receiver circuits he gave in the " Notes " in the March AEROMODELLER.

We now have a good idea put forward by A.C. Rogers, stationed at Tangmere. He writes :—

" I should like to put forward an idea for making easier the task of taking out and replacing the home constructed radio control receiver in a model. It will, I think, be suitable only for the larger type of model.

The idea makes use of an octal valve base and plug. A valve base can be bought from a radio dealer, and a dud octal based valve will also be required. Break the glass off the valve and remove the electrodes, being careful not to damage the base pins.

The top of the plug must be filed down to approximately 3/16 in. from the pins. Next drill the key of the base to take a long bolt with nut. This must be done carefully as the bakelite is liable to crack. A hole must be drilled in the base of the receiver to take the plug bolt. Also drill small holes opposite the pins to take the wires from the receiver to the plug. Leads to the batteries, aerial, actuator, etc., must be soldered to the back of the pins. The plug is then bolted to the base of the receiver.

The valve base is mounted on a 2 in. paxolin square which is drilled at the corners for slinging by rubber bands. The aerial, battery, and actuator leads must be soldered to the base, which can then be mounted in the model. Make sure the leads on the base correspond with those on the plug. The receiver can be plugged in and out of the model very easily. A separate test bed can be made for testing and repairing the receiver. See illustrations, Fig. 1.

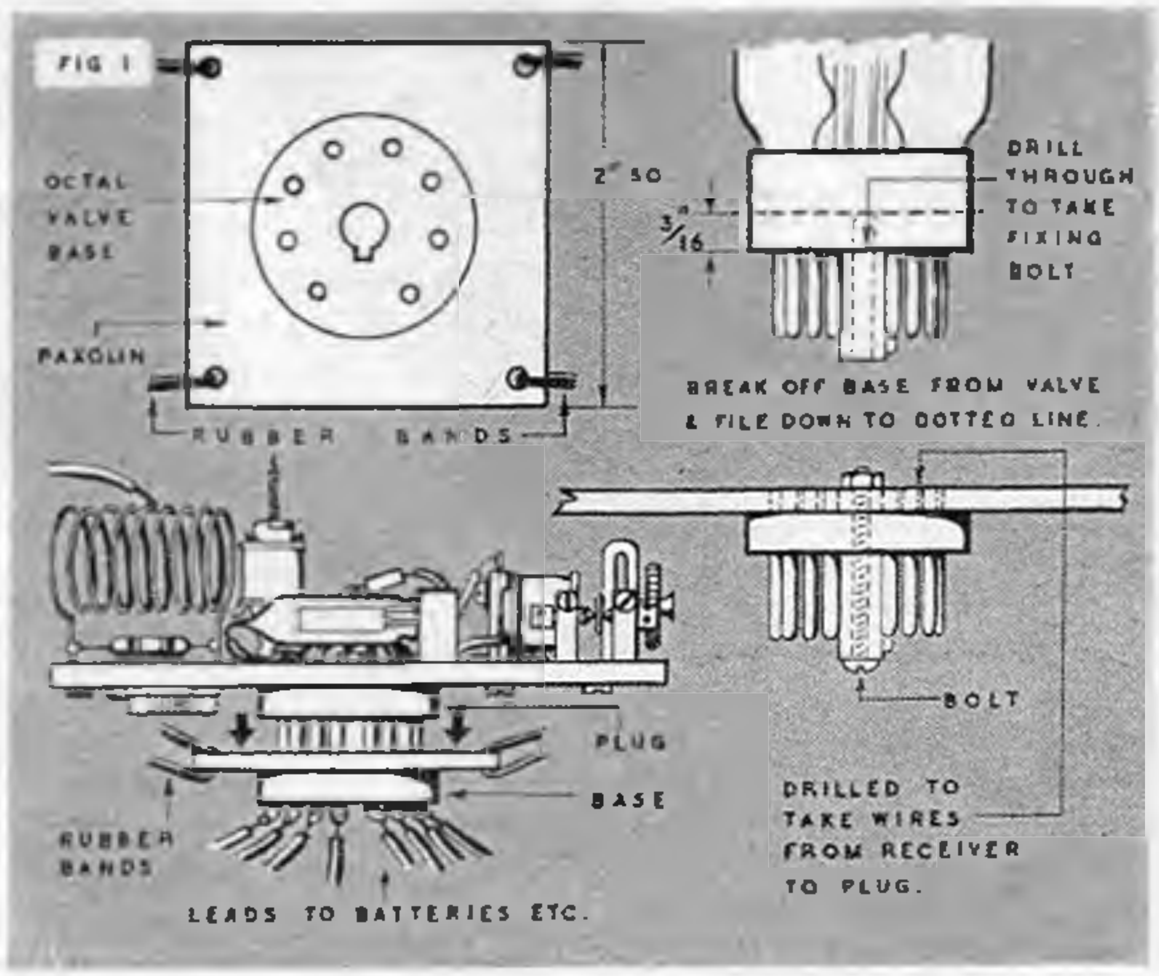
This plug mounting has the advantage that it is easier to test voltages with the meter probes on the valve base and another advantage is that two receivers can be taken on to the field, and if one breaks down the other can be easily plugged in."

Since writing the last " Notes " Mr. Birden's double acting actuator has been received, though not yet tested This actuator appears to offer practically the sam advantages as the writer's own motor actuator systen for proportional control. In due course Mr. Birden' actuator will be tested in the air, and reported or In the meantime here is a description of the moto actuator system.

Firstly a Mighty Midget motor is used. It wa discovered that these could be obtained suitable fc working on 1½ volts and at that they will start and ru reliably. Tests were first made with a partly run dow " Penlite " cell which showed no more than 1·4 volt When connected to the motor, and the motor runnin the volts dropped to 1·3 and the current drawn w: ·12 amps. With the motor held stationary, the vol went down to 1·2 and the current rose to ·36 amps. From these results it was felt that the drain on the battery would not be too great. Eventually, half No. 8 batteries were used as they were only a fraction of an ounce heavier and slightly cheaper.

The electrical circuit for this system is given in Fig. 2; when a signal is received from the transmitter the relay contacts close on one side, and without signal the contacts close on the other side. The two cells are arranged so that they drive the motor opposite ways, with signal to give right rudder, without signal to give left rudder. See Fig. 3. The Mighty Midget motor has a built-in reduction gear and a crank pin is soldered to the large gear wheel. A hole was drilled to take the pin to make a firm job, the actual position not being important. A rubber band is put round the crank pin and anchored to the model at right angles to the push-pull rod to pull the rudder to a central position, and must be tight enough to prevent the motor rotating more than 90 degrees either way. The tension on this band can be adjusted to control the degree of rudder movement, and consequently the maximum turn. With the band tight there will be little turn, and the model will be safe to fly and will not lose height in turns. With the band loose the turn can be violent enough to produce an almost vertical dive. When set like this, anything going wrong will cause a crash, but while it lasts the flying is exciting. The motor should be mounted well forward in the model near the receiver to keep the battery leads short, and the push-pull rod can be made of balsa or hard wood.

