AERO MODELLER

AUGUST 1953

IN THIS ISSUE

SPECIAL CANBERRA SCALE PLAN FEATURE

WORLD SPEED CHAMPIONSHIPS

BRITISH NATIONALS

FULL SIZE PLANS OF SIPA 200 MINIJET

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.

Look out for the REDHEADS

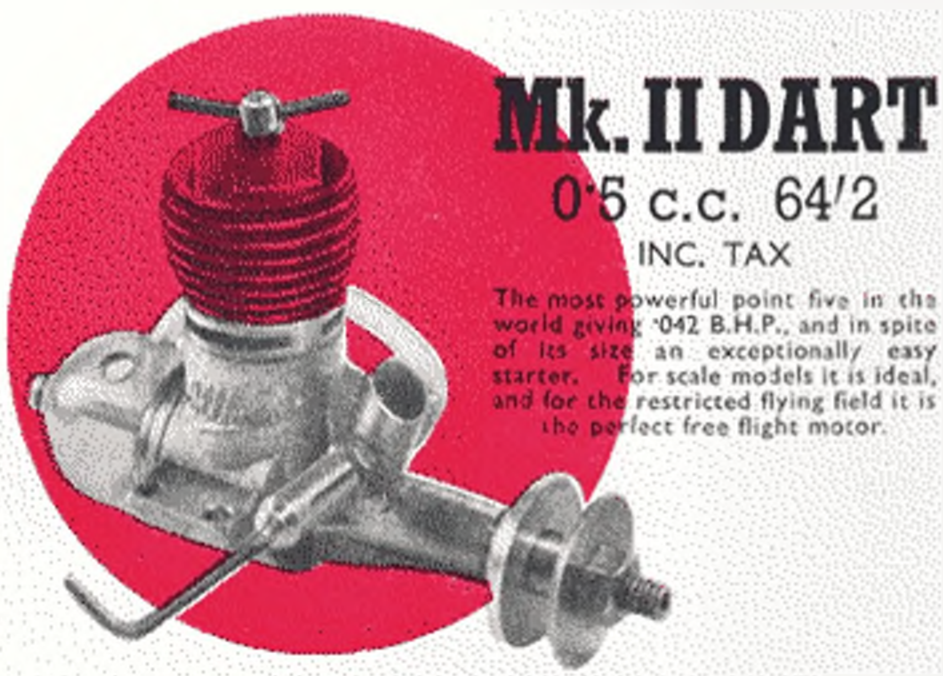
For they denote quality, performance and reliability. Characteristics enjoyed by every motor in our range. Go into your local model shop and examine any one of our motors. Note the excellent finish both internal and external ; feel the solid resistance of really sound cylinder compression, made possible by individual honing and lapping in our modern engineering works. Thousands of pounds worth of precision equipment operated by first class engineers is your guarantee when purchasing a Davies Charlton Allbon engine. Note too that you can purchase them anywhere. Supplies of every motor in our range are readily available, our policy being never to advertise goods that are not in stock.

SPITFIRE

1 c.c. 64/2
INC. TAX

Designed especially for the beginner with easy starting the keynote. It is, at the same time, the most powerful 1 c.c. motor on the market. Needle valve assembly has now been modified, as can be seen in accompanying photograph.

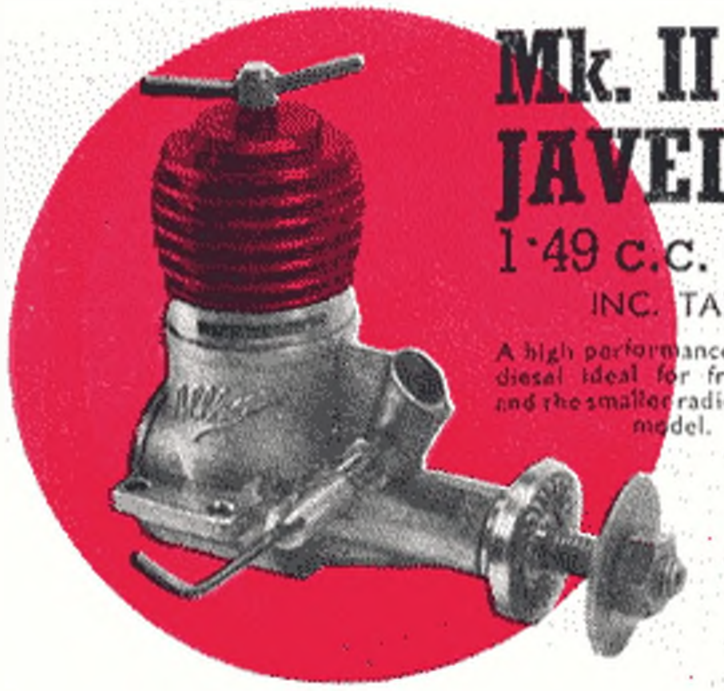
Watch these advertisements for new and intriguing additions to our range available in the near future.



Mk. II DART

0·5 c.c. 64/2
INC. TAX

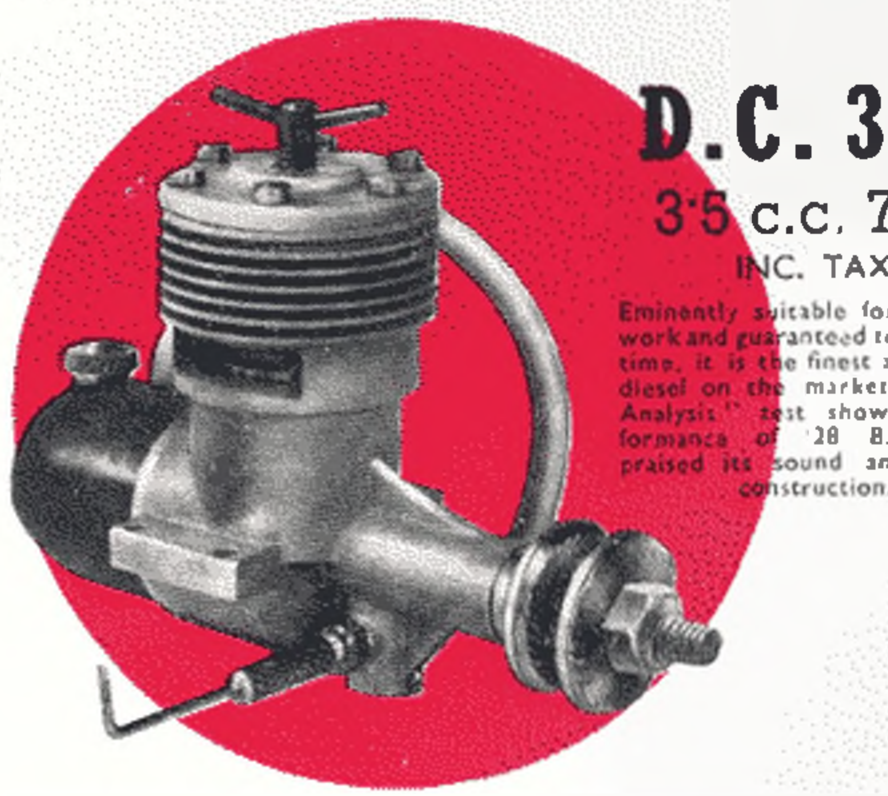
The most powerful point five in the world giving ·042 B.H.P., and in spite of its size an exceptionally easy starter. For scale models it is ideal, and for the restricted flying field it is the perfect free flight motor.



Mk. II JAVELIN

1·49 c.c. 65/4
INC. TAX

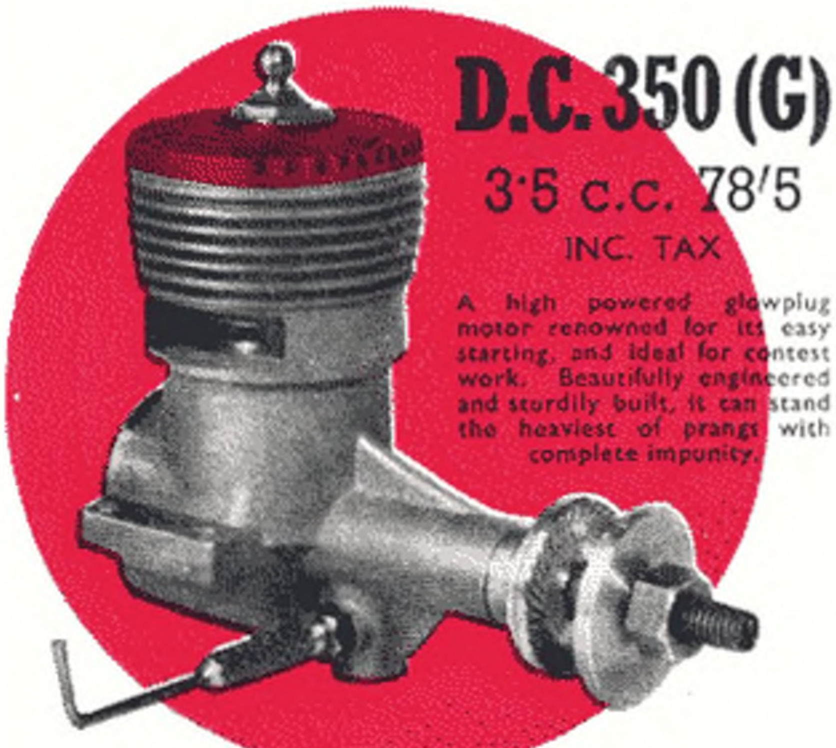
A high performance contest diesel ideal for free flight and the smaller radio control model.



D.C. 350

3·5 c.c. 78/5
INC. TAX

Eminently suitable for PAAload work and guaranteed to last a lifetime, it is the finest all-purpose diesel on the market. "Engine Analysis" test showed a performance of ·28 B.H.P. and praised its sound and rugged construction.



D.C. 350 (G)

3·5 c.c. 78/5
INC. TAX

A high powered glowplug motor renowned for its easy starting, and ideal for contest work. Beautifully engineered and sturdily built, it can stand the heaviest of prangs with complete impunity.

**Manufactured by : DAVIES CHARLTON LTD.
Barnoldswick, via Colne, Lancs. Tel. 3310**

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

JUST GOOD SERVICE

NORTH SOUTH EAST WEST

GREGORY'S

Service is the Best

RADIO CONTROL COMPLETE OUTFITS

E.D. Mk. II, 3-valve unit. Complete transmitter and receiver only. 296/0 + 55/6 P.T.
E.D. Mk. IV Tuned Reed. 3 channels unit. Including control box. Complete 400/0 + 75/0 P.T.
E.D. Boomerang. 200/0 + 35/9 P.T.

TRANSMITTERS

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

RECEIVERS

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

COMPONENTS

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

ORDERING INSTRUCTIONS

HOME CUSTOMERS. Cash with order or C.O.D.
POSTAL INSTRUCTIONS. All orders under 10/- add 9d. 25/- add 1/1, 40/- add 1/6, over 40/- post free. For overseas according to postal service requested and destination. Postal information concerning dispatch to any country given on request. Cash with order or C.O.D. See previous issues for list of countries.
NOTE. Will all customers requiring information please include a S.A.E. or if overseas International Reply Coupons. **Customers resident outside United Kingdom, including H.M. Forces, buy free of Purchase Tax. Correct rates of exchange given.**
FORCES CLUBS. Recognised Clubs can buy on a credit account. Details on request.
Model shops overseas supplied, write for terms.

ENGINES

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

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

ENGINES (continued)

P.T.
E.D. Miles Special 5 c.c. ... 140/0 + 26/3
E.D. Miles Special 5 c.c. Watercooled 160/0 + 30/0

C/L KITS

Frog
Vanfire ... 24/0 + 4/0
Vandiver ... 12/0 + 2/0
Vantage ... 17/3 + 2/9
Keil Kraft
Ranger ... 10/6 + 1/9
Pacer ... 15/0 + 2/6
Stunt Queen ... 21/0 + 3/6
Skystreak 26" ... 9/6 + 1/7
Skystreak 40" ... 10/4 + 1/9
Phantom ... 18/4 + 3/1
Scout Biplane ... 22/6 + 3/9
Phantom Mite ... 11/6 + 1/11
Veron
Beebug ... 12/0 + 2/0
Panther ... 25/0 + 4/2
Minibuster ... 15/0 + 2/6
Philibuster ... 23/6 + 3/11
Midget Mustang ... 22/6 + 3/9
Focke Wulf 190 ... 21/0 + 3/6
Sea Fury Mk. IX ... 23/6 + 3/11
Spitfire Mk. XXII ... 27/6 + 4/7
Wyvern ... 23/6 + 3/11

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

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

BOAT KITS

62/6 + 10/5 P.T.

Veron's Marlin, 36" long, 10" beam. Balsa and ply construction, designed expressly for R/C. For 1–5 c.c. engines.

P.T.
* Wavemaster, 2–7 c.c. 60/0 + 10/0
* Spraymaster, 1–3 c.c. 31/0 + 5/0
Above in all hardwood construction.
* Veron Police Launch 1–1·5 c.c. ... 36/0 + 6/0
Veron Seagull ... 16/6 + 2/9
Electrotor for above 8/6 + 1/5
Veron Dolphin ... 30/0 + 5/2

Taycol Electric Motor for above ... P.T. 15/2 + 2/6
* Suitable for radio.
Flywheels, marine units, universal couplings for E.D. engines.
Your E.D. Comp., Mk. III or IV can be converted to watercooling. 43/6. *Post free*

JETEX

Please note that those goods marked * are not available for immediate delivery. All except "Interceptor Fighter" have been promised within 3-5 weeks of publication date. Order now and be assured of early delivery.

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

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

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

READY-TO-FLY MODELS
All complete with Motor(s), Fuel, Wicks, etc.
Helicopter (50's) ... 27/0 + 4/6
Sharkie (50) ... 13/0 + 2/2
Interceptor Fighter (50)* 27/0 + 4/6
Wren (35)* ... 10/0 + 1/8

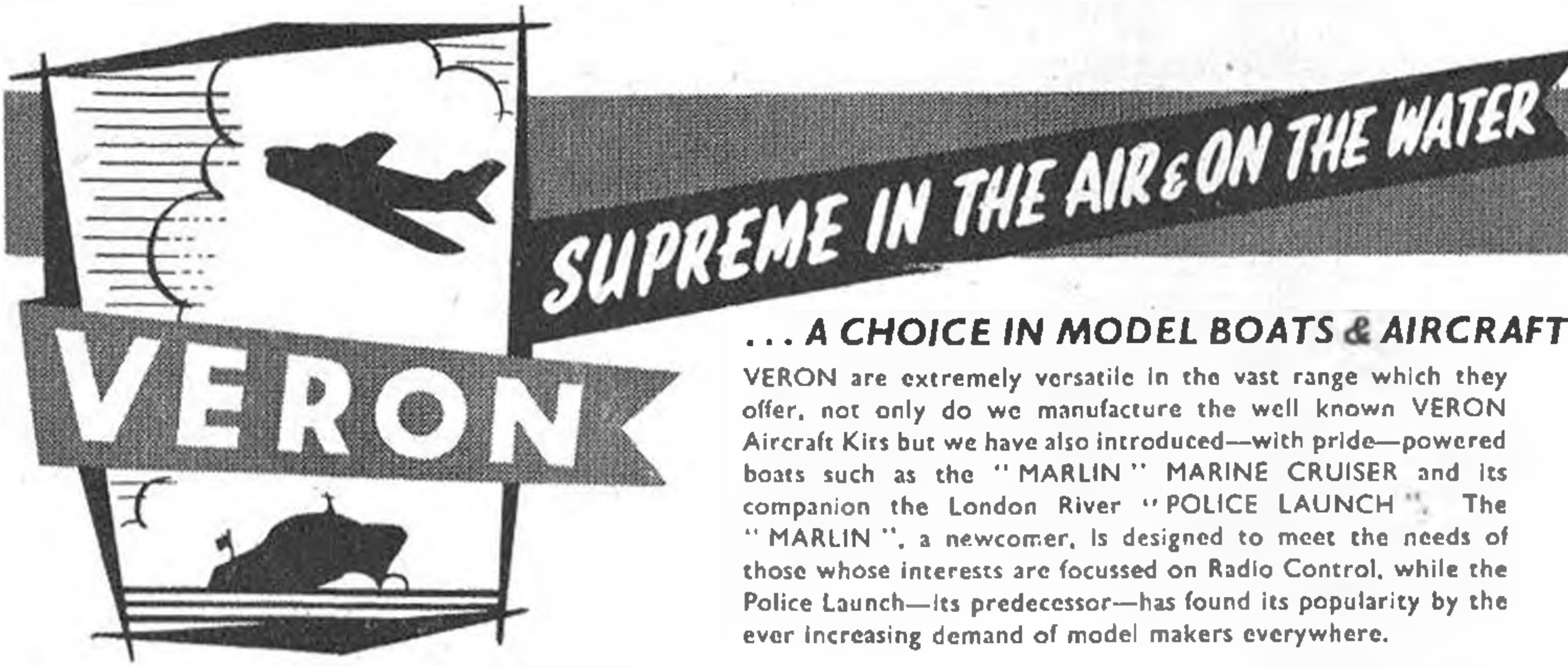
STANDARD KITS
Jeticopter 50 ... 5/9 + 1/0
Jeticopter 100 ... 8/8 + 1/5
Flying Wing 50 ... 5/9 + 1/0
Hot Dog 50 ... 3/6 + 7d.
Contest 200 ... 8/8 + 1/5
Avro 707b 50 ... 5/9 + 1/0
Zyra Space Ship kit only (50) ... 5/9 + 1/0
Vampire 50 ... 5/9 + 1/0
Vampire 100 ... 8/8 + 1/5
Meteor 50 ... 8/8 + 1/5
Saunders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

GLIDER WINCH

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

P. E. GREGORY & SON (ALTON) LTD., ALTON *TEL. 3376* HANTS

AN UNEQUALLED RETURN POST SERVICE. 3d. STAMP FOR LISTS.

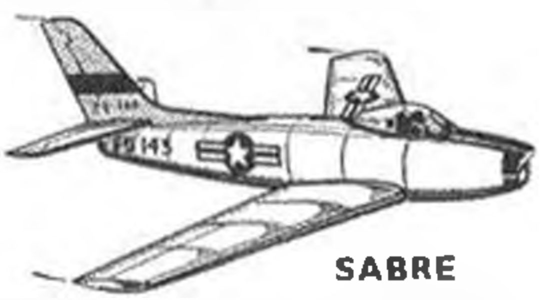


... A CHOICE IN MODEL BOATS & AIRCRAFT

VERON are extremely versatile in the vast range which they offer, not only do we manufacture the well known VERON Aircraft Kits but we have also introduced—with pride—powered boats such as the "MARLIN" MARINE CRUISER and its companion the London River "POLICE LAUNCH". The "MARLIN", a newcomer, is designed to meet the needs of those whose interests are focussed on Radio Control, while the Police Launch—its predecessor—has found its popularity by the ever increasing demand of model makers everywhere.

TWO SUPER KITS TO MAKE AND FLY DURING SUMMER MONTHS

VERON GIVES YOU THE *BEST* IN VALUE!



SABRE

18" span super quality kit of the well-known swept wing jet which is so much in the news and has arrived in large numbers at R.A.F. stations in this country. Kit includes a perfectly laid out plan together with cockpit covers, all materials and insignia transfers. Ideal for Jetex 50 motors.

6/5 Inc. P. Tax

CARDINAL

Wing span 37", length 27". Area 188 sq. in. Modernistic in appearance and a "good looker". This is the ideal kit for all those who wish to make a start in powered flight. Simple to construct from ready-shaped parts. Weight less engine, 6/7 ozs.

16/11 Inc. P. Tax

"MARLIN" MARINE CRUISER

DESIGNED EXPRESSLY FOR RADIO CONTROL

Veron are proud to present this superb free-lance design of a Cabin Cruiser for 1 to 5 c.c. power units or electric motors (12 volts).

The cabin top can be built as a completely removable unit for access to the commodious radio well. Stage-by-stage constructional development is shown on a wonderfully complete 30" × 40" plan with fully descriptive instruction leaflet. Kit has almost completely pre-fabricated balsa, ply and hardwood parts using the "basic-box" system.

£3 . 12 . 11 Including P. Tax

POLICE LAUNCH

Here we have the ideal companion for the "MARLIN". This is a 26" replica of the famous prototype used by London's River Police. Ideally suitable for small Diesel or Electric Motors. No shaft or propeller is provided, thus enabling you to fit the propulsion of your choice.

Like the "MARLIN" this boat is of unsinkable construction.

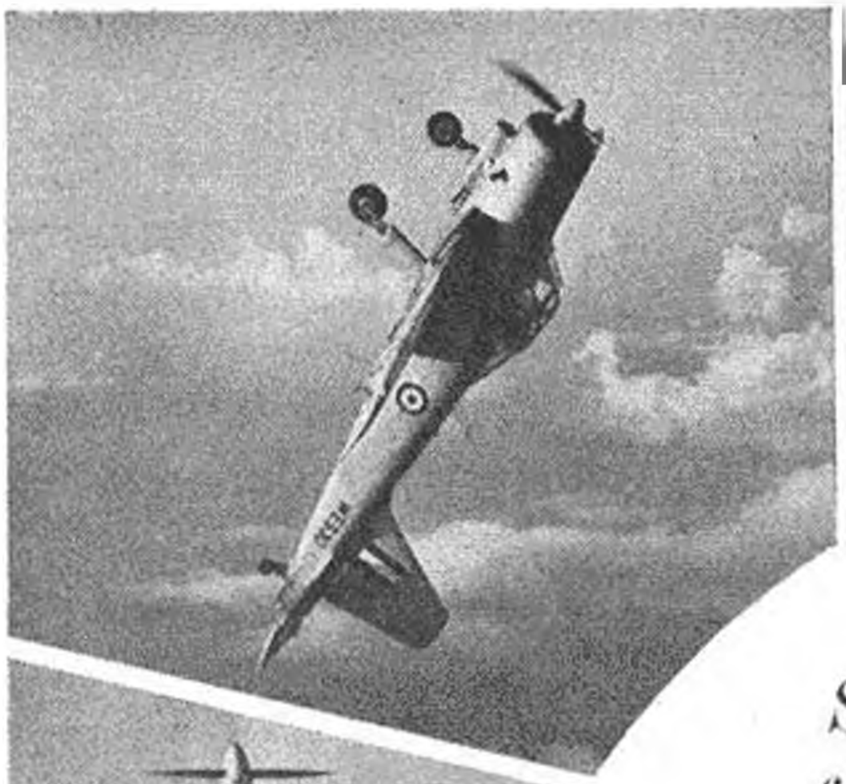
42/- Inc. P. Tax

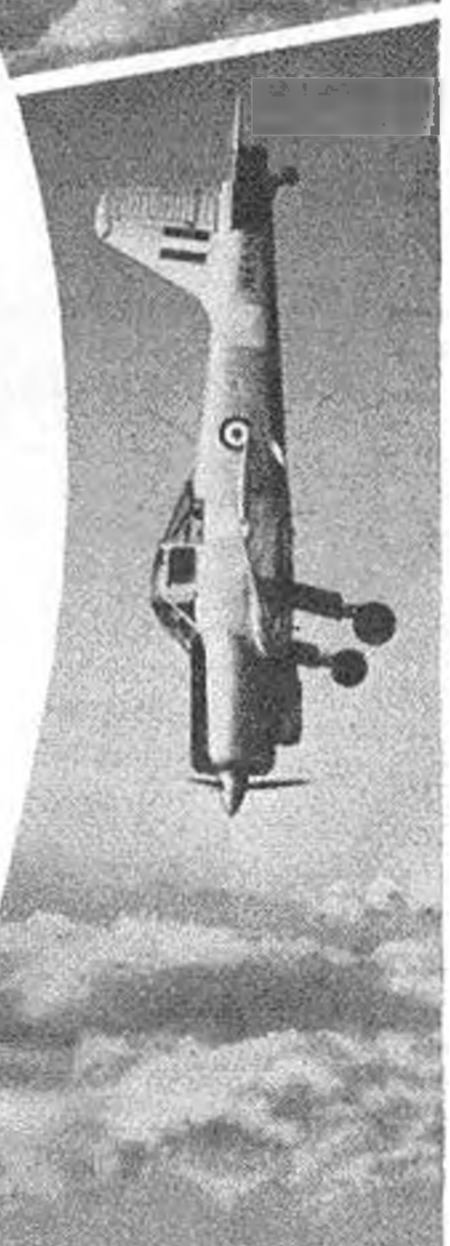
★ ASK YOUR DEALER FOR THE "VERON" POCKET FOLDER

VERON

MODEL AIRCRAFT (Bournemouth) Ltd., Norwood Place, Bournemouth

Tel.: SOUTHBOURNE 43061



WORLD WIDE MAIL ORDER Service

ENGINES

All leading makes stocked, including full E.D. range as advertised.

		P.T.
Allbon Dart ·5, Mk. II	54/0	+ 10/2
Allbon Mk. II Javelin 1·49 c.c.	55/0	+ 10/4
Allbon Spitfire 1 c.c. ...	54/0	+ 10/2
E.D. Baby ·46 c.c. ...	45/0	+ 7/3
Mills 0·75 c.c.	50/0	+ 8/0
Mills 0·75 c.c., with cut-out	55/0	+ 9/10
E.D. Bee 1 c.c.	47/6	+ 7/3
Mills 1·3 c.c. ...	75/0	+ 12/6
E.D. 1·46 c.c. ...	52/6	+ 4/6
Frog 150 1·5 c.c.	40/6	+ 6/9
E.D. Comp. 2 c.c.	57/6	+ 4/3
E.D. 2·46 c.c. Racer	72/6	+ 6/0
Elfin 2·49 c.c. ...	56/0	+ 10/6
E.D. Hunter 3·46 c.c. ...	72/6	+ 6/0
D.C. 350 3·5 c.c.	66/0	+ 12/5
Amco 3·5 B.B.	93/0	+ 17/3

GLO PLUG

		P.T.
ETA 29—Series 3D 5 c.c. Racing Motor. From Stock...	£5.19.6	+ £1.2.5
Frog 500	61/8	+ 10/3
Frog 500 Spark ...	69/9	+ 11/7
D.C. 350 (G)	66/0	+ 12/5
Fuel Cut-off Valve ...	3/6	+ 7d.

All leading fuels stocked

JETEX

		P.T.
Jetex 50 motor	7/6	+ 1/3
Jetex 50 Outfit	10/11	+ 1/10
Jetex 100 Outfit ...	22/5	+ 3/9
Jetmaster	24/0	+ 4/0
Jetex 200 Outfit	31/8	+ 5/3
Jetex 350 Outfit	43/2	+ 7/4
Augmenter Tube ...	5/0	+ 10d.
Hawker Hunter, with Jetmaster, Augmenter, complete	44/6	+ 7/5

Fuels and Spares in stock.

Jetex Kits as advertised by the leading makers.

IDEAL IN DESIGN AND FUNCTION

The "Am-Pull" marks the first serious departure for years in handles, and its advanced design is winning converts everywhere. Once you have experienced the extra degree of fine adjustment the "AM-Pull" offers, particularly in contest flight, you will never want to fly without it.

ARTHUR MULLETT'S "AM-PULL" C/L HANDLE 5/6 P. Tax 11d.

AM'S "BALANCED OUTFIT" SERIES

Complete assemblies of kits, motors and props selected specially by A.M. for maximum performance.

		P.T.
Veron Ducted-Fan Sabre with Allbon Mk. II Dart and correct prop	81/0	+ 14/2
K.K. Bandit with Allbon Spitfire and correct prop	75/0	+ 13/2

KITS

PARAMOUNT

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

BARRY WHEELER

World-champion Eliminator kit 19/6

KEILKRAFT

Gliders

		P.T.
Topper, 40"	8/6	+ 1/5
Cadet, 30"	4/0	+ 8d.
Soarer Minor, 48" ...	8/0	+ 1/5
Soarer Major, 60" ...	11/6	+ 1/11
Invader, 40"	6/6	+ 1/1
Minimoa, 50" ...	7/0	+ 1/2
Chief, 64"	18/6	+ 3/1

Free Flight Power

		P.T.
Slicker Mite, 32"	9/6	+ 1/7
Southerner Mite, 32"	10/6	+ 1/9
Skylon, 38" ...	10/6	+ 1/9
Pirate, 34" ...	12/0	+ 2/0
Slicker, 42" ...	17/6	+ 2/11
Slicker, 50" ...	25/0	+ 4/2
Slicker, 60" ...	35/0	+ 5/10
Southerner, 60"	40/0	+ 6/8
Junior, 60"	39/6	+ 6/7
Bandit, 44"	18/6	+ 3/1
Outlaw, 50"	22/6	+ 3/9
Ladybird, 41" ...	18/6	+ 3/1

Flying Scale Power

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

Control Line

		P.T.
Phantom Mite, 16" ...	11/6	+ 1/11
Phantom, 21"	18/6	+ 3/1
Scout Bipe, 20"	22/6	+ 3/9
Ranger, 24" ...	10/6	+ 1/9
Pacer, 30" ...	15/0	+ 2/6
Skystreak 26	9/6	+ 1/7
Skystreak 40	10/6	+ 1/9
Stunt Queen	21/0	+ 3/6

Rubber Powered

		P.T.
Ace, 30"	5/0	+ 10d.
Senator, 32" ...	5/6	+ 11d.
Ajax, 30"	6/0	+ 1/0
Competitor, 32" ...	7/0	+ 1/2
Gipsy, 40" (W) ...	10/6	+ 1/9
Contestor, 45" (W)	23/6	+ 3/11
Flying Scale Series	3/0	+ 6d.

VERON

Control Line

		P.T.
Bee Bug	12/0	+ 2/0
Midget Mustang ...	22/6	+ 3/9
Sea Fury	23/6	+ 3/11
Wyvern	23/6	+ 3/11
Philibuster	23/6	+ 3/11
Spitfire	27/6	+ 4/7
Focke Wulf	21/0	+ 3/6
Minibuster	15/0	+ 2/6
Panther	25/0	+ 4/2

Gliders

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

Rubber Powered

		P.T.
Rascal, 24"	5/6	+ 11d.
Sentinel, 34" ...	10/6	+ 1/9
Hi Climber, 38" ...	25/0	+ 4/2
Fledgeling, 24" ...	7/6	+ 1/3

Free Flight Power

		P.T.
Sabre Ducted Fan ...	25/0	+ 4/2
Streaker, 32" ...	19/9	+ 3/3
Skyskooter, 48" ...	25/0	+ 4/2
Cardinal, 37" ...	14/6	+ 2/5
Lavochkin, 37" ...	25/0	+ 4/2

SKYLEADA

Gliders

		P.T.
Three Footer ...	5/0	+ 10d.

Flying Scale

		P.T.
Auster, 26"	3/0	+ 6d.
Grasshopper ...	3/0	+ 6d.
Tiger Moth	3/0	+ 6d.
Avro 707	3/0	+ 6d.
M.I.G.15	3/0	+ 6d.
Vulcan	3/0	+ 6d.

For Jetmaster Units

		P.T.
Comet, 24" scale ...	7/3	+ 1/3
Avro Vulcan ...	7/3	+ 1/3

Control Line

		P.T.
Auster	7/5	+ 1/2
Curtiss Hawk ...	15/6	+ 2/6
Hornet	8/11	+ 1/6

Free Flight

		P.T.
Point Five	7/9	+ 1/3
S.E.5a	14/5	+ 2/3

RADIO CONTROL

E.D. COMPONENTS

		P.T.
Potentiometer ...	5/6	+ —
Mk. I Clockwork Escapement... ...	47/6	+ 9/6
Mk. III Escapement...	18/6	+ 3/3
Compact Escapement	18/6	+ 3/3
Polarised Relay ...	30/0	+ —

4-pin Plug and Socket ...	2/6
2-pin ditto (polarised) ...	2/3
2-pole Switch	3/0
On-off Single Pole Switch	3/0
On-off Double Pole Switch	3/9

E.D TRANSMITTERS AND RECEIVERS

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

FLIGHT CONTROL. Absorption Type Wavemeter **15/6**
E.C.C. Equipment, Batteries, Valves, etc.

VERON MARLIN MARINE CRUISER KIT

For 1 c.c. to 5 c.c. Diesels.

Another first-class completely pre-fabricated kit worthy of the famous name it bears. Very suitable for Radio Control. From stock. **62/6** + 10/3 P.T.

BRISTOL FREIGHTER Type 170 PLANS
EXCLUSIVE LIMITED DESIGN (Copyright)

Suitable for twin Allbon Spitfire or E.D. Bee engines. 65 in. span. Scale 3/5 in. to 1 ft. Designed, built and flown by H. J. Towner. The perfect R/C job. Instructions and list of parts with plan. *All parts in stock for building this masterpiece. Recommended only for specialists.* Price **2 gns.**

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AERO MODELLER

INCORPORATING "THE MODEL AEROPLANE CONSTRUCTOR"

VOLUME XVIII
NUMBER 211
AUGUST 1953

" Covers the World of Aeromodelling "

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Published monthly on the 15th of the previous month by the Proprietors:
THE MODEL AERONAUTICAL PRESS LTD.
38, Clarendon Road, Watford, Herts.

Subscription rate 21/- per annum prepaid (including Special Christmas Number).

Contents

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

THE 1953 British Nationals, held at R.A.F. Waterbeach, near Cambridge, goes down in history as perhaps the most successful of the series since their inception way back in 1947, when the fairly well-attended meeting at Gravesend Airport initiated an attempt at duplicating the ever popular American " Nats.".

Since then the meeting has gone around the country in the following sequence: Midlands (Sywell), London (Fairlop), North (York), West (Swansea), and South (Gosport), but experience has proved that a meeting of this type must be held fairly near to a heavily populated centre if general support is to be adequate.

Thus there is a logical claim that London, with its culmination of main line traffic and other facilities, should be the future base for such meetings, but with the loss of Fairlop to the modelling fraternity, there seems no other space on which to stage such an important meeting with any assurance that the gates will be open when the crowd turns up.

What then is the answer? A close study of the factors that go to make a successful model meeting indicates that a first consideration is that the organising group shall have experience of staging an all-round meeting such as the Nationals, and the continued success of certain of the larger Rallies emphasises this point. No less important is the suitability of the airfield selected, for the comfort of fliers in both take-off and retrieving should be a top priority consideration.

With the above in mind, it is our considered opinion that this most important annual affair should—as far as possible—be established at one centre, under the authority of a special organising group whose continued experience should rapidly remove the irksome failures that cannot fail to recur when the responsibility is passed from one group to another each year.

For this reason we strongly support any move to hold the 1954 Nationals again at Waterbeach, for in few directions did this venue fail to receive full marks from all who were fortunate enough to attend the 1953 event. Just as important was the sterling effort forthcoming from the East Anglian Area, and particularly the Cambridge club, in carrying out the bulk of the organisation—a factor that has since proved by comparison probably even more important than actual field selection.

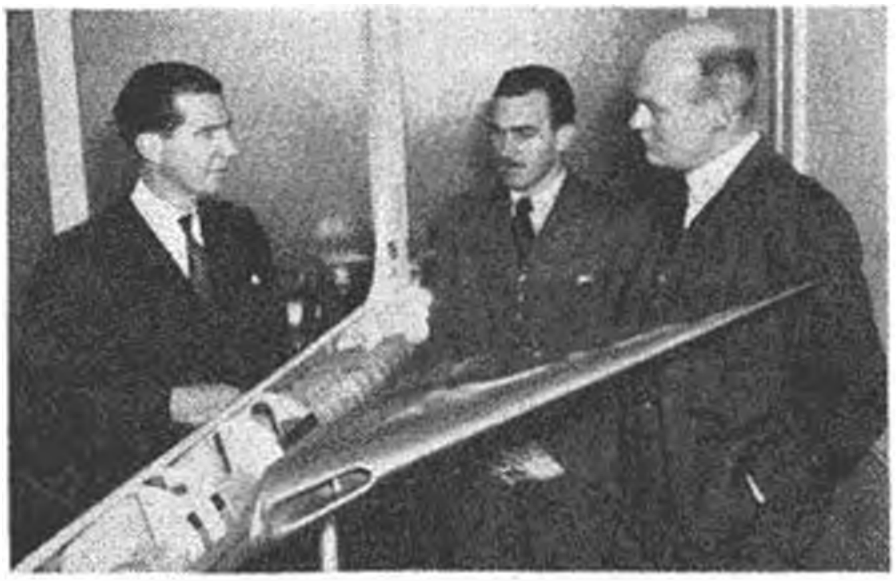
Last, but by no means least, is the sympathetic co-operation received from the R.A.F. staff, who, under the authority of Group Captain A. H. Donaldson, D.S.O., D.F.C., A.F.C., made the modellers most welcome, and, we gather, would like to see the meeting held there again next year.

