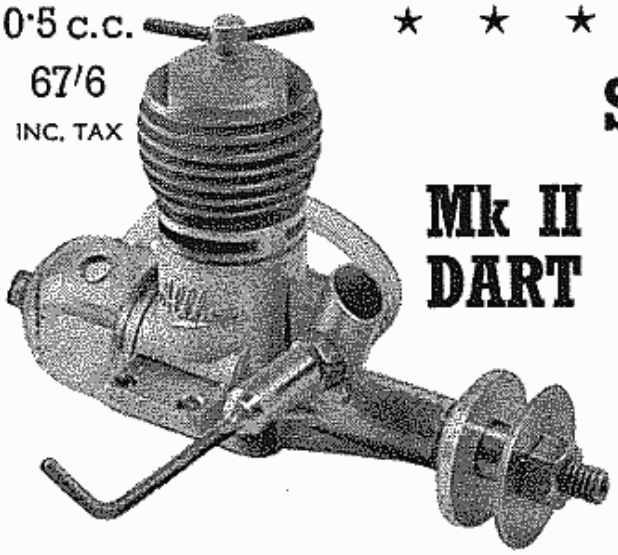
AERO MODELLER

APRIL, 1953

PLANS FOR THIS HONEY BEE ● IAN DOWSETT'S ARROW DESIGNS ● VIC SMEED'S ELECTRA BEGINNERS RADIO MODEL ● AUSTRALIAN NATIONALS ● DUCTED FANS ● DE HAVILLAND COMET PLAN ● CLIPPER CLASS FOR POINT-FIVES ● FOCUS ON DETHERMALISERS

1'6

0·5 c.c.
67/6
INC. TAX



Star of the Month!

Mk II DART

Supreme in the ½A Class, the Mk. II Dart passes the critical "Engine Analysis" test in this issue with flying colours.

The figure of ·042 B.H.P. proves the exceptional power output of this amazing "baby", which in spite of its size, is praised by the tester for exceptional "startability".

Ideal for the small free flight model where flying fields are limited, and especially suitable for powered scale models by virtue of its small overall dimensions.

Mk II JAVELIN

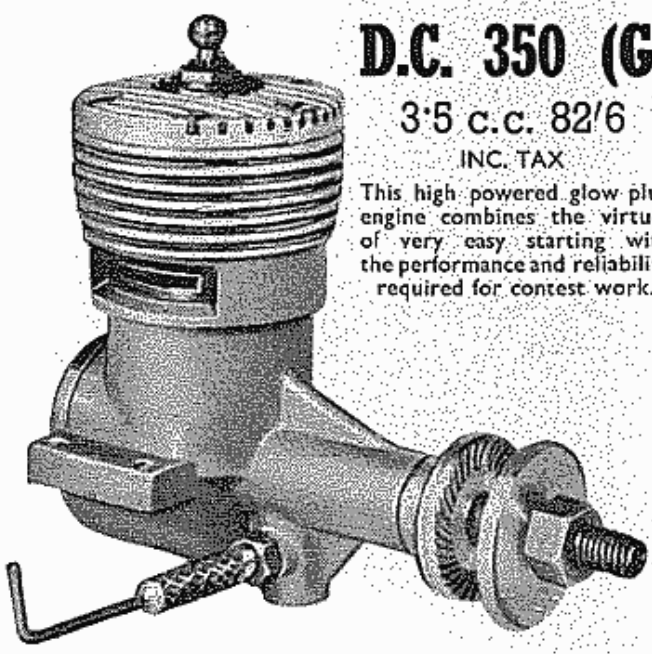
1·49 c.c. 68/3
INC. TAX

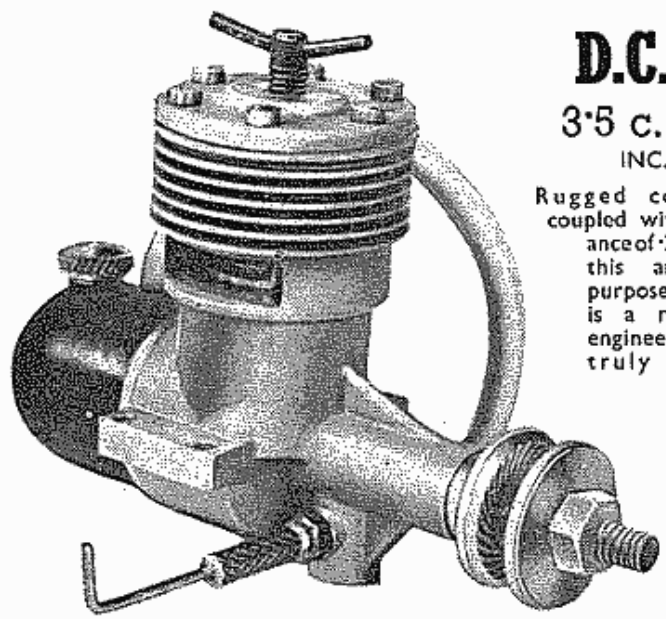
The Mk. II Javelin is now available and is a worthy successor to the engine that has already established itself as the finest diesel in its class.

D.C. 350 (G)

3·5 c.c. 82/6
INC. TAX

This high powered glow plug engine combines the virtues of very easy starting with the performance and reliability required for contest work.





D.C. 350

3·5 c.c. 82/6
INC. TAX

Rugged construction coupled with a performance of ·28 B.H.P. make this an ideal all-purpose diesel. Here is a really finished engineering job at a truly economical price.

YOUR GUARANTEE

Modellers can enjoy the utmost confidence in any of the Davies Charlton–Allbon engines. Every motor is in fact guaranteed, not only in writing, but by the skill and care with which it is manufactured. Each engine in this comprehensive range was evolved by a designer of repute, and produced by a skilled production team to the finest engineering limits.
For reliability, outstanding performance and long life you can do no better.

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Service is the Best

FREE-FLIGHT KITS

Veron	P.T.
Streaker, 37" ...	19/9+4/4
Cardinal, 35"... ...	14/6+3/2
Lavochkin	25/0+5/6
Frog	
Cirrus, 48"	21/0+4/6
Fox, 40"	17/2+3/10
Firefly, 36"	18/5+4/1
Janus, 44"	14/4+3/2
Vixen, 36"	12/4+2/8
Powavan, 48" ...	22/1+4/11
Zephyr, 33"	10/3+2/3
Keil Kraft	
Skylon	10/3+2/3
Slicker 42	17/6+3/11
Outlaw	22/6+5/0
Bandit	18/6+4/2
Ladybird	18/6+4/2
Pirate...	12/0+2/8
Cessna 170	18/6+4/2
Luscombe Silvaire ...	18/6+4/2
Piper Super Cruiser	18/6+4/2
Southerner Mite, 32"	10/6+2/4
Skyleada	
Point Five	7/10+1/8
S.E.5A	14/4+3/2
Doughty	
Eliminator	19/6

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Model Glow Plug Engines ...	3/9
XACTO Handbook	4/10

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Frog	P.T.
Vanfire	24/2+5/4
Vandiver II	12/3+2/9
Vantage	17/2+3/10
Keil Kraft	
Ranger	10/6+2/4
Pacer	15/0+3/4
Stunt Queen... ...	21/0+4/8
Skystreak, 26" ...	9/6+2/1
Skystreak, 40" ...	10/6+2/4
Phantom	18/6+4/2
Scout Biplane ...	22/6+5/0
Phantom Mite ...	11/6+2/7
Veron	
Beebug	12/0+2/8
Panther	25/0+5/6
Minibuster	15/0+3/4
Philibuster	23/6+5/2
Midget Mustang ...	22/6+5/0
Focke Wulfe 190 ...	21/0+4/8
Sea Fury Mk. IX ...	23/6+5/2
Spitfire Mk. XXII ...	27/6+6/1
Wyvern	23/6+5/2
Doughty	
Ambassador	21/0
Skyleada	
Hornet	9/0+1/11
Auster	7/4+1/8
Curtiss Hawk ...	15/7+3/5

RUBBER POWERED KITS by all leading makers. **SOLIDS** by Veron, Keilkraft and Bateman.

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E.C.C. TRANSMITTER UNIT
50/0+12/6 P.T.
Only 2 screws are required to fit this unit into a suitable carrying case. Transmitter housed in metal box 4¼"×4¼"×2½". Ready built including valve. *NOT A KIT.*

E.D. Mk. II, 3-valve unit. Complete transmitter and receiver only. **296/0+74/0 P.T.**

E.D. Mk. III Miniature (Hivac) Unit. Complete transmitter, receiver and escapement. **159/6+38/5 P.T.**

E.D. Mk. IV Tuned Reed. 3 channels unit. Complete **400/0+100/0 P.T.**

Any of the above can be purchased as separate items.

E.D. III Hivac receiver. **60/0+14/5 P.T.**

E.C.C. 951A hard valve receiver. **70/0+17/6 P.T.**

E.D. escapement, compact and normal type. **18/6+4/5 P.T.**

E.D. polarized relay. **30/0**

E.D. Standard Relay **22/6**

E.C.C. 5A relay. **25/0+6/3 P.T.**

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Milliameter, 0·5 M/A. **12/6**

Batteries stocked for any of above.

ENGINES

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

E.D. MILES DIESEL
Hand built throughout. 5 c.c.
A magnificent engine.
140/0+35/0 P.T.

Amco B.B. 3·5 ...	92/0+23/0
Allbon Dart 1·5 c.c. II	54/0+13/6
Allbon Javelin II ...	55/0+13/3
Allbon Arrow G.P. ...	55/0
D.C. 350	66/0+16/6
E.D. ·46	45/0+10/0
E.D. Bee I c.c. ...	47/6+10/0
E.D. 2·46 Racer ...	72/6+10/0
E.D. Mk. IV 3·46 c.c.	72/6+10/0
E.D. 1·46	52/6+7/6
E.D. 2·46 Watercooled	98/6+16/6
E.D. 3·46 Watercooled	98/6+16/6
Frog 50, ·5 c.c. ...	36/9+8/3
Frog 150 Diesel ...	40/6+9/0
Frog 500 Red Glow...	61/8+13/4
Frog 500 Petrol ...	69/9+15/3
Mills P.75	60/0+10/9
Mills S.75	55/0+11/9
Mills 1·3	75/0+16/1
Elfin ·5 c.c.	54/0+13/6
Elfin 1·49 c.c. ...	47/6+12/0
Elfin 2·49 c.c. ...	56/0+14/0

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Hawker Hunter. **15/6+3/5 P.T.**
We have no hesitation in saying that this sets a new standard in British Kits. A model all scale enthusiasts will want to build.

Voodoo (50)	6/5+1/4
M7 Kit only	4/1+11d.
M7 (complete with Jetex 50B motor, fuel, etc.)	8/7+1/11

OTHER KITS FOR JETEX

Jeticopter 50 ...	5/9+1/3
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Hot Dog 50	3/6+9d.
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Vampire 50	5/9+1/3
All K.K. Scale Jet Kits as advertised ...	3/0+ 8d.
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SKYLEADA JET (50) FLYING SCALE

All one price. **3/0+8d.**
Avro 698, Avro 707A, Mig 15, Gloster Javelin.

JETEX MOTORS

	P.T.
50 Outfit	10/11+2/5
200 Outfit	31/8+7/11
350 Outfit	43/2+9/7
Jetmaster	24/0+5/4
Augmenter Tube ...	5/0+1/1
50 motor only ...	7/6+1/8
100 motor only ...	16/8+3/9

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

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

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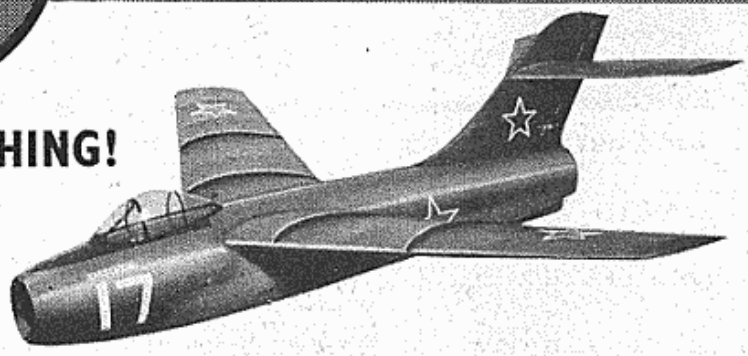
VERON'S La 17 "IMP" SYSTEM (Pat. Pending) has REVOLUTIONIZED Free Flight Scale

IT'S JUST LIKE THE *REAL* THING!