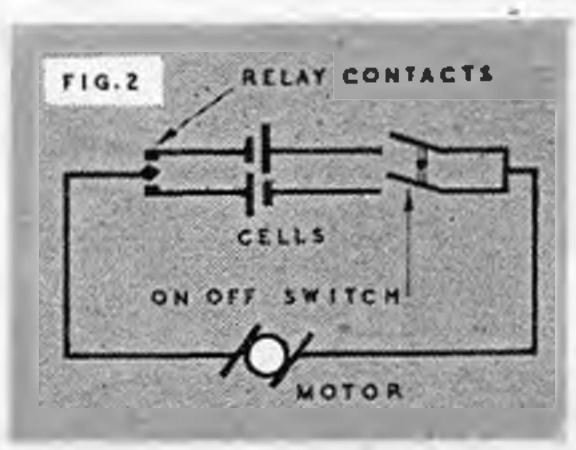
This system is by no means heavy, the motor is slightly less than 2 ounces and the two cells together slightly over 1 ounce, making 3 ounces compared with a standard 1 ounce escapement with 1½ ounce battery, a total of 2½ ounces. Rather naturally the batteries do not last as long with the motor actuator as they are in use the whole time. One advantage, however, is that they do not suddenly fail to operate. As they run down the amount of turn gets less so there is plenty of warning. There is another very attractive advantage with this motor actuator system, and that is that the control or turn does not vary with engine on and off. It works out this way. With the relay contacts closed on one side a voltage is applied to the motor. This rotates the crank until it is stopped by the rubber band combined with the force on the rudder. If the model is stationary there will be no force on the rudder, but with the model flying the air flowing past the rudder will prevent it moving very much, and for small degrees of movement the rubber band will have very little effect. For practical purposes then, in the air, the motor rotates until it is stopped by the air stream force on the rudder. It is obvious then that the force on the rudder depends on the turning effort of the motor, which in turn depends on the voltage applied to it. The voltage on the motor can be easily controlled from the transmitter by a switch such as that made by Mr. Birden and described in the last "Notes" (while mentioning this switch it might also be suggested that a Mighty Midget motor would be ideal to drive this in view of its light weight and economy). We now see that the force on the rudder depends basically on the position of the control switch on the transmitter. Now this force on the rudder is the effort that is turning the model, so the force turning the model is regulated by the control switch. It does not matter whether the air stream is speeded up by the propeller or not, the force on the air stream is the same, so the control is the same with or without the engine. With engine on, the rudder will not move so much, but it still moves until the forces balance. This balancing of forces holds good for small movements of the crank pin and also it appears for large movements. As the crank goes further round it has a greater leverage on the rudder, but this is offset by the proportionately greater effect of the tension on the rubber band. First flights should be made with the band fairly tight for safety.

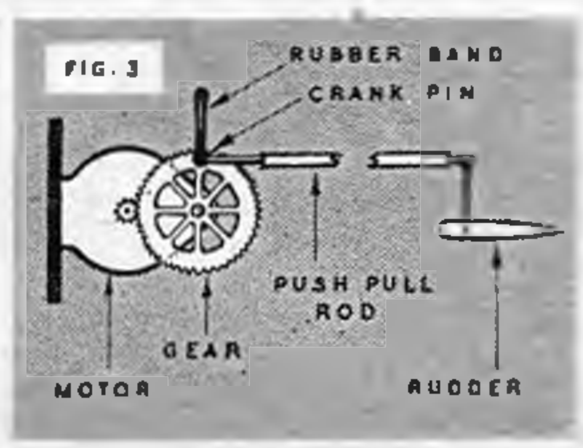


Referring back to Mr. Birden's double acting actuator, it looks like doing the job as described above, though it would most likely make a heavier drain on the battery. For anyone wishing to try it, the writer would suggest altering the stops to allow a greater movement of the arms, put the crank pin close to the shaft, and link up to the rudder so that a large movement of the armature gives only a small rudder movement. The writer intends to try this actuator in this manner when time permits, and will then give results.

It will be remembered by some readers that aileron control was found to give the same control with or without engine, but this has not been used lately due to the success of the motor actuator on the rudder. It is likely however that aileron control will be tried again at some future date, using magnetic actuators on the score of economy. A magnetic actuator has recently been made weighing only about 1 ounce and working off 1½ volts with a current drain of ·25 amps. This is supplied by half a No. 8 battery. The system has given a good account of itself in a Mills Mk. II engined model. It is proposed to fit one actuator in each wing to give up aileron or neutral and not use a return spring. The air stream should be sufficient to lower the control surface.

Here's wishing you good flying, and "Cheerio" till next month.





Realism ?

Dear Sir,

In view of Col. C. E. Bowden's letter (June Aeromodeller) in which he supports "Realistic type of flight as opposed to exaggerated duration climb", I should be pleased to read the Colonel's remarks regarding the vertical climbs of the latest "Meteors" and the "Canberra".

West Bridgford, Nottingham. J. Howard.

High Altitude Modelling

Dear Sir,

I have long been a regular reader of the Aeromodeller, and I think I may be the highest aeromod. in the world. I would like to know if any of your readers operate at a higher altitude than this (I live at 8,400 feet above sea level). If there are any, I should very much like to compare notes because modelling at this height has its complications, believe me !

I have experimented with various types of models with varying success except for rubber powered ones which I intend to try next. I have just finished a Phantom C/L trainer which I think you'll agree is a fairly easy machine to fly at sea level with quite good performance. I was at a quandary when the wretched thing wouldn't even take off with a standard prop and just hopped along the ground, although my Mills engine was doing full revs. I have now installed an enormous 9-in. diameter prop, and even with that she only just gets off the ground. I have found the same with free flight models and in every case a larger prop is needed. So far I have found gliders to be my best, and have had considerable success and not a few losses, due to the fantastic thermal activity. Perhaps some of the theoretical bods in England whose articles appear from time to time can give some ideas and suggestions on high altitude work ?

Mau Summit, Kenya Colony. P. D. Hemphill.

Balsa Selection

Dear Sir,

I have been very interested in reading Mr. J. H. Maxwell's article on a Balsa Hardness Gauge.

We have, from time to time, given much consideration to the possibility of marking our "SOLARBO" Balsa Sheet, strip and block under some form of colour coding to make the aeromodellers' selection easier, it is, as Mr. Maxwell very rightly says, a difficult problem because of the variation in hardness in an individual Balsa plank.

For the whole of the post-war period, we have had to deal with supplies of Balsa wood as and when we could get them and in whatever quality came to hand. As far as possible we have selected the best grade of wood available for the various sizes we cut. We just cannot cut 1/32 inch thick sheet from any Balsa, whereas ¼ inch sheet and thicker can have a very much wider tolerance. I am afraid that at the present time we are not always using the wood we would like to use, but we are using the wood we have in the best possible manner.

In general, I think aeromodellers would be surprised to find how much selection we do make in our Works and we can go as far as to say that there is no Works in the world which does such a variety of work and has as many possibilities of selection.

All this means that, particularly at the present time, some form of gauge, such as Mr. Maxwell's is necessary. Mr. Maxwell's gauge certainly appears to be very simple and remarkably accurate. I have tried various forms of gauge but they have all been discarded as being impractical for Works' use. As Mr. Maxwell says, it is a big job for supply companies and can finally only be done by the individual aeromodeller.