Finally, we would make it clear that the foregoing does not indicate that we budge in the slightest from our frequently stated policy of urging that the S.M.A.E. shall conduct its affairs on a proper National basis, but sufficient experience has now been gained relative to the conduct of a successful British Nationals that would justify any future centralisation of the meeting as fair and logical.

Cover Picture . . . .

Is this month, a tribute to British Aviation achievement and depicts the Olympus engined Canberra which on May 4th established a new Class C International altitude record. The height reached was 63,668 ft. (12 miles up!) a height to which few modellers could aspire, despite some of the tales we have heard! Our sincere congratulations to the English Electric and Bristol Companies on this great feat.

Heard at the



A. V. Roe Director J. A. R. Kay discusses the Avro Atlantic 1/24th scale model with project engineer Geoff Monk and Chief Aerodynamicist J. R. Ewans. Model is 6 ft. long, took 28 days to make, weighs 50 lbs. See below.

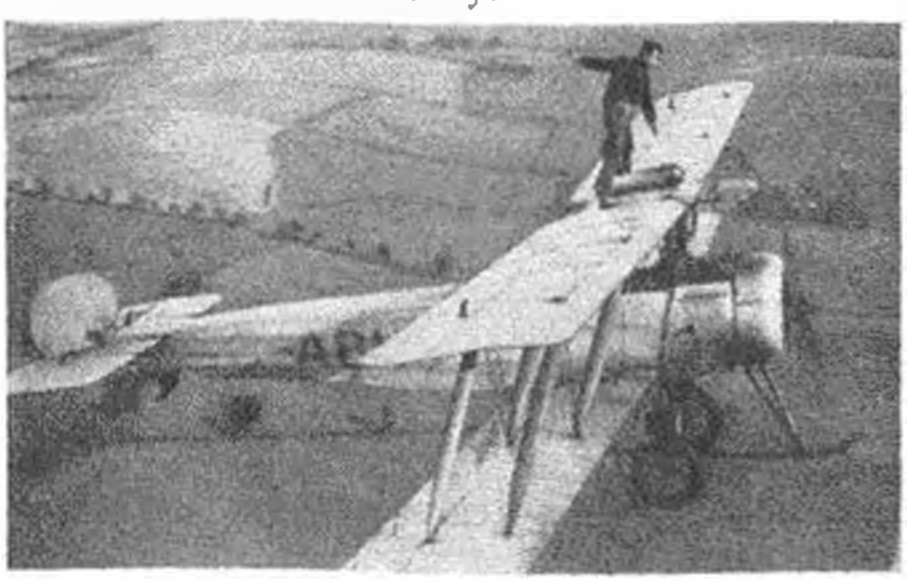
" Atlantic " Aeromodeller

Probably the most revolutionary aircraft project to date is the recently announced Avro " Atlantic ", the logical civil development of the highly successful delta-winged " Vulcan ".

It gives us great pleasure to learn that the Project Engineer on this important undertaking is none other than Geoff Monk, for many years a stalwart member of the pre-war Lancashire M.A.C., and well remembered as an enthusiastic scale model " fan " in line with our Editor. Manchester readers will recall many hard fought contests for the Hart Trophy, the mecca of scale modelling in the pre-1940 period.

Geoff. joined A. V. Roe's in 1930, served a six-year apprenticeship before entering the Design Office, and was eventually promoted to Section Leader in charge of all repairs and maintenance for keeping the famous Lancs. airborne. Further promotion in 1944 to Assistant Designer was followed by elevation to Project Engineer in 1947 on the " Tudor II " series, thence to " Ashtons ", and last September he was given the " Atlantic " for preliminary investigation.

Avro's at Manchester numbers a host of keen aeromodellers in its vast works, the late Roy Chadwick being also a very keen modeller in his young days. Truly, aeromodelling is the ideal training ground for the manning of our world-renowned aircraft industry.



Gen from the F.A.I.

A report just to hand from the Paris offices of the F.A.I. indicates that the Models Commission is one of the most active groups in session at these important aeronautical affairs.

At the last conference, held at the Hague from the 14th to the 22nd May, 1953, the Models Committee spent much of its time in polishing up the rules and regulations for records and contests in an attempt to avoid further modifications for at least two years. The number of model records at present in the official list was thought to be too great (an opinion we heartily endorse), and the list has been reduced in number to 4 World Records and 30 International Class records in three groups, instead of having 170 records as at present.

Mr. A. F. Houlberg was the recipient of one of the new F.A.I. diplomas, awarded to persons in the different countries who, for many years, have done much to help forward the cause of aviation in one or other of its branches, but who so far have received no recognition either nationally or internationally for their work. (Other British recipients were Mr. C. G. Grey and Capt. J. L. Pritchard, C.B.E.).

It is apparently the ambition of the F.A.I. to institute a form of " decentralised " World Championship, in which countries will hold contests in each category of model aircraft, the results to be forwarded to the F.A.I. for tabulation and collation. In our opinion, such a scheme cannot hope to succeed, for the widely varying conditions to be found even in one country almost completely negatives any form of fair competition, and this would be greatly amplified in any form of international event on the lines suggested.

Revival of a 504

Vintage enthusiasts will gladden when they learn that one of the three remaining Avro 504's is being rebuilt for permanent exhibition at the Science Museum, London. Twice battered by bombs, once shot down, and for many of its 39 years exposed to the elements, D.7660, which is a Le Rhone version, will be a constant source of interest in its new home. We take the liberty of reproducing a view in lighter vein, at left, to remind readers of an aeroplane that remained in production from 1913 to 1931.

Planning for Prizes

We rarely introduce " commercialism " to these particular columns, but readers will agree that we are justified in feeling proud of recent contest successes with standard A.P.S. designs. " Corsair ", " Tadpole " and " Sorcerer's Apprentice " and innumerable " Quickies " all did very well for themselves in the Nationals, and at this pre-

Hangar Doors

eminently original design meeting it was gratifying to observe that nearly all the commercially available designs present were from the A.P.S. range.

In a letter from J. E. Abbot of Grahamstown, discussing the South African Nationals, the following also provides food for thought : " . . . A.P.S. designs were very prominent—first three places in A Glider Junior, first in B Glider Junior, first and second in A Rubber Junior, second and third in Jetex Junior, second in A Gas Senior, first, second, third and fourth in A Gas Junior, first and second in Precision Junior, second and third in Nordic, and second in A Team Race."

Current Study

A novel course is being arranged by the Southdown Gliding Club (see classified advertisements) to cater especially for the aeromodelling fraternity. Many aeromodellers have some gliding experience, and many more are keenly interested ; the course offers the opportunity of learning points from full-size sailplane construction and operation, as well as getting first-hand knowledge of thermal and slope lift. Interested modellers can be sure of loads of space for any models they care to take along, and the club cheerfully offers free hangarage.

1953 M.E. Exhibition

Model aircraft will again be an outstanding feature of the " Model Engineer " Exhibition, to be held at the New Royal Horticultural Hall from August 19th to the 29th. In all, eleven classes are scheduled, four of which are for junior entries only, and judges A. F. Houlberg, R. F. L. Gosling and Capt. S. D. Taylor will have their job cut out selecting the winning models. We understand that in addition to the usual indoor attractions, negotiations are under way for a separate demonstration of control-line flying at a site near the main hall.

½A Team Racing

There seems to be a fair amount of demand for smaller-sized team racing, in addition to the existing classes, and it will be interesting to see how much practical response there will be at the Cambridge M.A.C.'s Team Race Rally on August 9th. Rules were summarised in June's "Club News", but, briefly recapitulated, they include minimum area 35 sq. ins., up to ·99 c.c. motors, 30 ft. lines, min. cockpit depth 2¼ ins., max. tank 7·5 c.c., ½ in. pilot's head, no wheel restrictions. 50 lap heats and 100 lap finals are scheduled, and, where applicable, normal team race rules apply. Also in the programme is a combat event, unrestricted except that models must R.O.G. and fly on 42 ft. lines ; 8 ft. paper streamers on 2 ft. of thread will be used, two competitors at a time flying for five minutes, scoring being 4 points per foot cut from opponent's streamer. Details from A. Jordan, 23 Herbert Street, Cambridge.

This beautiful scale P.51 Mustang held by its constructor G. Vick won the acrobatic event at Weisbaden Air Base, Germany, during the annual U.S.A.F.E. model championships. Judges were Eddie Cash, Colonel Yates and Harry Hundleby who, rumour has it, have been smoking large 10 cent cigars ever since! Henry Nicholls, who normally attends, met the American Navy in the form of a large lorry rather forcibly just before the party was due to leave, and was unable to go. His rebuilt M.G. special was a complete write-off, but fortunately Henry himself escaped with severe cuts and bruises.

From the Bournemouth M.A.S. News

" The Editors of the B.M.A.S. News loudly acclaim the decision of the AEROMODELLER to sponsor, in conjunction with Pan American Airways, a design competition for 1 c.c. P.A.A. Load models and to hold competitions for this class next year.

. . . " The decision of the AEROMODELLER will be instrumental in bringing not only something new to aeromodelling, but will result in many enjoyable hours of flying for both Seniors and Juniors."

. . . . which reminds us—to remind you : did you use your entry form last month ? Closing date is now four weeks nearer, but you still have plenty of time before September 30th in which to design and build your model for the contest.

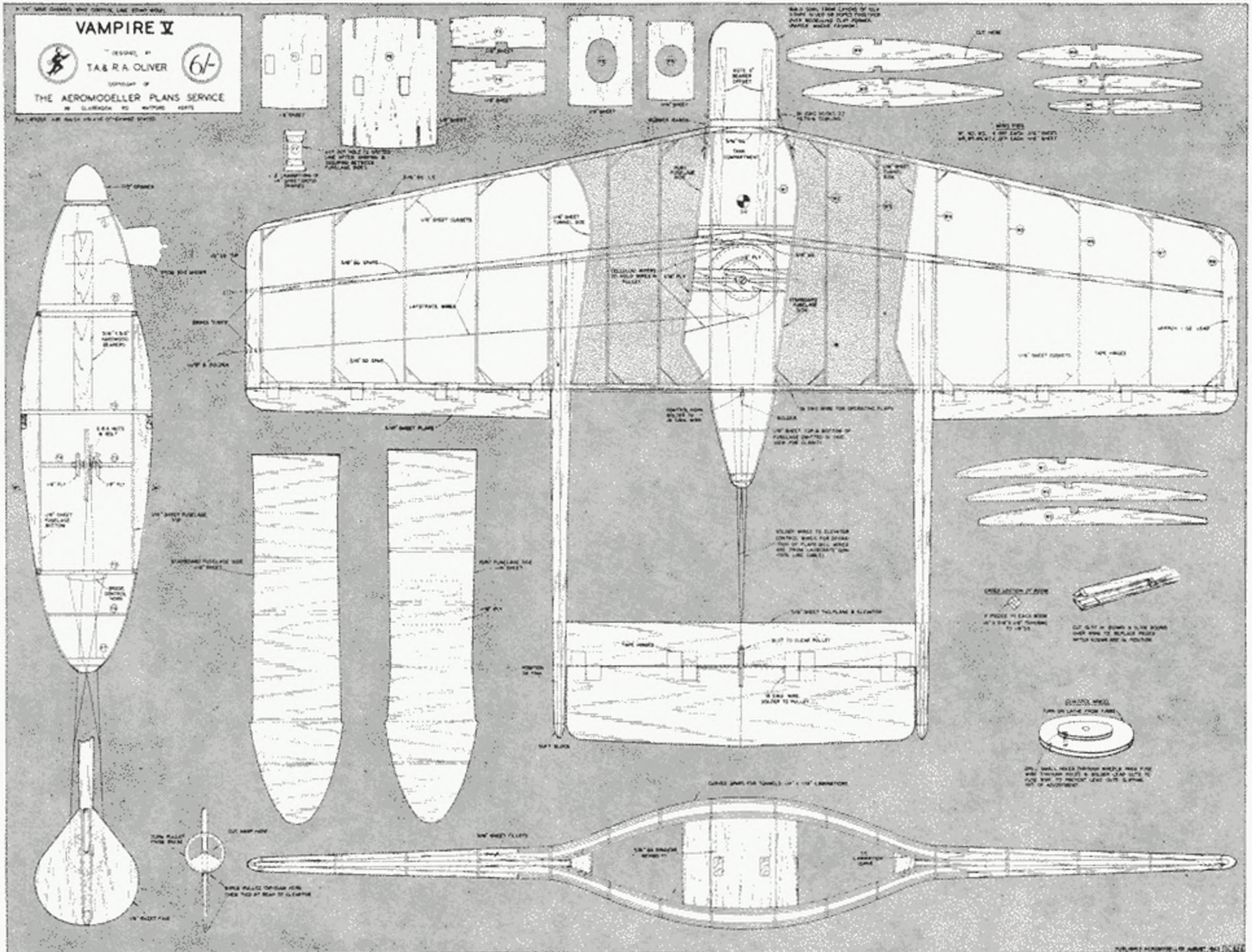
Reminder to Spotters

Now's the time for full-size aircraft recognition enthusiasts to get together and start swotting for the All-England Aircraft Recognition competition of 1954. Last time we mentioned the Aircraft Recognition Society in these columns, we discovered quite a wealth of enthusiasm among aeromodellers —so how about it clubs ? Why not write for particulars from the Secretary of this Society at: 39 Bedford St., London, W.C.2.

Whilst on the recognition subject, we take this opportunity of bringing to your attention "The Observers Book of Aircraft", published at 5/– by Frederick Warne & Co. Ltd., and which we feel is the most comprehensive and accurate record of modern aircraft available in this price range. Already a best seller, and rivalling " The Cruel Sea " in print figures, this Observers handbook is pocket size, describes 164 aircraft in silhouette, photo and fact, includes no less than 278 illustrations. . .

STOP PRESS

ALL BRITAIN RALLY (Radlett) postponed to September 20th. Full details in next issue.



Full size copies of the 1/5th scale plan can be obtained from the Aeromodeller Plans Service, price 6/- post free.

A stunt model with differences !

THE VAMPIRE Mk. V

NEW ZEALAND'S CHAMPION STUNTER WITH NEW CONTROL SYSTEM & DUCTED WING • FOR 3·5 - 5 c.c.

by

TREVOR & DICK OLIVER

of Tauranga, New Zealand.

WHAT can there be new to a control-line stunter? Convention has settled upon the plain monoplane with flaps coupled to elevators and a mighty powerful engine mounted up front. Trevor Oliver and brother Dick in New Zealand had other ideas, and after developing a series of models, settled upon the unique Vampire Mk. V—a policy which won the N.Z. National stunt contest in 1952.

First and foremost, this is a special design for tight lines. Unorthodox wing ducts are arranged in an offset manner to pull the model outwards in just the same way as naval paravanes were kept away from parent ships in wartime. Then a roller form of control is installed to provide an almost unlimited, unrestricted elevator/flap movement, and this, coupled with a slowish airspeed and the duct effect, enable some spectacular manoeuvres to be executed.

The " Sabre Dance ", originated by Jim Walker, can easily be emulated as the elevators are flapped vigorously with the Vampire hanging on its prop. Square turns are an actual possibility with this design, and its reasonable turn of speed gives both added satisfaction in control, and added time for the contest judge to follow each manoeuvre.

Two essentials must be added before these aerobatics are possible. The one is a good engine, the other a reliable feeding tank. On the original, a Frog 500 was coupled to a Walker pressure feed tank, which can of course be replaced by any of the commercial metal stunt tanks.

Since this is obviously not the kind of model we would expect a novice to tackle, we shall not go as far as basic facts in the building instructions. Anyone with at least two models' experience should, with a little thought, and plain commonsense, be able to go ahead without undue difficulty. Close adherence to the part sizes on the accurate full-size APS plan will play an important part in the assembly of the ducted portion of the wing. The wing is in fact the first part to tackle and work begins with all the laminated parts shown in the front view. A slight variance in curve for the T.E. should be noted. Each of the " bridge-form " duct panels is built over the plan, the top one with bisected outer wing portions attached, so that we have a flat bottomed wing. The fuselage is then made up with roller pulleys installed and flexible cable lead outs and elevator wires locked in place.

Asymmetric fuselage sides need special care, vertical grain making the task more easy and smoother curves possible. Then sheet centre wing panels inside the duct, and cover with silk. Using F.2 as a key, assemble the top winghalf onto the fuselage after fitting the tank, celluloid wipers, etc. Then complete outer panel ribs and add lower duct portion and outer duct contours.

Flap detail, booms, and tail unit are relatively simple, care being needed to see that the tailbooms are secure and in perfect line. Now connect up the control system, run the elevator wires over the rear pulley, through and round to opposite sides and tie or solder at T.E., so that there is no slackness in control and everything lines up with the lead-out wires. Flap wires are crossed to get correct operation, then solder joined.

Study the layout of the Vampire, and you'll agree that in its complete breakaway from convention it combines all the attributes of the best in stunt design and though slightly more complicated to build, is one of the tightest looping, most adaptable designs in the A.P.S. range.

HIGH PERFORMANCE CONTEST DESIGN FOR THE INTERNATIONAL POWER CLASS FROM CANADA

Fifteen

by ALEC G. BURNS

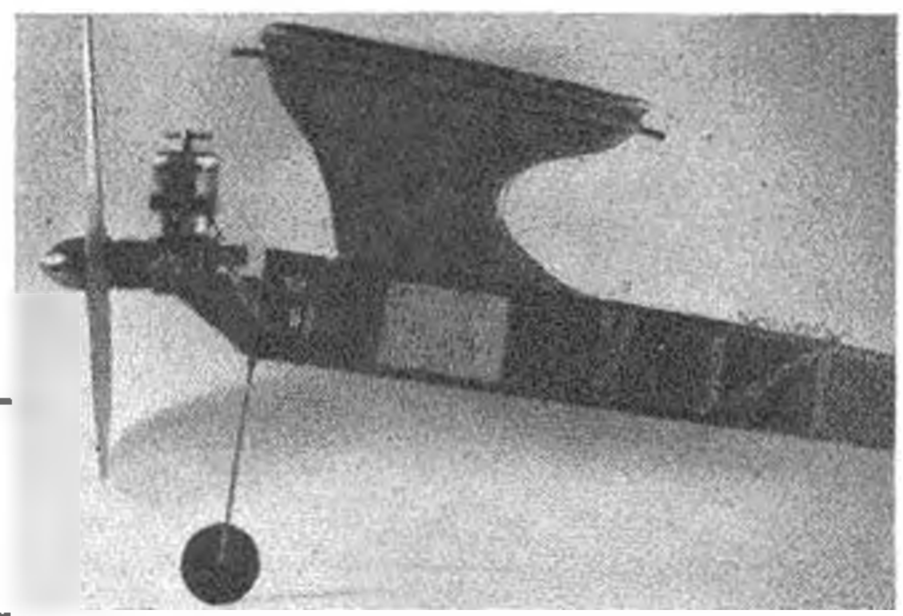
25 years old . . . Topographical draughtsman by profession . . . resident of Mimico, Ontario . . . specially keen on freeflight power . . . other interests are radio control, team racing, photography and the young lady on the left, Miss Glady Davidson, shortly to be Mrs. Burns.

"IN my opinion," says Alec Burns, "it is the gadget-free model which is the consistent contest winner," and in this viewpoint he has the support of most competition fliers. "Fifteen" (the 2·5 c.c. class is ·15 cu. ins. in the U.S.A. and Canada, hence the name) certainly reflects this opinion, for a simpler or more straightforward contest job would be hard to find. The "Hogan" influence is apparent, and the only gadgets employed are the gravity tab, the timer, and the metal engine mount, which offers advantages for simple thrust adjustments. In flight, the model has a vertical climb to the right and left glide circles, and has proved particularly safe in windy weather, flicking out at the top of the climb without loss of height. With a motor of up to 2 c.c. it would be a trouble-free introduction to contest-style flying, and, with a good 2·5 in experienced hands, a threat at any contest.

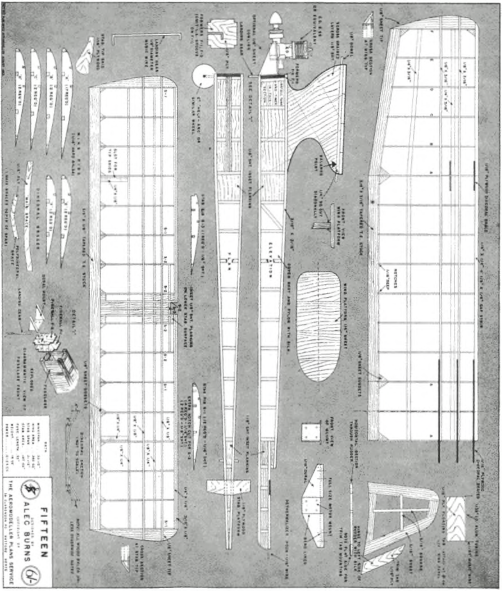
Building procedure is normal, the box fuselage being built in the usual way. Side sheeting (except in tank bay) should be fitted in before removal from plan and the pylon added after being constructed separately. The front former is laminated and the dural motor mount bolted in place, together with the undercarriage, before cementing the former to the fuselage. After installation of tank and timer the front former should be reinforced with liberally-cemented strips of silk. Wing and tail mounts are self explanatory. The pylon and entire fuselage are silk-covered and given seven or eight coats of thin clear dope.

Construction of the flying surfaces is also perfectly conventional, but the positive rudder tab is worthy of mention. After attaching the tab to the rudder (left flat at the appropriate place) with a silk hinge, a 10 B.A. bolt is passed through both tab and rudder; packing placed between the two is varied for the right trim, the bolt being tightened to retain the packing. Use Modelspan for covering the wing and tail.

After assembly and alignment check, balance the model as indicated, using ballast if necessary. Up to 1/16 in. packing may be used under the L.E. or T.E. of wing and tailplane to obtain a slightly stalling left-hand glide. Use a $9\frac{1}{2} \times 6$ prop. for windy weather and a $10 \times 3\frac{1}{2}$ in flat calm, and make initial power flights with reduced revs. A right-hand climb is required, and sidethrust should not be necessary. If a left turn is evident, fit washers behind the port engine mount. Increase power and aim for a 100 ft. power turn. Slight left rudder may be needed for the glide, but clay added to the gravity tab should remove stalliness. Excess left rudder will call for additional right thrust. The built-in downthrust should take care of any looping tendencies; increase if necessary.



Simplicity with efficiency is the keynote of this New World design. Close up shows timer/cut-off installation, incorporated downthrust and monowheel. Thinned Clark Y airfoil gives snappy climb and super glide, is also an aid to easy construction.



Full size copies of the 1/8th scale plan can be obtained from the Aeromodeller Plans Service, price 6/- post free.

HELD AT MILAN

JUNE 12th to 14th

Described by HARRY HUNDLEBY

WORLD SPEED CHAMPIONSHIPS

Heading photo, shows flying circle, complete with typical Milanese background of fountains and statues. Above, the British team enjoy the comforts en route of "R.M.A. Sir Philip Sidney" an Elizabethan Class Ambassador. Below, they are grouped with models and Captain W. B. Henn, the pilot.

THURSDAY, 11th June, saw normal routine at London Airport slightly disturbed by the appearance of the British Speed Team *en route* to Milan for the World Speed Championships. Porters, desk clerks, and even those phlegmatic characters in H.M. Customs, all gathered round to view with interest a collection of assorted speed models.

The team alone was sufficient to raise many an eyebrow—Ron Davenport, Harry Timms and Brian Skinner all being over six foot, so much so that your unfortunate scribe, as team manager, felt dwarfed.

Soon we were climbing steadily over the Channel in all the luxurious comfort of one of the new Elizabethan Class Ambassadors, and crossing the Alps at 17,500 feet were treated to the unforgettable sight of Mont Blanc and Lake Geneva.

Slowly the nose of our Ambassador tilted downwards as we commenced our approach to Malpensa Airport, and barely three hours flying time from London we touched down in brilliant sunshine and intense heat. An hour later we were in the offices of the Milan Aero Club to be greeted by an old friend, Ing. Nino Frachetti. From there an adventurous journey by Milan taxi (almost as bad as the Paris variety) brought us to the headquarters of the 1st Italian Air Force, where we were accommodated for the duration of the contest. All of the contestants were grouped in the same barrack room, a scheme that has many advantages, but not in the very late and very early hours!

Unpacking provided an unpleasant shock for Ron Davenport, who discovered that a quart bottle of his favourite fuel brew had broken in his case with dire results to personal effects. You should just see a shirt or a toothbrush that has been liberally dosed with a 40 per cent. Nitro Methane mixture! In point of fact the situation was not so humorous, as this bottle held the bulk of his fuel and we were a little alarmed as to whether the remainder would suffice. Fortunately Timms and Skinner had fairly ample supplies, which saw us through.

Considering the event was a world championship the number of competing nations was a great disappointment. They consisted of France, Great Britain, Italy and Sweden. Entries had been intimated from Switzerland and Spain but failed to materialise.

The writer has always felt that confining the World Championship to one class was a big mistake and sincerely hopes that the poor support at Milan on this

occasion will convince the F.A.I. that a change of policy is called for.

However, although the entries were few in number, both the quality of flying and the organisation were first class. So too was the flying site, which was laid out in the square or "piazza" in front of the main building of the famous Milan Fair.

The first day of the meeting saw test flying, processing and the 2·5 c.c., 5 c.c. and Jet classes.

First off the magnificent flying surface on a test hop were Timms and Skinner with their Dooling 29 jobs and they quickly found that atmospheric conditions gave different characteristics to their motor settings. During the whole run of the contest it was hot and dry, which prevented really high speeds being attained.

In class A (2·5 c.c.) entries were entirely Italian, with no less than nine teams from all parts of that country. Fastest of these "babies" was a G20 Super Tigre job of Amato Prati's at 162·162 k.p.h. The same contestant also placed first in class B (5 c.c.), again with Super Tigre, this time a G21.

The familiar figure of Robert Labarde, attired in his customary white, was well to the fore in the 5 c.c. class, where he placed third, followed by our own Ron Davenport, who flew a spinnerless Dooling 29 model.

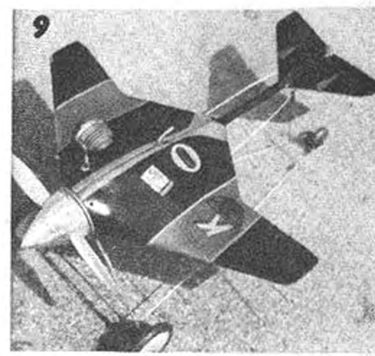
From conversation with the French boys we discovered that the famous "Docteur Volante" was unable to attend owing to pressure of work. Somehow, no International speed contest seems complete without Doc Millet, and we sincerely hope he is back in action again next season.

And so passed the Friday, which served as a warming-up session for bigger things on the morrow; meantime your scribe and his giants, not forgetting the Swedish boys Ericson and Elliason, set forth to explore the Milanese delights of spaghetti, ravioli and a few bottles of the inevitable chianti!

Saturday saw the same hot sun, which, reflecting relentlessly off the white buildings surrounding the flying circle, raised the sales of sun specs., particularly amongst we Britishers. Flying order was drawn for amongst the nations and each contestant entitled to two official flights with two attempts at each flight.

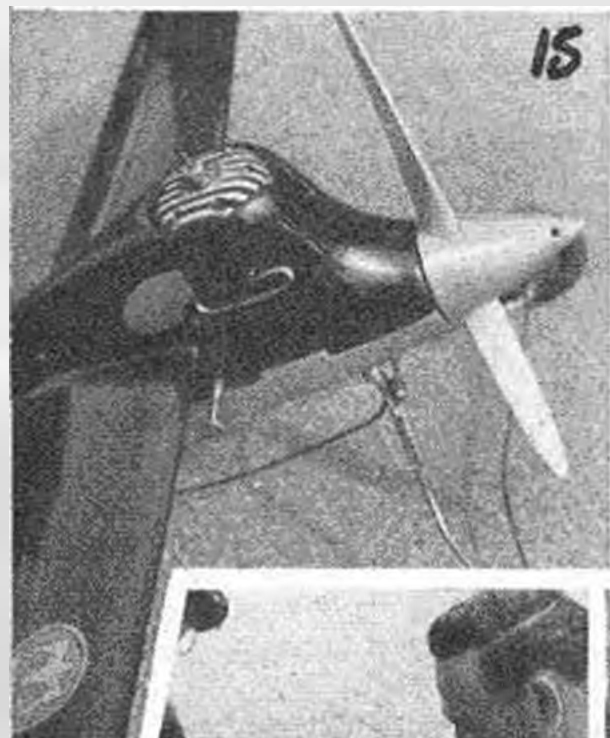
Davenport having the fastest model in the team, it was decided that he should fly first in order to gain the slight advantage of an early flight before the full heat of the day. His first attempt at getting away was

1. Amato Prati, winner of both the 2·5 c.c and 5 c.c. classes shown here with his 5 c.c. Super Tigre G21 model. 2. Franco Marcenaro with an asymmetrical Dynajet job flown by Rudi Schneider. 3. Brian Skinner's Dooling 61 job is weighed-in at the processing table. 4. Ing. Frachetti, on right, makes an accurate check of the line length markers. 5. Team from Venice at their pit table with Battistella on the right. 6. Otello Vita of Pisa starts a Dooling 29 model assisted by Marcenaro. 7. Brian Skinner expresses doubt whilst enduring the pull test of twenty times the weight of the model.



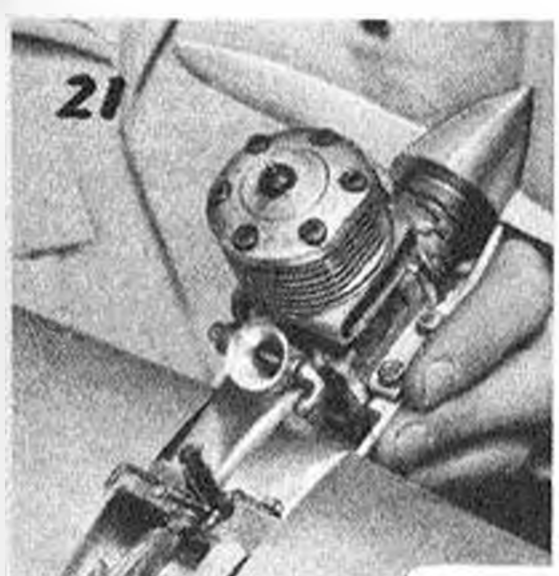
8. This handy rig was used for the line pull test, with a suitable collection of heavy weights in the foreground. 9. Giuseppe Rio of Verona built this unusual 2·5 c.c. speed model. 10. Rudi Schneider complete with anti-shock rubber glove starts Marcenaro's jet job. Harry Timms put in stalwart work on the pump in temperatures around 90°. 11. Official time-keepers were protected by sunshades which proved very necessary in the intense heat. Note the tripod sight for checking height of model, etc.

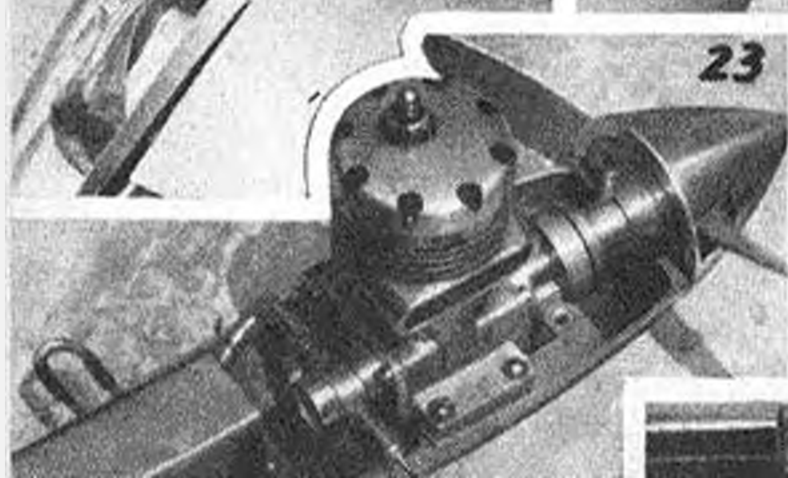
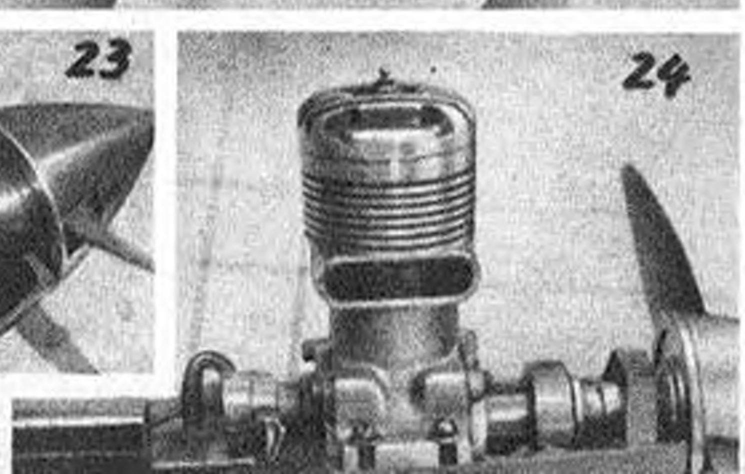










12. Ron Davenport, left, assisted by Harry Timms runs up his Carter Special. 13. Robert Labarde hand starts his metal-winged 10 c.c. Micron speedster. 14. Per-Axel Elliason, left, and Olle Ericson, right, formed the Swedish team. Models are all Class "C" and used Dooling 61 and McCoy Series 20. 15. Neat helmet cowled model as flown by Serge Malfait of France, with 10 c.c. Micron. 16. Smart stunster on left was flown in aerobatic event. 17. Gianni Fiorini, fourth place man, used the new prototype Super Tigre G24 as a power unit. 18. Jean Prudent with the third French entry, again using a Micron 10 c.c. 19. Enrico Fanoli, third place man with a superbly finished McCoy Series 20 model. 20. Left, Max Wolf and right, Robert Liechti of Switzerland with their stunt jobs. 21. Close-up of Fiorini's Super Tigre G24 installation. Note flat filed on cylinder head fins and the balloon tank. Neoprene tube is left disconnected from motor as safety factor, and a special cut-off valve holds pressure fed fuel in balloon until motor is started. 22. Labarde's Micron installation, using oval section tank of ample proportions. Note the bicycle spoke between tank and intake. This is a quick-release lock for the upper fuselage portion. 23. The Carter Special is Davenport's model. This is not, as many people think, a Dooling. Only original piece of Dooling is the crankcase. Engine has different cylinder head, piston, carburettor assembly, and backplate. Spinner is turned from solid and fuel line shows anti-kink interior spring. 24. Fanoli's McCoy Series 20 is a snug fit in metal under-pan.

unsuccessful and investigation showed that the neoprene tubing connecting the tank vents had been left disconnected. This was quickly put right, the motor restarted, and the model was away for a shaky take-off, running very rich. So rich in fact that the prop clipped the ground after dropping the undercart, losing nearly an inch off each blade. The resultant noise had to be heard to be believed, and what was even more incredible was the fact that the model flew the tank out at what appeared to be a very fast speed !