LAVOCHKIN 17 gives the nearest approach to authentic jet free-flight yet attained in any phase of model aircraft development. The "IMP" (Patent applied for) is a ducted impeller perfected by Phil Smith, Veron's designer, and is not only revolutionary but has given VERON the lead in a new field. This system of propulsion has completely out-dated any of the more conventional methods.

Span 37", Length 34". Kit complete with stage-by-stage plan including READY MADE IMPELLER and STARTING PULLEY. Graded strip and sheet, quality printed woods, and all materials (moulded cockpit cover) are included. **30/6**

...AND A GRAND RANGE OF SOLIDS

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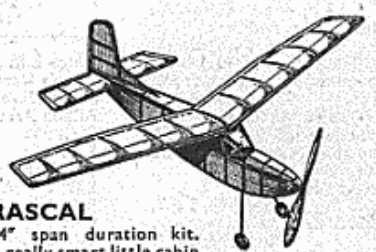
SUPERMARINE 508	2/9
SUPERMARINE 510	2/6
VENOM N.F.2	2/6
CUTLASS	2/6
MiG 15	3/4
La 17	3/4
METEOR 8	4/3
CANBERRA B.1	6/8

All the above prices include Purchase Tax.

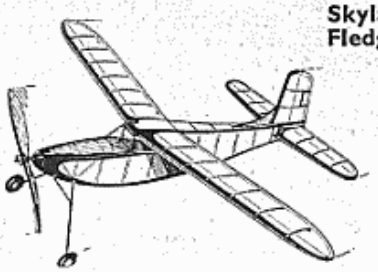


RASCAL
24" span duration kit. A really smart little cabin job, easy to build and a delight to fly. **6/8** inc. P. Tax

GOBLIN
20" span small super-duration model which looks and flies like a miniature "Wakefield". **4/7** inc. P. Tax

Other duration flight Kits include

Skylark 6/1 inc. P.T. **Snipe** 6/8 inc. P.T.
Fledgling 9/2 inc. P.T. **Fantail** 6/8 inc. P.T.



SENTINEL
34" span competition duration model which will outclass any similar kit on the market. Into this Phil Smith design go years of experience in contest performance. **12/10** inc. P. Tax

For Jetex-powered flight

FOUGA-CYCLONE ...	6/1 inc. P.T.
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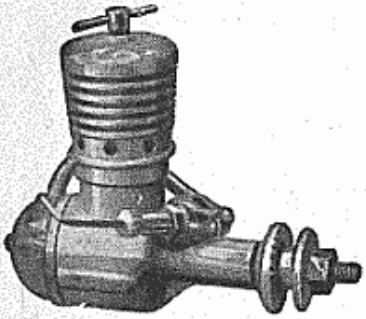
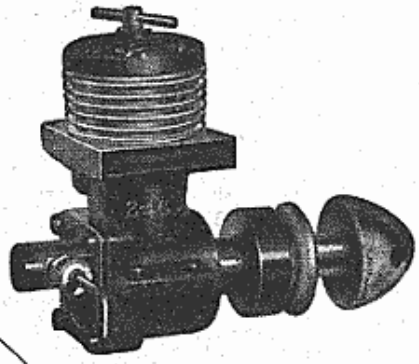


E.D. ·46 c.c. BABY
Specification : bore 5/16 in. ; r.p.m., 9,000–12,000 ; height, 1 15/16 in. ; stroke, ⅜ in.; cu. capacity, 0·46 c.c. ; b.h.p., 0·04 ; weight, 1·4 ozs. with tank ; length, 2⅜ ins. ; width, 1¼ ins. ; fuel control placed at 30 deg. for easy access.
Price £2 . 15 . 0



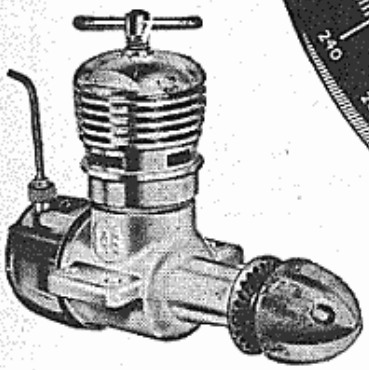
E.D. Mk. III 2·46 c.c. RACING ENGINE
Specially designed for use as a diesel, glo-plug or spark ignition engine, the 2·46 develops over ¼ h.p. at 14,000 r.p.m. plus. Tota weight 5 ozs.
Price £4 . 2 . 6

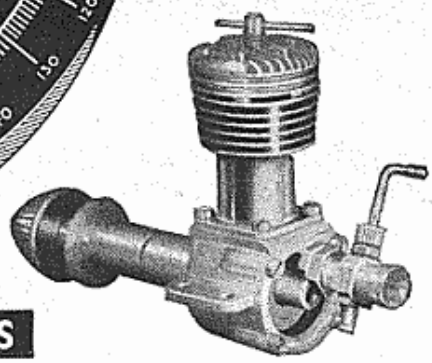
set course with Every Degree of assurance

You are the pilot of your model aircraft—whether by control-line, radio control or free flight. You decide not only the course to steer but the design, construction, and—most important—the choice of parts and equipment. The famous range of E.D. diesels have formed the basis of many a record-breaking design and performance. For those taking part in any of the numerous contests during the coming season, these magnificent engines offer a choice—from ¼ to 3½ c.c.—any of which provides an excellent start in "setting course" for success.

E.D. 1·46 c.c. DIESEL
Height, 2¼ ins. ; length, 3 ins. ; weight, 3 ozs. ; bore, 0·531 ins.; stroke, 0·40 ; r.p.m., 12,000 ; b.h.p., 0·14 ; compression variable.
Price £3 . 0 . 0

E.D. 3·46 c.c. Mk. IV
Developing 10,000 r.p.m., the three-forty-six is one of the finest engines for control-line and stunt flying. Stroke 0·625 in. ; height, 3 ins. ; width 1¼ ins. ; weight 5¼ ozs.
Price £4 . 2 . 6



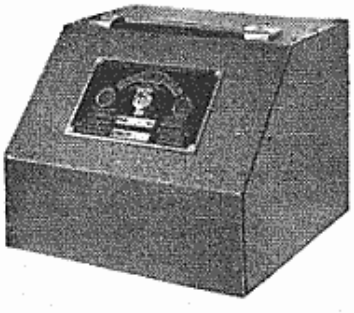


RADIO CONTROL UNITS

E.D. Mk. II Miniature 3 Valve Radio Control Unit comprising Transmitter and Receiver.

A standard battery pack will give over 3 hours **Continuous Operation** with a receiver and batteries weight of only 10¼ ozs. Deaf-aid **Hard** valves with a life of over 3,000 hours are used in the receiver. The transmitter is wired for dual purpose use and will operate either carrier or modulated receivers.

Price Complete	**£18 . 10 0**
Receiver	£11 . 10 . 0
Transmitter ...	£7 . 0 0



E.D. Mk. III Miniature Radio Control Unit.

One valve transmitter of DCC 90 Twin Triode type with up to 4 watts input ; **Crash-proof** receiver (weight 1¾ ozs.), escapement (weight ¾ oz.), with meter and battery sockets and plugs, on-off switch and potentiometer ; and sectional 8 ft. transmitter aerial.

Price complete (less batteries) **£9 . 17 . 11**

Prices separately

Transmitter ...	£5 . 14 . 9
Escapement ...	£1 . 2 . 11

Receiver (including meter and battery sockets and plug, on-off switch and potentiometer) **£3 . 14 . 5**

All prices include Purchase Tax. ORDER THROUGH YOUR MODEL SHOP.

E.D. ELECTRONIC DEVELOPMENTS (SURREY) LTD
KINGSTON-ON-THAMES
DEVELOPMENT ENGINEERS
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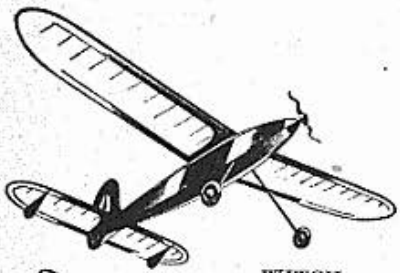

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36" Rubber .. 12/9

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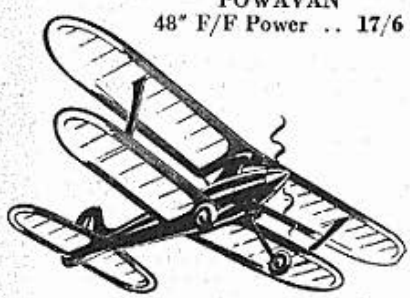
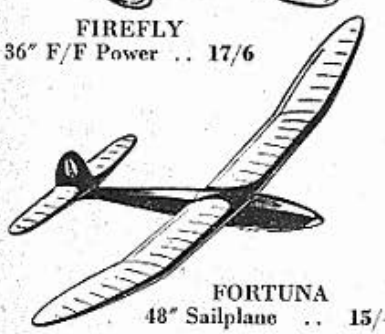
48" F/F Power .. 17/6

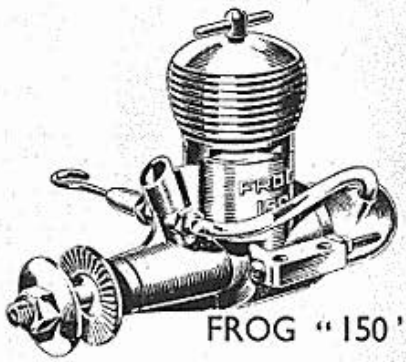


FIREFLY
36" F/F Power .. 17/6



FORTUNA
48" Sailplane .. 15/-

VESPA
30" Sailplane .. 7/-



FROG "150"

Britain's most popular contest motor! FROG "150" is the most powerful diesel in its class, with a speed range of 2,000 to 15,000 r.p.m. and a weight of only 3 ozs. complete with integral F/F fuel tank. Whatever the model, from Team Racing to Radio, the FROG "150" is the best you can buy—and at the lowest price, too!! **49/6**

FROG "50"—the best of the baby diesels and the lowest priced. Made like a watch, and costing only 45/-, the FROG "50" gives you 15,000 r.p.m. at a weight of only 1 oz.! **45/-**

FROG "500". One of the world's best known motors, the FROG "500" turns over at 4,000 to 15,000 r.p.m., weighs only 7¼ ozs. and is complete with fuel tank. Price is only **75/-**

—FROG FUELS—

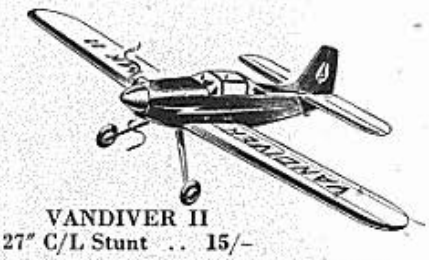
POWAMIX for 1953 has new SHELL formula to boost power and improve starting. NOW INCLUDES ETHER!! Try this super-fuel in *your* diesel, and see it *really* roar!! RED GLOW—the experts' choice for glow-plug working is still the finest.

BETTER & LOWER PRICED FROG AIRSCREWS

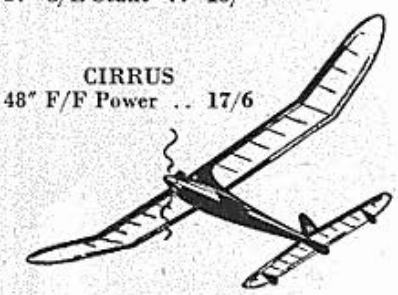
Another example of FROG price slashing! Note new LOWEST EVER prices of plastic airscrews—still the best and most efficient.

Size	*Standard Plastic*	*Nylon*
8"×5" pitch ..	1/3	2/9
8"×6" " ..	1/3	2/9
8"×8" " ..	1/6	3/3
10"×6" " ..	1/6	3/3
9"×6" " ..	1/6	3/3
6"×4" " ..	-/9	1/6

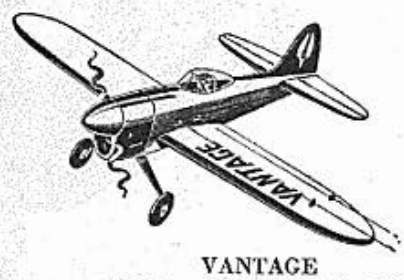
NEW! NYLON AIRSCREWS are 20% lighter in weight—100% stronger.