Of course, in the course of handling very large quantities of Balsa wood, our works staff know how to deal with each piece of wood as it comes along and it is worthy of note that, in order to get really accurate and fine sawing the saws themselves have to be changed for different textures of wood.

I, personally, have developed my own method of gauging the texture of wood and this I do by means of thumb nail. I have found this to be a very sensitive instrument indeed, but, of course, it has only come with long practice and is entirely unsuitable for an individual aeromodeller. It is what you can tell with a thumb nail. Two pieces of wood may weigh the same—one may be good sound wood and one may be wood which has deteriorated through fungal decay. They have, however, a very different feel.

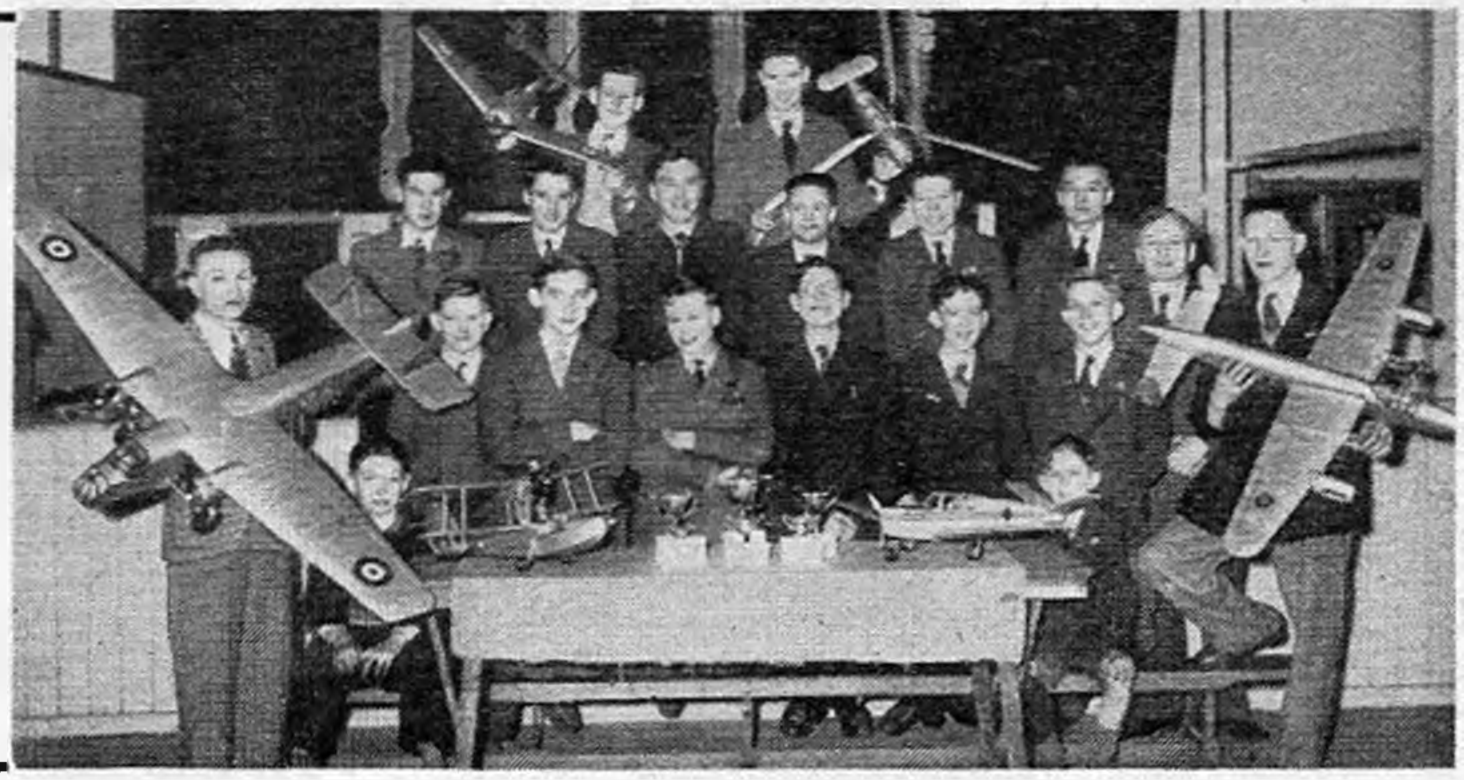
If we could buy Balsa wood freely and adjust our buying to our requirements and keep in stock sufficient Balsa wood that we could always draw from selected stocks, we could go a very long way towards supplying the graded Balsa wood for aeromodelling. It could only be done, however, by taking all the Balsa wood as it is received and making the grading in its bulk form. We could then draw in from a particular graded stock, cut it and put it into stock in graded cut Balsa wood. Our deliveries would then be made from stocks of graded wood.

Finally, the whole business at the present time is complicated by the fact that we have to make a first selection as to quality after the material is cut for our export orders. Without this export business we would not be able to buy Balsa wood to keep the industry going. We can only get this export business if we supply a better article than can be bought from any other source. We are apparently doing this, as we are receiving extensive orders from twenty different countries and as many as forty different clients abroad, but it does not make it easier to maintain our high standard on the home market. However, we consider it better to allow some defects in the wood, rather than have more waste and higher prices. We do know what is required ; if we don't always supply it we honestly claim that it is from causes beyond our control and not of our desire.

J. V. Patterson.
Plantation Wood (Lancing) Ltd.

CLUB NEWS

Woodlands Model Flying Club display a goodly selection of free-flight flying scale models at their exhibition in Doncaster. See if you can name the six types and then turn to page 442 and check your aircraft recognition.



I'VE got two real binds to get off my chest this month, and I trust all will carefully read and consider the following points, for they are made in the best interests of the hobby.

First is the increasing annoyance caused by retrieving squads who will persist in cluttering up the take-off area with push-bikes and motor cycles, creating a real hazard to competitors, and in the latter case a great handicap to timekeepers who are endeavouring to correctly time the engine run of a power model. This was forcibly brought home to me during the contests staged at Radlett over the Whitsun holiday, for on a number of occasions it was only possible to check a motor run by seeing the model dip on the engine cutting, hearing being impossible by virtue of three or four motor bikes starting up within a few yards of the timekeepers.

We all know and appreciate the value of retrieving squads, but I do feel that matters have got out of hand in this direction. Surely it is not asking too much for such retrievers to be stationed well to one side or the other of the take-off area, and to be started off on their recovery service on receipt of a signal from their clubmate. Further, is it really necessary for more than one such vehicle to chase one model ? On more than one occasion at Radlett I witnessed no less than *five* motor cyclists in pursuit of one solitary model, and it seems that aeromodelling meetings are degenerating into opportunities for blinding up and down a runway where no speed limit operates.

My second beef is against those " official timekeepers " who have still not clued up on the current regulations regarding their duties. In spite of full instructions, these types will insist in entering times in seconds, though the regulations require official durations to be shown in MINUTES and SECONDS. (A classic example I came across was at one Area meeting where the timekeepers had all been issued with a special sheet of instructions applicable to that particular meeting. In spite of every effort to ensure that the bods knew what was expected of them, some cards were returned to control with times entered up to three decimal places of a second ! !)