After this bad start Davenport made an almost perfect run on his final attempt at the first flight, reaching a speed of 244·89 k.p.h. This was disappointing compared with his speed at the Nationals (255·412 k.p.h.), but it did give him a lead of one kilometre over Batistella, who was flying to his usual excellent form. The other boys, Timms and Skinner, although starting easily and getting airborne without any difficulty, just couldn't get their motors to behave dead right and finally Brian Skinner landed with his model on fire! This indicated a motor that was overheating badly, and quite possibly insufficient cooling was the cause of his trouble.

After lunch the second round commenced and we held high hopes that Ron Davenport would improve on his first round speed and attain a bigger lead.

Away again to an impeccable start, with the Carter motor giving forth that beautiful hard note that distinguishes it from the McCoy or Dooling. Then down went his wrist in the pylon for what looked like being a very fast run, but to our chagrin the tank failed to last the final lap and this did, of course, count as his second official flight. It was now up to another competitor to best Davenport's leading time, and we all knew that if anyone was going to do it, Battistella would be the man. Sure enough he made a magnificent run, finally beating Davenport by just over 5 k.p.h.

Summing up the final placing shows an interesting variety of engines. Battistella, *Dooling* 61, Davenport, *Carter Special*, Fanoli, *McCoy Series* 20, Fiorini, *Super Tigre Prototype* G24. Which all goes to prove that there are some fast engines about and a healthy manufacturing interest in the bargain.

Thus finished the World Speed Championship for 1953, and there only remained the stunt contest at Forlanina Airport the following day, where the prize-giving for the whole meeting took place.

Two Swiss lads turned up this last day to fly in the stunt and together with Malfait of France they formed the only foreign entries, all others being Italian.

Generally, flying was good, the final position being closely contended before going to Cellini

Guido Battistella of Venice, Italy, becomes the first 10 c.c. World Speed Champion. His model is almost the same as he flew at Brussels in 1952, with the slight addition of a fin. The Dooling 61 standard is a tailor fit in the cowling which has no vents other than the exhaust port. Below, Ron Davenport, who placed second, hands in his model for weighing.

WORLD SPEED CHAMPIONSHIP CLASS C, 10 C.C.

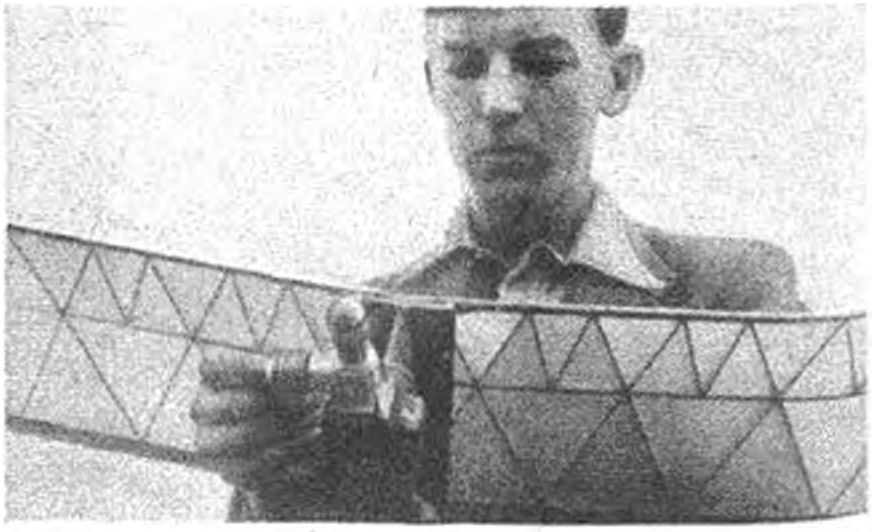
1.	Battistella, Guido	(Italy)	250,000 Km./hr.
2.	Davenport, R.F.E.	(England)	244,897 ,,
3.	Fanoli, Enrico	(Italy)	233,766 ,,
4.	Fiorini, Gianni	(Italy)	233,766 ,,
5.	Ericson, Olle	(Sweden)	220,858 ,,
6.	Labarde, Robert	(France)	220,858 ,,
7.	Timms, I. H.	(England)	210,526 ,,
8.	Skinner, B. A.	(England)	200,000 ,,
9.	Malfai, Serge	(France)	198,895 ,,
10.	Pruden, Jean	(France)	196,721 ,,
11.	Eliason, Per-Axel	(Sweden)	193,548 ,,

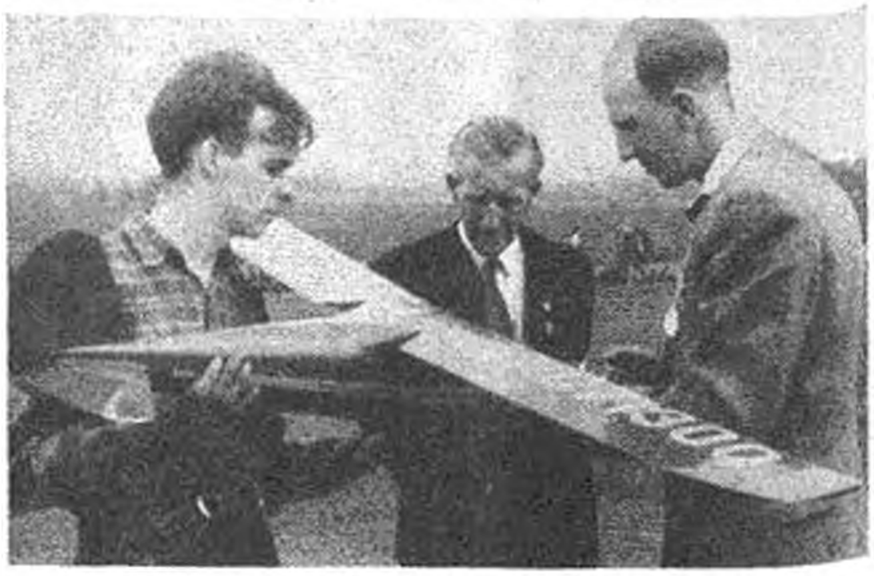
Team Positions : 1. Italy. 2. England. 3. France

GIORNATE AEROMODELLISTICHE AMBROSIANE

			Km./hr.
Class A			
1.	Prati, A.	Bologna	162,162
2.	Cellini, G.	Treviso	155,521
3.	Schneider, R.	Genoa	155,172
Class B			
1.	Prati, A.	Bologna	204,545
2.	Fanoli, E.	Milan	203,389
3.	Labarde, R.	Paris	201,117
4.	Davenport, R.	London	193,548
Class D			
1.	Marcenaro, F.	Genoa	208,092

Main group featuring all World Championship Teams, officials and interpreters.





RAIN STOPS PLAY AT MANCHESTER

RULE 6 in the *Daily Dispatch* National Rally programme stated that "all flights shall be over by 5 p.m.", but few, especially the organisers, could possibly have expected teeming rain to sluice the field free of spectators and all but the team racing competitors at this early hour. With good warning of the impending torrents, all and sundry moved smartly for home and shelter—we almost heard the gateman say, "Well, that's got rid of that lot!"—yet through the downpour the "A" and "B" racers strove to splash their way to decisive finals. Only the impromptu Stunt Combat remained unfinished, and that due to decomposition of streamers in the wet!

The Jacksons of Littleover, father and son, each topped ten minutes to take senior and junior rubber prizes from the nine who collected double max's in better conditions, whilst power men, Bickerstaffe, Doughty and Monks took one look at the weather, said no thanks, and tossed up for their prizes instead of making a fly-off. Notable indeed was the absence of double max's in Glider, the 164 ft. line playing its part, but still not stopping young Wendy Bennett from taking the junior prize even from Rally Junior Champion Hughie O'Donnell, whose Whitefield Club collected, as is usual, a large proportion of the placings.

Scale, for the Eddie Riding Memorial Trophy, was extremely popular with the crowd and rightly so, for the narrow win proxy-flown J. Bridgewood's Heston Phoenix held over Frank Lees' beautiful Luscombe Skypal is indicative of high quality, particularly among the first four in this event. But oh! Why no model pilots in what are supposed to be *flying* scale models? Only one in eighteen entries had this last but important touch of realism. After all, the real thing could hardly fly without someone at the controls, why not put an occupant in a model cockpit or cabin? Full marks for the points scheme in this contest are hard to get: but when flight and landing points are near equal among entries, these little details help to win. R.G.M.

Full results are to be found on p. 504 in "Club News".

Above, top: Worm's eye view of Accrington's E. Lord tuning up his very fast Elfflaender 2·49 special; note wing structure. Centre: Bob Gosling looks in as F. Lees starts up his beautiful Skypal for 2nd place in scale. Below, is J. Bridgewood's Phoenix being hammered into shape by proxy fliers Biggs and Clifton; in second photo (left) they check undercarriage retraction which operates 10 secs. after take-off and comes down as motor idles after 40 secs. All done by one fuse! Bottom: In pouring rain, drenched but happy, Foresters winning T.R. "A" team, Hall, Bolton and Weston with Oliver Tiger job, 65 laps at 78 m.p.h. Right are "B" winners Williams, Harper and Jarvis of Outlaws.

JETEX 100 OWNERS WILL LIKE THIS 24 in. SCALE MODEL OF THE WORLD'S SMALLEST JET

SIPA 200 Mini jet

BY BRIAN LEWIS

24 years old . . . single . . . member of the Southern Cross Club . . . one of the "Aeromodeller" staff draughtsmen/tracers . . . F/F fan, preferring light-weight rubber and large gliders . . . student of modern piano music . . . also keen on motor cycling and boxing.

LOOKING rather like a shrunk-down "Vampire", the Sipa 200 "Minijet", with its span of a mere 23 ft. 9 ins., is the world's smallest jet-plane. The design is the work of a young French engineer, Yves Gardan, whose name first achieved prominence with the Sipa 90 in 1946, and who later produced the popular "Minicab". The 200 was built at Suresnes, and made its maiden flight at Villacoublay on January 14th, 1952, in the hands of test pilot Roger Launay.

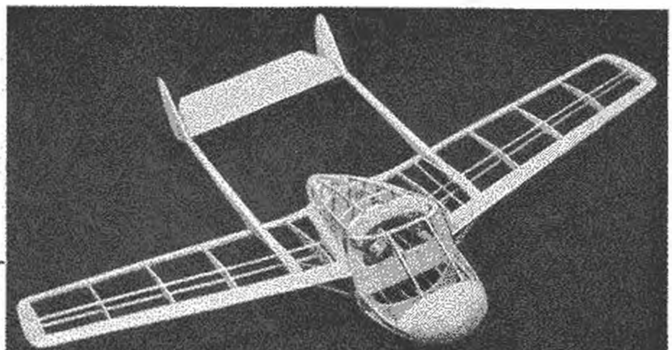
This initial flight nearly ended in disaster, for, after a perfect take-off and smooth climb-away, severe vibration and control flutter commenced, and only the airframe's great strength and the skill of the pilot avoided what might have been a nasty accident. Some months later, after various recalculations and modifications, the machine reappeared with strengthened tail booms, a re-designed cockpit cover, and mass-balanced control surfaces.

The general layout of the "Minijet" has been likened to an egg to which has been added a mid-mounted wing fitted with a twin boom tail unit. The "egg" accommodates pilot and passenger, seated side by side, and a Turbomeca "Palas" jet motor of 330 lbs. thrust. Air is fed to the motor through two very large root intakes which are of more than sufficient cross-section—an unusual factor in jet aircraft design! The cockpit is surprisingly roomy, once inside, but a shoe-horn has been suggested as an aid to entry, although the very low tricycle undercarriage is a help in this respect.

Employment of a laminar flow wing section helps considerably in achieving a top speed of slightly over 210 m.p.h. and a reasonable stalling speed of just under 70 m.p.h. Pilots report excellent handling and control response at all speeds, and the machine is fully aerobatic.

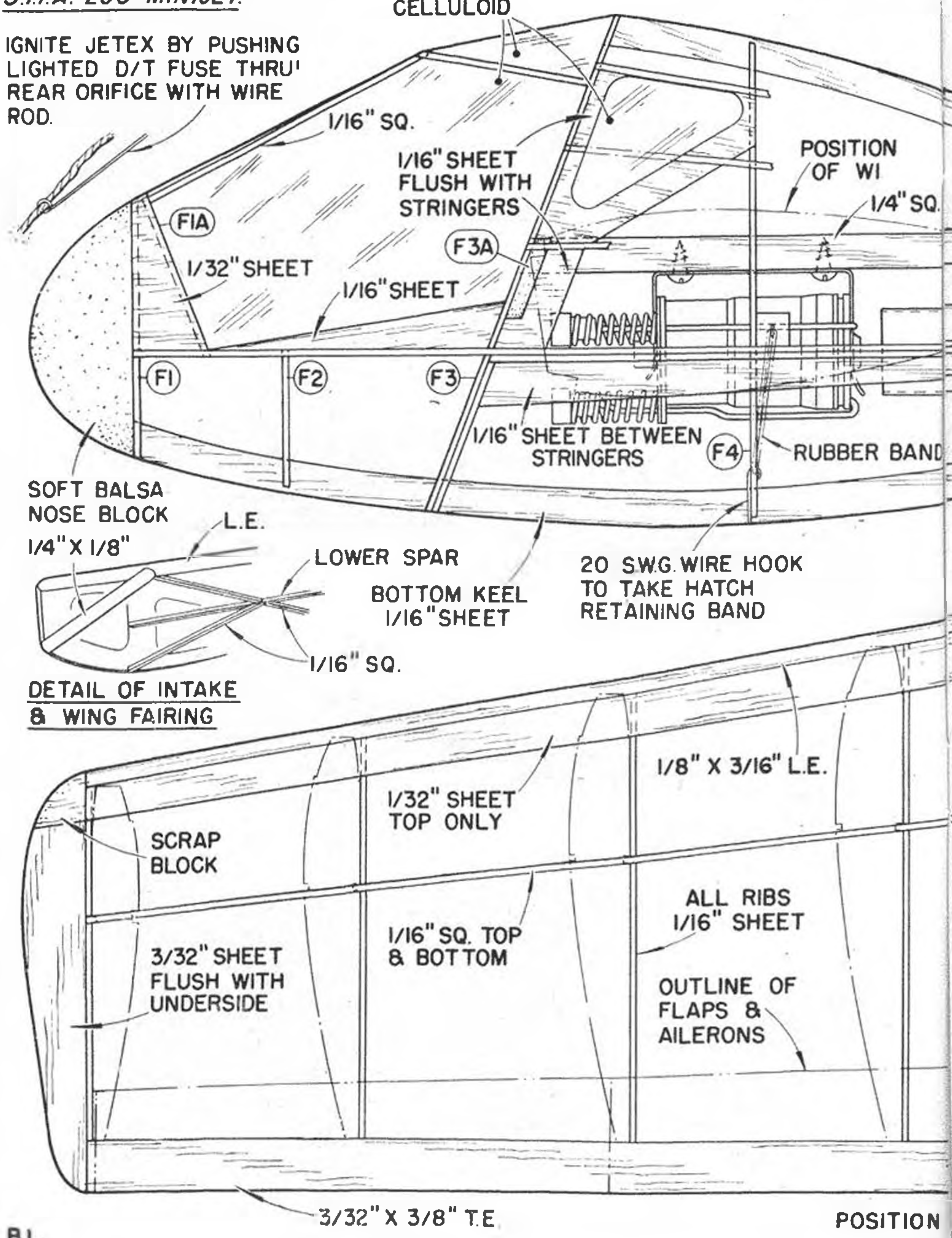
The model retains the simplicity of construction of the prototype, but access to the interior is made easier by the provision of a large hatch beneath the

(*continued on page* 470)

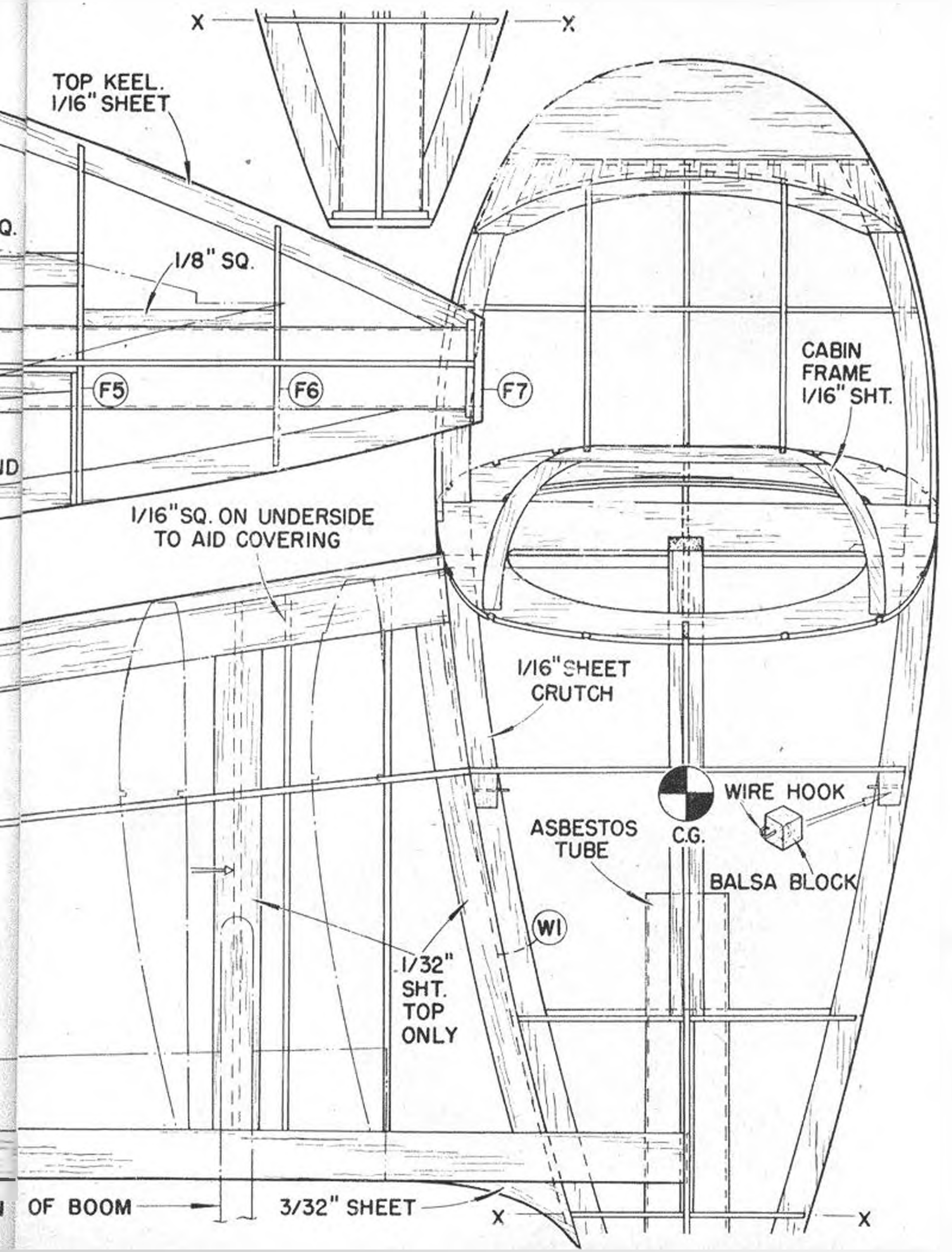


One-piece construction is simple and strong, takes normal flying knocks in its stride. Model is suitable for cut-down Jetmaster as well as "100".

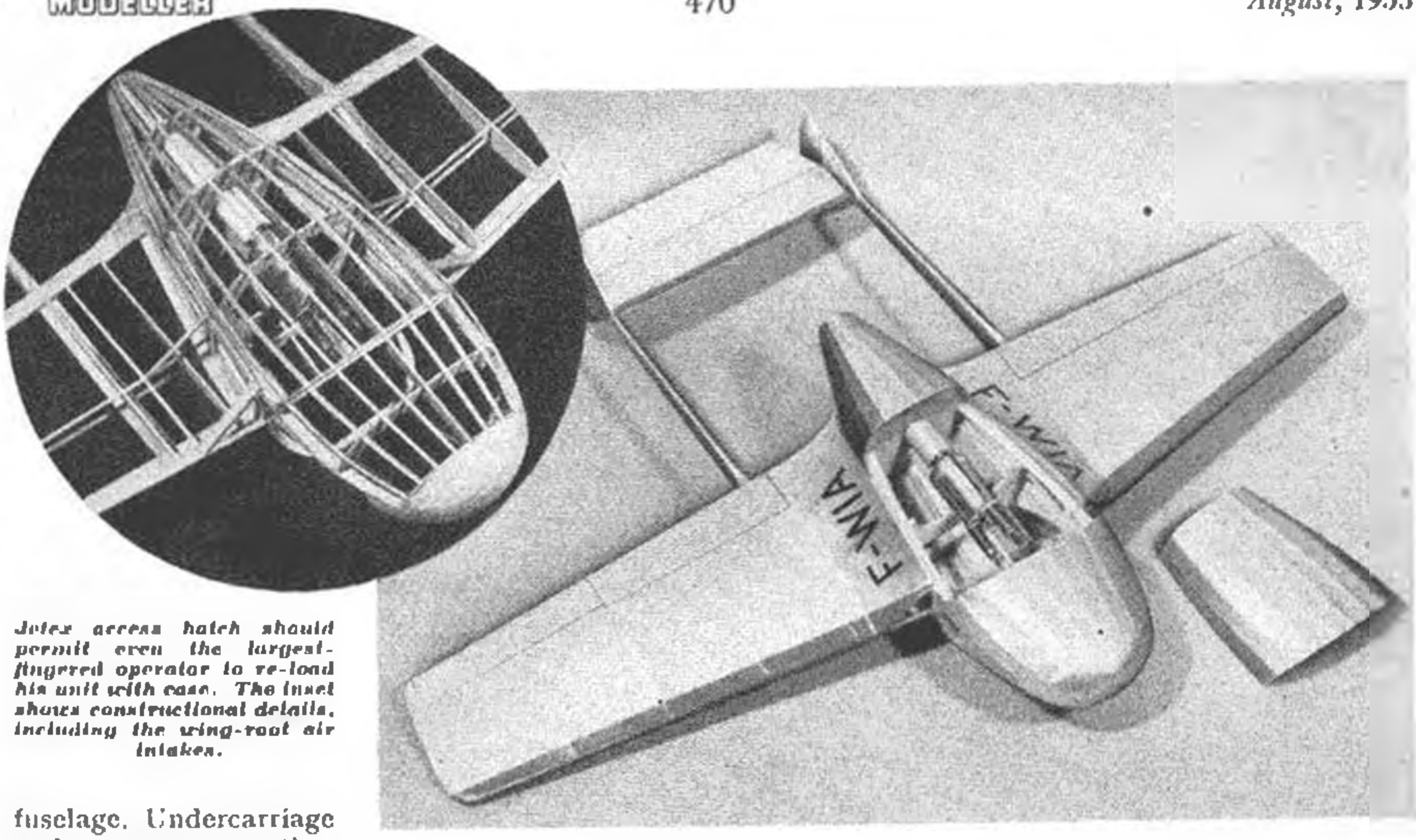
S.I.P.A. 200 MINIJET.



B.L.



X
X
TOP KEEL.
1/16" SHEET
Q.
1/8" SQ.
F5
F6
F7
CABIN
FRAME
1/16" SHT.
ND
1/16" SQ. ON UNDERSIDE
TO AID COVERING
1/16" SHEET
CRUTCH
WIRE HOOK
ASBESTOS
TUBE
C.G.
BALSA BLOCK
W1
1/32"
SHT.
TOP
ONLY
OF BOOM
3/32" SHEET
X
X



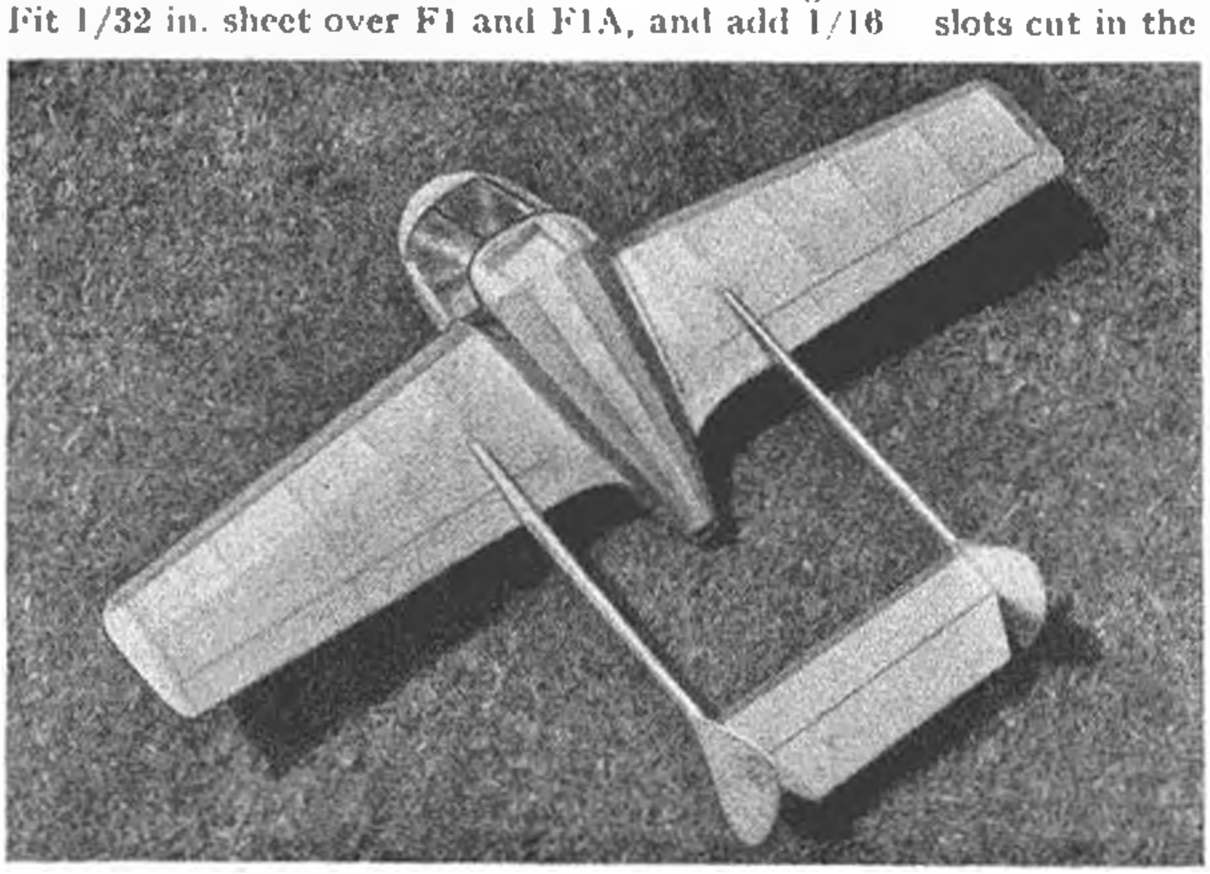
Jetex access hatch should permit even the largest-fingered operator to re-load his unit with ease. The inset shows constructional details, including the wing-root air intakes.

fuselage. Undercarriage and one or two other weighty and non-essential details have been omitted, as is customary with Jetex models, and the result is a sturdy airframe of light weight (less than 3 ozs.). Some builders may care to enlarge the plan slightly and, with one or two slight alterations, use the machine as a basis for a ducted fan installation.

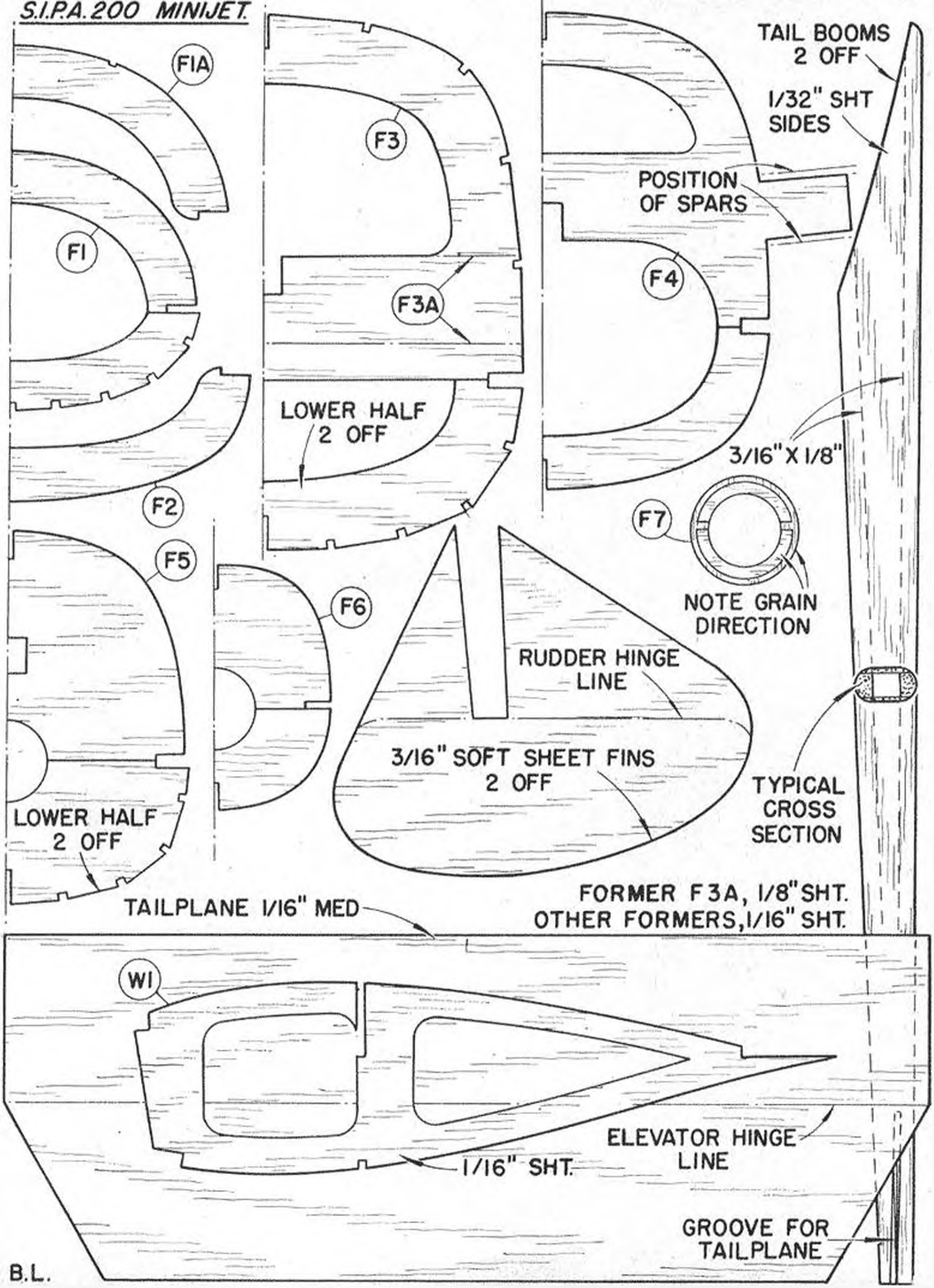
CONSTRUCTION commences by pinning down the crutch over the plan, and pinning to this the hatch sides. Lower halves of formers (except F7) are then cemented in place, followed by the lower keel. F7 (made from two cross-grained laminations) is fitted after removal from plan, together with the asbestos tube. Top former halves and top keel are now added, followed by the ¼ in. square motor mount, well-cemented, and the stringers. Fit 1/32 in. sheet over F1 and F1A, and add 1/16 in. filling between stringers where shown. Carve noseblock, sanding to finished shape after cementing to F1, and separate hatch by cutting through lower keel and stringers. Wire hooks and a rubber band retain the hatch in place.

Make a tracing of the wing and construct one half at a time, reversing tracing for second half. Leave spars slightly overlength until fitting. Cement W1s to fuselage sides, carefully checking angles, and fit wings at angles given by F4, which should produce 1 in. dihedral under each tip. Add W1 cap strips, t.e. filler, ⅛ × ¼ lower intake outline, and 1/16 in. strips on underside.

Booms are built as boxes, using 3/16 × ¼ top and bottom and 1/32 sides, and sanded to section shown. The tailplane, of medium sheet, fits in slots cut in the booms, and the soft sheet fins are cemented to the boom tops. It is best to pin the assembly together to check line-up, applying 2–3 coats of dope or filler to tail and booms before finally cementing. Cover cabin with thin celluloid; wings and fuselage are lightweight tissue-covered and given two coats of thin dope, after which the booms may be cemented to the wing and any colour trim applied.



Balance the completed model where shown, and trim for glide by bending the elevator up or down. A little wingtip washout is helpful but not essential. Power-trim on half charges. The hatch should be replaced after loading and the wick ignited as shown on the plan.


S.I.P.A. 200 MINIJET.
F1A
F1
F2
F3
F3A
LOWER HALF 2 OFF
F4
TAIL BOOMS 2 OFF
1/32" SHT SIDES
POSITION OF SPARS
3/16" X 1/8"
F7
NOTE GRAIN DIRECTION
F5
F6
LOWER HALF 2 OFF
RUDDER HINGE LINE
3/16" SOFT SHEET FINS 2 OFF
TYPICAL CROSS SECTION
FORMER F3A, 1/8" SHT.
OTHER FORMERS, 1/16" SHT.
TAILPLANE 1/16" MED
W1
1/16" SHT.
ELEVATOR HINGE LINE
GROOVE FOR TAILPLANE
B.L.

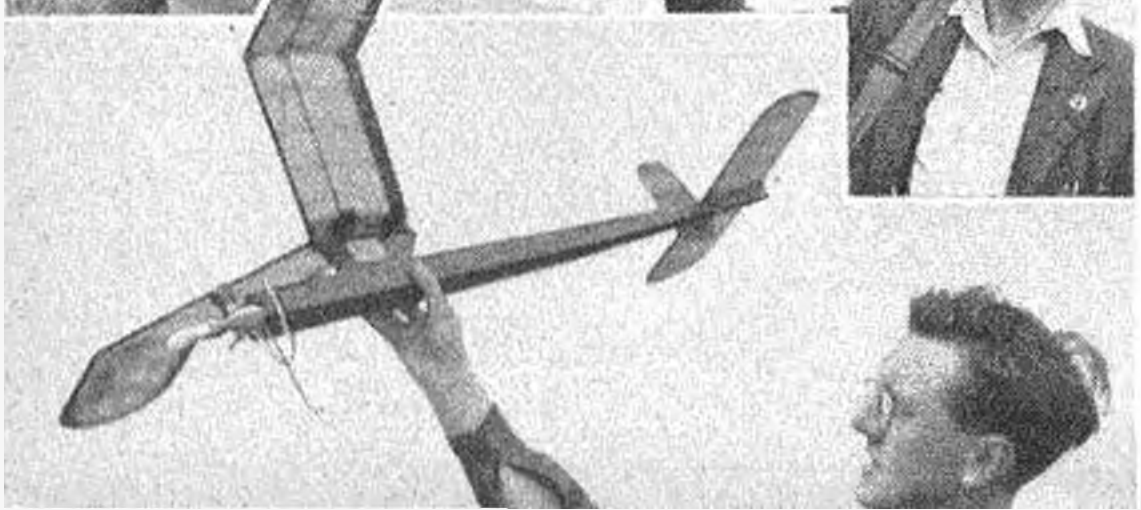
The 1953 'Nats'

WITH the Navy excelling themselves as hosts last year the R.A.F. were not to be outdone in 1953 and they certainly laid on a perfect airfield, first class weather and co-operation that can only be described as 100 per cent. Thanks are due to the Station Commander, Group Captain A. H. Donaldson D.S.O., D.F.C., A.F.C. (at right) who really appreciates the value of aeromodelling, particularly to the R.A.F., and who hoped that the S.M.A.E. would come again next year! Let us not forget either the stalwart efforts of the Nationals Committee, who did a first class job and also had some unenviable jobs at the end of the meet!