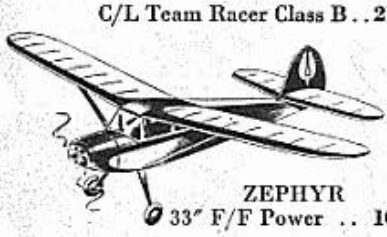
VANDIVER II
27" C/L Stunt .. 15/-



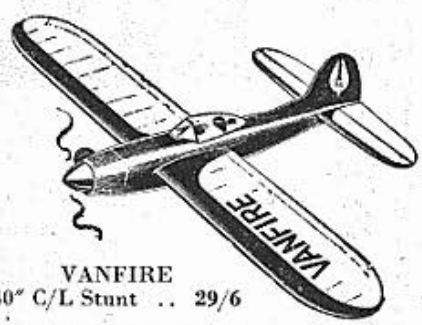
CIRRUS
48" F/F Power .. 17/6



VANTAGE
C/L Team Racer Class B .. 21/-



ZEPHYR
33" F/F Power .. 10/6



VANFIRE
40" C/L Stunt .. 29/6

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Manufactured in Great Britain by
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LINES BROS GROUP

ESTABLISHED 1935

AERO MODELLER

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"Covers the World of Aeromodelling"

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Contents

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Aeromodelling and Education

THE article appearing on page 236 should give thought to many of our Education authorities, and the author is to be congratulated on the evident success of his " extra curriculum " activities. We have long been of the opinion that aeromodelling would be an ideal subject for inclusion in the normal schools handicrafts activity, and this article by a man with actual experience lends greater weight to our convictions.

As Mr. Chaplin says, " I started this class as an extra-curriculum activity some three years ago, and thought that my experiences might be of interest to your readers. To my mind it has proved itself to be one of the most creative hobbies there is, *and I have found definite improvement in the academic work of boys who have taken up the hobby. I feel that if aeromodelling were to be taken up by schools and used intelligently, it would form an extremely useful activity* ". (The italics are ours.)

From time to time we learn of similar activities conducted by masters who are themselves enthusiastic aeromodellers, but the number is infinitesimal in comparison with the number of centres of learning in Great Britain, and we look hopefully to the day when some authority is progressive enough to include our hobby in the schools' programme.

After all, look what aeromodelling offers to a boy (or girl). Apart from the obvious suitability of the subject as a modern interest—for never was the world so air-minded—the hobby offers many different facets for thought and manual dexterity, and combines in an ideal manner both indoor and outdoor activity. Leaving aside the vital question of designing for a later date, the youngster immediately learns how to translate three-view drawings into intelligible constructions, and his fingers are soon trained into the use of the very simple tools.

Above all, patience is more or less forced on the individual, for no well built model is possible without a measure of this very desirable attribute, and, providing the recruit receives a reasonable share of attention from his instructor, he soon progresses to the stage where good construction is allied to a desire to progress with each succeeding model.

Perhaps the vital consideration is the fact that the youngster knows that—providing he applies himself to the task in a proper manner—the final result of his work will continue to give him unlimited pleasure in flight. (What a difference from those long lost days we remember spent in the school woodwork shop, turning out exercise after exercise ranging from planing a bit of wood square to mortice and tenon joints! The interest was certainly there whilst the class was in progress, but apart from taking the best pieces home to display to a proud parent, the youngster had nothing to continue his interest in the subject.)

No, aeromodelling combines many admirable features into an ideal indoor and outdoor hobby. Needless to say, any help we can offer will be gladly given.

To close on a final word from our author, he states " It may interest you to know that two of the senior members have just taken their General School Certificates, and have been accepted by two of the leading English aircraft firms into their apprenticeship schemes. These schemes are very competitive in the acceptances, and it is quite an achievement for these boys. They both visited me, and said they felt that their interest in aeromodelling had definitely helped to turn the scales in their favour ".

Cover Picture . . . .

Not very often are we able to present a photo of a full-size aircraft and its miniature counterpart with a couple who are directly associated with both craft. Mr. and Mrs. Walter Mooney are active aviation enthusiasts, who assisted in the construction of the real 28 ft. 65 h.p. Honey Bee, and then proceeded to make the perfect scale model published on p. 204.

Heard at the Hangar Doors

False Alarm—Plus ! !

SCHOOLBOY CAUSES N.I. HUNT.

Vain 4-hour search follows telephone call to police of 'crashing' plane

YOUNGSTER'S TOY IS THOUGHT TO BE TO BLAME FOR REPORT

A MODEL AIRCRAFT flown by a schoolboy in the district was thought today to be the 'plane' reported to have crashed at Glengormley on Sunday afternoon—a report that led to a four-and-a-half hour search for wreckage by police, firemen, ambulance units, an R.A.F. mountain rescue squad and dozens of civilians.

This report, appearing as front page headline news in the "Belfast Telegraph" on February 16th, was the culmination of a considerable false alarm in Northern Ireland. Six fire engines and ten ambulances were sent by the Belfast Fire Brigade and the N.I. Fire Authority. Radio equipped cars and a Mountain Rescue unit joined in the search; but the last paragraph of the newspaper report appears to sum up the situation with:

"It was believed today that the 'aircraft' was a 33-inch model of a Tiger Moth."

Motormodell-Auf-Ski

First International contest of this year was also the first R.O.S. (Rise Off Snow) contest for power models in Switzerland, and from the report we have received, it was a most popular affair, organised with the customary skill of Arnold Degen of the Swiss Aero Club. A frozen lake at Davos-Platz, the famous ski centre, was selected for the take-off spot, and after an overnight 12-in. fall of soft snow had been cleared for a runway, the bods started flicking at their motors in a freezing temperature of 18 below! Strong, changeable winds, falling snow and a combination of universal timer trouble meant that few of the 24 entries managed to record three flights. Our own Silvio Lanfranchi, assisted by S. African Mike Rutherfoord and flying an "Eliminator" had a stuck timer on his second flight (frozen ?) and the job disappeared upwards in the driving snow. It was later recovered from the Davos Ice Rink by the ski-borne recovery party.

Model skis varied from 10 to 2 ins. in length, and 2 to ½ in. in breadth, actual size did not appear to be critical, though of course the larger skis could cause a lot of unwelcome drag. Winning time of 218 seconds by W. Schrammer of Zurich included a creditable best flight of 136 secs. in very exacting conditions. Most entrants used d/t action to make sure of recovery.

Fairlop Finale

Another newspaper report we take the liberty of reproducing is a cutting from the "Express & Independant", local paper in the West Essex Area. In brief, it covers the concluding chapter of the Fairlop story, and it is with regret that we announce the closure of this field for aeromodelling—we understand that it will now revert to farmland.

"By 1950, the Civil Aviation Ministry were considering Fairlop as one of four airports needed for London.

Now, after 20 years of plans and hopes and an expense of £340,000 the City Corporation's Common Council is to be asked to abandon the whole scheme.

The airport committee recommended at the Guildhall on February 19th that the whole scheme be dropped.

Before the war the Corporation acquired 932 acres at Fairlop to build an international air terminal and plans were well-advanced when war broke out.

The Air Ministry requisitioned a third of the site and built a fighter station.

The reason for cancelling the terminal scheme was given by Mr. A. Lennox Boyd, the Civil Aviation Minister, who said that the weather at Fairlop was not suitable for an airport in constant use."

Dignified Flappery

Your Editor was privileged to attend a lecture on the 21st February at the Royal Institute, London, the lecturer being Lord Brabazon of Tara, President of the S.M.A.E., and a pioneer of British aviation.

The subject was "The Birth of Flight", and His Lordship was truly on form, a most interesting discourse being well illustrated with slides and a number of practical demonstrations which included the Macrocarpa seed described in the January, 1952, AEROMODELLER.

Highlight of the evening was a demonstration of indoor flying models by Reg. Parham of Worcester, probably the most noted British exponent of the art of indoor flying. During the course of the lecture he demonstrated his record-holding microfilm covered Helicopter, and an even more amazing Ornithopter. This model, with microfilm-covered centre section and tailplane, had tissue wings, and performed in a truly amazing manner.

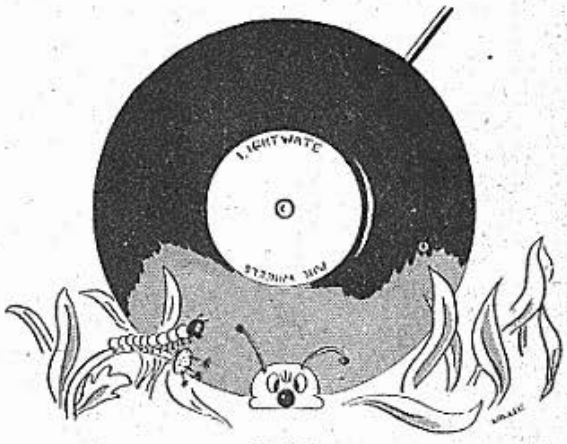
So good was the design that, following the lecture, a further series of flights were made in the lecture hall, and a new British record of 44 seconds for this class of model was achieved. Plans for this model will appear in the AEROMODELLER next autumn, together with a number of authoritative articles by Mr. Parham on the requirements of this fascinating branch of aeromodelling.

"World's Sweetest Plane"

Remember the Wee Bee? The aircraft that gained fame a year or two ago by its world-wide demonstrations as the world's smallest piloted plane. It came to the "Daily Express" Air Pageant at Gatwick, perhaps some remember its austere lines, tiny radio-controlled target engine, and the fact that the pilot lay prone and very exposed along the top of the triangular section fuselage. Through holes in the top covering, the pilot operated normal controls, and though small enough to be lifted by one man, the "airplane" had quite a performance. On our cover this month, and overleaf, we present the development of the Wee Bee, known as the Honey Bee. Organised by a group of aeronautical engineers, technicians and pilots, Beecraft Associates (Designer Ken. S. Coward) made this all-metal butterfly tailed for a 65 h.p. motor. Top speed is 120 m.p.h. and cruising speed as high as 110 m.p.h. We think it really does earn the title "World's Sweetest Plane" and we venture to suggest that it will become one of the most popular scale free-flight subjects. Few designs can claim the same authenticity of Walter Mooney's perfect scale reproduction.

The World in Miniature

Organisers of the International Model Exhibition, Le Monde En Petit, in Pavilion Des Sports, Geneva, have contacted us with a request for the participation of British modellers. The exhibition takes place from May 1–10, and at the same show last year most of the west European countries, including France, Germany, Italy and Switzerland, were given stands displaying model aircraft, boats, cars, trains and model engineering. It was generally regretted that we in this country were unable to participate on that occasion, but this year we have sufficient time to organise British exhibits. Those interested in the show are advised to contact our editorial offices at the earliest opportunity. All expenses in connection with model despatch insurance, etc., will be fully covered by the organisers.



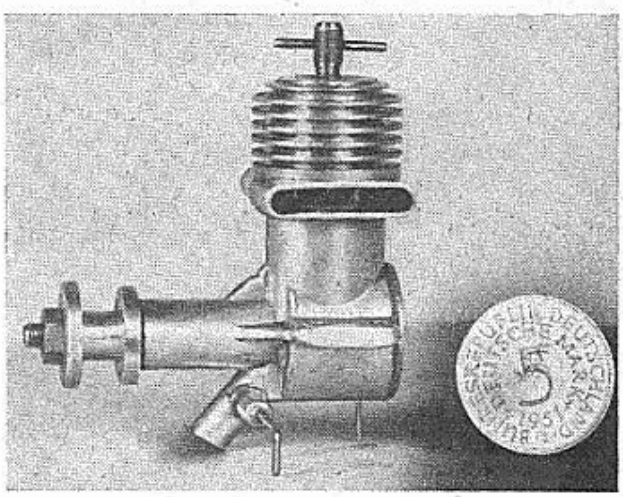
Ugh ! !

Soviet Zone Engine

Hans Pfiel in Germany sends us the photo reproduced on this page, of a new and unique front rotary "sleeve" valve diesel, manufactured in the East Zone of Germany. Known as the Wilo 2·46, it has already had a number of successes in East Zone events, and boasts quite a high performance.

Weighing 3·7 ounces, it is said to turn up 14,500 revs. with a 9×5 prop on un-doped fuel. The actual intake looks more like a front disc attached to the crank web than a "sleeve" valve, and though we've seen several petrol engines with this induction, this is the first diesel so equipped.

From the U.S.A. we have had the opportunity to study their first 2·5 c.c. motor, the O.K. Cub ·149. Amazingly light, the Cub 14 is a 2·8 ounce (by our scales), well finished job which promises well. Porting arrangements are the O.K. patented system, similar in many ways to that used in the latest Allbons. An analysis of this motor will appear soon. News from the U.S.A. indicates that a diesel version is on the way, also a diesel O.K. 1 c.c. and the already mentioned McCoy ·049 diesel. Sounds like someone is marketing the right fuel over there!