I may sound niggly, but surely it is not too much to ask of a few individuals to gen. up properly on the job, for it only adds to the work and difficulties of the main control who have to correct all such wrong entries.

May 6th saw some rather extraordinary variations in weather conditions in the different Areas, for we hear of an almost perfect modellers' day in the East Anglian district, bright sunshine in South Wales, average conditions at Fairlop, and high wind and very poor visibility in the Midland and South Midland Areas.

Repeating the story of the first Area meeting, the **MIDLAND AREA** again had a large number of entries in both the national contests, 54 Wakefield stalwarts battling it out as against 82 in the power event. (It is obvious that the Wakefield Eliminators are getting too specialised for the average competitor, and the less experienced are leaving such contests to the more experienced and keener types.) Ray

CONTEST CALENDAR

June	17th.	West Essex Gala. Fairlop; Walsall Festival of Britain Rally. Walsall Airport; South-Western Area Rally. Chudleigh Knighton Heath; Scottish National C/L Rally. Montrose Cricket Park.
	23rd.	Le Coupe du Salon & Challenge Plymouth, control-line, speed and stunt international. Le Bourget, Paris.
	24th.	Merseyside 9th Annual Clwyd Slope Soaring Meeting. Clwyd Hills, N. Wales; Northern Heights Gala. Langley.
July	1st.	MODEL ENGINEER CUP ; WOMEN'S CHALLENGE TROPHY ; POWER 1·5 c.c. (Area). South Midland Area Rally, Cranfield.
	7/8th.	Wakefield Finals. Finland.
	14th.	FESTIVAL OF BRITAIN CONTROL-LINE CHAMPIONSHIPS. Wembley Stadium.
	15th.	KEIL TROPHY & LADY SHELLEY CUP. (Decentralised.)
		F.A.I. Power Championships and International Radio Control Contest, Paris.*
	22nd.	Wakefield (Yorks) M.F.C. Open Day. Heath Common, Wakefield.
	22nd.	Godalming Team Racing Trophy, Farncombe Recreation Ground, Meadrow, Godalming, Surrey. 11 a.m.
	29th.	Control-line Championships. Belgium.
August	5–6th.	BRITISH NATIONALS. Fairwood Common, Swansea.
August	6th.	Control-line Rodeo. Chester.
	12th.	South Coast Gala. Brighton ; Bolton M.A.S. Annual Rally. Affetside, Bolton.
	15–20th.	A/2 Glider Finals. Yugoslavia.
	18th.	INDOOR NATIONALS. Manchester ; " Daily Dispatch " Rally. Woodford Aerodrome.
	19th.	All Herts Rally. Radlett.
	26th.	4th Huddersfield Rally. London Area F/F Championships. Fairlop.
August to September	21st. – 1st.	Model Engineer Exhibition. Royal Horticultural Hall.
	2nd.	F.N.A. Cup. Holland; FARROW SHIELD; JETEX CONTEST; FLYING SCALE (Power) (Area).
	9th.	Northern Area Rally.
	16th.	BRITISH CHAMPIONSHIPS and TAPLIN TROPHY.
	30th.	DAVIS CUP FINALS. Fairlop.
October	7th.	UNITED KINGDOM CHALLENGE MATCH. Heathfield, Scotland.
	14th.	FLIGHT CUP & FROG JUNIOR CUP. (Decentralised.)
	28th.	HAMLEY TROPHY. (Decentralised.)
November	17th.	S.M.A.E. Annual Dinner and Prizegiving.
	18th.	S.M.A.E. Annual General Meeting.

**These Paris events were originally scheduled for 10th and 17th of June and have been postponed subject to F.A.I. confirmation.*

Monks of Birmingham did extremely well under the existing conditions to set up an aggregate ratio of 48·75, though in the combined results this was well below winners total of 66·4. Barry Venville of Solihull again showed he has power flying well taped, even though a poor second flight pulled his aggregate down considerably. Generally speaking, the Wakefield models made a much better showing than the power jobs, and it was left to H. W. Revell (Northampton) to show the way home to a very strong entry with a total time of 9 : 45. His times were 3 : 51, 1 : 54 and 4 : 00, the last flight being the best time of the day in either comp. It is noticeable from the detailed results that second round times were poorest on average, this being due to a very bad spell of weather around the early afternoon which saw the cloud base right on the deck. As is expected in this area, the Northampton chaps did well in the Wakefield class, though Ted Evans could have kicked himself for launching cross wind on his third flight, after being well in the lead up to that point. A third round time of 13 seconds pulled him down to twelfth place, but he should have enough in hand to qualify for the final Trials.

A recent competition committee meeting of the **R.A.F. ASSOCIATION M.A.C.** studied organisation of the forthcoming R.A.F Championships, which will probably take place at Coningsby. Command eliminators will take place during the season, the best four in each class of flying going forward to the combined finals. The possibilities of staging a Challenge Match between teams of R.A.F. modellers in the U.K. and B.A.F.O. is being investigated.

The **NORTH WESTERN AREA** tried out a new ground at R.A.F. Tilstock on the 15th April when Bickerstaffe of Accrington showed he is well up in power flying by topping the Area results for the Astral, glider honours going to R. Faulkner of Whitefield with an aggregate of 6 : 03. (It is interesting to note that an Area with more member clubs than the Midland only produced about half the number of competitors.)

The **NORTHERN AREA** are hopeful of securing sponsorship for their annual Rally from one of the local newspapers, a move I trust will reach fruition, for we all know the value that has followed similar support by the Manchester " Daily Despatch " to the North Western Area. York M.A.S. have taken the advice offered by yours truly and overcome the " visitors to Clifton " impasse by making such guests honorary members for the day, providing due notice is given to the club secretary. (I ask in turn that chaps give the York lads a break by adhering to the latter requirement, for it is not fair to just turn up and expect arrangements to be made without due warning.) Weather for the May 6th meeting was slightly better than the earlier affair, but nevertheless a strong wind was present, which coupled with considerable humidity made long flights out of the question. W. Nelson of Sheffield was their best Wakefield man with a total of 7 : 13, with K. Farrance (West Yorks) making the best showing in the Halfax with an aggregate of 36·55.

The sun shone on Fairwood Aerodrome for the Weston and Halfax events, and a large **SOUTH WALES AREA** attendance enjoyed fine flying weather. Phil Vicary of Swansea was in fine form, putting up a total of 10 : 20 to place ahead of his fellow clubmen Frank Holland and A. Williams. F./Lt. Verney and Peter North battled it out for top honours in the power class, the R.A.F. succeeding with an aggregate ratio of 46·5—this also securing the Cardiff club " Watkins Trophy " which was flown in conjunction.

The **NORTH EAST AREA** competition organisers appear to have a flair for choosing windy days, and they have excelled themselves this year ! The Town Moor fliers on April 15th had to cope with wind and droves of spectators who surrounded everything and anything that looked like a model. They were treated (?) to a succession of crashes in the first round, the hardier spirits staying to watch the eventual annihilation in the second and third rounds. Laing of North Shields made best showing in the A/2 event with a total of 1 : 43. May 6th saw even fewer competitors, even though the conditions were no worse than the Spring meeting, but the Wakefields were able to put up better times, W. W. Armstrong topping the list with 3 : 44 and N. A. Clarke (Bishop Auckland) aggregating 20·37 in the Halfax.