Some 8,000 to 10,000 spectators watched nearly 1,000 competitors enjoy their Whit Week-end in true aeromodelling style. The PAAload event proved increasingly popular, and other highlights were the breaking of four speed records, exceptional radio control flying, and phenomenal team race entries.

Rubber and Power Saturday's gusty wind was accompanied by occasional thermals and large areas of gently sinking air, and times in the Sir John Shelley Cup (power) and M.A. Trophy (rubber) were correspondingly patchy. Only two double three minute maximums were returned in power compared with eight in rubber, which seems to indicate that flying on a 10 sec. motor-run certainly does cut down power times considerably.

Left: Class A Team Race entrant G. Yeldon looks on while organisers A. Jordan, Sid Taylor and Peter Hoskisson confer. These three, and other East Anglian volunteer administrators made the Nats a terrific success. Below: Tom Collins of Impington Village Club has 36-in. profile job for Mills ·75 called Lodestar. Bottom: Sanger of Southampton shows seagull influence in his Elfin 1·8 design.

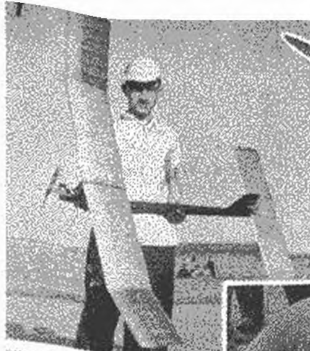


Many familiar faces were to be seen at the rubber launching spot, and the models used were nearly all 1953 Wakefields with a sprinkling of lightweights. Only one long (6 ft.) fuselage job was flown, by Tony Brooks of Grange, and, while it performed well, the turbulent air treated it rather unkindly. The O'Donnell brothers were well to the fore, flying their familiar Wakefields; John's struck a downdraught on its first flight, and sank like a lift to put him out of the running, but Hugh kept up the family reputation by being among the eight to fly-off. Few geared jobs were flown, and free-wheelers, featherers, single and double blade folders were fairly evenly distributed. All eight fly-offs were made within the space of a few minutes showing a clear win for Ed (The Expression) Bennett of Croydon.

If any trend was evident in the power event, it was that entries tended to be smaller, on the average. Several ·5 and 1 c.c. models were flown, but only three or four over 3·5. F.A.I. 2·5 c.c. jobs seemed most numerous, and little radical change of design was apparent. Tom Smith of Blackpool impressed spectators with the performance of his "Fried Fritter", a small, lightweight model on "Scalded Kitten" lines which handled its Elfin 2·49 with ease. A. Sanger of Southampton showed up with a cranked-wing Elfin 1·8 effort which resembled an astonished sea-gull in flight, but which suffered from tank trouble and put in only one flight. Buskell (Surbiton) and Horwich (Whitefield) flew off their tie almost simultaneously, but the latter's fuel tubing became disconnected, cutting his motor run to only 5 secs., and Buskell's "Slick Stick" romped home.

The Gold Trophy Judged by Harry Hundleby and Cpl. A. E. Birch of R.A.F. St Athen, this was probably the most disappointing "Gold" yet held. Out of 27 entries received only 7 actually flew. First man away was Hopkins of Bristol who clipped the ground at the bottom of his last horizontal eight, shortening the prop to the extent that a power-on landing was an immediate necessity. Both Jarvis and Harper of Outlaws flew well, but Harper's model, a Fox 35 powered lightweight job, lost its elevators in flight and came to grief. It was also a change to see Barry Wheeler in a stunt event, his model being unusual in that the whole tailplane pivoted instead of the normal elevator-only control.

Noticeable absentees were the Hewitts and Pete Russell, the top place being contested between Piacentini of Salisbury and Pete Smith of Chingford. Like a good deal more of the contestants Piacentini did not have a tank of sufficient duration to complete the schedule, but did fly an almost perfect schedule until his Oliver spluttered to silence. Pete Smith might well have pipped him had not the usual Smith Gremlin taken a hand. As he gave full "up" during one of the "eights", the top line at the handle snagged in the clip for the bottom line, with dire and unexpected results.

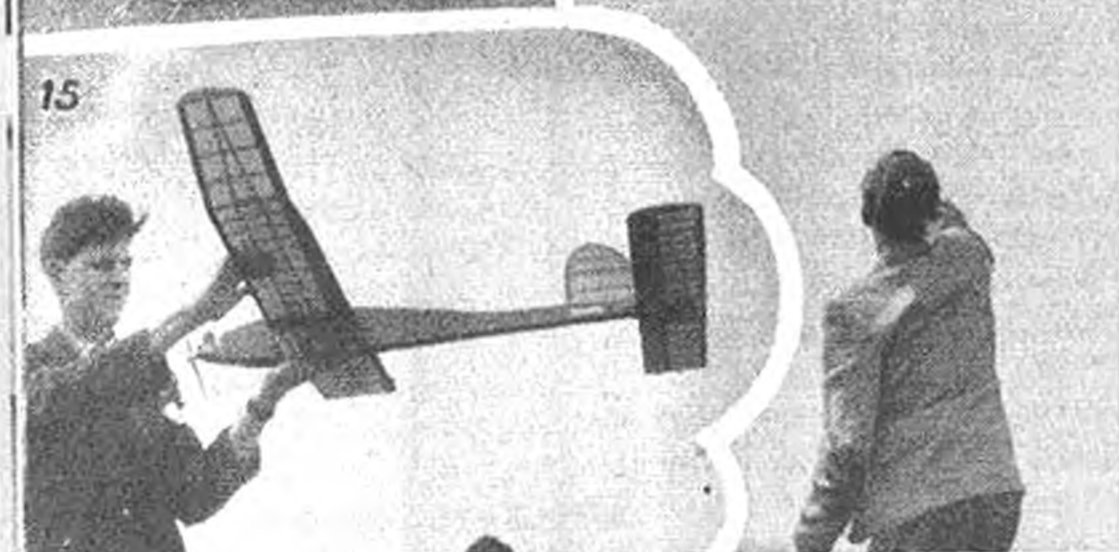


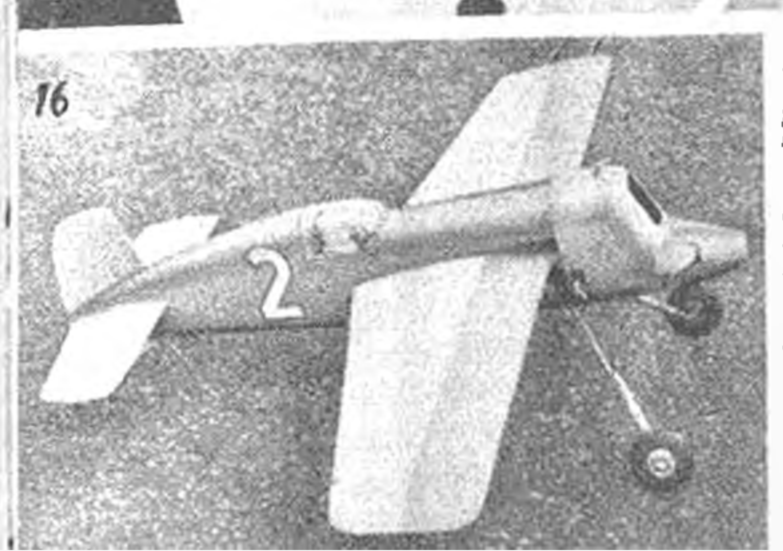


1. Horwich, whose tank disconnected after launch in the Shelley fly-off, placed 2nd. 2. Invincible Pete Buskell, recived last year's FAI model with Amco PB to win the Sir John Shelley. 3. B. Hopkins, S. Bristol, and inverse tapered Fox 35 Gold entry.


4. Tom Smith and fast climbing "Fried Fritter", 5th in Shelley. 5. 1952 World Power Champion Barry Wheeler concentrated on the Gold, with McCoy 19 stunter, and managed 3rd place, not 4th as in heading. 6. Pete Smith, the man who is always 2nd, with his beautifully finished Gold entry; slack line caught on handle . . . finis. 7. Oooh, did your gloplug motor backfire, Mr. Siddall? Well, never mind, have some sausage and tomatoes says Mrs. Siddall. 8. H. Wycombe, 1st and 2nd teams in Class A. Happy, aren't they?

9. Gold trophy winner, A. Piacentini, pressure fills tank for Oliver Tiger diesel, narrow chord flaps are used. 10. Smallest free-flight entry was 22-in. Dart model by Johnny Gould, Northern Heights M.F.C. 11. W. Dallaway of Birmingham placed 3rd in Rubber fly-off. 12. John Gorham with Reg Atkinson hanging on, winds up for 2nd place in Rubber.





13. Mick Jarvis of Outlaw's, 4th in Gold, prepares to start Fox 35 streamliner, flies fast. 14. M. Green of Men of Kent launches N. Cooling's A/2 from Sevenoaks for a single maximum. 15. Peter Wyatt, always with something new has 1·49 Javelin shoulder wing design with many novelties. Hinged flap on nearside no longer used. 16. Neat metal cowl signifies this as a Chingford class A racer.

Team Racing Over 120 team racers were entered for the " A " and " B " races, and, as might be expected, some very close results came in both classes. Run on the Saturday, the Class " A " for the Eastbourne Trophy produced as smart a crop of models as we have ever seen, and closed with a High Wycombe versus Croydon final that might well have been forecast by our June issue. Norman Butcher, with faithful Sorcerer's Apprentice, had narrowly won his heats in some very hectic racing, and Dick Edmonds, anxious to retain the Beer Tankard trophy for yet another year, was pushing his " Humpty-Go-Cart " to the utmost in speed and lappage. Third finalist was young Ryan Lee, new Wycombe recruit, with his *first* model and a brand new straight-out-of-the-box E.D. 2·46 that was running faster than many " doctored " motors.

A firecracker start with all three fuelled and away in split seconds, showed that Butcher's 2·46 had a slight edge over the others on speed. Within laps however, his motor could not match the increasing output of Edmond's Oliver Tiger, and when a blocked fuel line put the " Apprentice " down for half-dozen stops or more, the inevitable result became obvious.

Few models could hope to match the 72 m.p.h. Tiger powered racer by Edmonds and with a lappage nearly equal to his miles per hour, we can see yet another successful season ahead for this group of Class " A " enthusiasts. Winner's fuel is standard " Oliver " home-brew as quoted in Hangar Doors, June, propeller an 8 in. × 8 in.

The bigger boys in Class " B " suffered an early surprise when Cyril West's plain bearing Frog 500 eclipsed Norman Butcher's " Little Sheba " ETA 29 model ; from which it went on to win the quarter final and final from much faster machines. Through fast heats sometimes decided on a mere half lap, Cyril West's Bluebottle, G. Linford's Fox 29 and McNess's Carter/ETA models emerged as finalists. Both the latter are well over 80 m.p.h. fliers and McNess's West Essex entry was actually time checked at 100 m.p.h. during the first half of the race. But the Godalming team started with a rough motor run and Cyril actually put the Bluebottle down beside his pit men for a refuel, whilst the engine was still idling over. This shattered all time records for pit stopping and, coupled with loss of a wheel and a lengthy halt by McNess, it reversed the position in the second five miles. Final order placed Linford's (Outlaw's) entry in second place, and the huge airscrew trophy goes back to its donor club at Godalming for 10 miles at 63 m.p.h., with a quite remarkable plain bearing Frog 500.

Speed Though few in numbers, quality rated high among the speed entries, and no less than three new records were established. Peter Wright used his Class II Gook to reel off a 106·5, and his McCoy 49, which is still in the running-in stage, made a 124·3 flight for a new figure in Class V. In 5 c.c. the clock goes back again to the battle between Don Powell of East London and Pete

Wright which started over 4 years ago. First Powell, then Wright would be the speed man of the day, and now, with standard, as yet "Un-Carterised" Dooling 29, Don leads the field again in Class IV with 124·3. To Fred Carter, indeed, should go all honours of the meeting.

Working in close harmony with Ron Checksfield, Fred has prepared a series of 10 c.c. all-British motors that should, with the right airframes, establish themselves as fastest in the world. On Saturday at Waterbeach, rumour was rife among the speed men that Davenport, Gibbs and Claydon, the East London men, were each exceeding 150 m.p.h. in tests. So, not with little speculation and much incredulity was their arrival watched on the second day. When Davenport did get down to his motor for a flick start, things began to move—and we include all and sundry adjacent to this very special engine! Airborne safely, Davenport settled down to the pylon and signified his speed run—158·7 m.p.h. was the proud figure—yet another check time made on later laps recorded over 162 m.p.h. To Carter and Checksfield this is a triumph, for since the first E.D. Competition Special, these engineers have worked hard to make engines run faster, and in this "Special", based on a Dooling type crankcase, they have their best yet.

This placed Davenport securely in the team for Milan; but misfortune eliminated his clubmates.

Throughout the two days, the collection of Chrome Yellow models from Harrow club, aided by the skilful hands of M/Sgt. Crowe of U.S.A.F., made successive runs to qualify two of their members, Harry Timms (139) and Brian Skinner (138 m.p.h.) as second and third men for Milan. Like Davenport, they use home-brew fuel with 40–50 per cent. Nitro Methane and 9 in. × 11 in. props. For model finish, quality of flying and low rate of crashery, this was the most satisfactory speed meeting yet seen.

Glider and PAA-Load Sunday's glorious weather brought fliers out at 5 a.m., but it was not till mid-morning that a very faint breeze and crops of thermals became evident. At one time in the Thurston Cup as many as five gliders were to be seen circling in the same thermal just below cloud base, but despite this the number of double maximums was low—only nine. Design showed the same characteristics as in the previous day's power event, being much the mixture as before with a trend towards smaller models and the main accent on the World Championship class. Remarkably few large models were in evidence, and no particularly unorthodox jobs. L. Halko of the Polish A.F.A. entered a beautifully built 96 in. high-aspect ratio (14) R/C sailplane, weighing only 16¾ ozs. all up, but, of course, did not use the radio in the contest. Higher aspect ratios seemed to be the only design feature noticeable, yet it was a low aspect ratio model which eventually won—the A.P.S. "Corsair" flown by designer J. Holt. The fly-off was a case of "find the thermals", and,

17

18


17. Beautifully built B.G.44, fast proving a popular design. 18. J. Holt test glides his APS Corsair, which won the Thurston Trophy. 19. Tony Brooks and Long-Tom rubber entry, upset by down-draught. 20. Chocolate and yellow high-finished A/2 by J. Rogers of Solihull was fuel proofed.

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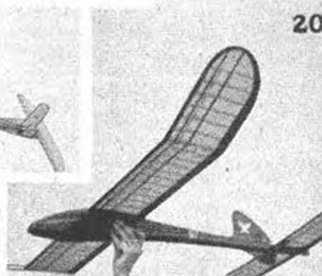
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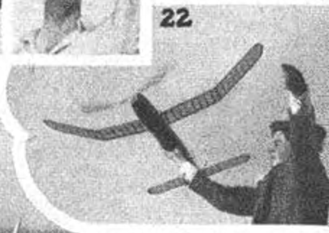
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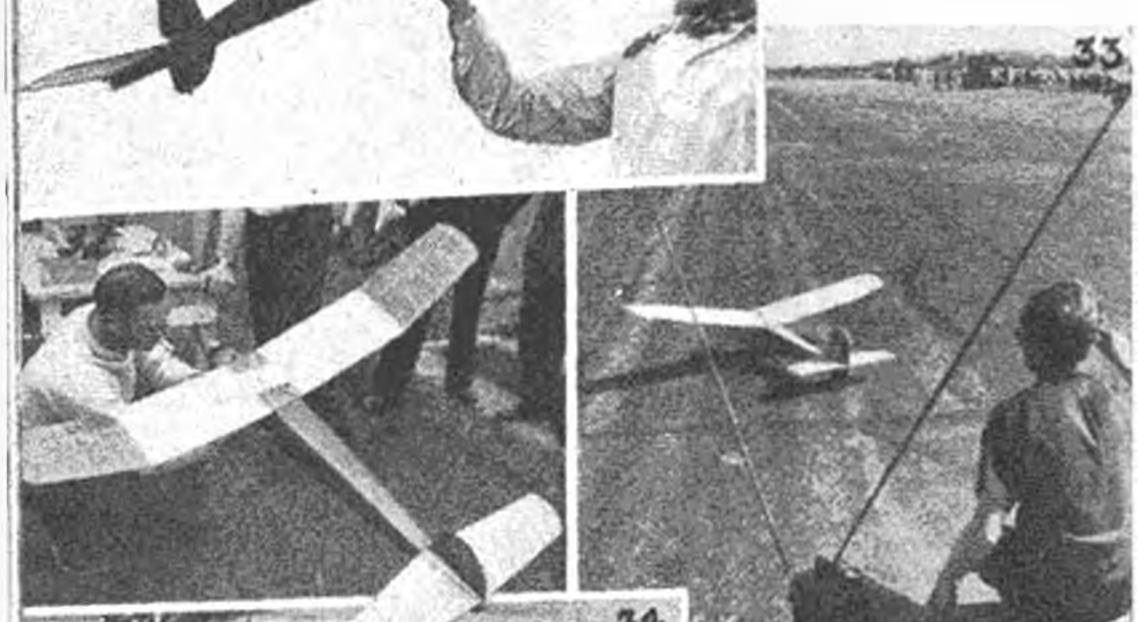
21. Hughie O'Donnell launches for 4th in Rubber whilst in 22 Ed. Bennett puts on the expression to make sure of winning the "Model Aircraft" Trophy. 23. Don Powell and Dooling 29 speed winner with large tail area. 24. Extension shaft on ETA 29 enables R. Farey of Wimbledon to obtain smart lines in B racer. 25. Radio sailplane by L. Halko of Polish A.F.A. 96 ins. span, weighs 16¾ ozs.

24

25


26. Davenport and Fred Carter examine the latter's superb engine. Model made record flight without spinner. 27. D. White travelled 820 miles on round trip from his Scottish home. 28. Roger Reffles, Cyril West and D. Holt with winning "Bluebottle" racer. 29. Jim John with smart PAA model using K A B 10. 30. Georgie Fuller prepares to light up d/t on E.D. 2·46 Stomper Hearse, was third in PAA load.

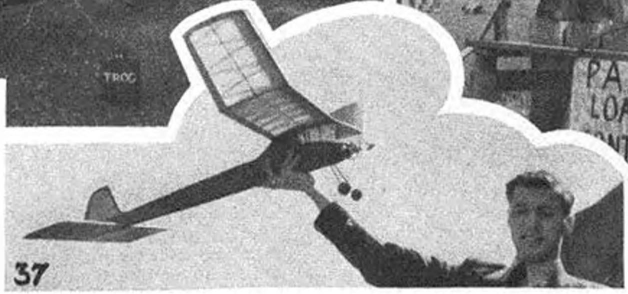


31. Unknown retriever poses with G. Robert's DC 350 P1 Hoader from Lincoln. 32. Ray Spence, Arthur Mullett's model shop man, prepares for what was a perfect loop take off. 33. E. Ardron, Cambridge, away nicely with his Mills 1·3 c.c. design. 34. Ted Sills, Bedford, used his special short wing Sparky for course flying, and changed to normal wing. In foreground for the stunt section of his flight.

as the times show, it proved a touch and go business, for of nine almost simultaneous flights, only two connected with lift. D. Ridley, flying an A.P.S. "Tadpole", placed second.

The Short Cup. for 3·5 c.c. payload models, was without doubt the free-flight event attracting the most interest, with three of P.A.A.'s magnificent Bulova watches as senior prizes, and three for juniors . . . and not one junior entered! One surprise was the number of entrants using 2·5 c.c. motors, despite which the standard of flying was remarkably high. Apart from a number of "Crowbars" (two of which placed in the first six) design was extremely varied, and several entrants were obviously out to observe only the letter of the rules rather than the spirit. Even so, the top three models were all reasonably nice-looking and must be very close to Pan-American's ideas in sponsoring the contest. Amusing incidents occurred when Wrigley's (Whitefield) dummy fell out and disintegrated on the runway, and Holland's (West Herts.) leaked shot into the fuselage, upsetting his C.G. somewhat. A. Wemyss of Southampton had a bright idea in cutting his occupant from thick sheet rubber and inserting lead rods to bring the weight up. Take-off is mandatory, which produced a few dicey moments, but 90% of the entries made quite safe take-offs and climbed away fast despite the weight restrictions. Many thermal flights were made, resulting in several maximums, but only the winner, K. Glynn of Brixton, managed to return a treble-max; Ray Monks looked a cert. from the beginning, but George Fuller got off to a bad start and did extremely well to pull up to third place.

S.M.A.E. Radio Control Trophy. Held under almost ideal conditions apart from a very late start, this was the finest radio comp. we have yet seen. The wide runway at Waterbeach tempted many competitors to R.O.G. and several fine take-offs were witnessed. Flying was very good and the crowd, which numbered several thousand, were greatly entertained. Sid Sutherland, the winner, discarded his main undercarriage at a great height, made a near vertical spot landing, and was the only man to complete three full spins, the last one being much too close to terra firma to be comfortable. Encouraged by this, Sid Allen completed his third spin underground and, to our surprise, produced an almost undamaged model in spite of it. Askew of Cheadle, a new name in radio competition flying, flew with great precision into a well-earned second place; Nachtman, the Pole, with a model of superb construction, had a real long-distance flyaway, and to Wolfe of Epsom must be credited the best prang of the contest. Sills of Bedford was handicapped by interference, as were apparently other competitors, this being eventually traced to people near the spot landing area with a receiver switched on that had sufficient radiation to affect the more sensitive receivers. A point we hope all R.C. fliers will appreciate and note for the future.



35. A. Wemyss of Southampton entered 1,025 sq. ins. Amco 3·5 model with a novel thick sheet rubber dummy. 37. Winner of the Short Cup, plus a magnificent Bulova gold wristlet watch. K. Glynn of Brixton displays his Elfin 2·49 design.

36. PAAload models and dummies were carefully checked. R. Lipscombe of administrating Cambridge Club, beam weighs J. Ellison's (Skyrangers and R.A.F.) occupant, while pipe smoking S/Ldr. Laurie Ellis waits his turn.

SIR JOHN SHELLEY TROPHY

1. Buskell, P.	Surbiton	6 : 00 + 1 : 37
2. Horwich, E.	Whitefield	6 : 00 + 0 : 48
3. Lamble, J.	West Herts	5 : 32
4. Marcus, N. G.	Croydon	4 : 54
5. Smith, J.	Blackpool	4 : 43
6. Godden, R.	Cambridge	4 : 41

" MODEL AIRCRAFT " TROPHY

1. Bennett, E.	Croydon	6 : 00 + 4 : 04
2. Gorham, J. A.	Ipswich	6 : 00 + 3 : 56
3. Dallaway, W.	Birmingham	6 : 00 + 3 : 10
4. O'Donnell, H.	Whitefield	6 : 00 + 3 : 01
5. Taylor, P. T.	Kingston	6 : 00 + 2 : 47
6. Faulkner, B.	Cheadle	6 : 00 + 1 : 43
7. Wingate, J.	Streatham	6 : 00 + 1 : 32
8. Snewin, J.	Blackheath	6 : 00 + 1 : 30

SHORT CUP (PAA LOAD)

1. Glynn, K.	Brixton	9 : 00
2. Monks, R. C.	Birmingham	8 : 33
3. Fuller, G.	St. Albans	7 : 47
4. Lucas, R.	Brighton	6 : 22
5. Marcus, N. G.	Croydon	6 : 05
6. Holway, R.	Brighton	4 : 56

THURSTON CUP

1. Holt, J.	Barking	6 : 00 + 8 : 45
2. Ridley, D.	W. Middx.	6 : 00 + 7 : 37
3. King, M. / Haisman, B.	Belfairs / Belfairs	6 : 00 + 2 : 16
4. Giggle, P.	Brighton	6 : 00 + 2 : 01
5. Rawlings, H.	Belfairs	6 : 00 + 1 : 44
6. Soame, E.	C Member	6 : 00 + 1 : 10
7. Longstaffe, A.	Beavers	6 : 00 + 0 : 54
8. Lamble, J.	West Herts	6 : 00 + 0 : 43

S.M.A.E. RADIO CONTROL TROPHY

1. Sutherland, S.	West Essex	490 points
2. Askew, R.	Cheadle	416 "
3. Fox, J.	Hatfield	402 "
4. Allen, S.	West Essex	397 "
5. Rhodes, M.	Harrow	380 "
6. Sills, R.	Bedford	355 "

CONTROL LINE SPEED

Class			m.p.h.
I	Dille, M.	Croydon	68·7
II	Wright, P.	St. Albans	106·5
III	Hall, J.	Chingford	119·7
IV	Powell, D.	East London	124·3
V	Wright, P.	St. Albans	124·3
VI	Davenport, R.	East London	158·7

GOLD TROPHY

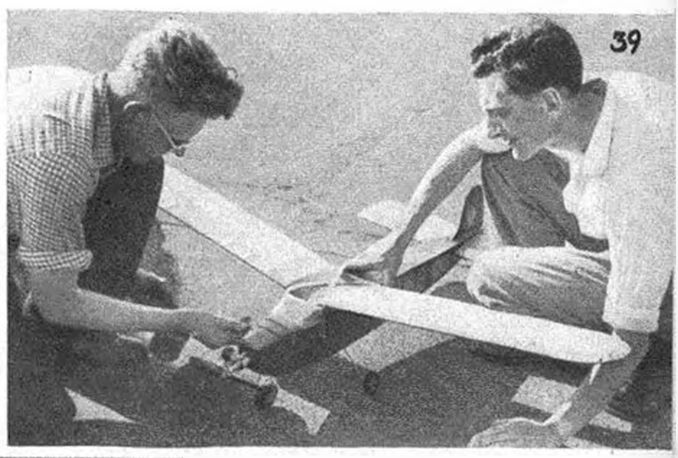
1. Piacentini, A.	Salisbury	282 points
2. Smith, P.	Chingford	235 "
3. Wheeler, B.	Birmingham	218 "
4. Jarvis, M.	Outlaws	213 points
5. Harper, B.	Outlaws	195 "
6. Hopkins, B.	Sth. Bristol	183 "

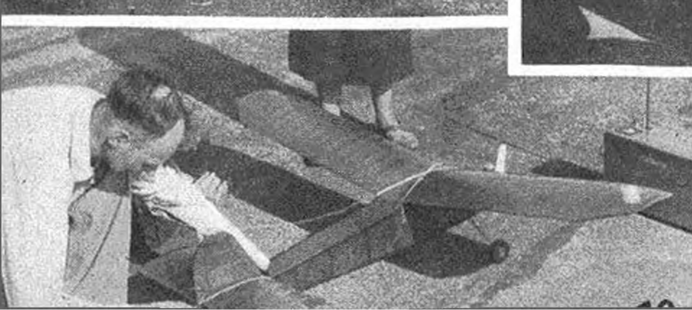
TEAM RACE " A "

1. Edmonds, R. ... ... High Wycombe

TEAM RACE " B "

1. West, C. ... . Godalming





38. M. Rhodes of Harrow, assisted by Sid Sutherland, tunes up for a beautiful take-off in the S.M.A.E. radio control contest. 39. Sutherland's own model, with Amco PB 3·5, completed a thrilling flight to win the Trophy. Here Sid is refuelling, with Den Allen as assistant. 40. R. Askew of Cheadle cranks up the escapement motor before his very smooth flight which gained second place.

AEROPLANES IN OUTLINE

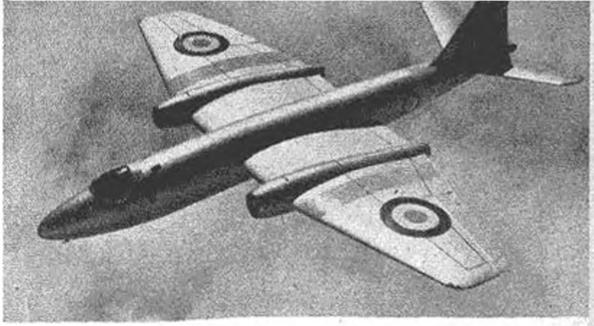
Number 10 BY G · A · CULL

TO the forefront of outstanding aircraft in recent years, the Canberra was the first jet bomber to serve with the R.A.F. and still holds the distinction of being the only jet-bomber existing in effective numbers with our squadrons.

The basic ideas from which the Canberra grew were formulated in 1944 by W. E. W. Petter (who designed the Lysander and Whirlwind) and the Air Ministry Spec. B3/45 was drawn up around his scheme and issued to the English Electric Company. That our first jet bomber should be entrusted to a company which had ceased designing aircraft more than twenty years ago came as a surprise, and the fact that this company had built numbers of Hampdens, Halifaxes and Vampires did not entirely offset this. However, aircraft production is but one of the activities of the vast English Electric concern and the Canberra was another new product which was taken in its stride. Apart from the Spec. number, the new light bomber was first known as the EA/1 under the S.B.A.C. system, but was soon named Canberra by Sir George Nelson at the head of the company. From the first display performance it was apparent that here was a bomber that was very unlike its predecessors, for the only thing in common seemed to be the purpose of delivering bombs. In other respects it was like an overgrown fighter with aerobatic and high speed capabilities that were quite unbecoming to a bomber. The great powers of manoeuvre are endowed by the large wing which is the design's dominant feature. Although a swept wing would at first appear a foregone conclusion in a high speed design, this was not used for a number of reasons. In 1945, when the Canberra was designed, information (mostly German) on swept wings was scarce and inconclusive, and with the engine power likely to become available before the airframe grew obsolete, it was decided that the benefits of a swept back wing would not be gained to a worthwhile degree, whereas all the disadvantages would be felt. Moreover, the performance and manoeuvrability at high altitudes given by a large wing were most desirable, and the large wing has area in hand to cope with weight increases that development inevitably brings, without forfeiting the low landing speed and tight turning radius. Wing thickness was largely decided by the depth required for wheel stowage and with the high speed symmetrical section employed (a modified German section) a wide chord automatically followed. This resulted in the low aspect ratio of 4·3, most favourable for a fast rate of roll and a stiff yet light structure.

The maiden flight of the first Canberra was on May 13tn, 1949, with W/Cmdr. Beamont in charge. This machine was a B.1, and was a dull blue all over with serial VN799 in white letters. The fin had a dorsal fairing and the rudder a rounded top which was soon shortened to the now standard flat top. Four Mk. I's were built and all were high altitude bombers with "solid" noses. VN813 was the second machine and had R.R. Nene engines as an alternative to the standard Avons, in case of trouble. Like the first, VN828 had Avons, but differed in not having the fin fairing, while VN850 retained the fairing but introduced wing-tip tanks. Of these VN799 made the spectacular debut at the '49 S.B.A.C. Show, but VN813 crashed on take-off at Hucknall.

The production Canberra was to be the B.2, and the prototype VX165 appeared with transparent nose with bomb aimer's panel. Crew was increased from two to three, all with ejector seats, and cartridge replaced electric starting. The B.2 has been built in numbers, and all but early machines have increased area at the rudder top and strengthened canopies. The Mk. 3 is the photographic version with a longer fuselage but does not have the flat bomb aimer's panel in the perspex nose. Several cameras are carried and parachute flares are stowed in the shortened bomb-bay. VX181 is the prototype. Also in production for the R.A.F. is the T.4, which is a dual conversion trainer with a "solid" nose. For pathfinder duties the B.5 has been produced and the prototype VX185 has a "solid" nose but for the enlarged bomb aimer's panel. In addition to these Canberras there are some spectacular one-off machines. WD933 has two A.S. Sapphire engines, WD943 has "reheat" Avons fitted with two-position "blinkers" at



Heading picture shows the nose of the famous B5 prototype which crossed the Atlantic both ways in one day. Bottom left: The Mk. 3 prototype is P.R.I. blue all over, and (right) all silver with bands of yellow distinguishes the T4 crew conversion trainer. Bottom photo shows the prototype B2, which does not have the enlarged rudder or strengthened hood of production machines.

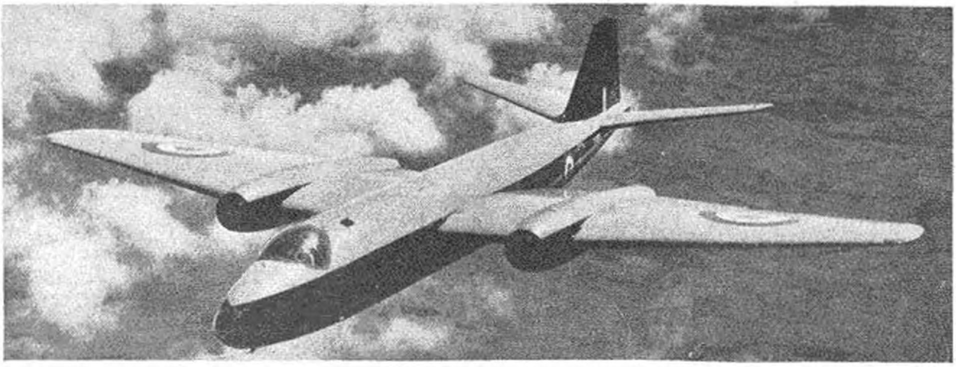
Photos by courtesy English Electric Co. Ltd.

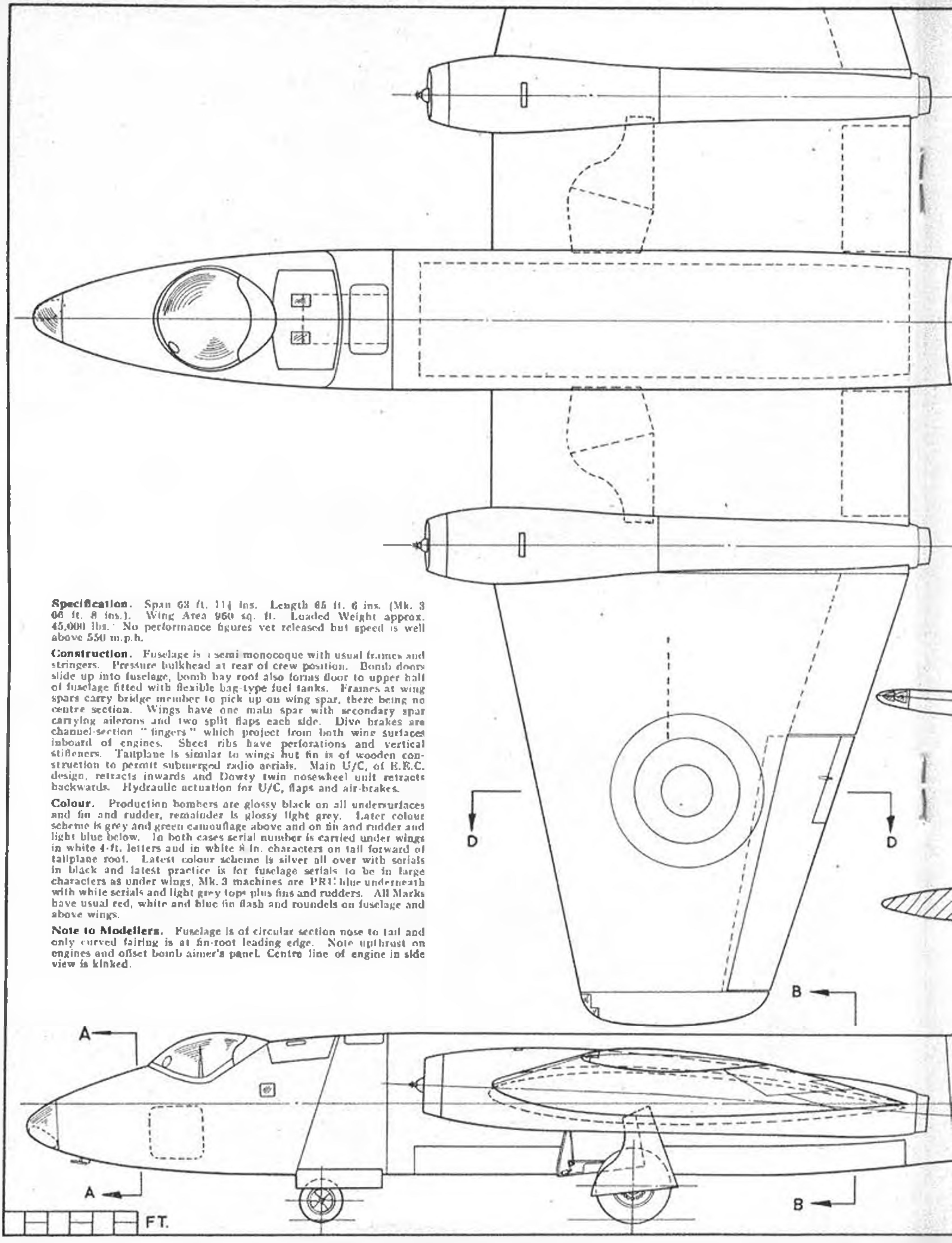
the jet orifice and which commences a steep climb after rolling a few yards from a standstill, and WD952 has the very powerful Bristol Olympus engines, as featured on this month's cover.