Plane on the Cover.

A 33½ ins. Perfect scale model of BEECRAFT ASSOCIATES INC.

Honey Bee

by Walter E. Mooney

Aero Engineer & modeller for 18 years . . . member Convair Aeromodellers . . . builds all except r/c . . . wife also keen modeller . . . full size power and glider flier.

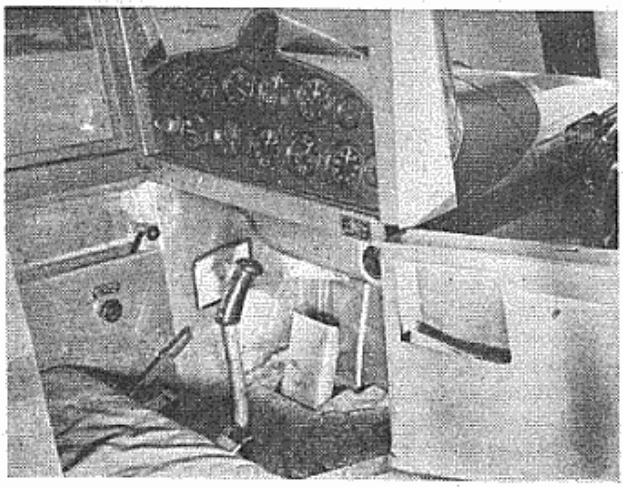
PERHAPS some explanation as to why the model was built and why it has some particular features is in order.

First : we (the author and his wife) spent every Saturday for some thirteen months working on the real thing. Second : it is of such form that straightforward aeromodelling techniques may be used in its construction. Third : its aerodynamic set-up is such as to make a free flight scale possible.

Built to exact scale in all respects including dihedral in the wing, there are some penalties which we felt were worth taking as far as flight is concerned in order to obtain the satisfaction of having an exact scale ship for the judges at the 1952 American Nationals.

Two things could be done by the novice to simplify the trimming problems. The dihedral, at rest, could be increased to one inch at each wing tip and the included angle at the empennage could be increased from 90 to 100 degrees. It should be noted that the dihedral specified is at rest, since with the wing attachment used there is, and "in flight," wing deflection of approximately one half-inch. This way we obtained an exact scale plane for the judging but, a slight amount of dihedral for flying. The dihedral tailplanes also add their bit to spiral stability, but, less fin area and more stabilizer area will make a model which is easier to trim.

Full-size interior detail for exacting builders: below.



The original model has had flights of 90 seconds on a 45 second motor run. It makes beautifully realistic take offs and climbs well with the Frog ·50 c.c. turning only 5,500 r.p.m. It has never been flown under full power because the pilot has always been timid. Flights to date have numbered 55 plus, and the model took third at the Nationals, and tied for fourth, at the Inglewood Flightmasters Third Annual Scale Contest. The model is, in general, very simple to make and should present no difficulties to anyone except a novice at the modelling game. One should note, however, that the model is small and quite strong so the very lightest, firm balsa should be used to keep the weight down.

With a diesel, low powered hops are a cinch. The author feels that hand launches under power are pretty rough, especially if the airplane isn't trimmed. There are more feet of altitude to accelerate through before it hits !

With low power, as low as possible, allow an R.O.G. attempt. The model may just taxi along but it'll indicate any radical turning tendency. Check the gear for a straight roll and then use some thrust offset to correct the turn. Gradually increase the power until the model takes off by itself. By adjusting the thrust line and trim tabs, obtain a gentle left turn under power and a gentle right turn in the glide. *HAPPY LANDINGS !*

A 33½" SPAN FREE FLIGHT FLYING SCALE MODEL FOR 5 C.C. MOTORS.

HONEY BEE

DESIGNED BY

W. E. MOONEY.

4/6

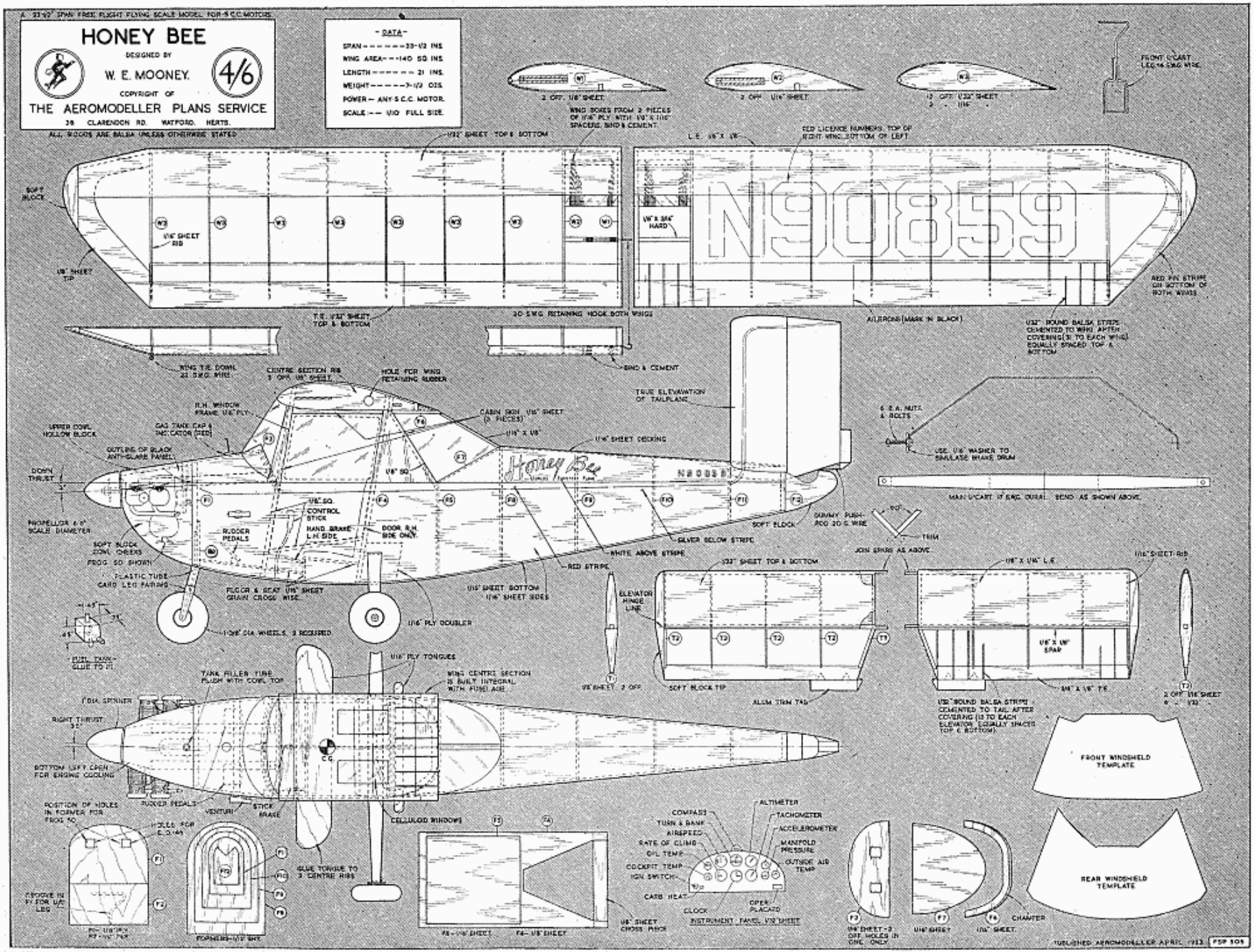
THE AEROMODELLER PLANS SERVICE

39 CLARENDON RD. WATFORD. HERTS.

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

- DATA -

SPAN - - - - - - - 33-1/2 INS.
WING AREA- - - 140 SQ INS.
LENGTH - - - - - - 21 INS.
WEIGHT - - - - - 7-1/2 OZS.
POWER - ANY 5 C.C. MOTOR.
SCALE :- - 1/10 FULL SIZE.

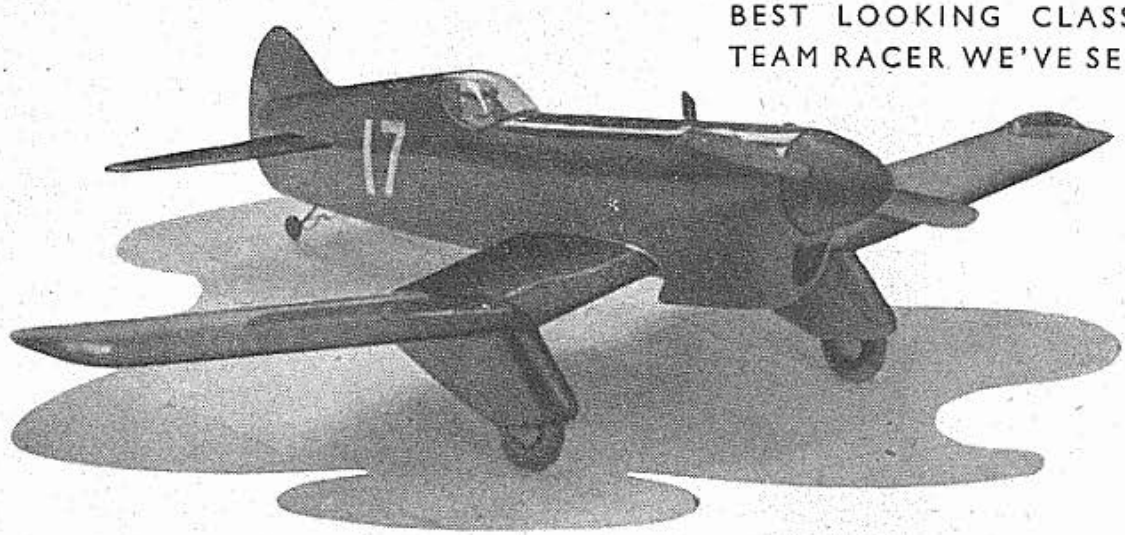


PUBLISHED AEROMODELLER APRIL 1953. FSP 509

Building instructions are issued free with each full size plan available price 4/6 post free from the Aeromodeller Plans Service. This reproduction is to 1/4th scale.

PACEMAKER

BEST LOOKING CLASS "A" TEAM RACER WE'VE SEEN YET

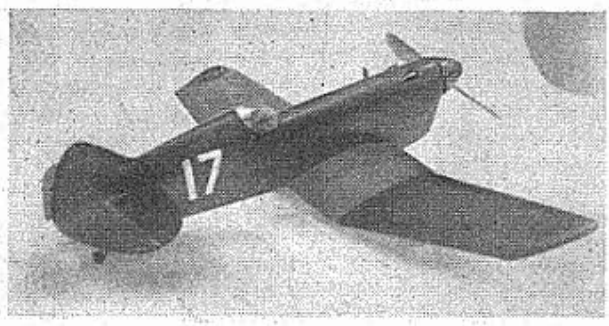


by S. RYMILL

Model Shop Proprietor, aged 28 . . . Member Wavertree M.F.C. . . . modelling for 16 years . . . tries everything except Jetex and jets.

HERE'S an out of the rut team racer with a high contest record, both for appearance and performance. Its Gullwing configuration and trousered undercarriage are departures from the normal team racer design which we welcome as a considerable improvement in realism. As for performance, the top registered speed of Pacemaker is 82 m.p.h., using an E.D. 2·46. This has steadily been speeded up from its original version which started life with a speed of 68 m.p.h.

In exhibitions, the prototype has taken first places at the Bolton and Southport Exhibitions, plus the Championship Trophy at the latter show. It also gained second place at the 1952 *Yorkshire Evening News* Concours d'Elegance. Though designed for the E.D. 2·46 it is easily adapted to any of the 2·5 c.c. engines, and if radial fitting is desired, an additional ply bulkhead can be fitted over shortened engine bearers.