Encountering similar weather to the Midland lads, the **SOUTH MIDLAND AREA** fellows flew at Watchfield where Roy Clements (Luton) proved best with Wakefields to total 8 : 07, his best flight being in the third round 4 : 56. Eric Smith of Icarians followed on some 40 seconds behind, and K. Watson placed third. R. Young of High Wycombe did best in the power event with a total ratio of 20·4, best ratio of the meet being 11·2 by Johnson of Berkhamsted—but he only got in one flight.

Mr. B. K. Clark of 184, Ruden Way, Epsom Downs, informs us that he has a model in his possession, this being a sailplane of presumably Nordic classification ; black and red, 58-inch parallel chord and 23-inch tailplane. Underslung rudder and offset towhooks are fitted, and the model carries an S.M.A.E. transfer—but of course no name or address ! The owner can recover the model on application to the address given, on giving proof of authenticity.

NORTHERN HEIGHTS M.F.C. wish to inform all modellers that a new trophy, donated by the De Havilland Company, will be competed for at the annual Gala, due at Langley on the 24th June. This trophy will go to the winner of the power event, and together with the " Queen's Cup " and other trophies will make this years effort a real bumper occasion. Programmes containing full details are available from A. T. Widgery, 20, Marriott Road, Barnet, Herts., price 7½d. post free.

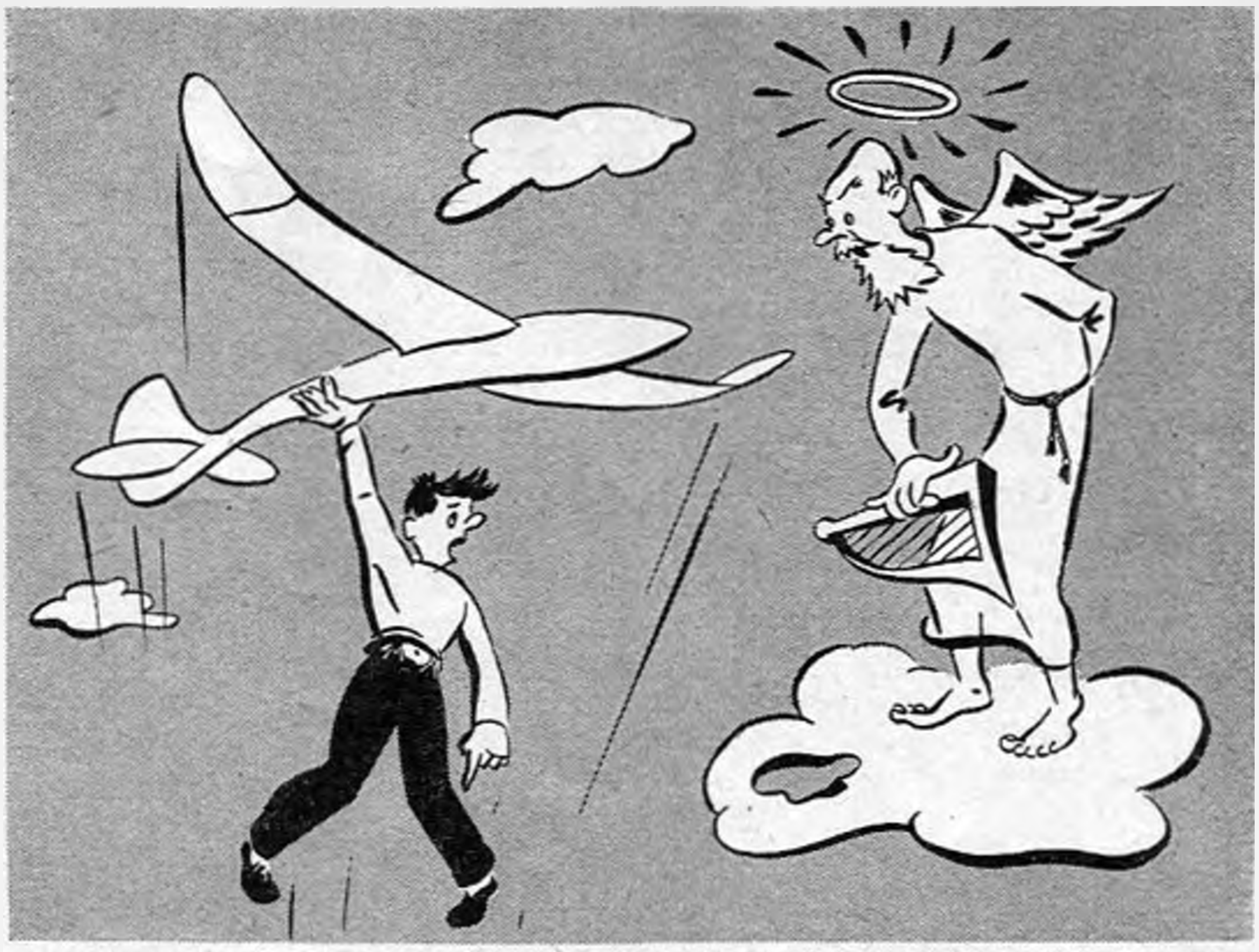
The junior challenge in the **YORK M.A.S.** is at last being met, comp. sec. Ron Firth gaining the " Clifton Nordic Cup " with a total of 6 : 56, followed by F. Miskin 6 : 45, and Tony Finucane 6 : 23. Firth repeated his success winning the " Dodd Trophy " for the second year in succession, his time on this occasion being 6 : 35.

The **EASTBOURNE M.F.C.** had a very encouraging start to the season with three firsts and one third place at the Area meeting held on Godalming Common on the 15th April, this being a fine performance in view of the fact that only five members made the journey. Two of the models are sure of places of honour at a forthcoming combined exhibition in Eastbourne of the Model Flying and Power Boat clubs. This is the first combined effort of the two clubs, and great hopes are expected of this co-operation.

It is with regret we record the disbanding of the Bredbury and Romiley M.A.C. due to lack of support and of a flying field. The latter probably contributed to the former !

April 22nd proved a good day for the **WINCHESTER M.A.S.**, almost perfect modelling weather enabling some good times to be set up in a sailplane contest staged on that date. First man off clocked 2 : 56, but this was soon beaten when Barry Shaw flew his " Nord 2 " away for a 6 : 21 o.o.s. Frank Shawyer proved the winner on aggregate with a total of 6 : 49, followed by Shaw and Bill Childs, 4 : 52.

London Area contests that " just happen " are criticised in this month's **WEST ESSEX AEROMODELLERS** " News ", but we are somewhat puzzled by a statement to the effect that they are not proposing to contribute more than their " fare " share in the proceedings. Case of " cash and not kind " ! ! We are even more intrigued with the fact that this very able club are altering the geography of this tight little isle, for we learn that they attended the " Northants" rally at Lasham. Seems the Midland Area will have to put a fence around their strongest Wakefield contingent or they will find Ted Evans flying for the Southern Area ! The club has flown off three matches in the Area team race league, gaining maximum points on each occasion. Ken Marsh and Ken Muscutt are flying in the 90's with their inverted Dooling 29 model, whilst the Taylor Bros. are still plugging away with their E.D. IV, getting about 70 m.p.h., but having difficulty in getting a consistent 80 laps. R/C flying is of course, well to the fore with these chaps, and we learn that Sid Sutherland is preparing for a cross country flight with the transmitter in a car.