Significant proof of the Canberra's success lies in its adoption by America, where it is being built under licence as the Martin B-57A with Wright J-65 engines, which are really British A.S. Sapphires also built under licence. Although the Sapphire is more powerful than the 6,500 lbs. thrust Avon, no improvement in performance is expected, as all-up weight is increased by some 15 per cent. due to American production methods and mods. to fit the machine to night intruder duties. Fixed guns have been added and the crew of two sit side-by-side. Two Canberra B.2's were delivered to the U.S.A. in 1951 and the first of these, WD932, has since been crashed, while WD920 is flying in U.S.A.F. markings with the new lengthened cockpit hood for the B-57A. Australia is also building Canberras and has taken delivery of two B.2's, which version is known as the B.20 when Australian built. At home B.2's are built by three other firms, namely, Shorts, whose first-off flew on October 30th, '52, Avros, whose first machine flew on 25th November, '52, and Handley Page, who commenced deliveries in March, '53.

Over the past three years many remarkable flights have been made and the first of these was on 21st February, '51, when B.2 WD923 flew from Aldergrove, N. Ireland, to Gander in 4 hrs. 37 mins. to average 449 m.p.h. on the first direct Atlantic crossing by a jet aircraft. On August 21st, '51, a Canberra flew to Australia in 21 hrs., and on 31st August, '51, the Atlantic was again crossed, E.-W. in 4 hrs. 18 mins., to establish a record. A startling flight by the B.5 prototype was the two-way crossing of the Atlantic in one day on 26th August, '52, taking 10 hrs. 3 mins. for the round trip. Three other records in the bag are London to Nairobi at 427 m.p.h. on 28th September, '52, London to Karachi on 27th January, '53, at 441·8 m.p.h., and to Australia at 391 m.p.h. on the same day. On May 4th the Bristol Olympus Canberra WD952 flew to 63,668 feet to make a new World's Altitude Record, and another feat was 600 hrs. flying in 50 days by one Canberra before engine overhaul. Four B.2's (WD987, 990, 993, 996) of No. 12 Squadron flew off on October 20th last year to commence a goodwill tour of S. America and made a great impression before returning on December 5th. It would seem that they were in some measure responsible for the order of 12 Canberra B.2's for Venezuela which is now in hand. The race to New Zealand will start from London on October 8th, '53, and five Canberras are entered. The R.A.F. will fly three P.R.U. machines and the R.A.A.F. will fly B.2's if their own B.20's are not ready. First squadron to be equipped was No. 101, followed by 9, 12, 617 and 139 (Jamaica Sqd.) and further squadrons are re-equipping as production allows. Another Canberra unit is No. 231 Operational Conversion Unit which converts air crews on to B.2's via Canberra T.4's at Bassingbourne.

From the already impressive record built up in a short time, it is clear that the Canberra is an outstanding trail blazer in the new field of jet bombers and, furthermore, is well-liked for its docile flying qualities by R.A.F. crews in whose hands its real worth lies.





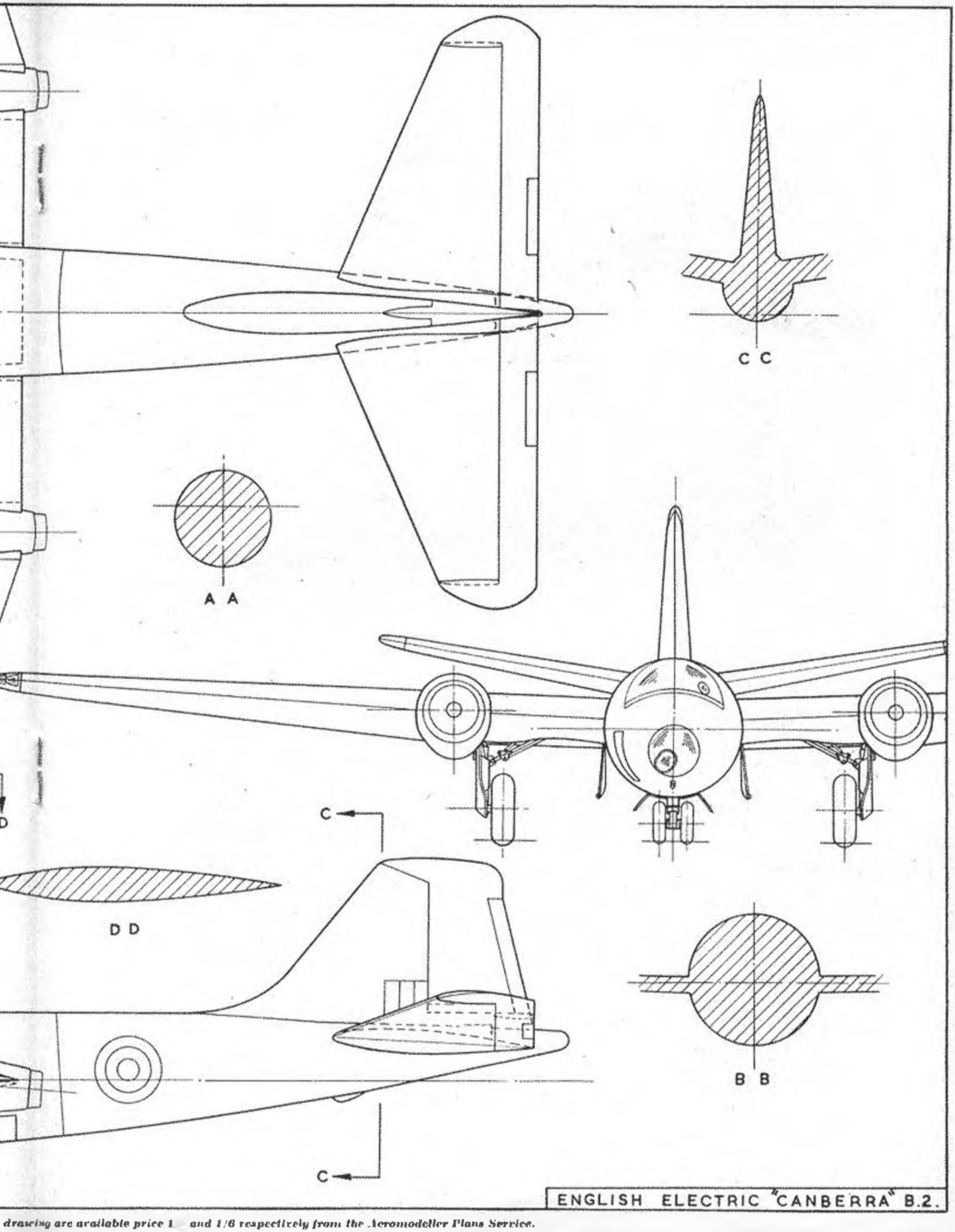
Specification. Span 63 ft. 11½ ins. Length 65 ft. 6 ins. (Mk. 3 66 ft. 8 ins.). Wing Area 960 sq. ft. Loaded Weight approx. 45,000 lbs. No performance figures yet released but speed is well above 550 m.p.h.

Construction. Fuselage is a semi monocoque with usual frames and stringers. Pressure bulkhead at rear of crew position. Bomb doors slide up into fuselage, bomb bay roof also forms floor to upper half of fuselage fitted with flexible bag-type fuel tanks. Frames at wing spars carry bridge member to pick up on wing spar, there being no centre section. Wings have one main spar with secondary spar carrying ailerons and two split flaps each side. Dive brakes are channel-section "fingers" which project from both wing surfaces inboard of engines. Sheet ribs have perforations and vertical stiffeners. Tailplane is similar to wings but fin is of wooden construction to permit submerged radio aerials. Main U/C, of E.E.C. design, retracts inwards and Dowty twin nosewheel unit retracts backwards. Hydraulic actuation for U/C, flaps and air-brakes.

Colour. Production bombers are glossy black on all undersurfaces and fin and rudder, remainder is glossy light grey. Later colour scheme is grey and green camouflage above and on fin and rudder and light blue below. In both cases serial number is carried under wings in white 4-ft. letters and in white 8 in. characters on tail forward of tailplane root. Latest colour scheme is silver all over with serials in black and latest practice is for fuselage serials to be in large characters as under wings, Mk. 3 machines are PRU blue underneath with white serials and light grey tops plus fins and rudders. All Marks have usual red, white and blue fin flash and roundels on fuselage and above wings.

Note to Modellers. Fuselage is of circular section nose to tail and only curved fairing is at fin-root leading edge. Note upthrust on engines and offset bomb aimer's panel. Centre line of engine in side view is kinked.

1/72nd scale "L" type reprints and 1/48th scale "R" type blueprints of this drawing a

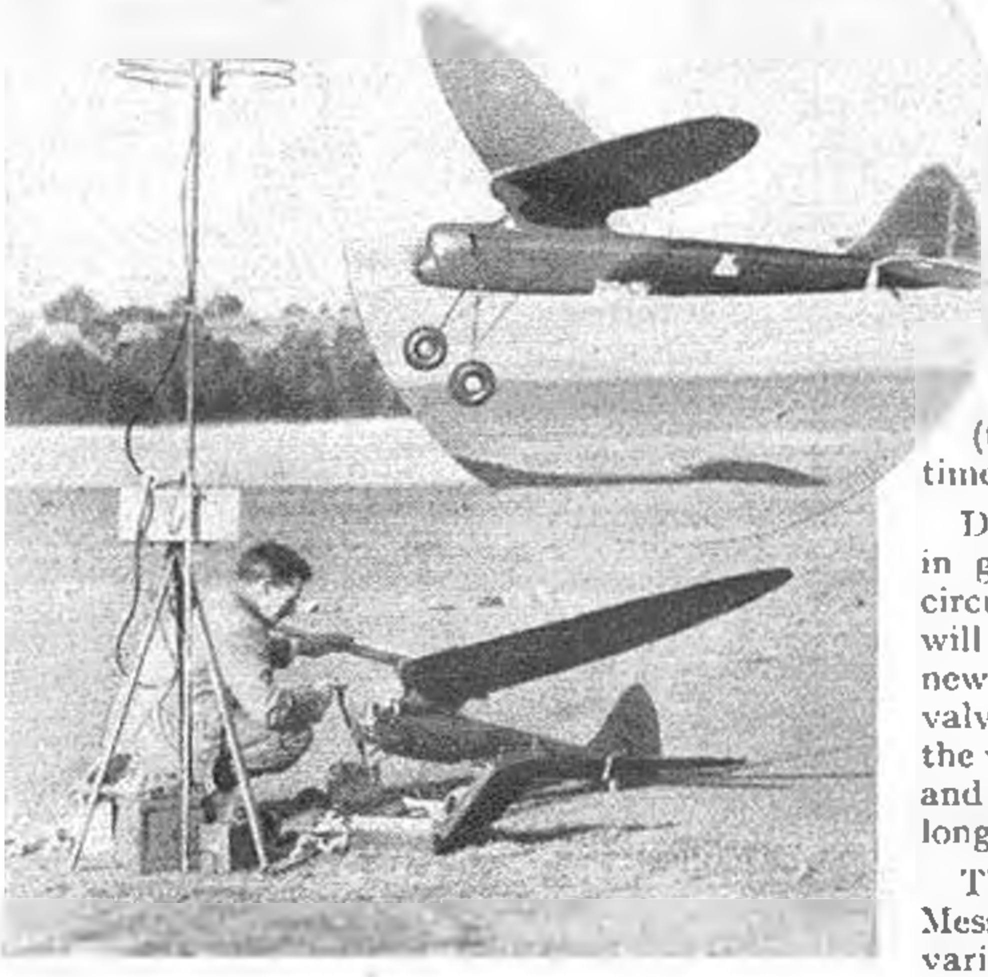


drawing are available price 1/- and 1/6 respectively from the Aeromodeller Plans Service.

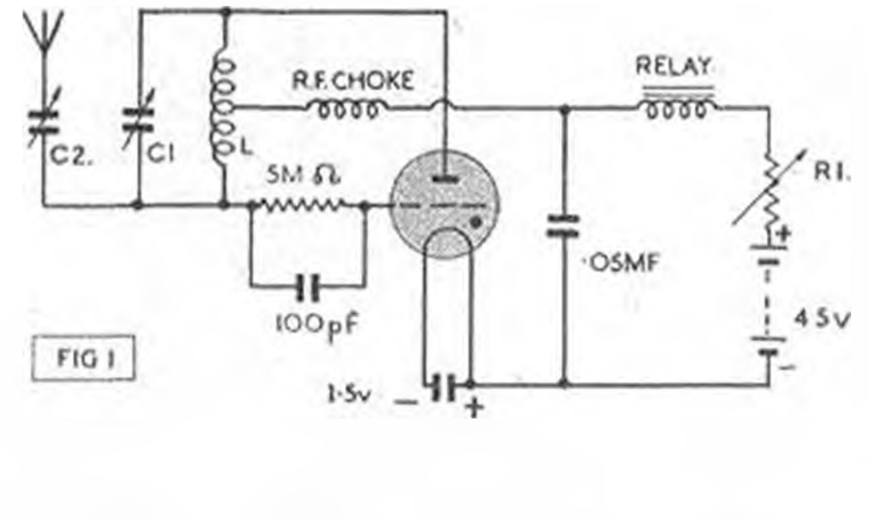
RADIO CONTROL NOTES

BY HOWARD BOYS

At Croydon, N.S.W., Australia, Gil Miles was operating this three channel controlled model two years ago. Halo antenna produces a horizontally polarised wave for dipole inside wing. Forster 99 has autocutout if out of range.



IT will probably surprise many readers to know that the writer uses the X.F.G.I. valve for most of his flying because it has been found to give consistent and reliable results when used properly. Admittedly experience has been gained at the expense of a number of crashes, but the model design has also improved due to these. Then again the control system used which gives left turn without signal, and right turn with signal, has frequently given warning of the approach of trouble, and has assisted in locating trouble when it has occurred. For instance, if the anode current fails for any reason such as valve ageing or Tx switch short circuiting, the model dives into the right. However, ageing of the valve gives warning by the model lurching to the right occasionally some 15 minutes flying before failure occurs. If this warning is heeded, it is a simple matter to avoid failure by increasing the capacity across the tuning coil. Another sign of the valve ageing is a flickering of the milliameter needle, and this indicates that a little more capacity is required. Sometimes, however, this flickering will occur when no radio frequency choke is used, but disappears with one. If this flickering occurs when the variable resistance is increased slightly (thereby reducing the anode current) it is time to add capacity.

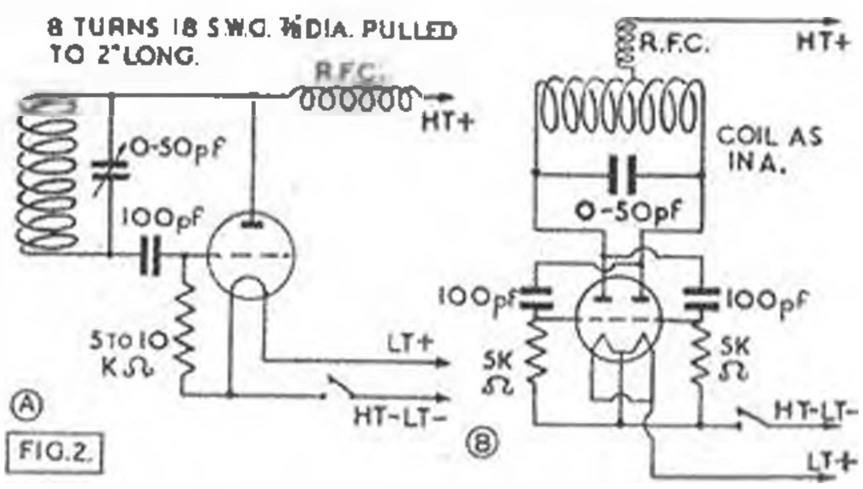


Difficulty is experienced by many home builders in getting the receivers to operate in published circuits, for the simple reason that no one circuit will suit all valves. At least not when they are new, though one circuit would probably suit every valve at some stage during its life. This is because the valves are made to give as long a life as possible, and usually the more difficult valve will give the longer life.

The circuit given in Fig. 1 is that shown by Messrs. Hivac as an example, but they say many variations are possible. Here are their notes on it.

"The useful life of the X.F.G.I. is critically dependant upon the peak anode current. This peak current is determined by the precise circuit conditions and is not readily measurable. The mean anode current can, however, be measured and should be adjusted to 1·5 ma. or less in order to prolong the valve life as much as possible.

"The value of the anode current in the circuit shown, when no signal is being received, depends on the value of R1 and upon the value of the grid bias, which is determined by the amplitude of oscillation in the tuned circuit.

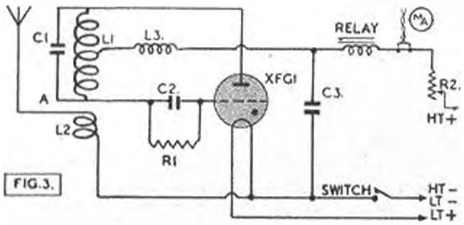


"For maximum sensitivity in any receiver there is an optimum value of grid bias and adequate provision should be made for adjustment, both initially and during the life of the valve. Preferably the L : C ratio of the tuned circuit should be variable but the provision of some form of variable aerial coupling may suffice. R1 commonly has a value of 5,000 ohms when used with a relay of about the same resistance.

"When a signal is received from the transmitter the amplitude of the oscillation in the tuned circuit rises and the resulting increase in grid bias causes a sharp drop in anode current which enables the relay to release."

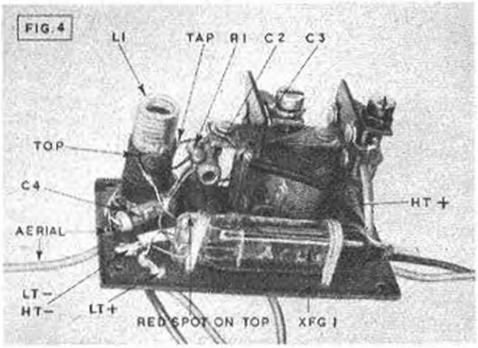
The writer's method is to adjust the L : C ratio, using a fixed condenser for CI and a dust iron cored coil for tuning. This requires a range of small fixed condensers from which to choose the best value. Quite frequently, however, no condenser at all is required with a new valve, but in any case it is always kept as small as will give the necessary anode current. A fairly short aerial of about 20 to 30 inches long is used and condenser C2 sometimes omitted.

An invaluable piece of equipment for trying out receivers is a small signal generator, and in the writer's case this is merely a transmitter without



aerial that can be tuned over a small range above and below the model control band. A rough dial has been marked out in frequencies, with the centre of the band indicated with a longer line. Such an instrument need not cost much since the valve and batteries from the normal transmitter can be used. Suitable circuits are shown in Fig. 2, "a" being for triodes or pentodes, and "b" for double triodes. If a pentode is used, the screen grid should be connected to the anode. Almost any valve can be used, for "a" there is the IS4, 3A4, 3V4, 6C4, LP2, and lots of others. For "b" there is the 3A5, 3B7, 1G6, 6J6, and others. One of these signal generators is useful to have on hand for lots of checking of receivers, and it can be made up permanently using a cheap valve. Calibrating this sig-gen naturally needs some equipment, and if the builder hasn't got it, it would be best to approach a local radio society or dealer.

Now let us consider adjusting a receiver to work. Fig. 3 is the circuit diagram that has given excellent results. The tuning coil L1 can be 19 turns of No. 36 or 38 s.w.g. double silk covered wire on a 5/16 in. (8 mm.) Aladdin former with dust iron core, or it can be 14 turns of No. 28 or 26 s.w.g. cotton or silk covered wire on a 7/16 in. (11 mm.) Aladdin former with dust iron core. L2 can be three turns of the same wire round the middle of LB, but a short aerial can be joined direct to the point A instead. L3 is a radio frequency choke, and is not always needed. C2 is generally 100 pf, and C3 can be from ·01 mfd to ·1 mfd, a Hunts ·04 being convenient. R1 is 4·7 megohms and R2 5,000



ohms. C1 is omitted for a start. (A radio frequency choke can be made by winding about 70 turns of double silk or cotton covered wire about 28 to 36 s.w.g. on a ¼ in. former such as fuel tubing.)

The receiver is switched on and the anode current noted. If it is low, R2 is varied in an attempt to get 1·5 ma. If still low, C1 is added, starting with 5 pf and increasing 5 pf at a time until the anode current will rise to 1·5 ma. If an old valve is being used, it often helps by reducing C2 to 50 pf. When a new valve is used it usually gives a high anode current, which will not fall much on signal and this can usually be helped by reducing R1 to something like one megohm, and C3 to ·01 mfd. All these things should be tried to get the anode current to about 1·5 ma, preferably with R2 set near its minimum value, to give high volts on the valve. If with a new valve the current cannot be brought below 2 ma. don't worry too much, because it will come down after a little use. The next thing to try is the tuning and sensitivity, and this is where the signal generator is so useful. With the receiver on, the sig-gen is switched on and tuned to operate the receiver. If there is no response the dust iron core in the receiver coil is screwed out a bit and another trial made. The position of this core should be varied in and out until a position is found where the receiver responds to the sig-gen, and the frequency can be found from the sig-gen. Most likely it will be low, and a turn or two will have to be removed from the tuning coil. Take a turn from each end alternatively, starting with the end to which the core is nearest. In this way it will not take long to adjust the receiver to tune to the correct frequency as marked on the sig-gen. It will be most convenient if it is adjusted at this stage so that it tunes correctly with the core nearly right in, then when the valve shows its first sign of wear, all that is needed is to add a 2 or 3 pf condenser to C1 and re-tune. As the valve ages, C1 will need to be increased to maintain the desired anode current, and after a certain amount of increase, it will be necessary to remove a turn from the coil, to enable the tuning to be carried out without the core sticking too far out.

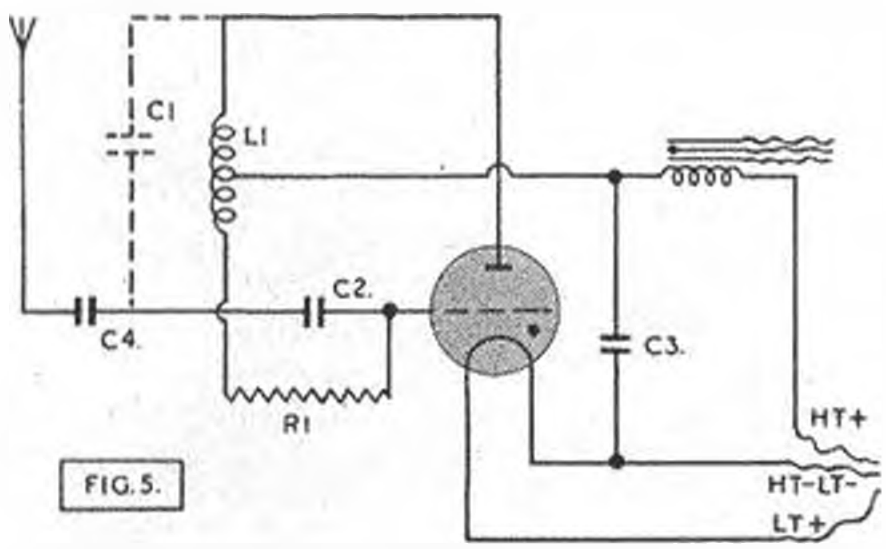


FIG. 5.

One trouble that was a little mystifying at first was a receiver that had been operating correctly but gave up answering the transmitter though the anode current appeared normal. Everything worked properly again as soon as the low tension battery was renewed.

The A.M. Baby Receiver

At this point we proudly introduce the AEROMODELLER Baby Receiver, shown in Fig. 4, with circuit diagram, Fig. 5, and panel, Fig. 6. The panel is made of paxolin ·048 in. thick, and the tuning coil uses an Aladdin former of 8 mm. diameter with dust iron core. This former is cut down at the base to 11/16 in. long and re-drilled to fit the tapped holes in the panel. The relay used in this receiver is one that could at one time be obtained from Messrs. E.D. and E.C.C. and it is believed can still be obtained from Messrs. E.C.C. The type can be seen from the photograph. The writer has had very good results with this type relay. The E.C.C. type 5A can be fitted in the same space, with the same holes.

If a larger relay is used such as the E.D. polarised, the panel will need to be about ¼ in. wider and there would not then be much point in cutting down the coil former. Also the holes for fixing the former need not be tapped, but nuts used instead. This former is bolted in place first with a short loop of tinned copper wire of about 24 s.w.g. between the bolt head and the coil former. The coil is wound with No. 28 s.w.g. double silk covered wire, putting on 21½ turns tapped with a little loop at the twelfth. The turns are wound fairly close (nearly touching) and tight, and should take up about half an inch in length. The start is from the side bolt, the tapping directly above, and the finish opposite, and the turns must be held in place with a few spots of cement, but not smeared all over. The relay is bolted in place and the valve bound down with thread, after the H.T. wire has been soldered to the relay. The leads should be thin flex with coloured plastic covering, and distinguishing colours are helpful, red for H.T.+, black for H.T.—, and yellow for L.T.+. The aerial can be the same sort of wire about 20 to 24 inches long. The wire covering should poke about 1/32 in. through the panel, with about another 1/16 in. bare. The valve leads are cut to ⅜ in. long, and the bottom and third ones soldered to the negative and positive L.T. leads respectively. Blobs of solder should be left on these joints which are then pushed sideways onto the panel to prevent the leads pulling through. Next the condenser C3 which is a Hunts 150 volt, ·04 mfd hearing aid type, is connected, and then C4, which is a 5 pf R.S. ceramic which is supported at each end by the coil bolts. C2 is a similar type of 50 pf and R1 can be 4·7 megohms 1/10 watt for first trial. A wire is taken from the coil tap to the relay and the top coil end to the valve anode leg. Leads to the relay contacts completes the wiring. Condenser C1 is left out for the time being.

No valve holder is used in this receiver because any change in valve usually means a change in other components too. It may be found with a new valve that the range is very short, but this will improve with age. One receiver built gave only 50 yards at first, but flying was commenced with a small model that could be kept within this. The range soon improved to all that was desired. Note that best range is obtained with C1 as small as will give the desired anode current. For getting the receiver to work read the notes in the first part of this article.

When once set up, such a receiver will operate for some time without attention, even the tuning seldom needs adjusting. The receiver has been designed so that a rectangular celluloid dust cover can be fitted since dust in the relay gap or contacts is about the most frequent cause of trouble.

"Precautional"

Having read Mr. D. W. Allen's letter (July A.M.) *re* the misuse of radio terminology, the A.M. caption writer came to the conclusion that Howard Boys' system could not be proportional, and therefore labelled the photograph on page 413 "progressive". The system *is* proportional, though only single channel. H. B. believes that one of his models was the first to fly with proportional control, and that he is the only entrant using proportional control in S.M.A.E. contests.

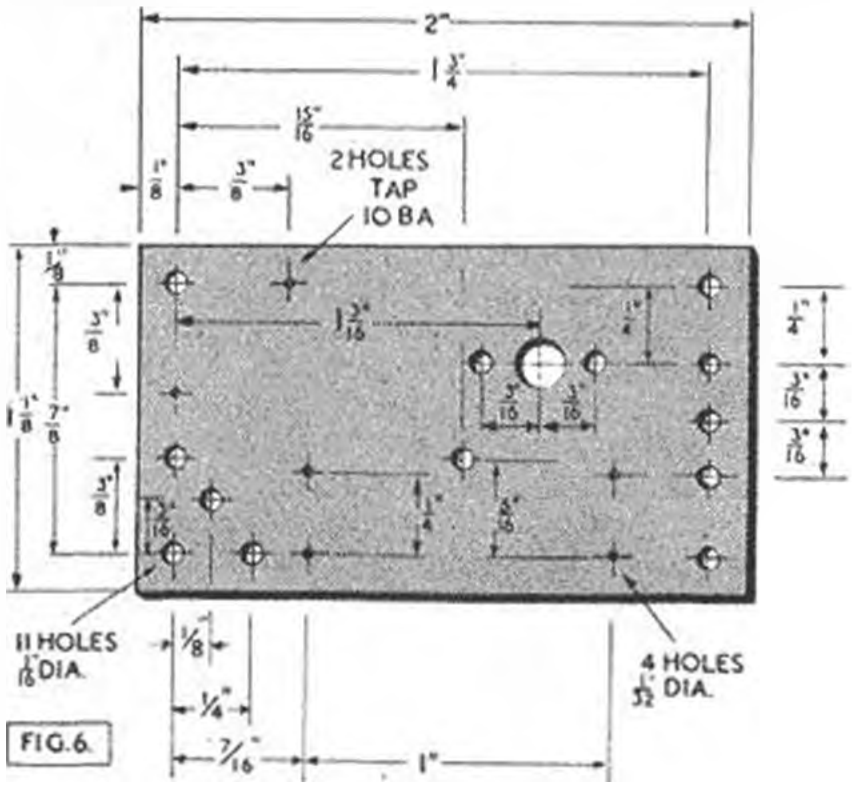


FIG. 6.

Bird Flight

PART TWO

By

John Barlee, F.R.P.S.

By courtesy of "Shell Aviation News"

BIRDS use a variety of methods to gain air speed when taking off. The simplest is the dive from a tree or cliff ; large wading birds such as herons do a shallow dive from the height of their long legs. Small birds can often manage with a jump and a vigorous flap. Water birds vary greatly in their ability to take off ; broadly speaking, those which are able to escape from their enemies by diving and swimming under water have not so great a need for a quick and efficient take-off as those which cannot dive. Thus the diving ducks such as the tufted duck have to taxi along the surface, while the mallard and other surface-feeding ducks can spring almost vertically into the air and climb steeply. Most sea-birds must taxi for a distance, as do swans, and it is on record that gannets have been found incapable of taking off due to the combination of a flat calm and no wind.

When landing, a bird reduces speed as much as possible, either by vigorous flaps against the direction of motion or by gliding upwards. Finally, it stalls on to the landing place, taking off the remaining speed by means of a couple of flaps. When the wings are turned so that the angle of attack is about 90° they act almost like a parachute. Birds with a high wing-loading, such as razorbills, (see overleaf), find great difficulty in landing on to ledges of cliffs though they find little difficulty in planing down on to water.

Gliding

All birds glide to a certain extent, but some glide more than others. The advanced gliders are sharply divided into long-winged fast gliders and short-winged slow gliders. The slow gliders which typically have a low-aspect-ratio square-tipped wing with many deep wing-tip slots, usually make use of ascending air-currents such as thermals.

Fast gliders make use of the differences in wind speed found near the surface of the ocean, caused by the friction of the air with the water. These birds have long narrow wings devoid of slots. The albatross, with a wing span of up to eleven feet, is the supreme exponent of this method. Gliding at high speed across or down wind it plunges from the upper faster layer of air into the lower slower layer. This causes the bird's air speed to increase by the difference between the speeds of the two layers. Turning head to wind and zooming up into the upper layer the bird gets a big lift from the momentary increase of air speed which it gets as it does so. Having achieved this height it turns and starts its long glide down wind again.

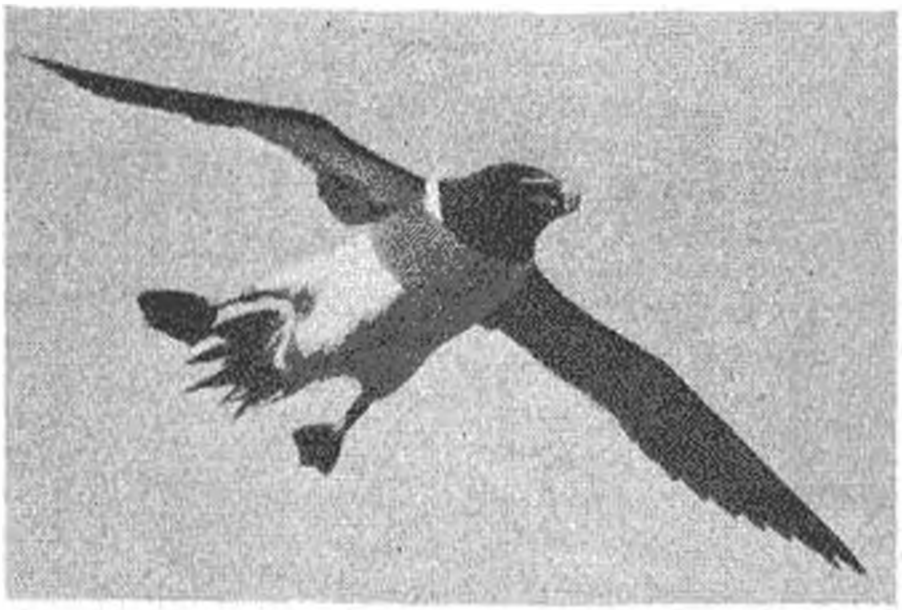
Of course, the air is not sharply divided into two layers, but is really an infinite number of layers, each being slowed down by the layer beneath, but the principle holds good all the same. This method can be used only by fast heavy gliders, and only in the layers of air within about 50 feet of the surface of the ocean. If it were not for the slowing down of the lower layers this method would be impossible. In still air the albatross has to flap like other birds.

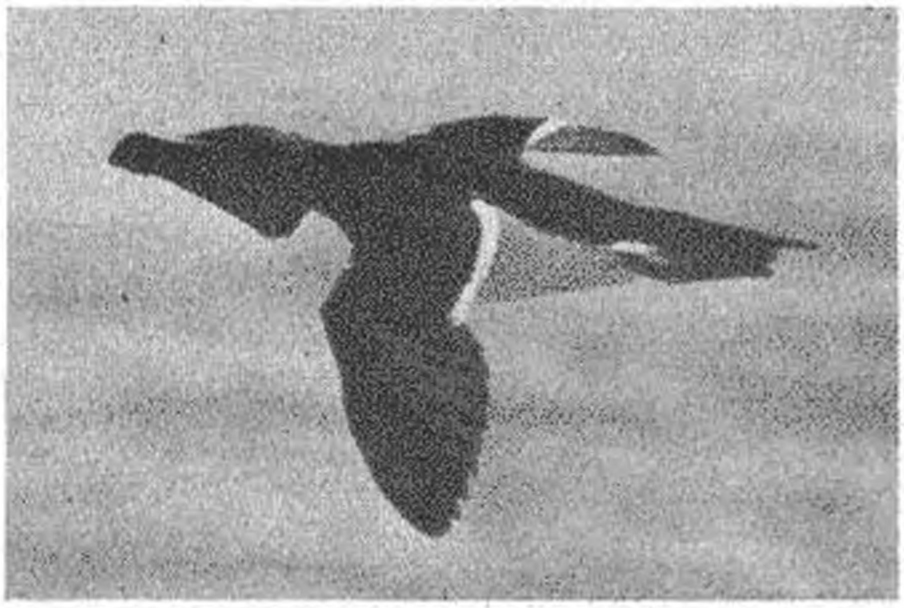
Some gliders, especially the shearwater, are helped by air being deflected upwards or being suddenly pushed upwards by ocean waves. Gulls which have a lower aspect-ratio than the albatross use up-currents caused by wind being deflected by cliffs or buildings, as well as those at the sterns of ships.