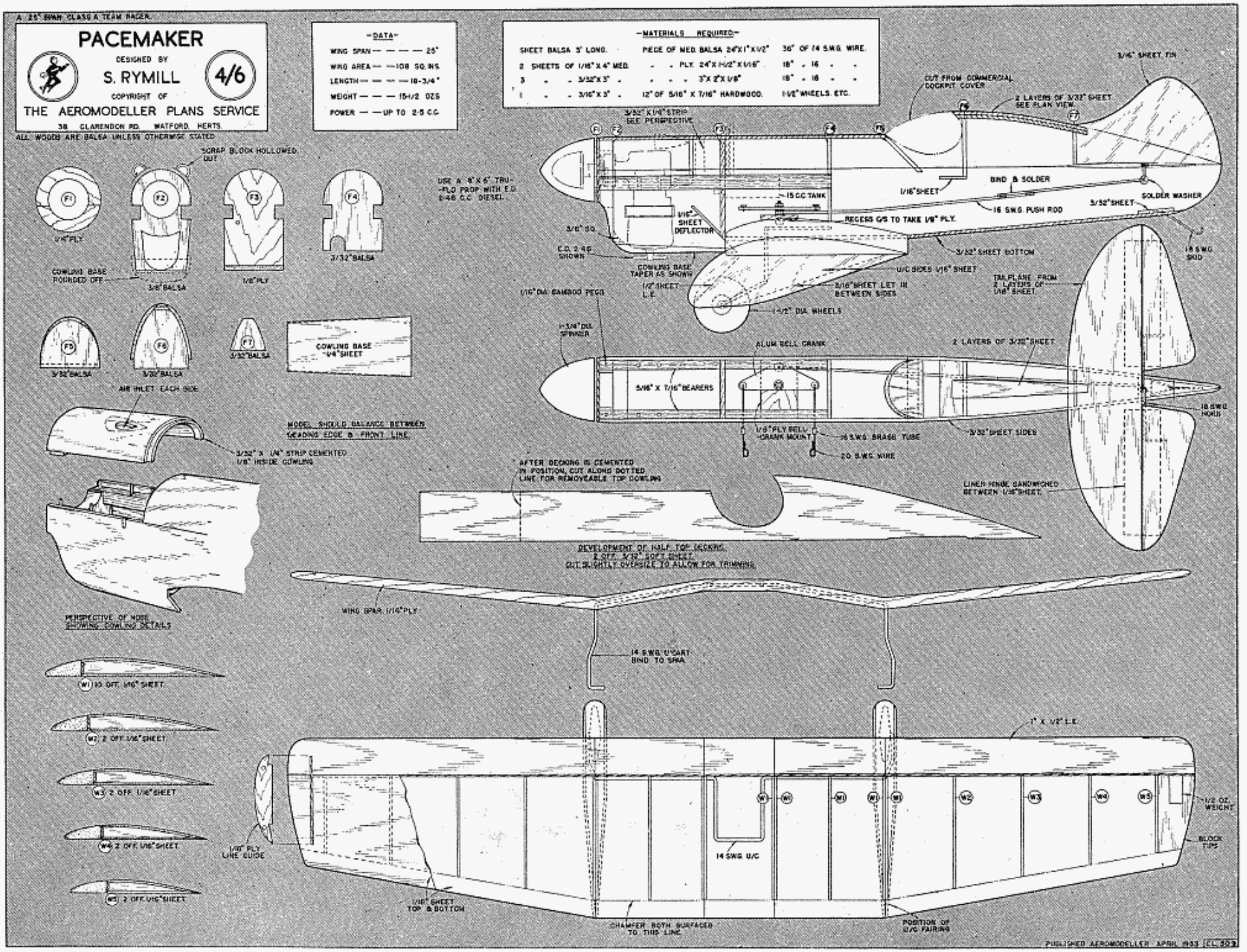
Construction

Bind the 14 s.w.g. undercarriage to the $\frac{1}{16}$ in. ply spar to which is added the leading edge, not forgetting to allow overlap so that the lower wing sheet comes below the spar. Working over the plan, add the lower sheet to the spar in stages then fit ribs, trailing edge, half ounce tip weight and tip blocks, then fit the top sheet before sandpapering and shaping the leading edge. The line guide is then added and the bellcrank assembly fitted to the centre section.

Cut fuselage sides, attach bearers, and whilst drying, make up the tail assembly complete with hinged elevator. Return to fuselage, joining the sides by mounting the engine on bearers, fitting front bulkhead and joining rear end by mounting the tailplane. Attach the wing now. Add remaining bulkheads, tank and fin, before fitting top side sheets and cockpit cover, not forgetting the pilot!

The wheel spats are made with $\frac{1}{16}$ in. sheet sides and block balsa leading edge. It is better if you are able to cover these with silk.

Give the whole model a good sanding, one coat clear dope, then cover with lightweight Modelspan and give three coats of sanding sealer. Rub down with " wet and dry paper " using soap and water, then finish with colour dope to your own scheme. For Concours d'Elegance finish, the prototype model was polished with " Brasso " and " Silvo ", and finished off with a good wax polish. Its prop is an 8 in. × 6 in., when take off will be quite fast and 75 m.p.h. easily attainable without special effort.



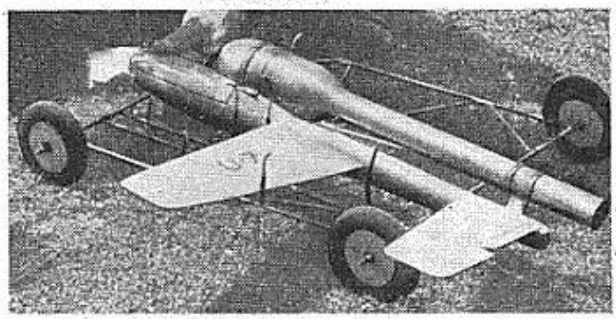
THIS IS A 1/4 SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE PRICE 4/6 POST FREE FROM THE AEROMODELLER PLANS SERVICE

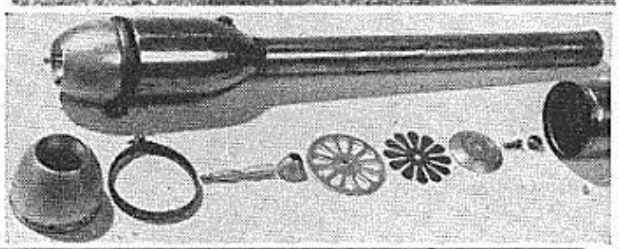
All-yellow assymetrical record holder now has a 161 m.p.h. unofficially timed flight to its credit.

The story of a 152·268 m.p.h.

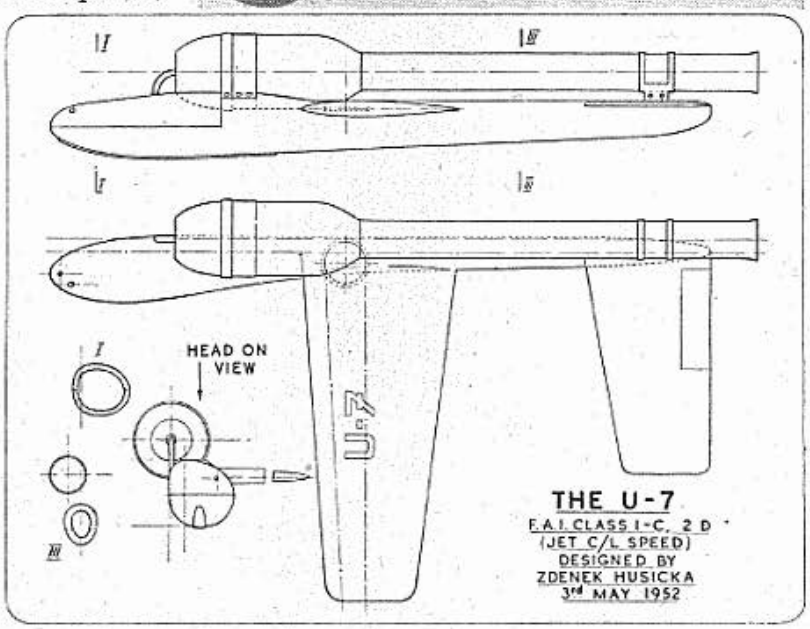
WORLD RECORD

WHEN Zdenik Husicka of Czechoslovakia sets out to break a World's record, it's certainly no half-hearted effort. On the 13th of July last year, he decided to try for the Jet control line absolute speed record, and at the end of the day, in which he made over 40 flights, the official timekeepers retired somewhat groggily to announce a top speed of 152·268 m.p.h. Such a figure can only be achieved by careful preparation and months of research.





High octane petroleum fuel was used for the Letmo MP 250/1952 jet power unit, which was designed by Mrs. K. Vystrcil and Zdenik Husicka, and several interesting experiments were conducted with carburation. At first a main wing tank, feeding a smaller nose tank, was used. High pitched whistling jet exhaust indicated too poor a mixture, and acceleration forces played havoc with the plumbing. A larger nose tank, offset to the inside of the circle proved to be best. Then came dolly troubles. Because of the assymetrical airframe, the tendency for the model to head straight for the pilot after take-off was a trifle disconcerting. After many varied trials, the dolly seen in the picture, top right, with U-7 mounted to one side, nearer the pair of dolly inner wheels, allowed a high ground speed. Take-off was then smooth and fast, but until the speed built up to 100 m.p.h., controllability with the thin wing was not satisfactory. A thicker airfoil solved this problem, and to date, the U-7 has made over 400 flights without damage.



As we go to press, we learn that an official Czech team will compete at the '53 European Championships at Knokke; but this very good news is considerably offset by the report that Husicka lies in hospital with a fractured spine, the result of a ski-ing accident. We are sure that all modellers join us in hoping for his swift and comfortable recovery.

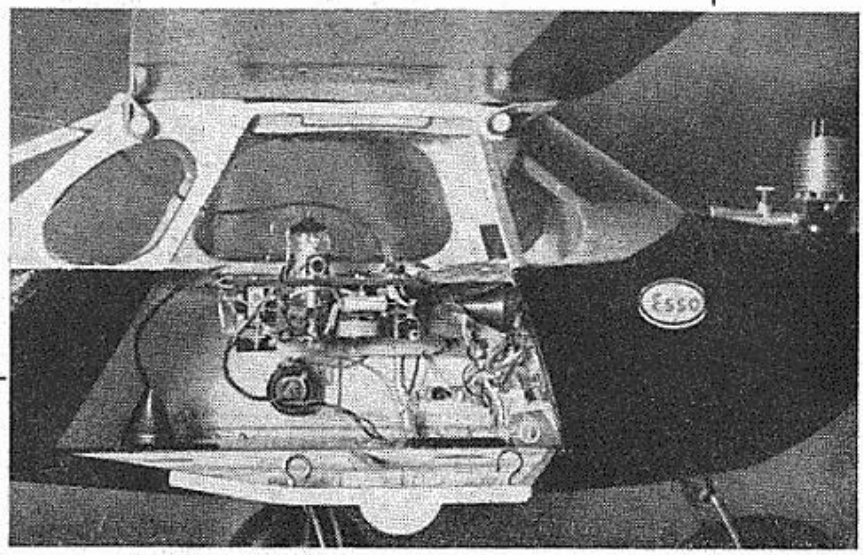
Dimensions: Span, 11·8 ins. Length, 24·2 ins. Wing Area, 49 sq. ins. Tail Area, 27 sq. ins. Flying Weight, 33 ozs.

Jet, Letmo MP 250. Length, 10¼ ins. Combustion Chamber Diameter, 2¼ ins. Exhaust Dia. 1¼ ins. Weight, 7½ ozs. Thrust, 4 lbs.

Especially for the Beginner, Part 35

LIGHTWEIGHT RADIO CONTROL

By VIC SMEED



Radio receiver installation is laid bare in this view of a Veron Skyskooter with access door opened. Suspended by rubber bands, this hard valve set can be reached in a moment by releasing two door catches.

THIS month we are taking a rest from the raw tyro or inexperienced modeller, and writing for the average modeller who keeps thinking about trying a radio job and who then becomes, like us, a beginner in this aspect of modelling. Let us say straightaway that it is not half as frightening as it sounds, and it is certainly a load of fun.

Radio control is actually a bit of a misnomer. At the present stage, it is almost accurate to say that most operators can only interfere with the flight of a free-flight model (" Is that model under radio, or is it just naturally unstable?") However, it isn't quite as bad as that—our first radio flight landed 20 yards away instead of a probable 920—but what must be knocked on the head is the idea often fondly cherished that one can arm oneself with a box of gadgets and walk out on the field expecting to have rudder, elevator, aileron, and engine control, at the very least. Control-line daddy Jim Walker, who flies three stunt jobs single handed at the same time, confessed that he hadn't a clue when trying to fly a radio job with both rudder and elevator control! The first requirement for a beginner is an ultra-stable free-flight model which can get itself out of a sticky position ; then, when in doubt—and most people have no idea which control is coming up next—the model can be left in neutral and allowed to sort itself out.