" Mr Gilder I Presume ? (Ref. page 430.)

Sunday, April 22nd saw the **BARNSLEY & D.M.A.C.** entertaining Huddersfield in the first round of the Area knock-out contest, when the home team were successful with a score of 1007 against the Air Leaguers 499. Both teams lost a model during the contest, the Barnsley machine being returned intact from Normanton, some 15 miles away.

The **GREAT YARMOUTH & D.M.F.C.** is now reorganised, and with all unnecessary chin-wagging dispensed with they are getting down to building and flying. They have ideal headquarters for building, etc., but have yet to find a good field for flying. However, strong contest tendencies in the club will overcome that difficulty, and we look forward to hearing more of them through the season.

The **SOUTHGATE & D.M.F.C.** has lost several members to the Forces and consequently has vacancies for active new members ; it invites all lone model fliers in the district to join the club to the mutual benefit. The hon. sec. A. O. Rogers, 19, de Bohun Avenue, Southgate, N.14, will be pleased to forward particulars to any interested aeromodellers.

C. R. Plant of the **STOCKTON & D.M.F.C.** had a field day on April 29th, first winning the club rubber comp. with flights of 2 : 41, 4 : 11 and 2 : 44, going on to make a new club r.o.g. record of 3 : 45 5, but lost the model in the process. Weak thermals followed a heavy downpour of rain, though the wind took most models o.o.s.

Indoor speed flying is taking place with the **CHINGFORD M.F.C.,** over 70 m.p.h. being claimed with souped-up Jetex 50 powered jobs. Seems the main requirements for this type of flying is something substantial behind which to duck, and the windows wide open ! These chaps went to the Lasham Rally, best sight being the well run tea hut. " Stew " Cameron got best flight in the club with a glider flight of 4 : 30.

Arrangements for the **BRIGHTON D.M.A.C.** organised South Coast Gala Day on Sunday 12th August, are progressing favourably, and we learn that the M.A.T.A. Silver Challenge Trophy (formerly presented to the S.E. Area C/L Rally) has been passed over to the Gala meeting, and will probably be awarded to the Gala Champion.

Members from 41 clubs visited the North Hampshire Rally on April 29th, but the fine weather forecast proved a spot of duff gen, the day deteriorating into hail, snow and wind. The R/C event did not prove the success hoped for, and only a few competitors were able to complete the course, but the tale was better for the team racing affair, which proved highly entertaining. One entrant was disqualified for continually flying too high, a final thrill occurring when the " down " line on the Godalming model broke, the model crashing when well in the lead. Full results were. :

Open Glider	**G. Smeed**	**Surbiton**	**12 : 13**
	R. Yeabsley	**Croydon**	**12 : 08**
	H. Setterfield	**Croydon**	**11 : 54**
Open Power	**H. Worsnop**	**West Middlesex**	**12 : 53**
	N. Marcus	**Croydon**	**11 : 52**
	R. Hill, Jnr.	**Hayes**	**10 : 57**
Open Rubber	**K. Miller**	**Croydon**	**8 : 59**
	A. Fuller	**St. Albans**	**8 : 23**
	P. Allaker	**Surbiton**	**7 : 39**
Radio Control	**G. Honnest-Redlich**	**Isle of Thanet**	
	W. H. Taylor	**West Essex**	
Team Race	**Taylor Bros.**	**West Essex**	**42.2 m.p.h.**
Concours	**A. F. Bourne**	**Godalming**	**"Laird Solution"**

Three members of the **PRESTWICH M.A.S.** were placed in the first seven of the N.W. Area A/2 eliminator, S. R. Targett totalling 4 : 35, A. Wrigley 4 : 07 and A. D. Bennet 3 : 22. Targett lost his A/2 on its second flight, but nothing daunted he pushed a towhook into the fuselage of his modified Elfin powered " Blitzbuggy " and clocked a modest 18 seconds for a third flight—complete with engine, prop. and a total weight of 21 ozs. ! ! (Wonder how this meets the contest requirements ?)

The **GLEVUM (Gloucester) M.C.,** now in its second year, has got well into stride and membership has reached 34. Relations with the local corporation are good, even to the extent of sole use of a reservoir (empty !) for C/L flying. A clubroom has been obtained with canteen and work space available, and with requests from the corporation for demonstrations of C/L flying at a Festival affair, this club seems well set for a comfortable run.

Since reorganisation in January, the **ST. HELENS M.A.C.** has more than doubled its membership. As a change from last year, every national comp. has been entered to date, though without much success. A novel type of contest held recently was a " free flight scramble ". Any type of model could be flown, each entrant making as many flights as he could in 30 minutes, with a 2 minute maximum and anything under 30 seconds not counting. B. Jackson won the senior class with a total of 5 : 24 flying a " Mallard ", D. Rigby proving best junior with his A/2 totalling 2 : 43.

Considerable flying has taken place in the **WHITEFIELD M.A.C.** one of the best flights being a 26 mile trip by J. O'Donnell's Nordic, the job having been timed 6 : 14 o.o.s. This chap has submitted a claim for the Special Class F.A.I. Glider Record, the machine being a normal glider with a built up rotor superimposed on a pylon. Other good times have been R. Woodhouse's 15 : 20 with a diamond pylon Wakefield, and O'Donnell's 9 : 30 with a 3 ft. lightweight glider.

G. Slater of the **HALIFAX M.A.C.** lost a Nordic glider following a 22 : 00 test flight, to be followed a few minutes later by E. North's job which clocked 10 : 02, the model landing only ¼ mile away. Having beaten Hull in the first round of the Area knock-out event, they are drawn against Bradford—a real local Derby !

The newly formed **R.A.F. ST. EVAL M.F.C.** would be pleased to hear from other clubs in the S.W. Area with a view to fixing up inter-club contests. Get in touch with 3126575 AC/1 Rudge, Flt./Planning Staff, R.A.F. St. Eval, near Wadebridge, Cornwall.

FORESTERS (Nottingham) M.F.C. membership is soaring since they obtained Tollerton drome for flying, with full use of the excellent clubhouse. (The table-tennis and darts championships will shortly be run off !) Squadrons of "Mallards" are appearing since J. Howard senior showed the way at Pershore with a 16–1 ratio, until it was pinched from the edge of the drome before the owner reached it ! Fairlopism spreading its wings ? This was an unlucky day for Howard Senior, who also lost his A/2 model. Geoff Pike has been showing some very pretty R/C flying with his Amco ·87 lightweight.

The **BOURNEMOUTH M.A.S.** Nordic contest was flown at Lone Pine (a modern equivalent of Macbeth's blasted heath !) in fine but windy weather, as a result of which nearly all models were lost on their first or second flights. A. Arnold proved best man with a total of 7 : 40, but Miss F. R. Rhymmes showed the rest of the field the way home by placing second with 4 : 26. Arnold's machine has been putting up some very good times, doing 5 : 10 on its first airing, and lost for the second time at Lasham after 12 : 00 o.o.s.