Most normal flight can be fitted into one of the following categories :

1. Direct continuous flapping. This is found in all sizes of birds from the swan down to the wren.

Gliding upwards and stalling on is perfectly demonstrated by the gannet in the heading picture. Lifting of feathers beneath wings shows how complete is stall. Above: Wood pigeon silhouettes show area and other differences between fast flight and landing or turning. Note slots and wide sweepback variation.

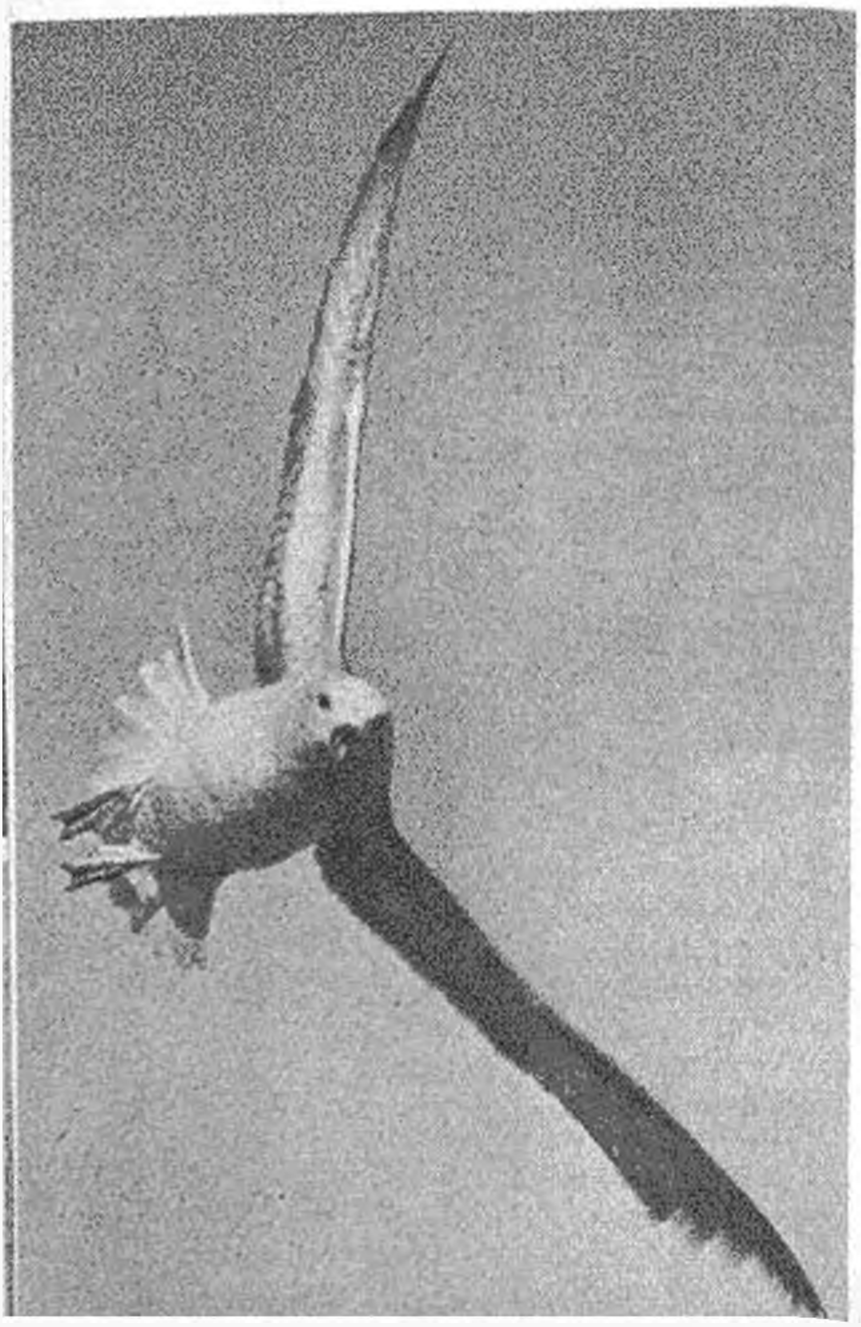




The bird's path is horizontal. The rate of flapping depends on the wing-loading, being slow in such birds as the heron and fast in the duck.

2. Undulating flight. This is flapping interrupted by a regular momentary closure of the wings. During the flapping phase the bird recovers the height lost during the closure of its wings. The great majority of small perching birds use this method. It is hard to see what advantage is gained for any rest during the closed phase would be more than cancelled by the increased effort needed during the flapping phase.

3. Regular flapping interrupted by glides. This method is found in many birds of prey and in the gannet, fulmar, shearwater and game birds. There is wide variation here for no one can say that a gannet and a grouse fly in the same way. Basically, however, the action is the same.



Top pictures show the high-wing-loading razorbill in a fast gliding turn, using feet and tail for additional control, and travelling straight and level at about 50 m.p.h. Left: Fulmar in a slow turn. The inner wing is extended to the full and has an increased angle of attack to equalise lift.

4. Long glides interrupted by an occasional flap, prolonged gliding and soaring. Included here are the two types exemplified by the albatross and the vulture—high-aspect-ratio fast gliders and low-aspect-ratio soarers.

5. Other types, including the following,—(*a*) Jerky, flitting and zig-zagging flight (warbler, chat, robin, redstart, nightjar), (*b*) Jerky and dashing (swallow, martin, swift, falcon), (*c*) Hovering (kestrel, kingfisher, tern, humming-bird). Headlong diving (kingfisher, gannet, tern).

Speed

Accurate measurements of speed are hard to obtain. Near the end of the last century a famous ornithologist claimed that migrating birds flew at great heights, and at speeds of 200 m.p.h. and over. Now that these claims have been shown to be grossly inaccurate there is a tendency to minimize the speeds and to claim for birds only the most moderate performances. Not long ago a scientist who should have known better claimed that the sparrow had a speed greater than the sparrow-hawk ! The following speeds may be taken as approximately accurate :—

	m.p.h.
Small perching bird, e.g. sparrows ..	10–20
Swallow, martin	20–30
Gull	20–35
Gannet	45–50
Pigeon	approx. 50
Razorbill	40–50
Swift	50–80
Peregrine swooping ..	.. more than 100

Estimates of speed are confused by the fact that a small bird flapping its wings rapidly looks much faster than a large bird flapping its wings slowly.

Endurance

Several land birds have been proved to cross up to 2,000 miles of ocean on their migrations to remote oceanic islands. In these cases their powers of accurate navigation are more astonishing than their endurance.

The Arctic tern nests within 600 miles of the North Pole and during the northern hemisphere winter is found as far south as the edge of the pack ice around the South Pole, a round journey of over 20,000 miles each year. A shearwater taken from its nest in the British Isles was recently released near Boston, U.S.A. It returned, covering 3,200 miles in just under 13 days.

A swift probably averages about 50 m.p.h. as it flies around catching insects for its young, and usually is in the air for nearly all the daylight hours. It must cover a very great distance each day:—probably more than 200,000 miles per annum.

Not long ago a flock of lapwings took off one winter evening from the north of England and headed for Ireland. Since there was an easterly wind of about 55 m.p.h. and the birds' speed was about 45 m.p.h. they overshot; a large number of them arrived in Newfoundland next day.

Ceiling and Payload

It is unusual for birds to be seen flying over 2,000 ft., and any accurate records of birds over this would be most welcome. There are a number of such records, many of which show that birds often cross high mountain passes on migration. A much quoted record is of a flock of geese photographed through a telescope while a photograph of the sun was being taken. Measurements are said to have shown that these geese were at a height of 5 miles. The condor, soaring over the Andes, must sometimes approach this.

Birds do not have any very great weight-lifting ability. Stories of eagles carrying away young children are almost certainly exaggerated. It is doubtful if an eagle could lift anything heavier than a sickly lamb. Gannets and cormorants, when frightened often vomit up their last meal before taking off.

Loss of Flight

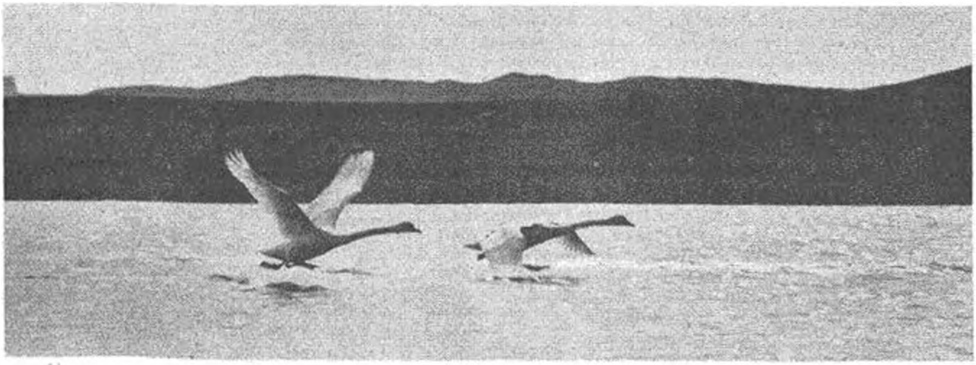
When birds inhabit remote places where there are no natural enemies, it may be to their advantage not to be able to fly. Once a bird becomes flightless there is no need for there to be a limit to its size, and so such birds as the ostrich reach a very large size, and the extinct moa was much bigger still. The heaviest bird capable of flight is the swan, and

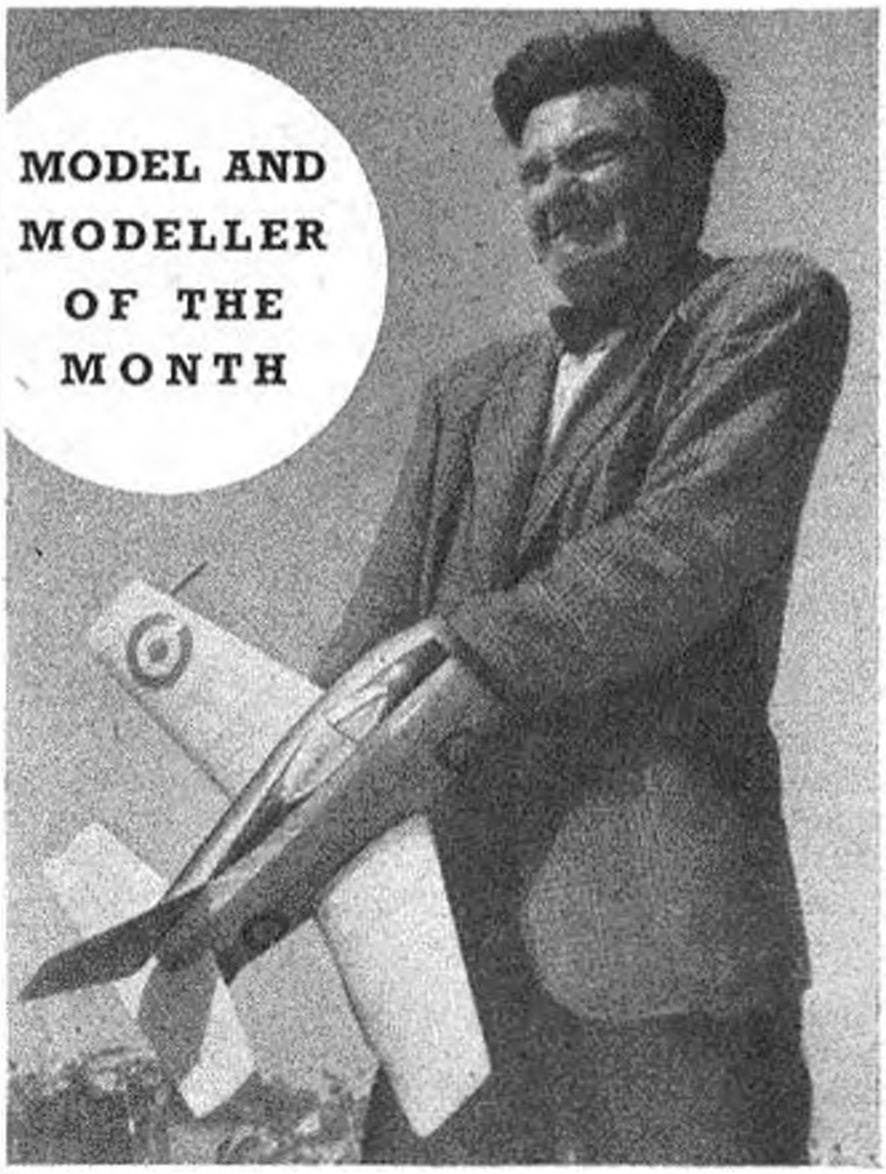
Right: A fulmar puts on the anchors by strong back-flapping and "parachuting" of tail and feet. Below: One of nature's most majestic sights is the heaviest bird capable of flight, the swan, becoming airborne.

it has great difficulty in hoisting itself into the air, having to run a long distance across the surface of the water before taking off, like a loaded bomber.

Birds which use their wings to swim under water have an evolutionary pressure on them towards a reduction in wing area. Water as a medium is so much denser than air that the propelling surface need not be large, and the buoyancy of the water holds up the bird without the need for supporting surfaces. Thus we find that the extinct great auk, the penguin and several fossil birds have greatly reduced wings or no wings at all. A close relative of the great auk, the razorbill, is gradually following in the same direction. Its wings are reduced slightly already, and so it has to fly very fast in order to get enough lift from the reduced wing-area. To fly fast it has to beat its wings very rapidly, and this requires very powerful and heavy breast muscles. Thus a reduction in wing-area has led to an increase in weight, and if this process of "development" goes on the razorbill will be grounded permanently.

Several interesting species are much nearer flightlessness than the razorbill. The Laysan teal can fly only about 100 yards before becoming exhausted, while the steamer duck of the Falkland Islands exists in two species, one of which can only just fly, while the other heavier one cannot take off. It can, however, move across the surface of the water with great rapidity using its tiny wings like the paddles of a paddle-steamer.





MODEL NEWS

"THAT'S a nifty bit of solid stuff", we thought, as we first looked at the Fairey "Flycatcher" photograph in the heading. If you agree—well, you're caught as badly as we were, because, in point of fact, the model is a 34 in. Eta 29 scale control-liner! Complete even to fully sprung undercarriage and engine-turned metal panelling, the model represents many hours of work, and we can but silently raise our hats to the builder of "Model of the Month", E. R. Phillips of Peterborough M.A.C.

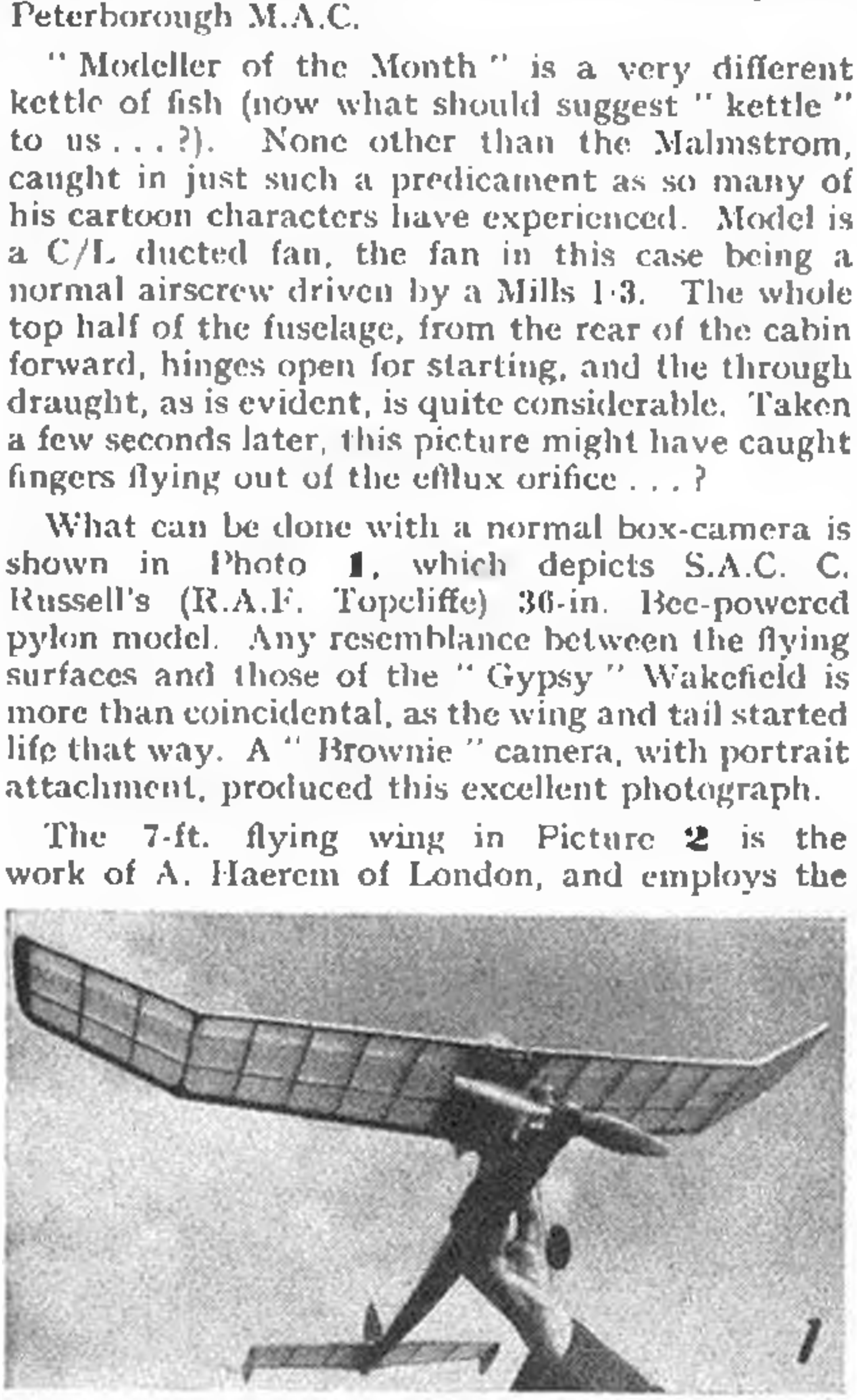
"Modeller of the Month" is a very different kettle of fish (now what should suggest "kettle" to us . . . ?). None other than the Malmstrom, caught in just such a predicament as so many of his cartoon characters have experienced. Model is a C/L ducted fan, the fan in this case being a normal airscrew driven by a Mills 1·3. The whole top half of the fuselage, from the rear of the cabin forward, hinges open for starting, and the through draught, as is evident, is quite considerable. Taken a few seconds later, this picture might have caught fingers flying out of the efflux orifice . . . ?

What can be done with a normal box-camera is shown in Photo **1**, which depicts S.A.C. C. Russell's (R.A.F. Topcliffe) 36-in. Bee-powered pylon model. Any resemblance between the flying surfaces and those of the "Gypsy" Wakefield is more than coincidental, as the wing and tail started life that way. A "Brownie" camera, with portrait attachment, produced this excellent photograph.

The 7-ft. flying wing in Picture **2** is the work of A. Haerem of London, and employs the Clark YH section. Increased chord near the centre-section is claimed by the builder to increase the stabilising effect of the reflex, and certainly the flight performance leaves little to be desired. The possibilities of fitting a small ducted fan beneath the centre-section are now being considered.

We have rarely (if ever) published a picture of a tandem twin canard biplane, and if any reader puts No. **3** down to Ray Malmstrom the error would be understandable! Actually, however, "Cucumber" is the work of another of aero-modelling's amiable eccentrics, J. D. McHard of R.A.F. Wellesbourne Mountford. Two Allbon "Darts" are used, and despite the odd appearance the design is aerodynamically sound, so it is no surprise to learn that it really does fly!

Smooth looking C/L job in Photo **4** is "Albatros", the work of another R.A.F. bod, Cpl. P. N. Godfrey of Old Sarum, whose "Tipsy"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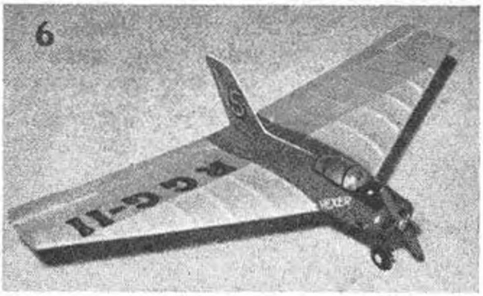
appeared on these pages some months back. His first attempt at design, this model is 30½ ins. span, weight 17 ozs. with its E.D. 3·46 and, as befits a sports model, is remarkably stable in flight. Finish is red and yellow with silver trim, and full credit is due for design, construction and photography.

The " Debutante " plan in our last Christmas issue seems to have rung the bell all round; picture 5 shows E. Thomas of Flixton with his " Bee " powered version. Colours are dark blue and white fuselage with pale blue flying surfaces, and Mr. Thomas reports that the model flies beautifully and gave no trouble at all.

For the powered flying-wing-cum-delta enthusiasts R. G. Grimes' " Hexer " (No. 6) will be of interest. Free-flight, the model is 30 ins. span with 170 sq. ins. to support its 9 ozs. of weight, and the E.D. ·46 provides sufficient power for a moderate climb. Glide is particularly flat and the general performance is very consistent and reliable.

Yet another R.A.F. model is the trim Miles " Martlet " in Photo 7. 33½ ins. in span, power is supplied by an inverted " Dart " and performance is stable and most realistic. The model, by Sgt. G. Robert of Pembroke Dock, is smartly finished in cream and maroon, and features removable cowlings, a fully sprung scale undercarriage, and knock-off surfaces with plug-in struts.

Lastly, that ever-popular solid subject, the F.W.190. This A–3 version is by Joe Brock of the Reading Solid Models Society, and is authentically coloured mottled grey-blue above and Heinkel blue below in the scheme used by German shipping raiders. Scale is ¼ in. to 1 ft., from the AEROMODELLER drawings of this machine.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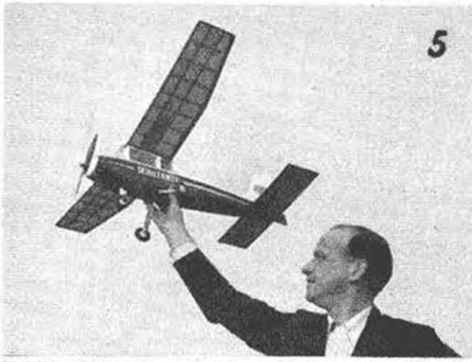
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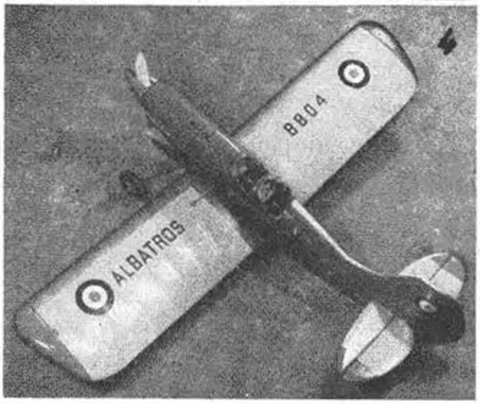

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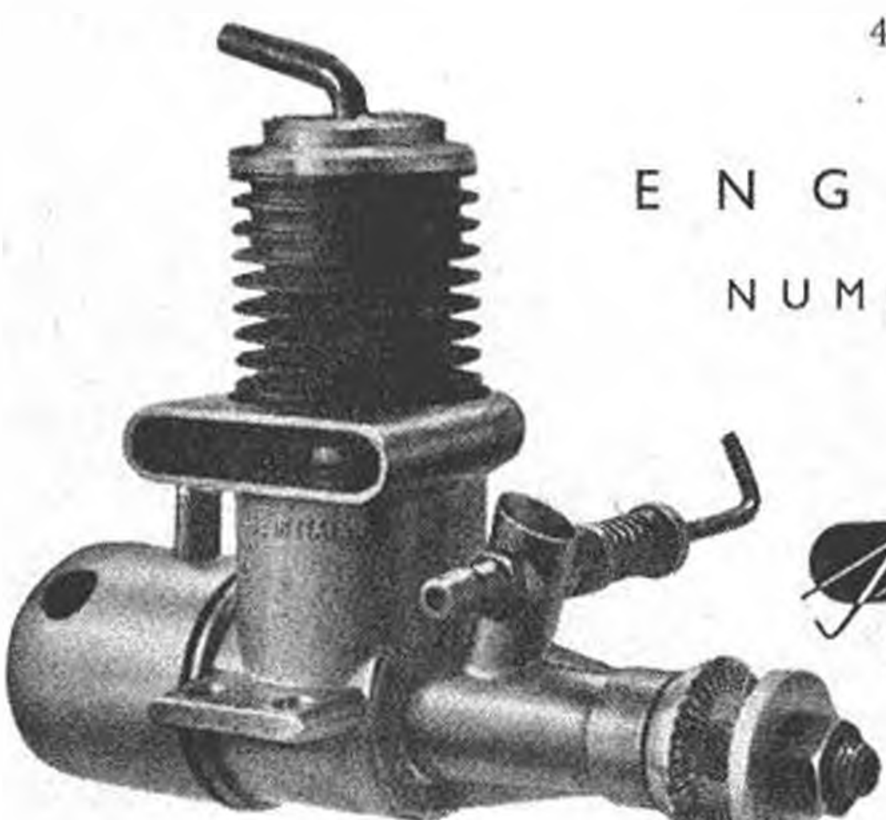


ENGINE ANALYSIS

NUMBER 12, NEW SERIES

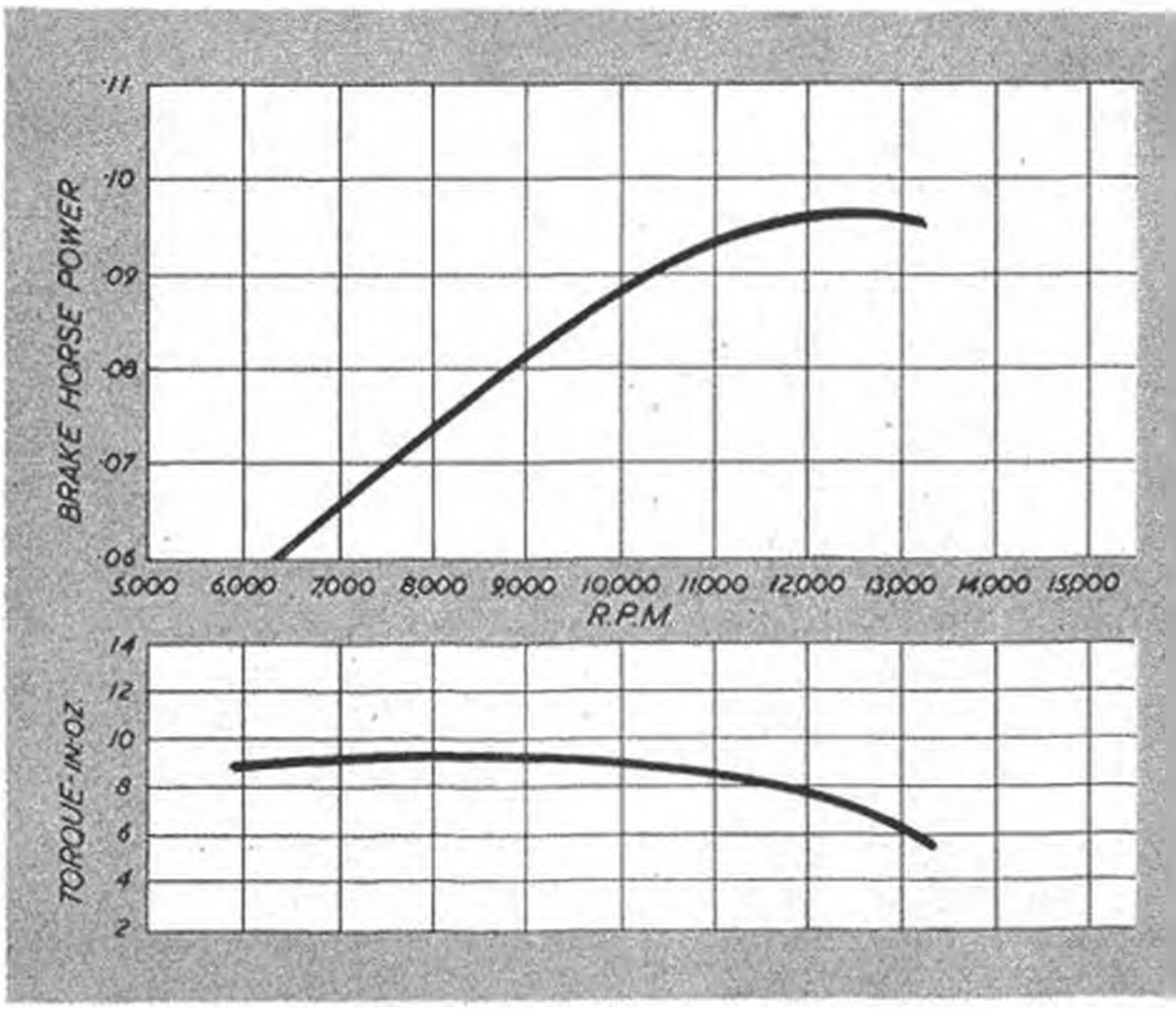
By Ron Warring

Super Tigre G.22

THIS new Italian diesel, which is officially called the "Super Tigre G.22" is perhaps more readily designated by the name on the smart black and yellow box—"Baby Tigre". For a small engine it did, in fact, prove most stubborn at times, with a ready ability to hit back smartly during starting!

The Baby Tigre comes from sound stock and like its larger brothers is full of power and speed. Its actual displacement is 1·23 c.c. which, logically, is a rather more sensible step down in size from 2·5 c.c. than the favoured British class of 1·5 c.c. However, our own 1·5 c.c. class has become a National standard and so, as far as British modellers are concerned, the Baby Tigre is an in-between size—too large to compare directly with our 1 c.c. motors and too small for similar comparison with our 1·5 c.c. types. Its performance, however, rates it in the upper bracket. The nearest equivalent in displacement is the 1·3 c.c. Mills, which, due to its design, is inherently a slower engine.

In appearance the Baby Tigre is not all that impressive. It looks rather tall and workmanlike rather than attractive. Appearances are deceptive, however, for the bore is actually twenty-five per cent. greater than the stroke, a feature generally common to high speed engines where high r.p.m. can be achieved without unduly increasing the linear speed of the piston, thus reducing the inertia of the reciprocating parts. Closer examination also shows that the engine is "cut down to minimum size", as it were, so that the total weight of only 1·75 ounces is a very good figure for the actual capacity of the engine.



SUPER TIGRE G.22

('BABY TIGRE')

Specification

Displacement: 1·23 c.c. (·072 cu. in.).
Bore: 12·5 mm. (·495 in.).
Stroke: 10 mm. (·395 in.).
Bore: Stroke Ratio: 1·25.
Bare weight: 1¾ ounces.
Mounting: Beam.

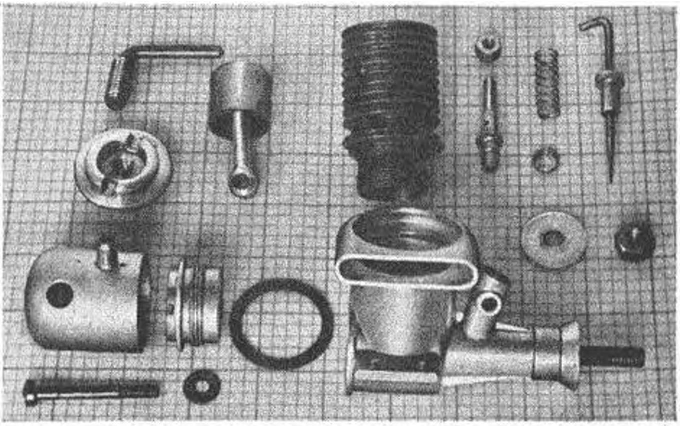
Material Specification

Crankcase: Diecast light alloy.
Crankshaft bearing: Bronze.
Piston and cylinder: Meehanite, ground and lapped.

Manufacturers

Micromeccanica Saturno,
Via Fabbri 4, Bologna,
Italy.

Though the integral exhaust duct in the crankcase casting is on one side only, the Baby Tigre actually has 360° exhaust and transfer ports as employed in Allbon engines. Ball and socket little end to conrod eliminates any possibility of gudgeon pin compression leaks.



The Baby Tigre or G.22 is actually made in two versions — diesel or glow plug. We had only the diesel for test but, although identical performance figures are quoted for both models, we understand that the diesel is actually superior. This, again is a common characteristic of diesels of small capacity, as compared with glow motors of similar size, and even similar design. It is also interesting to note that the instruction manual is printed half in Italian with a complete British translation filling the second half.

The makers recommend a "large, heavy propeller" for running in the diesel version (about 8 in. dia. and 4 in. pitch, weighing about half an ounce). This, we found, was an absolute necessity, for starting characteristics with the new engine were, quite frankly, a strain on one's temper. The boxed-in exhaust ports do not readily permit of injecting neat fuel into the top of the cylinder and sucking in by choking the intake tube readily draws fuel into the bottom of the crankcase, but takes considerably longer for this same fuel to be dispensed into the combustion chamber. As a result either way the tendency is to flood the engine every time. Right throughout the tests, in fact, starting difficulties persisted, so much so that the majority of calibrating runs were made with an airbrake and pulley started. Hence the scarcity of propeller—r.p.m. figures in this particular report. We consider this a justifiable procedure since this was a foreign engine which is not likely to be handled by more than a limited number of British modellers whilst, for general comparative purposes, the B.H.P. and torque figures are unaffected by the manner of test.

Normal procedure for starting a "reluctant" diesel was surprisingly ineffective, namely adjusting compression by the "feel" of the engine. What happened nearly every time was that the compression had to be slackened off and off until what was becoming an increasingly rich mixture finally fired. After that the quite amazing flexibility of the Baby Tigre as regards compression control was evident. The engine would start and continue to run with the compression slackened off as much as one turn from the proper running position. Admittedly the running was rough, but the engine did not stop and could be adjusted through nearly one and a half turns compression before it was finally stopped under excessive compression. It was much more sensitive to an increase in compression beyond the running position than too little compression. The compression control, in fact, could be used as a most effective throttle.

The needle valve, by comparison, had relatively little effect. The instructions stated "3 to 4 turns open". In actual fact there was very little difference in running between about 2 and 5 turns open. It became largely a matter of setting the needle valve so that the turned over end protruded away from the propeller disc and thus represented no hazard to the fingers when flicking over the propeller, rather than adjusting to a "best" running setting.

The method of locking the needle valve, incidentally, is most effective. A light compression spring is fitted between the locking nut on the spray bar assembly and the flanged end of the needle valve bush—not, perhaps, so neat as a split bush, but appreciably more positive.

The compression adjustment lever is comfortably large in size and smoothly rounded so that it can be operated with ease when the engine is running. The contra piston itself, however, was a little on the stiff side and would not blow back under compression very readily when the engine was not firing. Fore and aft play on the crankshaft was a little disturbing at first, this being at least 1/16th inch so that, flicking over, a sharp metallic click was often produced which rather made one wonder whether or not everything was in order.

The integral tank was rather a nuisance. The small vertical pipe protruding from the top of the tank is presumably intended as a combined filler and vent for it does not extend down into the tank wall. A comparative large hole in the tank is for the insertion of the fuel tubing—far too large to grip conventional tubing with the result that the end of the fuel pipe tends to work up out of the fuel and, eventually, right out of the tank as well. It was far easier to fill the tank through this hole, removing the fuel tubing each time, rather than through the small fixed tube.

With the modern tendency to flange the propeller backplate or boost the propeller shaft diameter so that the hole required through the propeller boss is about ¼ in. diameter, it was a little awkward to find an approximately ⅛ in. diameter shaft fitting on the Baby Tigre.

This would not, of course, worry individual users of the engine who can obtain propellers initially drilled with a hole of the required size, but most standard commercial propellers are drilled larger than ⅛ in. dia., preferably requiring bushing for a vibration-free set-up. It would be an excellent idea if engine manufacturers did conform to closer standards in this respect.