Rudder is plenty of control to start with. With it you can do left turns, right turns, left spirals, right spirals, loops, rolls off the top (Immelmans), and even a " falling leaf ". When you can cope with this lot on demand, and do them perfectly, followed by a spot landing, in any reasonable weather, well, you'll win every radio contest, just about, and you can turn your mind to motor speed control, which is the next step and is of much more use than elevator control.

The beginner's radio model has to have two main requirements (i) super stability, (ii) real ruggedness. Nothing else much matters provided the set is accessible and the climb is not too fast. An expert's model appears very little different, but usually uses a tricycle undercarriage, rather less dihedral, washed-out tips, and a higher wing-loading. A lot of the time, being an expert in the R/C world (leaving aside technical radio knowledge) means being able to fly the model and knowing exactly what it will do, and when. This counts far more than knowing which wire to twiddle with, especially if you have a reliable set.

We had two radio outfits for a couple of years before we got enough confidence to try a model. Every time enthusiasm boiled up we'd see radio bods sitting on the field all day waving to each other, and back into store would go our sets. Tales of weird behaviour of valves, not to mention short life, depressed us, and when we did get around to using a set we were astonished at how relatively easy it all seemed. Valves, we found, would last eighteen months and more with proper handling. Not exceeding a standing current of 1·5 milliamps constitutes " proper handling "! Our last objection—the cost of ancillary equipment required, like milliammeters and voltmeters and things—was removed by the simple gadget described in the November AEROMODELLER, which acts as volt meter, etc., and uses a milliammeter which can be bought for 7s. 6d. A volt meter (or this gadget) is definitely an essential—it saves hours in checking the equipment when something odd shows up.

Don't let this "checking the equipment" alarm you. Our knowledge of radio could be printed in one inch letters on a postage stamp. If the batteries seem serviceable and all wiring joints are sound, we twiddle a bit with a milliammeter plugged in and, if nothing happens, call in an expert or return the set to the manufacturers for check. A moment's thought often provides the answer; for example, our set was working well, but two hours later we switched on and the rudder came on, which seemed queer. After a minute or two of bafflement, we reasoned that the standing current must have fallen, allowing the relay to close, so we screwed up the resistance effort (the potentiometer) and lo! The rudder clicked into neutral. If the XFG–1 valve is shaded with the hand, it can be seen glowing blue when switched on, and the light goes out when the transmitter is keyed. This is our first check if all is not well. If it won't glow, or dim when required, we touch a few wires and lightly tap the set. If it dims but nothing happens, we gaze at the relay. If, after five minutes, no joy can be obtained by any of our cautious prodding, we take a free flight job out of the box and leave the radio for a check back in the work-shop.

When back in the 30's petrol engines appeared on the scene we thought we'd never get the hang of the ignition circuit, but, of course, after wiring one up a couple of times it became second nature. Much the same thing is happening with the installation of a radio receiver—we are now getting a glimmering of where the wires go. What put us on the track was switching over to colour-coded wires (red, blue, black and yellow) and we unreservedly recommend this system to anyone floundering around as we were. The diagrams with this article are our own patent sketches for the internal wiring, and with these in front of us we can romp through a hook up in no time. Many sets are supplied with a three or four pin plug, complete with colour-coded wires, attached to the receiver, and it is a simple matter to check that the colours continue through the wiring socket to the plug. Draw the socket and mark which colours have to run to which hole, and the whole thing becomes a piece of cake. All sets should be fitted with a plug when they leave the works—are you listening, manufacturers?—and while on the subject, we have yet to see installation instructions which are adequate or even comprehensible to any but those purchasers with a fair amount of radio knowledge; since the market for R/C outfits lies mainly among those who are interested in models but not very much in why a radio works, it is high time that more attention was paid to real ease of installation and operation, together with simple non-technical instructions and a guide to trouble-shooting.

The following points are universal for all XFG–1 installations. Batteries should be as fresh as possible, and if you can't find out when the weekly battery delivery takes place in your district, buy HT batteries from a big chemists or hardware shop which sells a good many of the type you want. For light-weight sets, two 22½ V. deaf-aid type are usually required (HT) plus 1 4½ V. flat battery (actuator) and a 1½ V. round one (LT). Bind them together to form a compact power pack (cellophane tape), with one of the 22½ jobs upside down. The reason for the upside down business is that the two HT batteries have to be connected at one end (× to —) so that you get 45 V. total. All the negatives on the batteries have a common lead (weird, this electricity stuff) which is connected at the other end to one of the tags on the plug socket. A black wire should be used for this. The 4½ V. battery positive is connected by a blue wire, via a switch to one of the connections on the actuator, and the other actuator connection (white or blue) runs to either another tag on the socket or the set itself, where indicated, depending on the set. If connected directly to the set a small plug is an advantage, as it assists in removing the set from the model.

The LT positive (yellow wire) simply runs to one of the socket tags via a second switch. HT positive (red) goes first to the potentiometer (the resistance gadget), thence to a shorting plug, and thence to the remaining socket tag. The idea of the shorting plug is that it can be pulled out to insert the milliammeter, and the plug itself is merely a sort of little bridge over a gap in the wiring. The HT lead provides most of the control over the set. Wiring is completed by attaching the aerial (length as directed) to the indicated point on the set: the aerial can be of any colour, but red is customary. Now, when you, or a stranger with radio knowledge, look at the wiring, each part can be identified at a glance—a big advantage.

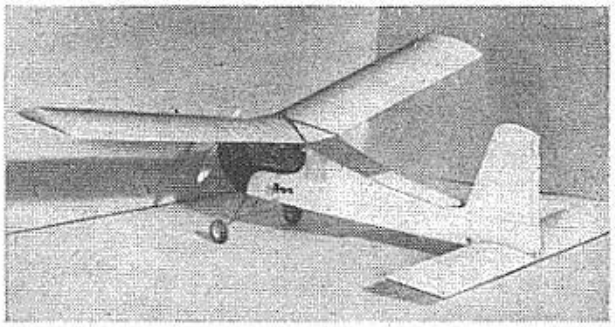
What actually happens in the set is that when everything is switched on, a standing current exists which is strong enough to hold the relay open by a sort of magnetism idea. The relay arm is sprung and is held open against the influence of the spring. When the transmitter is keyed, for some reason or other (something to do with the valve, we think), the standing current falls and the magnetism business is reduced so that the relay arm springs clear. Well, not quite clear, since it jumps back on to another contact, touching which closes the actuator circuit, so that the actuator operates. Releasing the transmitter key allows the standing current to rise again and the relay arm is once more drawn away from the actuator contact. Now, the standing current must be strong enough to overcome the spring of the relay arm, but if it is too strong it won't drop far enough to allow the spring to work (besides shortening the valve life). The current can be varied by altering the HT input strength, which is what the potentiometer is for. To adjust it, the shorting plug is removed (a good scheme is to tie this to the model so that it doesn't get lost) and the milliammeter plugged in its place. Twiddling

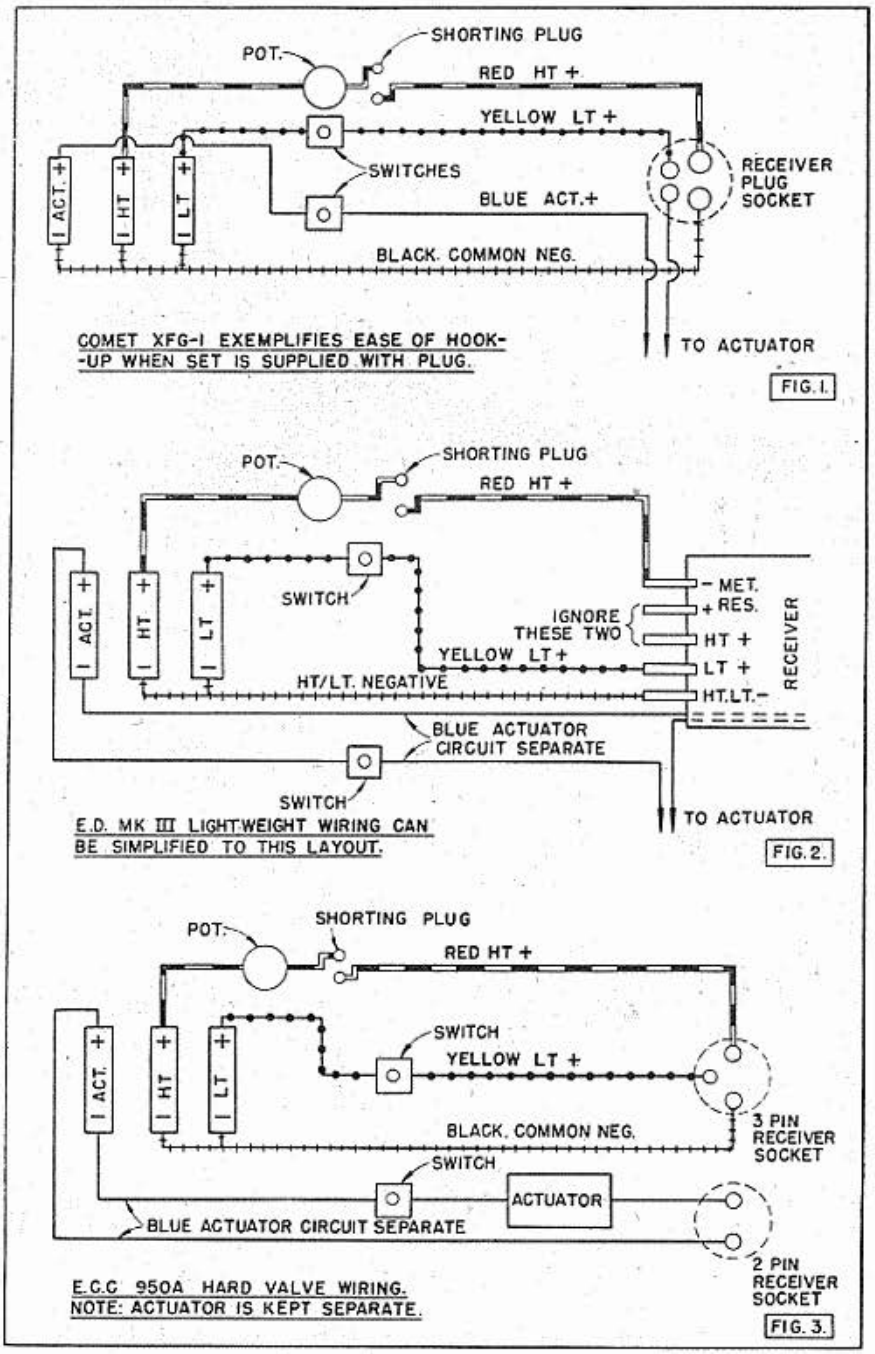
the resistance causes the meter needle to wave about, and it can be set to give the required standing current usually 1·5 milliamps. When the transmitter is keyed, the amount of current drop can be seen on the meter: it should normally be not less than ·5 milliamps. Once this is all working right, the meter can be withdrawn and the shorting plug replaced.

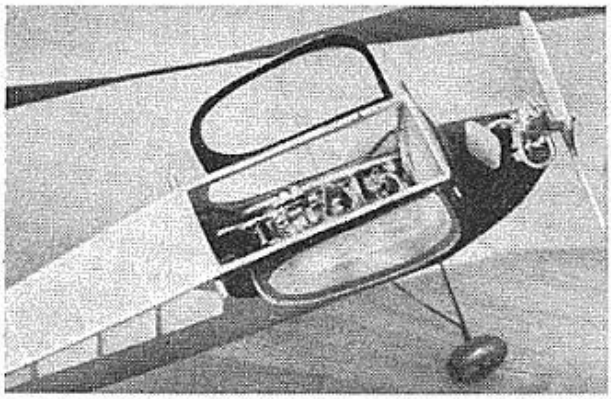
If the set requires tuning, whatever gadget is provided for this should be fitted with two or three inches of neoprene or rubber tube so that it can be adjusted without getting the hand near the set. With the meter plugged in as before, turn the tuner, with the transmitter on until maximum current drop is occurring, when the set should be in tune. Don't forget to replace the shorting plug.

The chief trouble encountered when novices buy sets is that the relay points require adjusting. This should definitely be done before the sets leave the factory (still there, manufacturers ?) and explicit directions should be contained in the instructions in case resetting is necessary. It isn't a difficult business, once you know what you are trying to do and what limit you should work to, but for the first setting it is best to get an expert to do it for you. If there are no modelling experts in your district, take the whole thing along to a good radio repair shop when they are not too busy. They are usually quite interested and should certainly be able to set a relay for you. A word of warning, though—don't let them tell you that your set can't possibly work. All normal radio men are horrified at the simplicity of our model receivers. We don't yet think they're all that simple but they certainly don't seem so difficult now as they did at one time. If you've got this far, perhaps you might agree ?