A control-line Rally staged by the **STOURBRIDGE M.A.C.** was blessed with fine if somewhat chilly weather, the team race affair proving most interesting. Total damage—one broken prop. M. Jarvis of Outlaws won the senior Stunt event ; F. G. Buck (Five Towns) the Class A speed with 62 m.p.h. and the Class C with 90 m.p.h. ; Class B going to W. Trow (Dudley) at 70 m.p.h. ; and Class D J. W. Jones (Birmingham) 76 m.p.h. Alan Hewitt won the Class A Team Race in 7 mins. 13 secs. and Jones carried off the Class B event with 6 mins. 44 secs.

The **THAMESIDE AND MEDWAY VALLEY RADIO CONTROLLED MODELS ASSOCIATION** is holding a Festival R/C Boats Regatta at Laughing Waters Restaurant, Cobham, Kent, starting at noon on the 15th July, and we recommend this event to our many readers interested in R/C work.

Final note on R/C gen is from the **INTERNATIONAL R/C MODELS SOCIETY** giving their usual list of meetings :

June 16th—2.30 p.m.—Milton Hall, Deansgate, Manchester.

June 29th—7.30 p.m.—176, Westgate Road, Newcastle.

July 7th—2.30 p.m.—Birmingham University, Edmund Street, Birmingham.

And so, as Pepys said—to bed. This burning of the midnight electricity is putting portmanteaus under the eyes of yours truly, and producing a palsied twitching of the digits that give rise to ribald comments from the rude aeromods met at sundry places ! I'm used to most epithets, but to be called the "Human Vibrotac" is demoralising. See you next month.

The CLUBMAN.

SECRETARIAL CHANGES

BLAIRGOWRIE M.F.C.
J. Henderson, 43, MacDonald Crescent, Blairgowrie, Perthshire.
CHESTERFIELD & D.M.S.
L. Burkinshaw, 369c, Hasland Road, Chesterfield, Derbys.
CHORLEYWOOD M.A.C.
J. E. Lamble, "Denham," Berks Hill, Chorleywood, Herts.
DAGENHAM M.A.C.
A. C. Smith, 521, Rush Green Road, Romford, Essex.
EVESHAM & D.M.A.C.
K. J. Davis, 26, Lime Street, Evesham, Worcs.
FOREST COTTAGE M.A.C.
G. W. Robbins, 2, Cordingleys Yard, New Bank, Halifax, Yorks.
ILFORD & D.M.A.C.
B. A. Hinds, 22, Fencepiece Road, Barkingside, Ilford, Essex.
NEWBURY & D.M.A.C.
J. Bailey, 78, North Brook Street, Newbury, Berks.
NORTH SHIELDS M.A.C.
N. G. Peacock, 5, Eastlands, High Heaton, Newcastle-upon-Tyne 7.
NORTH WEST MIDDLESEX M.F.C.
C. Lindsey, 4, Lulworth Avenue, Wembley, Middlesex.
OLDHAM & D.M.A.C.
S. Sumnall, 60, Williams Crescent, Chadderton, near Oldham, Lancs.
READING & D.M.A.C.
F. Butcher, 164, Lambfields, Theale, near Reading.
ROCHDALE & D.M.F.C.
G. Barlow, 77, Wardle Road, Rochdale, Lancs.
ROTHERHAM & D.M.F.C.
D. M. Walker, 16a, St. Leonards Road, Eastwood, Rotherham, Yorks.
SALFORD M.A.C.
E. J. Teece, 18, Ash Street, Seedley, Salford 6.

Continued on page 448.

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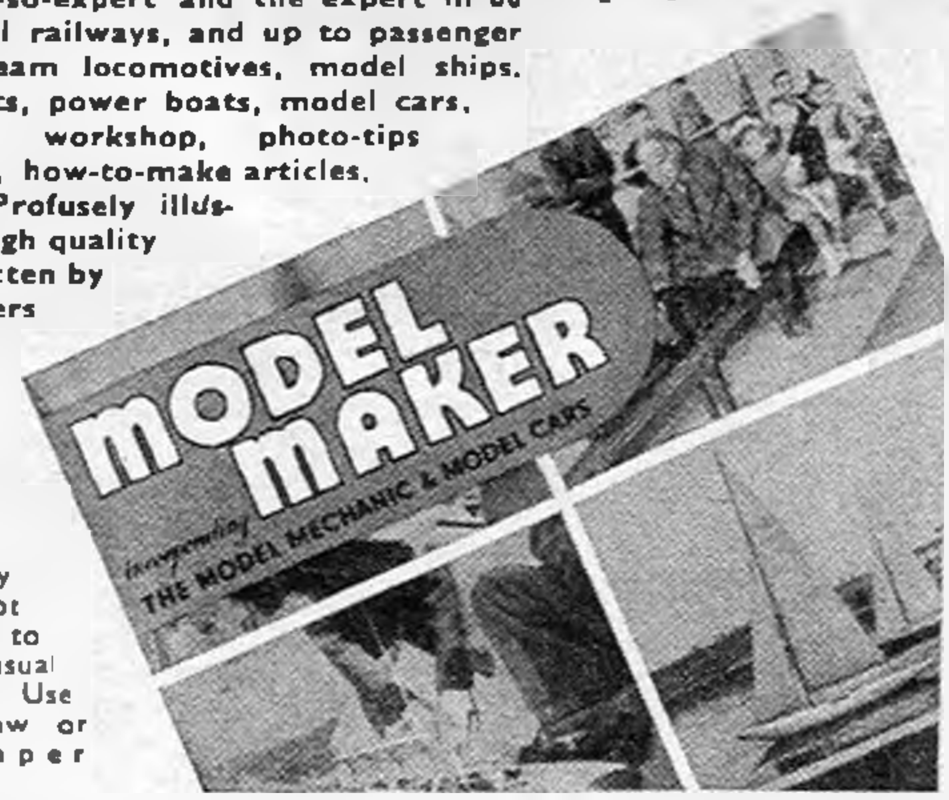

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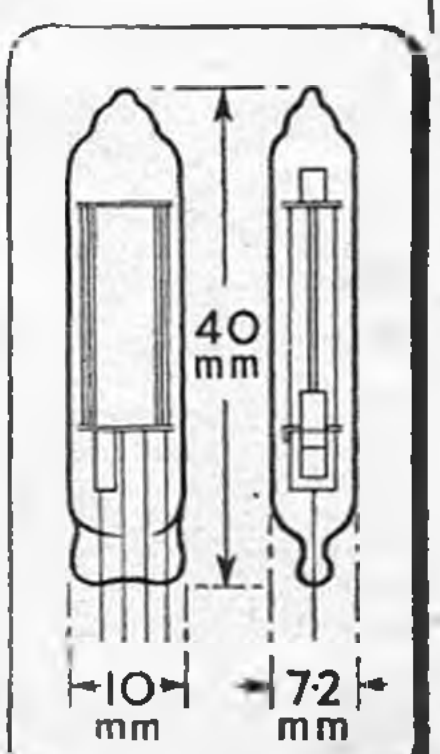