Apart from starting, no trouble at all was experienced in getting really high speed runs from the Baby Tigre. As speed increased, so did the amount of compression required, whilst a leaner mixture could also be used, although the latter mainly affected fuel consumption rather than actual r.p.m. Maximum power is developed in the region of 12,000—13,000 r.p.m. which makes it, essentially, a " racing " motor which could well be used for contest work. For a more moderate performance, *i.e.* for sports flying, the engine could be throttled down almost to a tick-over on the compression control, swinging a relatively large diameter propeller.

Like many other powerful engines, hand starting tends to become hazardous at speeds in excess of 10,000 r.p.m.—*i.e.* using small propeller sizes giving operating speeds in excess of this r.p.m. figure. At high speeds, too, the " throttling effect " of the compression control is rather less positive. The engine tends more to run in bursts with slackened off compression, rather than steady, slow running. The engine, too, needs a fair period of running in before it will hold consistent high speeds over a period of a minute or so.

A feature of considerable interest is the possibility of using the Baby Tigre for International class power duration flying. With a maximum engine size of 2·5 c.c. specified by F.A.I. rules, most designers tend to adopt the largest possible engine size within this limit (*i.e.* the most powerful engine available). However, the possibilities of using smaller engines (and smaller models) have already been proved by the British win in 1952 with a 1·5 c.c. motor. In the matter of power : weight ratio the Baby Tigre compares quite favourably and so may be considered a " possible " in this field. So far, however, Continental modellers of world standard have almost exclusively employed 2·5 c.c. engines for the F.A.I. championship events.

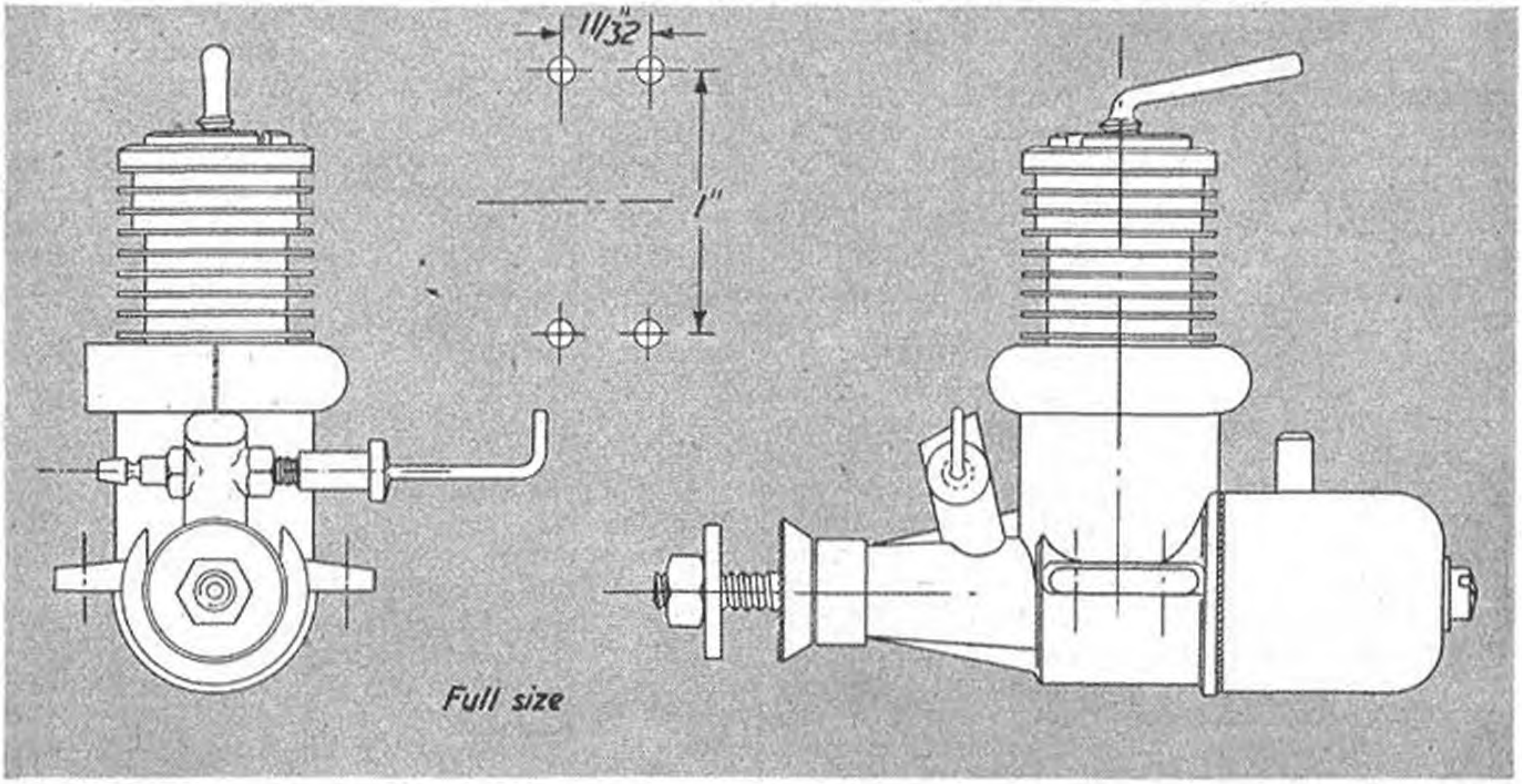
Compared with contemporary British productions we would say, to summarise, that the Baby Tigre has the power and speed, comparatively speaking, of the best of our products, is an attractive functional engine from the point of view of minimum size and weight, but lacks some of the " good looks " our own and American designers generally produce. Its handling characteristics, as exemplified by the particular example on test, were certainly not as good as regards starting temperament, although flexibility of the controls when running was most favourable.

Propeller Test Figures

FUEL : Mercury No. 8, ad test runs Manufacturer's Recommendation :

1 part Paraffin
1 part Castor Oil
1 part Ether, plus 2 per cent. Amyl Nitrate

Propeller Dia.		Pitch	R.P.M.
10	×	4	6,000
9	×	4	7,100
8	×	4	8,500
7	×	4	9,850
7	×	5	9,000
6	×	4	11,250



Full size

WAKEFIELD and POWER TEAM TRIALS

Digby 7th June, 1953

WAKEFIELD TRIALS

1.	Evans, E. W.	Northampton	15 : 00
2.	O'Donnell, J.	Whitefield	14 : 30
3.	Copland, R.	Northern Heights	14 : 18
4.	O'Donnell, H.	Whitefield	13 : 59
5.	Muxlow, E.	Sheffield	13 : 18
6.	Baldwin, R.	Wigan	13 : 14

POWER TRIALS

1.	Buskell, P.	Surbiton	13 : 36
2.	Fuller, G.	St. Albans	13 : 14
3.	Upson, G.	Northwick Park	12 : 59
4.	Cameron, P.	Croydon	12 : 57
5.	Kearns, T.	Leeds	12 : 53
6.	Miller, R.	Ilford	12 : 44

First four in each to fly for Gt. Britain at Cranfield

Heading: Third maximum coming up! E. W. Evans is assisted by fellow clubmate Tom Dunkley, who gave up his own chances this year to proxy fly Ted's model in the eliminators whilst Ted was in hospital. Above: Copland and Evans discuss the flying site (!) with Comp. Sec. S. D. Taylor, with Ken Rutter (Leeds) and A/2 team-man Maurice Hanson bending an interested ear. Left: Hugh and John O'Donnell again hit the highlights for the Whitefield club, the result of a large building programme and hours of test flying.

Below—left to right: Pete Buskell (Surbiton) repeated his 1952 success flying the same model as used in Switzerland. George Fuller appears even more pleased with life than usual. G. Upson of the new Northwick Park club was a surprise newcomer to power honours, as was Pete Cameron (Croydon), better known in the speed and team racing world.

Readers' Letters

Arterio Scalerosis

DEAR SIR,

I have been making model aircraft for many years; but I suffer with something that I have never found in any other modeller. Once the aircraft has been finished as per plan, no warped wings, C.G. is correct, I cannot bring myself to fly the model. I'll admit it—I'm scared!!! Scared that the model is going to crack up on its first trial glide, even over long grass, into a tangled mass of splintered wood, torn tissue and twisted bracing wires.

At the moment I have five models lined up which *should* fly—Avro 504k, Fokker D. VII, Bleriot monoplane, Sopwith Pup, and an R.E.8.

These are all scale models which take between six months and a year to build, that is, *each* model takes this to make, and maybe it's the thought of a year's work being wrecked inside 30 seconds that scares me of flying them. And the thought of an engine of more than ·75 c.c. to power these models (some fellow modellers say that ·75 is not enough), or the model flying at more than 5 m.p.h., makes me shudder!

I would be pleased to know if anyone else suffers from this complaint and how to overcome it.

Ashtead. S. V. TUCKER.

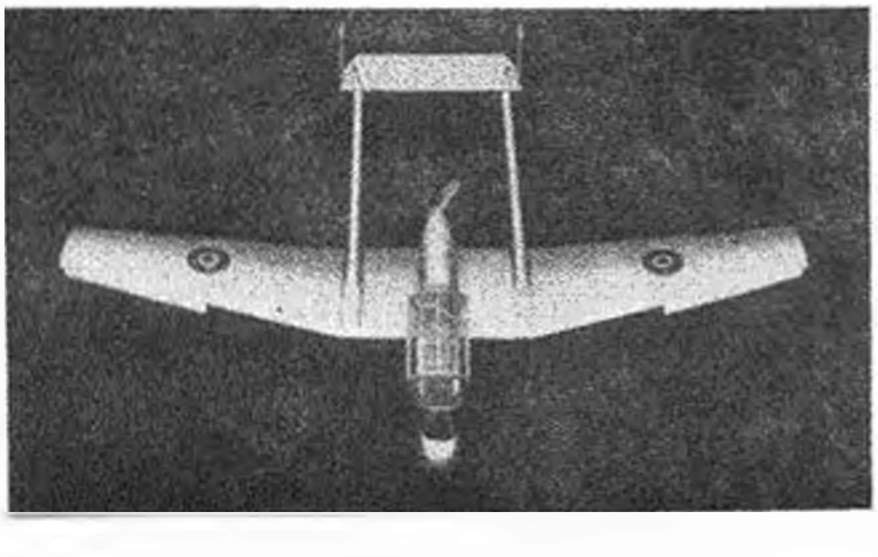
(Mr. Tucker can take heart in the knowledge that this particular disease is common to many of the top names in the flying scale world, as well as to lesser-known builders and even the Editor! Any recommended cures?)

Flippancy — and Slaps?

DEAR SIR,

I was very pleased to read Col. Bowden's reply, in the June AEROMODELLER, to two criticisms of his article on "Slots and related devices" in the December issue, the tone of one of which was entirely uncalled for, and tantamount to rudery.

Thank Heaven this type of critic is in the insignificant minority, which we can well do without. Aeromodelling would not have advanced to its present state if there had been more than a mere one or two of these people who indulge in sarcastic remarks devoid of any constructive suggestions.



Col. Bowden's status in the aeromodelling world is no flash-in-the-pan limelight like some, it's based on an accumulation of knowledge gained from experiments through a good number of years. When others have accomplished as much, it's still never time for sneers.

While not agreeing verbatim with all his writings, I always find food for thought in his articles. I also fly models just for the pleasure, and by far prefer to see a model "aeroplane" that at least resembles what it is supposed to represent, both in aspect and performance.

Let's have criticisms by all means—we learn by our discussions and more heads are better than one—but please, you "bods" who indulge in presumptuous accusations and petty digs, wind your necks in, you only indicate your poor spirit. If some individuals find interest in only one particular rut of aeromodelling, and believe everyone else to be labouring under a delusion except themselves, then it's a pity they do not even know how to live and let live.

Streatham. S. KEMP.

Slattery — and Flops?

DEAR SIR,

I was sorry to see the resentful manner in which Col. Bowden replied to Mr. Barker's and my criticisms of his article. The Colonel's attack on youthful modellers seems singularly out of place. The fact is that a young modeller can learn more with the aid of a few simple aerodynamic books than could be learnt from a lifetime of purely practical experience. In other words, a little theory is worth years of practice. Enough data has been published on the Delta to show that it is unsuited for model tailplanes. Whilst I have no objection to Col. Bowden trying delta tails in practice, why try to ram the idea down the throats of other aeromodellers?

In view of his tendency to misquote, omit important facts and introduce red herrings, I have no desire to bandy words with the Colonel. For instance, when he says the delta is one of the shapes of the future, he should have added "for *supersonic flight*". I doubt if Col. Bowden's delta is capable of that! Incidentally, Col. Bowden does not tell us how his large delta makes out in the air. I am afraid it looks rather unstable and very inefficient to me; I expect he will correct me.

Now, to come onto the subject of slots, I do not deny that slots can be *useful*. In fact I am using them on a Heston A.O.P. flying scale which tip-stalled without them (photo on left). However, I still doubt whether slots will give a drag reduction, even on large models, and Col. Bowden gives no concrete evidence of this. I think he will confirm that the tests which he mentioned were made in wind tunnels which were highly turbulent. Thus although the wings were of model sizes, flow conditions were completely different from those found around a model in flight. It is for this reason that these old wind-tunnel tests are little used for model design. However, there now exists in S. London a low-turbulence wind-tunnel which could prove once and for all whether slots do in fact improve power model performance.

If it is possible to form a small group of enthusiasts

(Continued opposite)

THE SHOW THAT WAS WORTHWHILE

by W. Turley

THE scene was typical of the minutes before the commencement of a model flying show. Engines were warming up, models being assembled, P/A tests going on and, over all, the usual murmurs of expectation from the spectators.

But this was a different show. The place was a Children's Orthopaedic Hospital, and the spectators . . . nurses and patients.

How those kids appreciated the Model Club's efforts to entertain. They were brought to the field in wheelchairs, or carried, strapped to special metal supports, to their places amongst the crowd. Others watched from stretchers, barely able to move their bodies to see all that was going on, but each one really enjoyed the show.

During the afternoon we were invited to see some of the handicrafts carried on as occupational therapy by the patients, and aeromodelling was there right to the fore. It was amazing to see the quality of the construction, bearing in mind the circumstances under which the models were made. One little chap, the proud owner of a partly finished "Skystreak" control-liner, announced his intention of "having a go" as soon as possible . . . this, in spite of having to use crutches for support.

Top: Ex-patient R. Langford of Malton Club explains his "Scout". Bottom: Matron and nurses listen with patients as H. Cryer discusses his "Quickie".

Whilst at the hospital, I thought of the many controversial letters which have appeared in the modelling press on the subject of junior club members, and the varying degrees of interest which they show in the movement. Here, I thought, are some of the real juniors of aeromodelling, grappling not only with the inevitable queries which dog the activities of us all, but also with their own obstacles of illness and deformity.

Surely we can class such youngsters as the future leaders of aeromodelling and I think you will agree that they are worth an occasional show and periodical assistance from established Clubs.

To Clubs who have an odd afternoon free during the coming season . . . offer your services to such an Institution in your area. You will find gratitude and assistance from the authorities, and reap your reward from the appreciation of the children, as we have done.

(Continued from preceding page)

who would like to assist in making a series of model tests in this tunnel, I am hoping we could produce some very useful results. The idea is to measure lift and drag of a number of the "best" wing sections, and some of the most "popular", using typical wing construction. Also, to test some typical models, scaled down, with washout, slots, sweepback, and any other devices which seem interesting, both by force measurements, and airflow visualisation, using wool tufts or smoke. Any readers who are interested in this project from any of the following aspects are asked to contact me through the AEROMODELLER:—

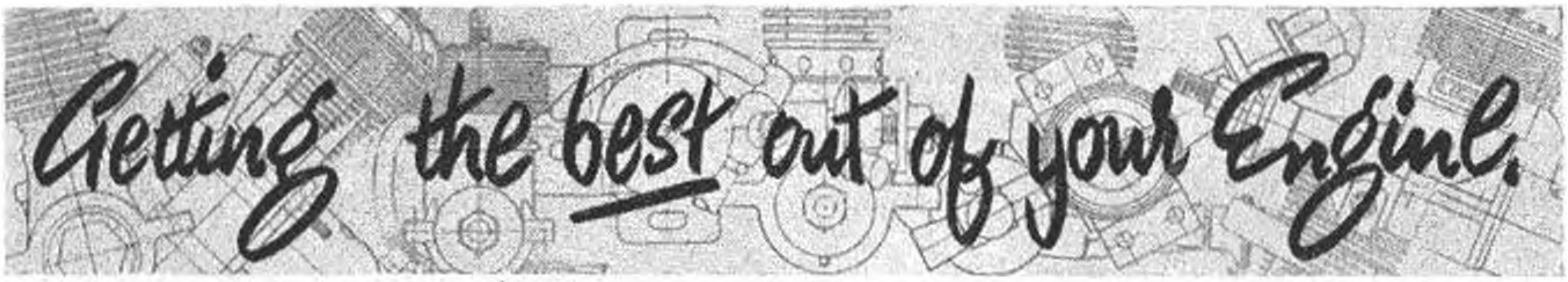
- Constructing test wings (about 14 in. span).
- Making accurate solid scale models (about 10 in. span).
- Wind tunnel testing (some experience of experimental work would be necessary).
- Making and developing a satisfactory smoke-generating apparatus.
- Photographing models under test.

I should also be pleased to hear from modellers who think any particular aerofoils worth including in the tests.

The successful conclusion of such a project can only lead to a better understanding of model aerodynamics, and eventually increased prestige for British aeromodellers.

Ealing. M. M. GATES.

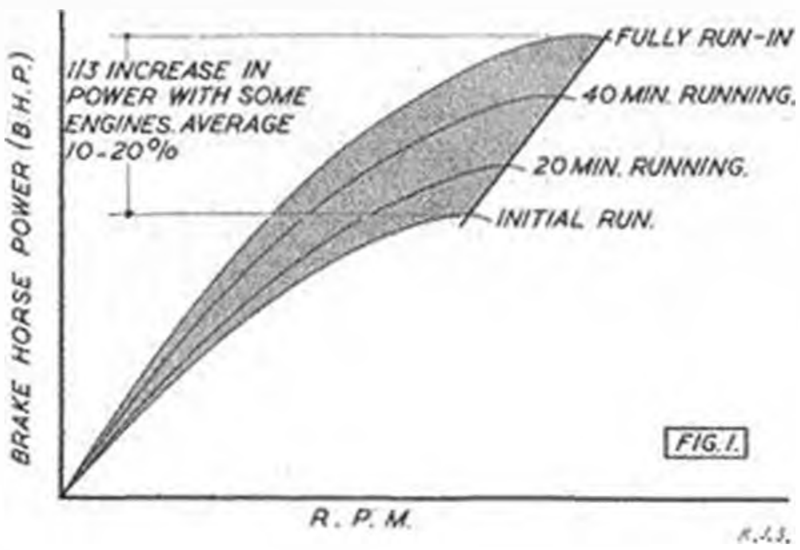
(Correspondence on this subject has proved to be equally divided for and against Col. Bowden's original article and his critics. Accordingly, in the interests of space, the Editor regrets that the correspondence must now be considered as closed.)



Getting the best out of your Engine.

ONE of the most frustrating things about power modelling, as far as the novice is concerned, is to read a report or an advertisement on such-and-such an engine which emphasises that the product concerned is "particularly easy to start"—and then having purchased that same engine find, apparently, that the very opposite is true! Both statements can be quite correct. An engine which is, genuinely, an "easy starter" can appear to be the most stubborn piece of mechanism ever invented if the process of starting is tackled in the wrong way. Riding a bicycle is easy—once you have mastered the knack. But it is *not* easy to someone who is learning to ride for the first time. It is very much the same with a model engine. Once you have mastered the basic knack of starting, then the whole process becomes quite easy. Until you have that knack, it may appear quite difficult.

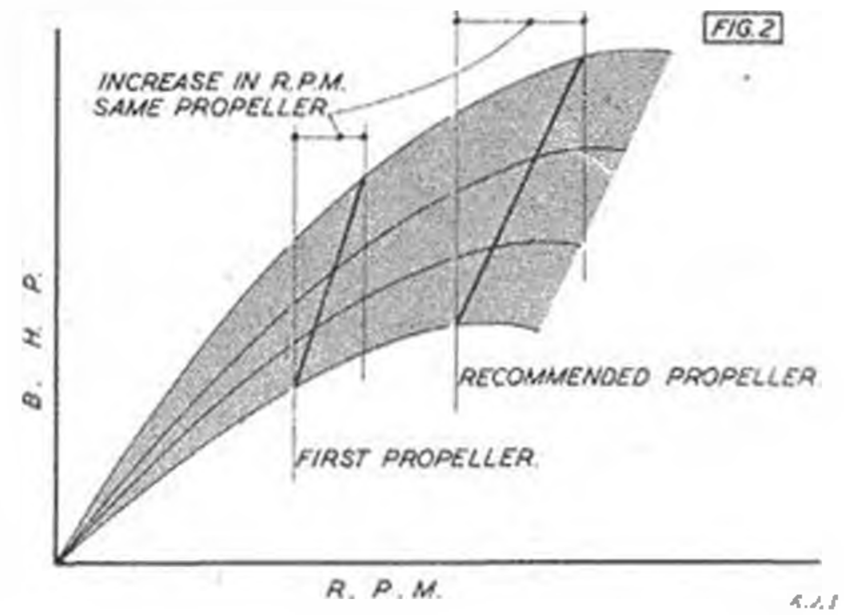
Getting the best out of your engine can, logically, be divided into two separate stages. The first consists of "getting to know your engine", which is best tackled before the engine is put in the model.



After you have mastered the knack of starting and adjusting the engine for consistent running, then only is the time to think about getting the best out of it in the way of performance. Far more important than getting an extra thousand revs is the knowledge, backed by your own experience, that you *can* start the engine quickly, every time, with no unnecessary prop. flicking. Also very important is that preliminary running gives you confidence in your ability to handle the engine so that you do not have to make hurried, sometimes frantic adjustments on the flying field—and more likely than not put your fingers in the spinning propeller, which is painful, to say the least.

Almost certainly, if this is your first engine, when you do get it running for the first time, it will frighten you by the noise it makes and the power it appears to be generating. The larger and faster the engine, the greater this psychological effect. The main factor involved is the speed at which modern engines operate, recommended propeller sizes being designed to produce an operating r.p.m. in the region of 10,000 or more, at which speeds the engine develops maximum power. You can minimise this effect from the beginning by using a propeller which is appreciably larger than the recommended size for normal flight operation and so limit the maximum speed at which the engine will run. All your "familiarisation runs" can be done with this oversize propeller and after you have got used to operating the controls and mastering starting technique, complete "getting to know your engine" by repeating the process with the propeller you will eventually use when the engine is installed in the model.

Preliminary running of a new engine before fitting it in a model is not only a common-sense process, it is necessary to settle the engine down, as it were, just like a new car needs running-in. In the case of a model engine, upwards of one hour's actual running time may be necessary before high spots left by manufacture are worn down smooth and all the working parts "mate" properly. This is particularly true of conventional designs where a plain piston is used. The piston cannot be manufactured as a true and perfect running fit and can only wear itself down to this desirable state after a certain amount of running time. The same is true of the crankshaft and its respective "mating surface" or bearing. Since engines are produced in quantities of, perhaps, several hundreds a week in the largest factories, each individual engine cannot be fully run-in before despatch. They are bench tested to prove their running ability, but the actual running-in is left to the purchaser. The



manufacturers of motor cars work on the same principle. They cannot afford the time to run each new car for the necessary five hundred miles or so specified before delivery. If buyers of cars (or model engines) insisted on this, they would have to pay that much extra. Running in a new engine, therefore, is really saving you money.

Some modellers do ignore this very necessary process. They bolt a new engine straight into the model and start flying with it. This means that they have to get to know their engine on the flying field and possibly are disappointed by the results. About the only type of engine which does respond to such direct treatment are those with ringed pistons. These, in general, need little or no running in, particularly if the crankshaft is carried on ball races as well, but still need getting to know before the best operating and starting technique is mastered.

What actually happens inside the engine during running-in is that the various rubbing and sliding fits are improved, so that less friction is produced between them. As a consequence, both engine r.p.m. and power improves. When fully run-in, the engine is developing optimum revs (and power) with the particular propeller used—Fig. 1.

Engine speed does, in fact, provide a simple check on the condition of a new engine. With the same propeller, r.p.m. will gradually increase with running-in time, until it reaches a constant figure where further running time produces no further increase in r.p.m. Some actual figures obtained on test with a new engine are shown in Table 1, illustrating this point. When constant r.p.m. is obtained, then the engine is fully run-in with that propeller. It may need further running-in time to settle down to constant r.p.m. with a smaller propeller producing a higher initial speed—Fig. 2. In practice, this can be reduced to an initial break-in run with an oversize propeller holding the revs down to something like one half of the maximum r.p.m. specified for the engine, followed by a further run-in period with a smaller propeller of the recommended size to be used when the engine is installed in the model. As a general rule, the oversize propeller required for initial running should be about the same pitch as the "recommended" propeller and two to three inches greater diameter.

TABLE I

Running time (Mins.)	0	10	20	30	40	50	60	70	80
R.P.M.	8,500	8,600	9,200	9,350	9,450	9,500	9,550	9,550	9,550

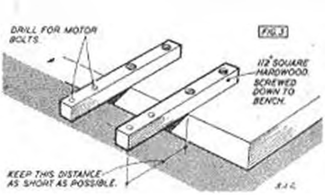
Allbon Dart II. Mercury No. 8 Fuel. 8 × 4 Propeller

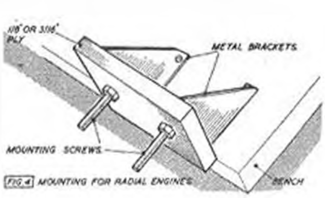
The advantages of correct running-in are threefold. First the engine is properly broken-in to develop maximum power. Any spots of local friction are worn down, so that the engine develops more consistent running. In the case of glow motors, in particular, and some spark-ignition motors, consistent running is not possible until the engine has been at least partially run in. In other words, a brand new engine may *not* run consistently and this failure is not a manufacturing or design fault. Diesels are less affected in such a way. Lastly, of course, running-in with the engine mounted conveniently on a bench provides an ideal method of getting to know the starting and operating characteristics of the engine in a practical way which no amount of printed instructions can convey.

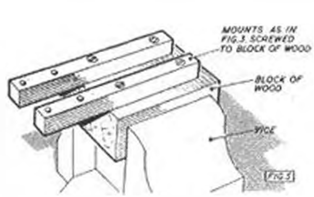
Suppose, now, we are taking a new diesel engine out of its box for the first time. It will almost certainly be complete and ready to run, except that the needle valve needs screwing in place and the engine mounting on suitable bearers. However great the temptation, *do not fiddle with the compression control* at this stage. Almost certainly it will have been left at the setting established by bench testing at the factory and be near correct for starting and running. Move it and you will have to find this correct setting again by trial and error. If you have no previous experience with diesels, the errors you are likely to incur are considerable and the "trial" part protracted.

Simply, starting the engine for the first time then consists of bolting it to suitable mounts, as in Figs. 3–5, using the recommended fuel and following the maker's instructions for starting. However much more we wrote on the subject, it would all boil down to that simple statement. The *makers* know how to start that particular engine and they do their best to convey that knowledge to their customers in their instruction leaflet. However obvious the moral, possibly a majority of customers still ignore the basic rule of *read the instruction leaflet carefully*.

With most modern engines the needle valve control is not particularly critical. The engine will generally start and run even if this is one turn too far open, or closed. The compression control is, however, more critical. Generally the setting for







best running is critical to within about one eighth of a turn. The importance of remembering this setting is self-evident.

If you have been unfortunate (or foolish) enough to lose the compression setting you can usually find it again by " feel ", but this takes a little practice to get the required knack. With the valve needle open the recommended amount (or 2–3 turns, whichever is the greater), prime the engine by placing a finger over the intake and turning the propeller over four or five times by hand until the top of the piston is visibly wet with fuel; alternatively you can squirt a small charge of fuel directly into the top of the cylinder through the exhaust ports. Now continue to turn the engine over with one hand and gradually screw the compression control down until a definite resistance to the upward stroke of the piston is felt. Never force the piston past such resistance, and never close the compression control down so far, or fill the top of the cylinder so full with fuel, that a " solid " feel is developed. Forcing the piston to move against " solid " resistance will most likely bend or break the connecting rod.

BRITISH PRODUCTION ENGINES—1951-53 (GENERAL DATA)

	ENGINE	Wgt. (oz.)	Displacement c.c.	Displacement c.in.	Bore (in.)	Stke. (in.)	Bore/Stke.	oz./c.c.	Overall Dimensions (in.) L.	H.	W.	Prop. Shaft Dia. (in.)	Intake	Tank	Mounting Dimensions (in.) Beam	Radial	Crank case Clearance	Bolts
DIESEL	E.D. ·46 ...	1·4	·46	·028	·312	·375	·83	3·05	2¼	2¼	1½	¼	Shaft Rotary	Integral†	1*	—	⅝	6 B.A.
	Frog '50' ...	1·25	·49	·0305	·345	·330	1·04	2·6	2⅜	1⅝	1	¼	Shaft Rotary	Integral	5/16 × ⅞	—	⅝	10 B.A.
	Elfin ·5 ...	1·5	·536	·0327	·329	·385	·86	2·8	2⅜	2⅜	1 1/16	¼	Shaft Rotary	Integral†	—	1	—	8 B.A.
	Allbon Dart	1·25	·55	·0336	·35	·35	1.0	2·26	2¼	2⅛	1 1/16	⅛	Shaft Rotary	None	5/16 × 1⅛	—	11/16	8 B.A.
	Allbon Dart II	1·25	·55	·0336	·35	·35	1·0	2·26	2¼	1¼	1 1/16	¼	Shaft Rotary	Integral†	5/16 × 11/16	—	11/16	8 B.A.
	Mills P.75 ...	1·75	·75	·045	·33	·52	·64	2·35	3½	2⅜	1 1/16	5/16	Cylinder Port	Integral†	⅜ × 1⅛	—	⅝	8 B.A.
	E.P.C. Moth	2·0	·85	·048	·375	·472	·79	2·65	3	2¼	1½	5/16	Cylinder Port	None	1·2*	—	·85	8 B.A.
	E.D. Bee ...	2·75	·98	·059	·437	·40	1·09	2·8	3⅜	2¼	1½	5/16	Rotary Disc	Integral†	3/16 × 1 5/16	—	11/16	6 B.A.
	Allbon Spitfire ...	3·0	·975	·059	·425	·420	1·01	3·08	3½	2⅜	1½	5/16	Shaft Rotary	Integral†	5/16 × 1 5/16	—	⅞	6 B.A.
	Mills 1·3 Mk. II	3·5	1·33	·081	·406	·625	·6	2·53	4	3	1½	5/16	Cylinder Port	Integral†	·43 × 1·42	—	1	6 B.A.
	E.D. 1·46 ...	3·125	1·45	·0855	·531	·40	1·33	2·18	3⅜	2½	1½	5/16	Rotary Disc	Integral†	5/16 × 1 3/16	—	⅞	6 B.A.
	Elfin 1·49 ...	2·6	1·49	·091	·503	·466	1·07	1·75	2⅜	2½	1 5/16	3/16	Shaft Rotary	None	3/16 × 1 5/16	—	⅝	6 B.A.
	Frog '150'...	3·125	1·49	·091	·50	·46	1·08	2·05	3⅜	2⅜	1⅞	5/16	Shaft Rotary	Integral	5/16 × 1 5/16	11/16*	⅝	8 B.A.
	Allbon Javelin	2·25	1·49	·091	·525	·42	1·25	1·51	2½	2 5/16	1 5/16	5/16	Shaft Rotary	None	5/16 × 1½	—	⅞	6 B.A.
	Allbon Javelin II ...	2·25	1·49	·091	·525	·42	1·25	1·51	2⅜	2 5/16	1 5/16	5/16	Shaft Rotary	None	5/16 × 1⅛	—	⅞	6 B.A.
	Reeves H.18	3·0	1·77	·102	·51	·50	1·02	1·7	3⅜	2½	1½	5/16	Rotary Disc	None	·4 × 1½	—	·9	6 B.A.
	E.D. Comp. Sp. ...	6·0	2·01	·122	·5	·625	·8	2·99	4½	3½	—	5/16	Cylinder Port	Integral†	5/16 × 1 5/16	—	1½	6 B.A.
	Mills 2·4 ...	5·6	2·42	·147	·5	·75	·66	2·29	4½	3⅜	—	⅜	Rotary Disc	None	⅜ × 1·8	—	1½	6 B.A.
	E.D. Mk. III	4·75	2·46	·150	·59	·55	1·07	1·83	3½	3	1 11/16	5/16	Rotary Disc	None	3/16 × 1½	—	1⅛	6 B.A.
	Elfin 2·49 ...	3·4	2·48	·1	·554	·625	·88	1·4	2⅜	2⅜	1·55	5/16	Shaft Rotary	None	·6 × 1·3	—	1 5/16	6 B.A.
	Frog 250 ...	5·5	2·49	·151	·58	·575	1·01	2·21	4⅜	3½	1·65	5/16	Shaft Rotary	Integral	·6 × 1·45	—	1·05	6 B.A.
	Oliver Tiger	6·125	2·50	·151	·55	·625	·88	2·42	2⅞	3	1⅜	5/16	Shaft Rotary	None	·55 × 1 11/16	—	1·20	6 B.A.
	Amco 3·5 ...	4·25	3·43	·209	·637	·562	1·23	1·24	4	2⅜	1½	5/16	Shaft Rotary	None	⅜ × 1 5/16	1 5/16	1	6 B.A.
	Amco 3·5 BB ...	5·5	3·43	·209	·687	·562	1·23	1·61	3⅜	3	1⅜	⅜	Rotary Disc	None	⅜ × 1·9	—	1½	6 B.A.
	D.C. 350 Mk. II ...	5·5	3·43	·209	·687	·562	1·23	1·61	4⅜	3	1½	⅜	Shaft Rotary	Integral†	⅜ × 1 5/16	—	1½	6 B.A.
	E.D. Mk. IV	6·5	3·46	·211	·656	·625	1·05	1·87	5	3⅜	1 11/16	5/16	Rotary Disc	None	5/16 × 1 5/16	—	1½	6 B.A.
GLO	Frog 150 ...	2·9	1·48	·090	·50	·46	1·09	1·97	3½	2⅜	1⅜	5/16	Shaft Rotary	Integral	5/16 × 1 3/16	11/16*	⅞	8 B.A.
	Amco 3·5 (Glo) ...	4·2	3·43	·209	·687	·562	1·23	1·22	4	2 5/16	1½	5/16	Shaft Rotary	None	⅜ × 1 5/16	1 5/16	1	6 B.A.
	D.C. 350 (Glo) ...	5·5	3·43	·209	·687	·562	1·23	1·61	3⅜	3	1½	⅜	Shaft Rotary	None	5/16 × 1 3/16	—	1½	6 B.A.
	Frog 500ø ...	7·75	4·92	·30	·75	·68	1·1	1·53	4½	3⅜	2	⅜	Shaft Rotary	Integral	⅜ × 1⅜	1·35 dia.	1½	6 B.A.

* Single fixing holes. ø Also spark ignition version. † Plastic.

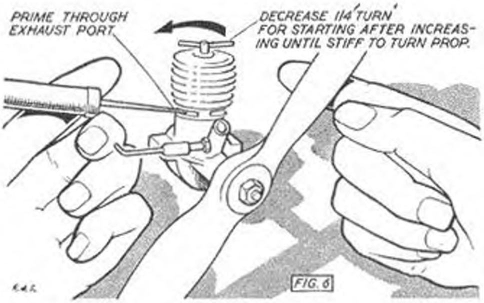


FIG. 6

Having found the position of the compression setting for " stiff " (not solid) resistance, slacken off about one quarter of a turn, and that should be about right for starting. You can then go through the normal starting technique recommended and make further small adjustments to the compression setting, as required.