A scaled up Tomboy ? Well, what could be a better subject for a safe and sure radio control design. Now introduced to A.P.S., the Electra is the perfect beginners' approach to R/C, and this article on radio installation should be used in conjunction with the design.





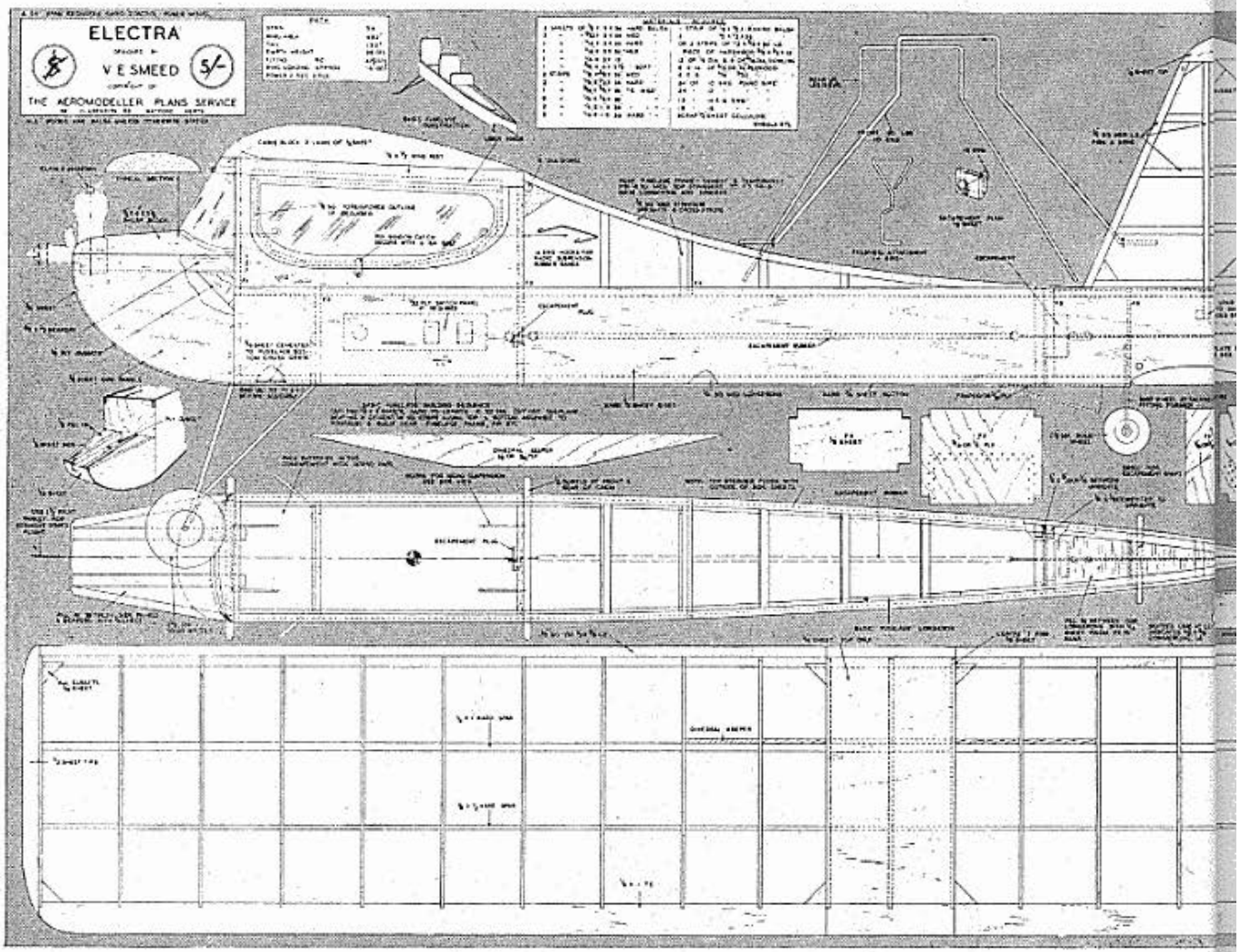


Electra was designed for simplicity, stability and accessibility.

Ideal for your first Radio Cor

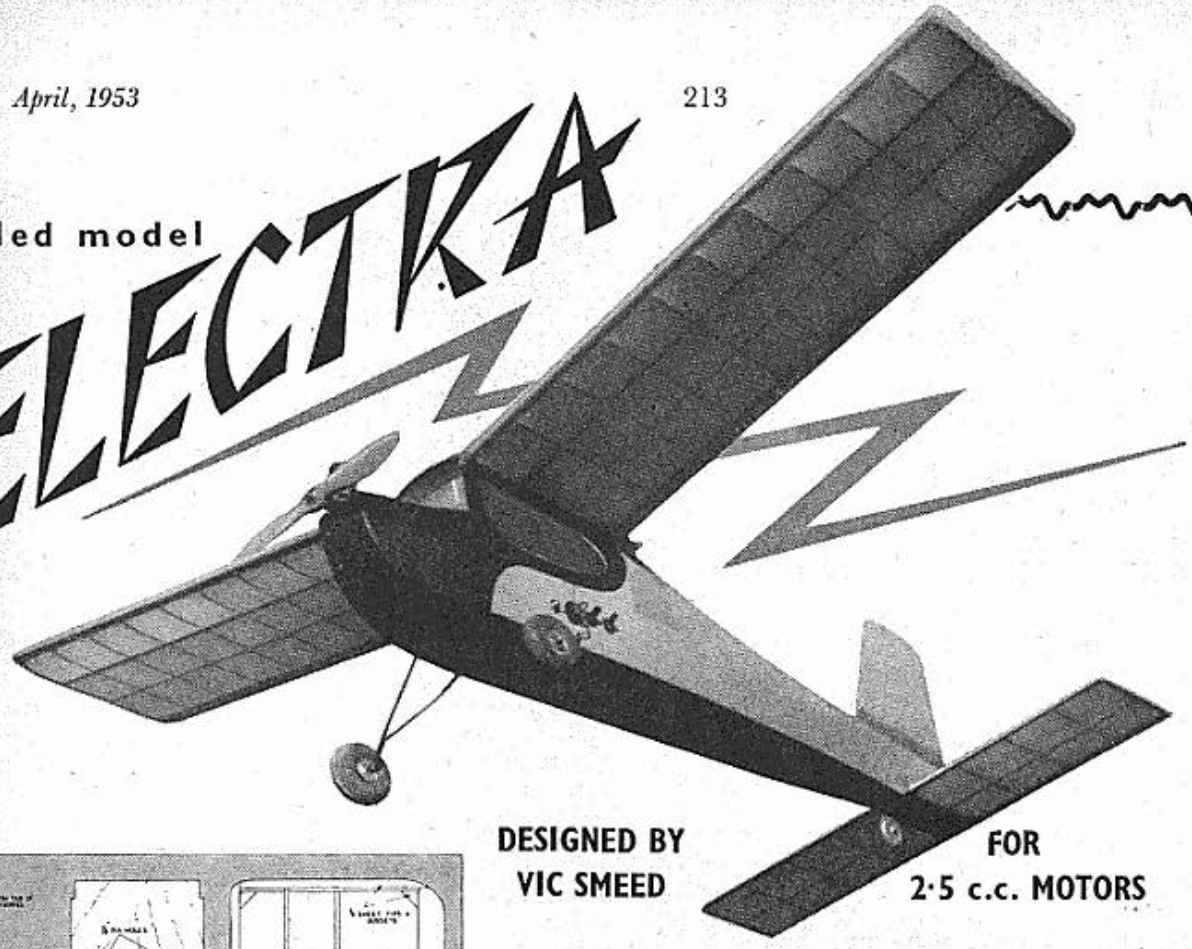
RADIO enthusiasts looking for the ideal model should pass on quickly from this page, since this job is designed strictly for the radio tyro and far too stable for experts. In producing so stable a model, some penalty must be paid, and the chief disadvantage with this model is lack of smoothness when leaving turns. The dihedral is rather more than the expert would use, and it tends to jerk the aeroplane straight when the rudder is neutralised. However, this is not a very serious snag for ordinary sport flying and does, if anything, make learning to fly rather easier.

Other features of the design besides its stability are roominess and accessibility—helpful when wiring up for the first time—and extra-rugged construction. The original has been spiralled into the ground (due to a battery fault) with only very minor superficial damage. The building procedure is, moreover, so very simple that radio experts with little modelling experience should have no difficulty in producing a flyable model. If you are a novice with a 2·5 c.c. motor, looking for a tough sport job, "Electra" without radio will give you several seasons' flying with a minimum of maintenance and repair work.

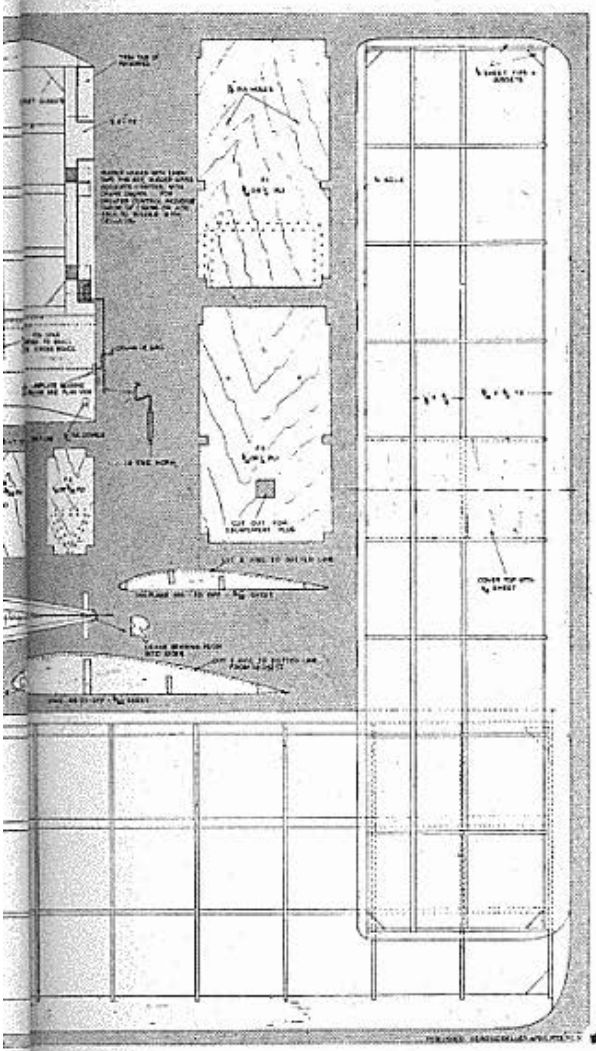


trolled model

ELECTRA



DESIGNED BY VIC SMEED **FOR 2·5 c.c. MOTORS**



With radio and batteries installed the final weight should be 47–48 ozs., and the model should balance on the rear spar or fractionally behind it. Glide test on a slight slope—in calm air it is necessary to run and launch the model hard, ensuring that the nose points down. Provided the glide is reasonable, power flights can follow two hand-glides, and should use the radio. Straight flight under power and on the glide is desirable, and a small amount of right sidethrust should be built in. Run the motor and check the radio, then launch as before. Do not key the transmitter until a safe height has been reached, and then do not hold a turn on for more than 90°. Generally, " Electra " should lose height to the right and gain to the left, although a prolonged turn will eventually lose height either way. The main thing is to avoid the feeling that you *have* to control the model—if built reasonably accurately and somewhere near trim it will be quite happy flying along without you panicking. The amount of rudder shown on the plan is adequate for control but not too much to get you in trouble ; it can be increased as your experience grows. Twice the amount shown produces quite a sharp turn and is as much as would ever be needed. Remember, neutralising is enough to stop any normal turn, but if you have let a spiral dive build up, opposite rudder will stop it ; leave yourself plenty of height and you have nothing to worry about.

Full size plans for Electra are available price 5/– post free from the Aeromodeller Plans Service.