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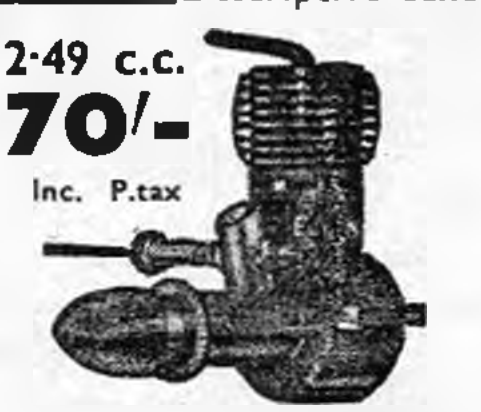

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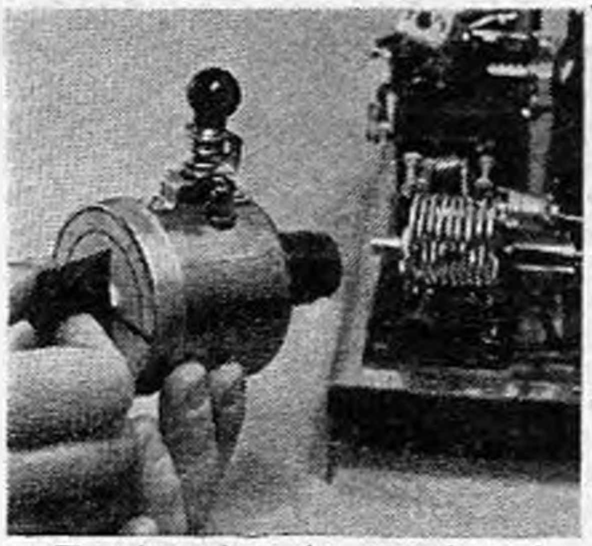

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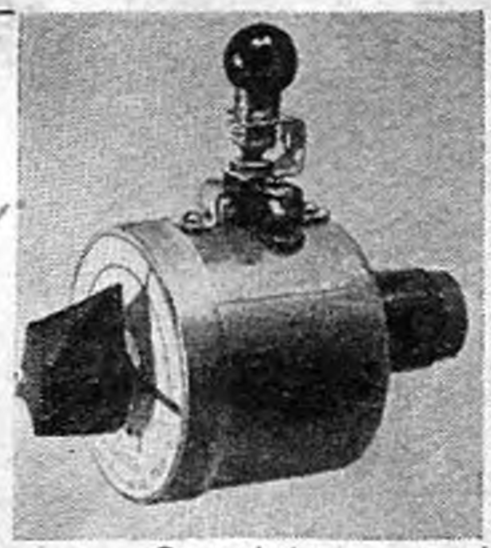

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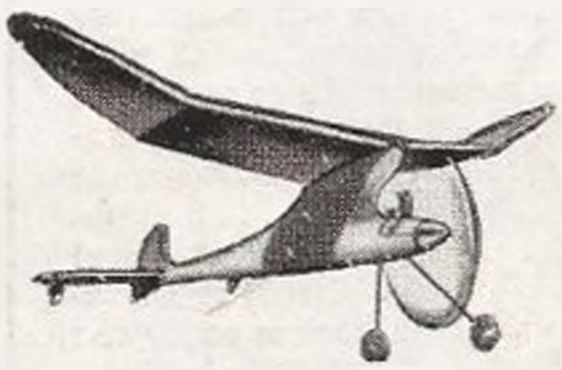

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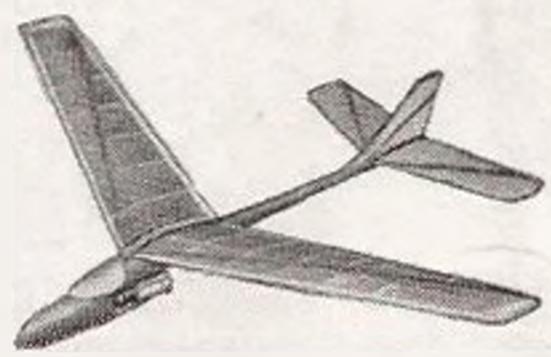

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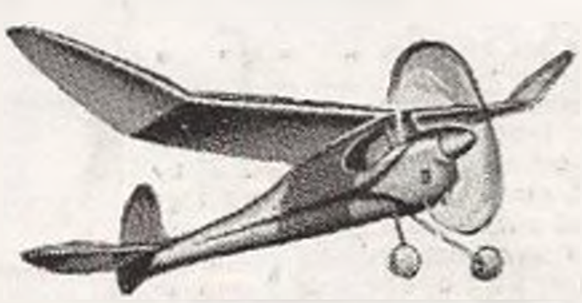
The first of the Keilkraft Jetex models, the Skyjet series feature swept back wings and streamlined appearance. Skyjets are easy to build and fly.

SKYJET 50 ... ... 4/7
SKYJET 100 ... ... 6/9
SKYJET 200 ... ... 9/2

(Skyjet 100 illustrated)



SOUTHERNER MITE

32" span cabin model for small diesels. An ideal beginner's power model. 12/10 inc. tax

The 'CHIEF' WINS AGAIN!

'CHIEF' IS OFFICIAL NEW ZEALAND A·2 GLIDER CHAMPION

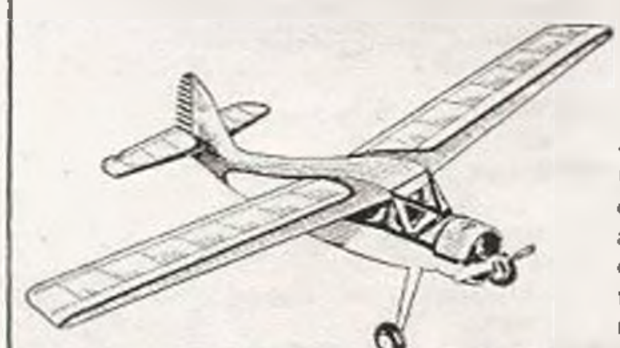
A 'Chief,' built from a standard kit by Mr. D. G. Fail, holds the official New Zealand A.2 Glider Record for 1951 with an average flight time of 6 mins. 41 secs.

'CHIEF' WINS AT 1951 S. AFRICAN NATIONALS
1st A.2 Glider, Class B. Total 1279 secs. for three flights ... ... 22/8 inc. tax

KEILKRAFT SAUCER

Keilkraft's latest Jetex powered model. This flying 'Saucer' is one of the easiest kits to build, and the all balsa construction makes it really tough. It flies equally well with Jetex motor or as a chuck glider.

Price 3/1 inc. tax



LADYBIRD

42" span semi-scale power model for the E.D. Bee or similar capacity diesels. The Ladybird is an exceptionally good looking plane, and the kit is overflowing with really first class materials. This kit is fine value for money. 22/8 inc. tax

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(RUBBER POWERED)

AVERAGE WINGSPAN 20".
Kit contents include plastic propeller, plastic noseplug and wheels, and ample materials.

ALL ONE PRICE
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Range includes :—
Auster Arrow
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Beechcraft Bonanza
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Piper Super Cruiser
Fairey Junior
Percival P.56
Fokker D.8

Rather than raise the price of Keilkraft Kits through rising costs of raw materials, cement, paste and rubber are now omitted from the contents.

KEILKRAFT *Kits and Accessories*

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