In general, the compression setting works this way. Provided adequate fuel is being sucked into the engine (*i.e.* the engine is primed and/or the needle valve is opened far enough), *slowly*, increasing the compression as the propeller is flicked over should eventually result in the mixture firing. If the firing is harsh and the engine stops abruptly, compression is too high and must be slackened off. Slacken off a little and continue flicking until the engine fires again, and repeat, as necessary, until it keeps running. Some engines will start and run at the same compression setting. Some start best at one setting and compression must then be *increased* slightly to keep them running. With others, slight *decrease* of compression after starting keeps them running. When the engine is running, mis-firing or knocking indicates *lack of compression*. The engine labouring to a stop indicates *too much compression*.

At the same time, bear in mind that although it is wrong compression which results in mis-firing, or labouring to a stop, it is not necessarily only the *compression control* which is at fault. Compression adjustment is the more critical, but excess fuel (an over-generous prime, or needle valve open too far), or lack of fuel (needle valve not opened far enough) can also produce similar results.

As a general rule, if the exhaust is very oily, the needle valve is open too far. If the engine bursts into life and then quickly dies out, the engine is being starved of fuel. Rather than prolong these particular instructions we again emphasize reference to the manufacturer's instructions on starting features—and a study of the monthly Engine Analysis feature which deals with the starting and running characteristics of individual engines on tests. These latter reports, written in a completely unbiased manner, should be representative of the average modeller handling the same engine. Also we emphasize, it is *your own* practice which eventually makes perfect.

Fuels we have so far mentioned only to recommend the fuel type specified by the manufacturer. We stick to that, at least for the " familiarisation " period. Do not try to make up your own fuel mixture for a start. Nor need you add " running-in " compounds for breaking in the engine. Stick to a tried and recommended fuel which is known to suit that particular engine and that is one aspect of " familiarisation " that you will not have to worry about. Once you feel that you have mastered the controls of the engine, then try other fuels, if you wish. Actually, unless you are specifically after absolute maximum performance, stick to branded fuels of the ordinary kind. Try one of two different types, if you like, to see which gives the best performance with the particular propeller you intend to use. The advantages claimed for a good many " home made " doped fuels are frequently more hypothetical than actual—and some of these " hot " formulas are actually corrosive to the interior of the engine !

When the time comes to install the engine in your model the engine itself should be properly broken in, you should be able to start it from cold

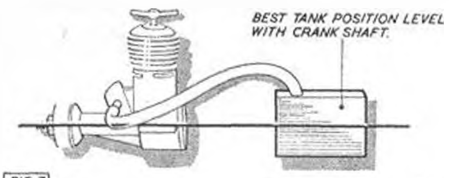


FIG. 7

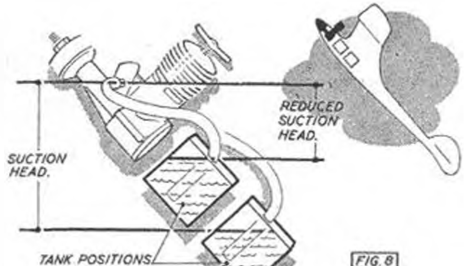


FIG. 8

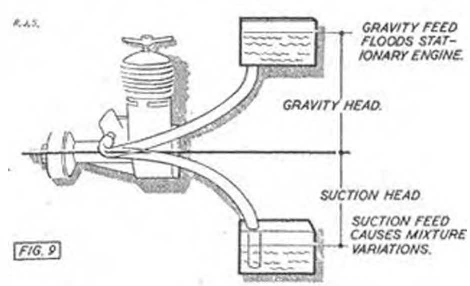


FIG. 9

or hot in a matter of a few seconds *every time* and should be thoroughly familiar with the effect of the controls (e.g. the effect of too much or too little compression, etc.) so that if you do do something wrong on the field when starting you can immediately recognise where you have gone wrong and correct. The one new feature you may have to arrange is a suitable fuel tank, for not all engines are supplied with an integral tank.

A good fuel tank can make all the difference to the actual flight performance of your engine. If the engine has a tank fitted, all well and good. If not, then you must buy or make a suitable tank to fit to the model as close to the engine as possible and, ideally, maintaining the fuel level appreciably on the same line as the crankshaft. Fig. 7. A flattish tank is therefore preferred to a tall one—located as close to the engine as possible to minimise the effect of the changing attitude of the model during flight. In a steep climb, for example, a tank mounted well aft develops a considerable "suction head" which may well affect the mixture, or necessitate the engine being started and adjusted with the model held in "flight attitude" position.

Whilst some engines will operate quite successfully with a considerable suction head, this is not good practice and does tend to give a varying fuel mixture in flight with the same (fixed) needle valve setting. Thus a low-mounted tank is generally best avoided, unless mounted very close to the engine, e.g. immediately underneath the crankcase. A high-mounted tank is even worse for normal operation since this will tend to let fuel feed continuously into the engine under the action of gravity as long as the needle valve is open, with a consequent risk of flooding the engine during starting. Under actual flight conditions a gravity feed of this type can be advantageous, but seldom worth the possibility of starting troubles.

Flight testing is, of course, the only satisfactory answer as to whether the tank design and location is correct. If the engine runs all right on the bench but does not perform consistently in flight, then pretty obviously the tank is at fault. Either try a different tank, or alter its position until this fault is cured.

Field operating technique follows the same principles of starting and adjusting determined by bench testing—together with applied commonsense. Keep the engine clean, for example. Dirt is abrasive, so small particles which may work their way into the cylinder will increase wear, reduce the useful life of the engine and eventually spoil its performance. Wipe the engine free from oil after a day's use and cover it with a rag. If you have a crash and the engine gets partially buried in the ground, wash all the dirt away thoroughly (e.g. with fuel) before attempting to turn it over to see if the crankshaft is bent. Make sure that the hold-down bolts are always tight and that the propeller is properly balanced so that no undue vibration is set up, and so on.

Finally, we commend the old adage—"if it's working all right, leave it alone!" In other words, don't disassemble the engine unnecessarily. Many expert power modellers will confirm that they *never* take an engine to pieces, except to deal with a major fault. Even then, e.g. the result of damage suffered in a crash landing, the best plan is generally a return to the manufacturers for the necessary repairs.

TABLE II

BRITISH PRODUCTION DIESEL ENGINES 1951-53 (PERFORMANCE DATA)

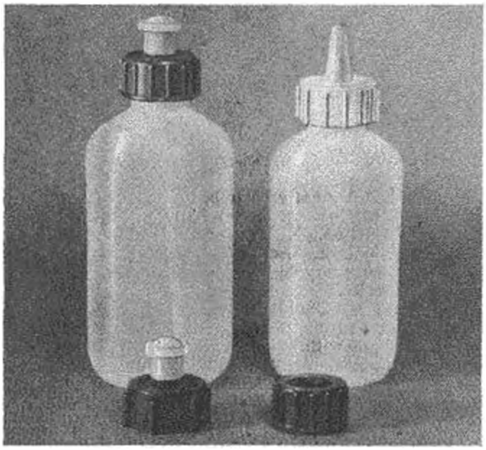
ENGINE	B.H.P. (max.), at r.p.m.	TORQUE (max.), oz.-ins. at r.p.m.	R.P.M. FIGURES—STANDARD FUELS—WOOD PROPELLERS										
			5" Dia.		6" Dia.				7" Dia.			8" Dia.	
			×5	×4	×3	×4	×5	×6	×3	×4	×5	×3	×4
E.D. ·46 Baby ...	·028—11,000	2·7—7–10,000	8,500	—	10,800	—	—	—	—	7,500	—	—	—
Frog '50' ...	·030—12,500	3·1—6,000	9,450	—	11,800	10,850	8,000	—	9,350	7,200	—	—	—
Allbon Dart II	·042—11,500	4·8—6,000	10,600	12,400	11,100	10,350	8,250	—	9,300	7,400	6,350	6,750	6,100
			6" Dia.			7" Dia.			8" Dia.			9" Dia.	
			×3	×4	×5	×4	×5	×6	×3	×4	×6	×3	×4
Allbon Spitfire	·084—10,800	9·9—7,000	13,150	12,000	11,250	9,450	8,950	6,850	8,500	8,200	5,900	—	6,750
E.D. 1·46 ...	·148—10,500	18·0—5,000	12,900	—	11,300	—	10,350	8,400	9,700	9,400	6,600	8,200	6,900
Allbon Javelin II	·134—11,000	15·8—5,000	12,450	11,950	—	10,550	10,150	—	—	9,550	6,800	—	7,250
			7" Dia.		8" Dia.		9" Dia.			10" Dia.			11" Dia.
			×4	×6	×4	×6	×4	×5	×6	×3	×4	×6	×6
Oliver Tiger ...	·315—14,000	28·0—7,000	13,750	11,800	12,200	9,950	—	9,400	8,450	9,800	8,650	—	—
Amco 3·5 BB ...	·32—13,000	27·0—10,000	—	—	—	—	11,450	10,650	10,000	—	11,100	9,750	7,950

MAX. B.H.P. @ R.P.M. FIGURES ONLY CAN BE QUOTED FOR THE FOLLOWING:

Allbon Dart ...	·045—13,300	Elfin 1·49 ...	·10—13,700	E.D. Comp. Special	·11—7,000	Frog 250 ...	·192—10,700
Mills P.75 ...	·059—11,350	Frog '150' ...	·12—13,000	Mills 2·4	·18—10,000	Amco 3·5 ...	·260—11,600
E.D. Bee ...	·062—10,600	Allbon Javelin	·099—12,000	E.D. Mk. III ...	·260—14,100	D.C. 350, Mk. II	·281—11,300
Mills 1·3, Mk. II	·078—7,250	Reeves H.18 ...	·087—13,000	Elfin 2·49	·231—12,300	E.D. Mk. IV ...	·265—13,300

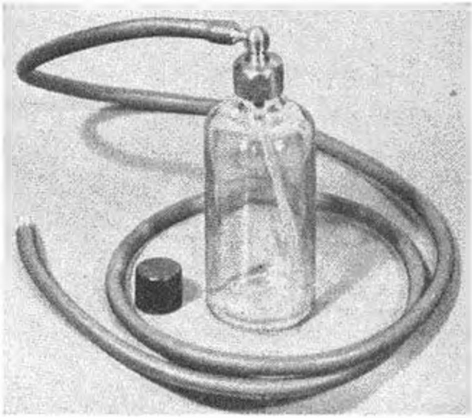
TRADE NOTES

MAKING their appearance in the model shops at the same time as this issue will be a new and inexpensive boon to modellers—a range of plastic bottles, which can be dropped, squashed, or thrown to the ground without damage. The basic bottles (from 4 to 10 ozs.) are made of a semi-transparent plastic which is soft enough to be squeezed in the hand. The first and obvious use is for fuel, and a plastic cap with a fine nozzle is available to replace the normal cap when the



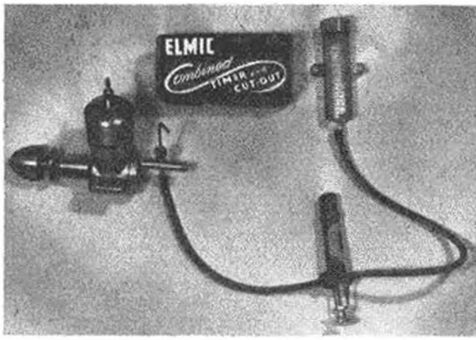
bottle is so used. Another version has a spray-cap, fitted with a long plastic pick-up tube, and is ideal for water-spraying or for applying small quantities of thin dope. Modestly priced (between 1s. 6d. and 3s. 0d.) these bottles will form a most attractive addition to the average modeller's tool-box.

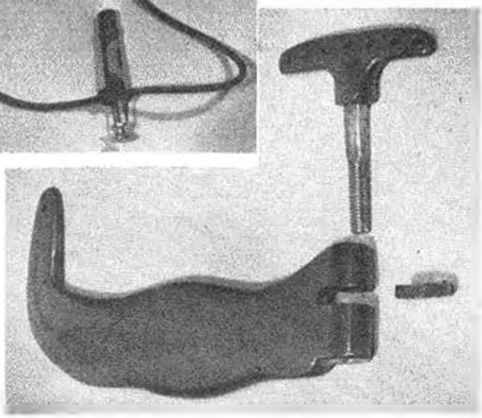
Much in evidence at the Nationals (by those lucky enough to get them in time) were the new **ELMIC MINI-DIESEL** timers fitted with Elmic Flexi Tube. These little units offer positive cut-off action for a weight of only 1/5 oz., and like the other Elmic Timers, are adjustable over a wide range of times from a second or two up to several minutes, with a very high degree of reliability. The Flexi Tube included is a supple, opaque tube completely impervious to all fuels, which passes through two holes in the unit's top bracket and so cannot slip out of place. For contest fans and those requiring a prudent motor-run, one of these little gadgets represents 8s. 9d. well spent.



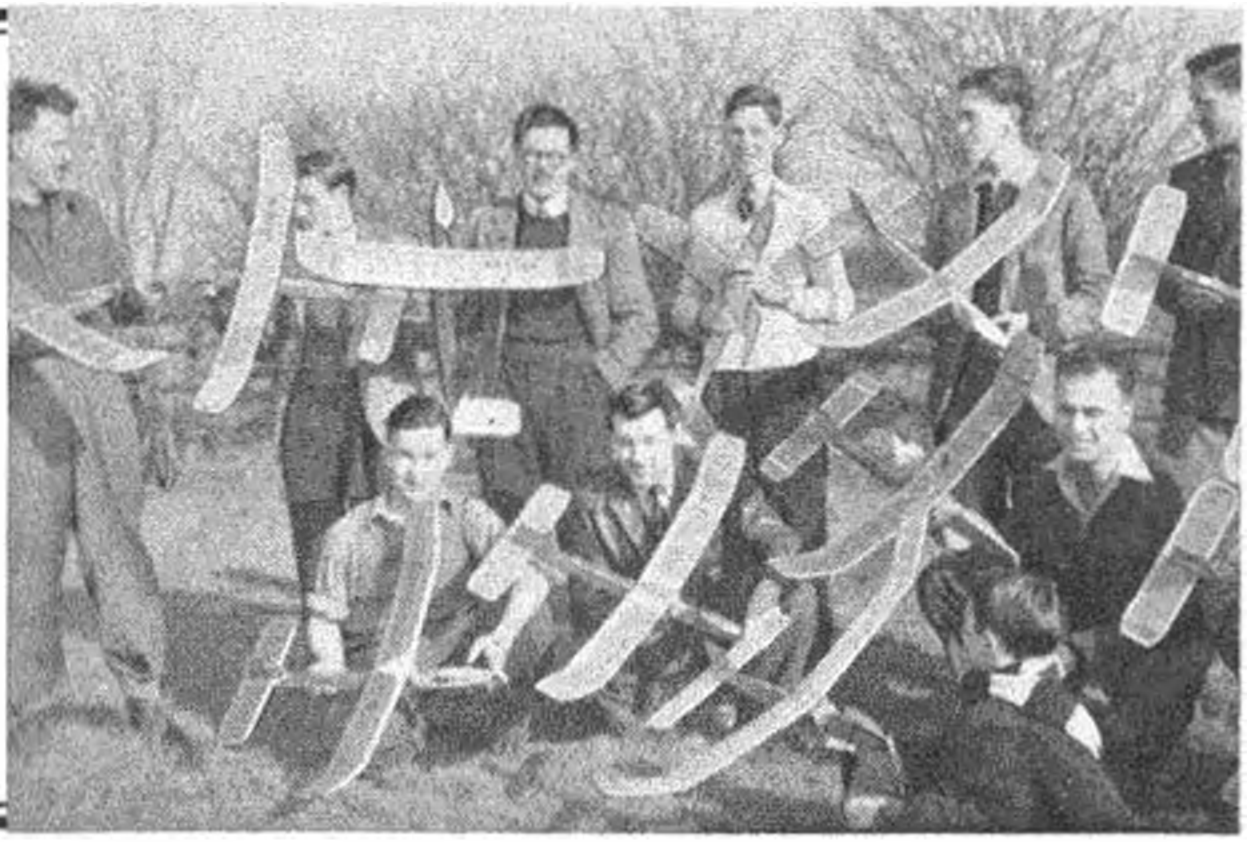
A clever control-line handle with that little extra thought is the **"AM-PULL"**, marketed by Arthur Mullett of Brighton. A screw adjustment enables the operator to adjust his line length, and also provided is a series of attachment holes by means of which control sensitivity can be varied. Comfortably shaped, the "Am-pull" costs 6s. 5d., including tax.

Many modellers are already using the special model size **SPRAY GUN** manufactured by The Motor Car Exchange, Deaconsfield Road, Hemel Hempstead, but many may not know of the larger guns, foot-pump operated, produced by this firm. Intended for touching up cars and motor-cycles, the units are excellent for spraying larger models, and come completely ready to use, requiring only attachment to a suitable pump. No. 1 (2 oz. container) cost but 6s. 0d., and No. 2 (4 oz. container) 7s. 6d.





CLUB NEWS



H.J.N.'s benefit day? Members of the Leicester M.A.C. with some of the models built in the club's one-design contest, for which this year the "Mentor" kit was chosen.

WITH one of the most successful British Nationals ever now behind us, the season is well and truly in its stride. So, unfortunately, is the weather. Earlier meetings and the Nationals were favoured with splendid flying conditions, but lately rain and wind have entered into the picture, upsetting one or two big meetings and innumerable small contests and demonstrations, particularly those held during Coronation week. If one feature of the 1953 season so far is to be remarked upon (apart from the climatic vagaries!) it is the tremendous number of public demonstrations which clubs all over the country have been giving. Such shows, held at local fetes or sports meetings, result in a great deal of publicity to the model movement, which can be very valuable in securing co-operation or concessions for future activities. Even really active clubs are frequently unknown to the local citizens, and it can do a great deal of good to let your townsfolk know that a live group of modellers exists in their midst. Organisers of large garden parties, fêtes, etc., are frequently only too glad to have an additional and unusual activity on their programmes, so what about it you clubs that still hide your lights under bushels ?

South Midland Area

Many roads will no doubt lead to Radlett on September 20th, for what is to be known in future as the "All Britain" (*née* All-Herts) Rally, organised by the **ST. ALBANS M.A.C.** An impressive list of contests (including tailless, seaplane, concours, etc.) gives something for everyone, and is backed up by a radio recovery service.

HENLEY M.C. are doing well in the certificate line, A. Cooke collecting his "C" and International by flights all made within a fortnight, while J. G. Waldron has only his rubber flights to make for the same. A new club rubber R.O.G. record of 8 : 00 was an incidental during one of Waldron's attempts to get his three times. Cooke broke his motor after a first round max. in the M.A. Cup at Waterbeach, and had similar luck in the Thurston.

Midland Area

A static show and C/L demonstration (stunt and streamer-cutting) given by the **SUTTON COLDFIELD M.A.C.** went down very well at the Princess Alice School, which is the local National Children's Home. The club is always happy to welcome new members at the Mill St. Y.M.C.A., between 8.0 and 9.30 each Friday.

SOUTH BIRMINGHAM M.F.C. are engaged on a full programme of displays at Sports and Carnival days, and find the resultant publicity and prestige of great value. At Stourbridge K. Ashman cleaned up team race and speed, leaving A. Hewitt to win stunt despite some months without practice. Tin hats are advisable in this area as some non-modelling big-head has airily told the club that he is producing an all-plywood, five receiver R/C effort to his own ideas . . . all five receivers tuned on the same 27 m/c band.

Ted Evans of **NORTHAMPTON M.A.C.** did well to top the Wakefield, but clubmate H. W. Revel was dogged by ill fortune. There is some mention of ¼ sq. longerons under the new rules . . . ? Many of the club visited Waterbeach and thoroughly enjoyed the meeting, and do express the hope that this splendid venue will be available for further contests.

WALSALL M.A.C. is another club taking advantage of the August Bank Holiday for a C/L Rally—their 6th in this case. Scene will be the Wallsall Arboretum Extension, and programme covers scale concours (plans are a must), open stunt, combined speed (up to Class IV) and A and B team races. Special

CONTEST CALENDAR

July	19	C.M.A. Cup, Frog Senior Cup. D/C.
	26	International R/C Contest. Southend Airport.
Aug.	2–3	WAKEFIELD TROPHY, F.N.A. Cup. INTERNATIONAL POWER TROPHY. Cranfield, Beds.
	9	Cambridge M.A.C. Team Race Rally. Cambridge.
	23	WORLD A2 CHAMPIONSHIPS. Yugoslavia.
		N.E. Coast Competitions. Town Moor, Newcastle-upon-Tyne.
		Bolton M.A.S. Rally. Edgeworth.
	30	Area Championships, Taplin Trophy. 1·5 and 2·5 Payload. Long Marston, nr. Stratford-on-Avon.
Sept.	5–6	Irish Nationals. Dublin.
	6	Yorkshire Evening News Meeting. Sherburn, Yorks
	6	International R/C Contest. Brussels.
	13	Gutteridge Trophy, M.E. Cup. Area Cent. (1954 Eliminators).
	20	International Team Races. Holland.
		All-Britain Rally } Radlett, Herts.
		International Jetex Contest } Radlett, Herts.
	27	K. and M.A.A. Cup, Halfax Trophy. Area Cent. (1954 Eliminators).

prizes for the most novel performance of the day and the best flight by a multi-engined job. Enquiries to Mitchell, 2 Faraday Road, Gypsy Lane Estate, Walsall.

Due to wind, **LEICESTER M.A.C.'s** scramble contest became a physical strain, and not surprisingly was won by M. Raynor, a junior. A chuck glider event suffered from the wind and was won by E. Kinnaird's aggregate of 83·5 secs. Better weather favoured the Jetex Comp., which was won by N. Kinnaird, whose model later disappeared into cloud after 7 : 03, establishing a new club record.

BIRMINGHAM M.A.C. also enjoyed the Nationals, and have a word of praise for the organisation. Wheeler placed third in the Gold, Dallaway third in rubber, and Monks second in payload, so the trip was well worthwhile. Second and third in power at Woodford were taken by Doughty and Monks, the latter's second maximum being in pouring rain !

Southern Area

R. Tee won the **WINCHESTER M.A.S.** Sailplane Comp., flying a " Lulu " ; also among the entries were three " Nords " and a " Snark ". P. Ivory lost an Elfin 1·49 job which was later picked up 9½ miles away, complete with D.T. fuse. Unlit, of course. The club newsletter contains the query, " Where do fliers go in the summer time ? ", since it seems that average flying attendance so far is just one third of the number who showed up to the winter evening sessions.

Western Area

Interesting was the flight of a modified A.P.S. " Stomper " belonging to R. Perrett of **BATH M.A.C.**, when it flew from Lulsgate across the Bristol Channel into Wales. The flight brought a tie for second place in the power section of the West of England Challenge Cup, which was actually won by J. Dixon, of Bath, with a Javelin-powered " Eliminator ".

South Eastern Area

The **CANTERBURY PILGRIMS** are leading the season's progressive club scores in the championship scheme organised within E.M.M.A. (East of Medway Modellers' Association, an independent body formed as a result of the S.M.A.E. 8/8d. fee). The first round brought Precision 1st and 2nd places, Ratio 2nd and 3rd, and Sailplane 2nd and 3rd, while the second round saw an improvement to Sailplane 1st and 2nd, Ratio 1st, and Precision 1st, members J. Ashby, D. Powell, E. Rigden and C. Ashby being responsible. Rigden's " San de Hogan ", lost on a 5 sec. run on its maiden flight and returned after five days exposure to flaming June weather, ratios a comfortable 18, largely due to being built at 0 ozs. under design weight.

London Area

More than 1,000 visited the **ENFIELD D.M.A.C.'s** annual exhibition, where over 100 models were on show and R.T.P. and C/L demonstrations continued all day. Chief interests of visitors were F/F scale and ultra-large F/F jobs, and balloon-bursting and streamer-cutting by pairs of control-liners. The local Council is now interested enough to co-operate on a flying demonstration to be given in a local park. The club travelled *en masse* to the Nationals, and these were the first comps. entered in force ; Lady Luck was not, however, part of the company and no prizes were won.

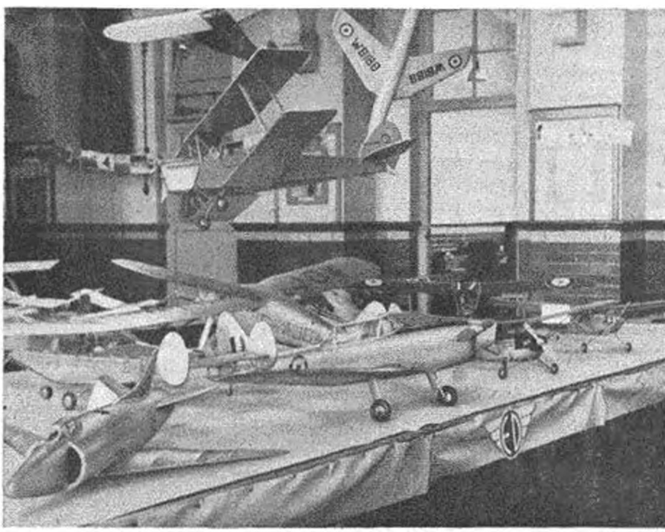
The **WEST MIDDLESEX M.F.C.** recorded their first success of the season when D. Ridley's " Tadpole " flew into second place in the Thurston Cup. Wakefield fliers, R. Nicole (Sweden '52) and I. Dowsett (Finland '51) had no luck in the Trials this year, despite the high hopes of Nicole's geared, feathering job which is a work of art. On June 14th Dowsett and G. Overs achieved three maxs. in six flights, which, with the scores returned by J. Plank (" Quickie ") and D. Ridley (" Tadpole ") proved enough to knock out the N.W. Middlesex (Thermaleers) Club in the Area Contests.

A prototype of the **NORTHERN HEIGHTS M.F.C.** club glider design indicates great possibilities for open contest work, wing loading coming out at nearly square feet to the ounce ! 28 mins. was the team score of Chesterton, Copland (Wakefields), Mead and Ferrer (A.2's) in their first K.O. contest against Hayes.

SURBITON D.M.F.C. members enjoyed their stay at Waterbeach despite all-night motor sessions by an unknown (but unpopular) C/L fiend. D. Free had the aggravating experience of having his lines fouled when his motor was running and he was all set for the last 9 laps of his " A " T.R. heat. P. Buskell's timer was sticking slickly in his " Slick Stick" (Amco 3·5) but intelligent guesswork enabled him to gauge his runs accurately and, of course, he took home the Shelley. With an E.D. 2·46 version of the same job he topped the Power Trials, and J. Hancock with a similar model placed 6th. P. Allaker returned 12 : 50 to be well up in the Wakefield results.

North Western Area

A chapter of accidents resulted from the **BLACKPOOL & FYLDE M.A.S.** visit to the Woodford Rally. I. Headley



Part of the scale department of ENFIELD D.M.A.C.'s Exhibition. Keen eyes will discern the many APS designs and several kit jobs. E.D. 2·46 ducted fan Supermarine Swift in bottom left hand corner is K. Rolfe's.

folded his 10 ft. glider wing, C. Davey broke his " King Oliver " rubber job prop., A. Webber lost his entry on its second flight, and A. Kimber's 16 : 12 rubber model lobbed in on top of a tree.

Similar luck attended some members of **WHITEFIELD M.A.C.** at the Nationals, but others enjoyed better fortune and members obtained two 2nds and a 4th. The sight of R. Bennett struggling with hydrophobia and washing eight times a day (well, it was hot !) is only one of many pleasant memories.

A tale of woe in the form of downpours of rain is the sad history of **HYDE, CHESHIRE'S M.A.C.** Coronation Display. **STOCKPORT & SHARSTON** clubs came along to lend a hand, and things were going well until the rain. R. Wilson's " Junr. 60 " was flown away on a long motor run (this always shakes the layman) and was recovered two days later 12½ miles away. C/C flying was on the go when down came the parney and the 500 spectators fled ; hundreds more on the way, to see what it was all about, turned back. The show is being reorganised for a later date. G. Buckley has raised the club power record to 5 : 15 o.o.s., and R. Wilson has purchased a cine-camera and projector to make a modelling film. He is prepared to lend both to any interested club, which is a very nice gesture ; write to 31 Bottom Street, Hyde, Cheshire.

WALLASEY M.A.C. reports growing membership and a big swing to scale. Interesting F/F models include a Widgeon, a Tiger Moth and a 60 in. Moth Minor and a D.H.5. A successful C/L display was given at the local British Legion Fair.

August Bank Holiday will see **CHESTER M.F.C.** staging a big C/L rally at the Roodee, with lots of cash prizes for A and B racing, stunt, scale stunt, and streamer-cutting. Tied up with the Chester Autumn Sports and Carnival a large audience is certain.

Northern Area

High wind upset **BRADFORD M.A.C.** v. **WEST YORKS** in their Area K.O. fly-off on Baildon Moor. Due to broken towlines, etc., none of the West Yorks boys managed to record an official flight, and for Bradford S. Eckersley's o d. A2 made only one 3 min., 3 mile flight. A. Collinson, however, made a three-flight aggregate of 8 : 25 with his " Hogan ", gale or no gale, and so ensured an honourable win for Bradford.

Luck again refused to favour **FORESTERS M.F.C.** members at the Nationals. A. Rhodes and Co. won their A team race heat with ease, but a lap-scoring error necessitated a re-run in the semi-finals, and a blocked jet put the Rhodes team out of the race. C. Green's D.T. failed in the Thurston, resulting in a 15 : 00 flyaway ; his reserve was damaged after a second max. and he was left with no model to fly off.

The *Yorkshire Evening News* third Festival (Sherburn, September 6th) this year reaches a new high with a prize list totalling more than £100, as well as trophies. The list includes cameras, watches, pens, electric razors, and even a fretwork machine, as well as cash, but even if you don't manage to collect a prize you can be certain of a most enjoyable day's flying.

East Anglian Area

A group of **WARE D.M.A.C.** members camped out at the Nationals and concentrated on the Thurston. No-one managed to catch two consecutive thermals, however, though E. Barks came near with 5 : 01, flying a two-year old A2. F. Hills flew a similar model, which D.T.'d near control and was, apparently, picked up by someone and seen no more. Any information about this incident would be welcomed ; model is 60 in. span, black fuselage, white wing, tip dihedralled tailplane.

NORWICH M.A.C. are busy with public demonstrations. R. Aplin and A. Coe gave a thirty-minute C/L show which went down well at a children's Coronation Party, and on August 3rd a static exhibition and C/L demonstrations are being held at the local British Legion fete. The club have found that three or four streamer-cutters in one circle attract the public more than anything else. Messrs. Davie and Son (son being 3½) recently went R/C flying ; papa stood the transmitter on the deck and launched his " Junior 60 ", which climbed away nicely, went into a left-hand turn, and crashed. Somewhat bewildered, he turned, to hear a small voice say, " Did I fly it, Daddy ? ", and to see his half-pint son staggering under the weight of the transmitter, with the button pressed very firmly on !

DAILY DISPATCH RALLY

	POWER		
1.	Bickerstaffe	Accrington	6 : 00
2.	Doughty	Birmingham	6 : 00
3.	Monks	Birmingham	6 : 00
Jr.	Hewitt	Ashton	5 : 43
	RUBBER		
1.	G. Jackson	Littleover	6 : 00 + 4 : 33
2.	Anderton	Cheadle	6 : 00 + 3 : 47
3.	J. O'Donnell	Whitefield	6 : 00 + 3 : 42
Jr.	R. Jackson	Littleover	6 : 00 + 4 : 21
	GLIDER		
1.	Shaw	Oldham	5 : 50
2.	Eckersley	Bradford	5 : 40
3.	Hindle	Accrington	5 : 30
Jr.	Wendy Bennett	Wakefield	4 : 12
	SCALE, E. J. RIDING TROPHY		
1.	Bridgewood	Doncaster	Heston Phoenix
2.	Lees	Ashton	Luscombe Skypal
3.	Barnes	Sale	Stinson 0–49

Jetex :— J. O'Donnell

Team Race :—"A" 1. Weston Forresters 58 m.p.h.
"B" 1. Harper Outlaws 62 m.p.h.

Champions :—Senior : S. Ward. Junior : H. O'Donnell.
Lady Champion : Mrs. Bennett.
(All of Whitefield Club).

With which example of childish virtuosity—for, after all, he successfully did what a good many seniors can only just manage—we will leave you for another month. And don't forget that most important item of gear when attending 1953 contests—your water-wings.

Cheers, The CLUBMAN.

NEW CLUBS

BURNBANK M.F.C.
W. Parks, 1, Robertson Street, Burnbank, Hamilton, Lanarkshire.

GRAYMOUNT M.F.C.
W. McClean, 35, Pittsburg Street, Belfast.

WILLASTON D.M.A.C.
V. L. Barnes, 61, Glenwood Road, Little Sutton, Wirral Cheshire.

SECRETARIAL CHANGES

RUGBY M.E.S. (AERO SECTION)
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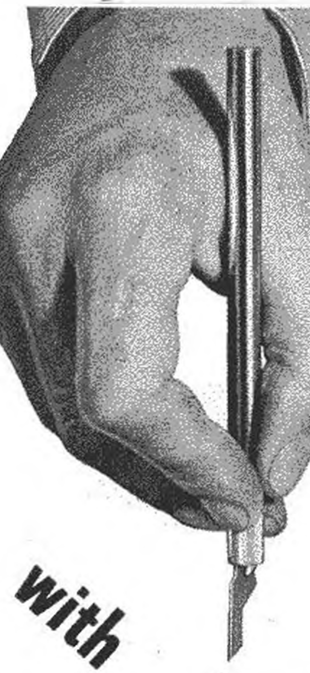

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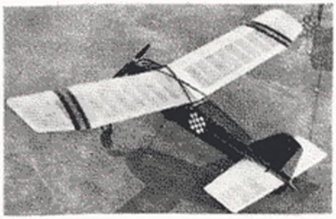

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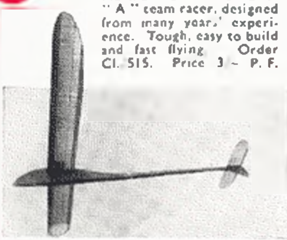

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RESULTS COUNT!

APS design successes in National & International events held this year alone

1st — **SPARKY,** built and flown by Ted Sills, wins the '53 "Aeromodeller" R/C Trophy with a 158 points margin over second place.

1st — **CORSAIR,** flown by designer J. Holt, decisively wins the Thurston Cup with a terrific 3rd flight of 8 : 45.

1st — **GOOK,** breaks its own record time to record 106·5 m.p.h. for Peter Wright and to win Class II speed at the Nats.

1st — **and 1953 World Champion G.B.8,** with small fin addition, wins the 1953 World Championship for Class III speed at 155·25 m.p.h. for designer Guido Battistella.

2nd — **TADPOLE** takes close second to Corsair in the Thurston Cup, flown by D. Ridley to make it a real A.P.S. "one-two".

3rd — **SORCERER'S APPRENTICE** wins all its heats and becomes third finalist in the Eastbourne T/R Trophy for Norman Butcher.

South African Nationals *In nine contests no less than seventeen A.P.S. designs placed 1st, 2nd or 3rd.*

and in Club events the popularity poll selects

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Fairey Junior 18" span

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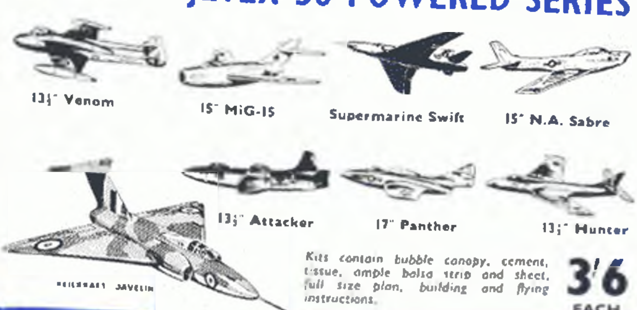
JETEX 50 POWERED SERIES



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