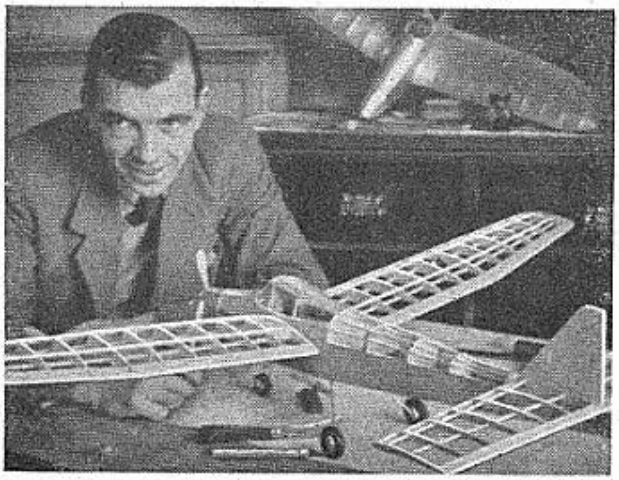
CLIPPER CLASS

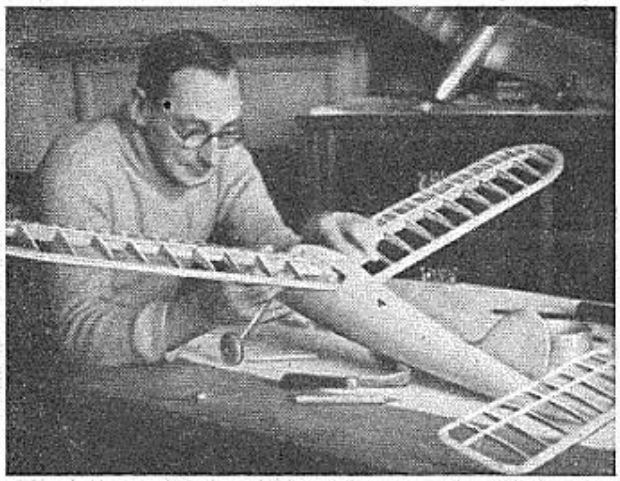
A new contest for point-fives only.

by Robbie Burns (Stewarton M.A.C.)

AT the present time, there is no power duration class rule for half c.c. engines, and there is a real need to stop long flights and keep duration models within bounds. Here is a solution to both of these questions. It may not appeal to many of the hardened power duration brigade, but after more than a season I can assure readers that there is a lot in these models. However, they do appeal more directly at first to sports model fans, as they fly in a manner nearer to that class of model, but you soon find out that there is a lot more to it than that. If you start competing with others in the same class you find that you can persuade a lot of extra duration out of your model by attention to fuel consumption, using just the right propeller and needle setting, without sacrificing climb.

However, that is going at things the wrong way round. First I ought to explain the rules, and the reasons for them. The idea grew from sports models, which might almost be defined as " any power model not capable of vertical climb ". We noticed that you could put in a great many flights on average days without the model going more than a short distance away, if you were flying a rather low-powered sports type and it kept down below 200 feet. On the same day, models going above that height were wafted away on thermals or blown much further by wind, and it was not uncommon for a junior member, flying a " Tomboy " with a very old engine, to get in 20 flights; meantime, the owners of very highly powered competition models put in three flights and many miles across country, plus long searches.



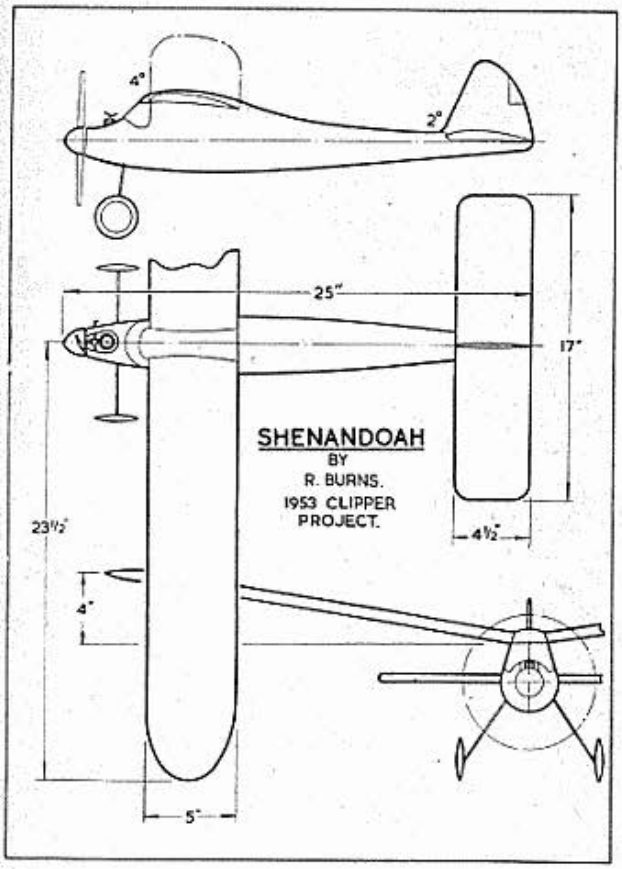


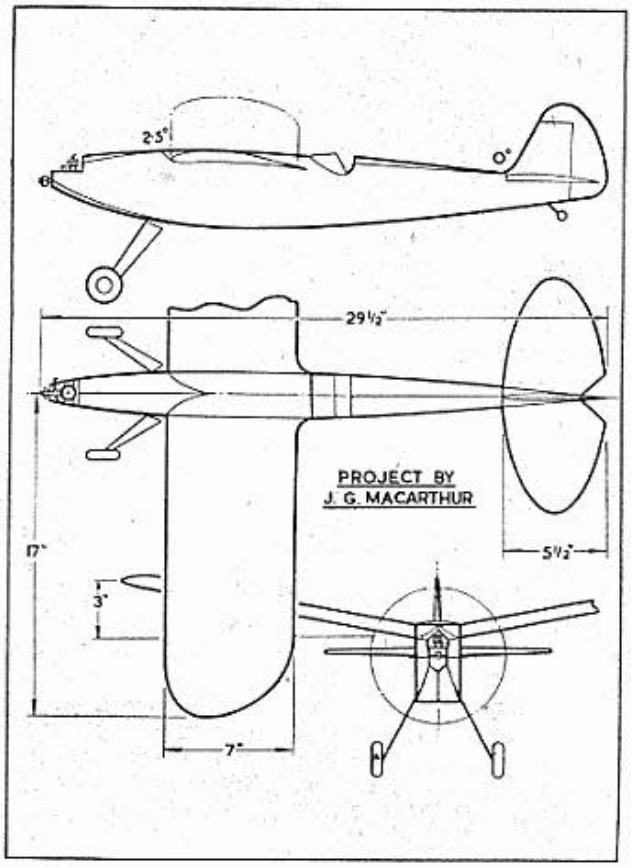
The only thing wrong with sports flying is the lack of " edge " which competition gives. Events based on precision rules do not supply this, as it arises from getting the utmost out of a model by flying it to the limits of its powers. Yet when you go for high performance in the form required by the usual power rules (either high duration on a short power run or a ratio of duration to power run) the sports model rapidly turns into a disguised pylon job. So there had to be a new idea.

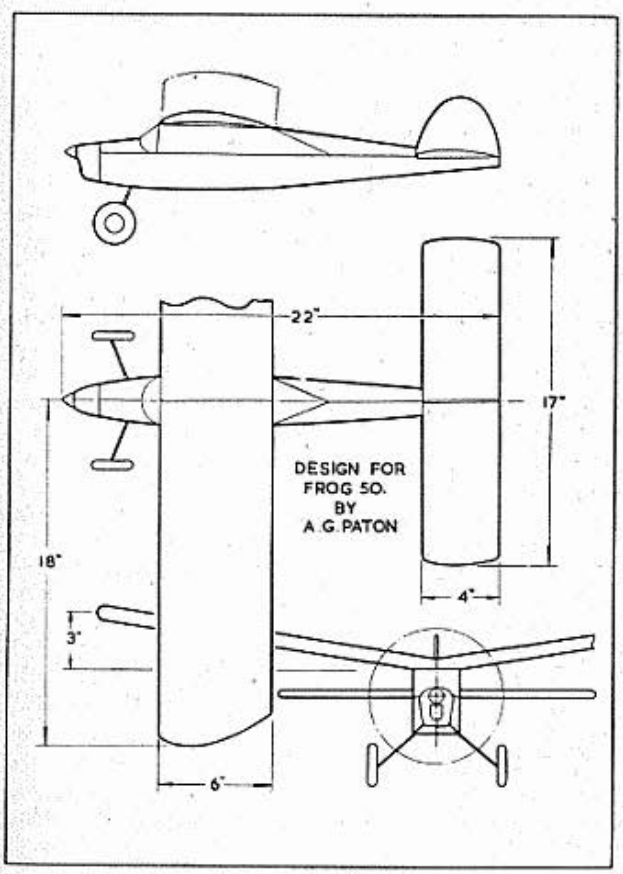
There followed a period of thought, and one day when flying several small sports jobs I realised how a practice had grown up of using short lengths of thick fuel pipe as tanks, serving to limit power runs. Of the various models present, some with hot engines running all out were using this fuel to get up high in short times, but others with more economical engines were taking longer to burn up the fuel, were climbing slower, but were on average turning in about the same durations, where the models were roughly equal in weight and size. So came the idea of models all the same size. heavy enough to make vertical climb impossible with the strongest engine allowed, and with a standard fuel supply which could be used as you like; either fast, and fast climbing or spread thinner with no climb to speak of.

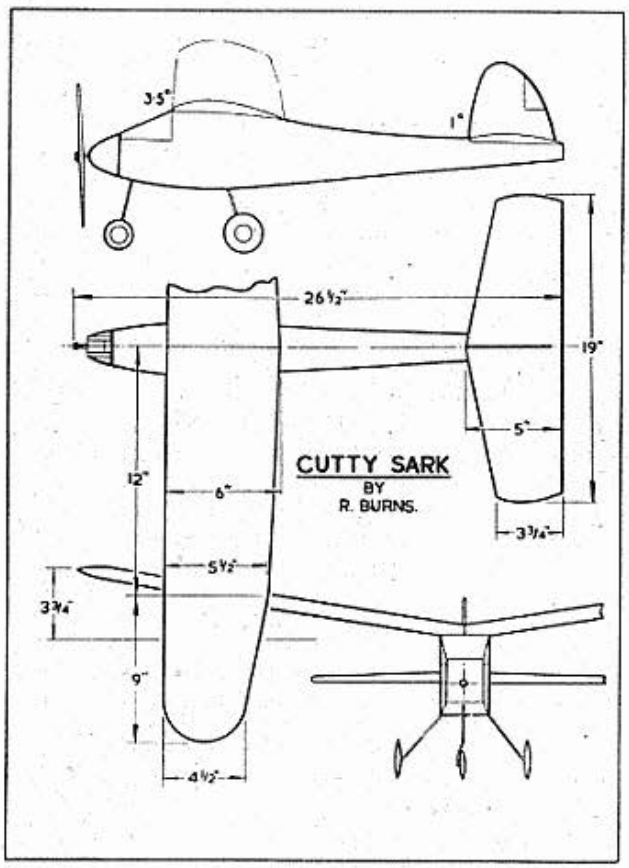
FOUR CLIPPERS: Shenandoah, Bob Burns' own project for 1953, is designed for the Dart, is 47 ins. span, 225 sq. ins. wing area, with streamlined fuselage of stringer construction. MacArthur's project, also for the Dart, but only 34 ins. span. Low aspect ratio gives 218 sq. ins. wing. Box section fuselage measures 4 × 2½ ins. Paton's model for the Frog 50 is compact. Span is 36 ins., area 215 sq. ins. Fuselage has 1/16 sides from sheet, with triangular top section. Cutty Sark, Bob Burns' other model, has an Allbon Dart, RAF 32 wing section, 1/16 sheet sides and attractive trike undercarriage.

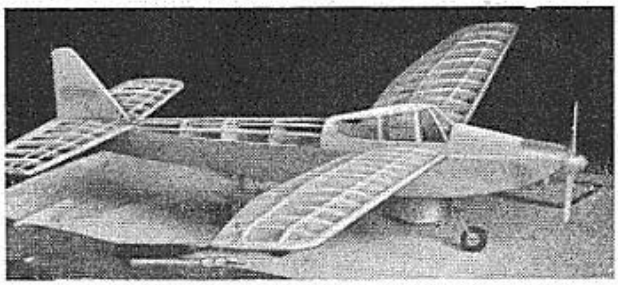
Top: Author Robbie Burns attends to his "Shenandoah", which weighs only 7 ozs., needing 1 oz. of ballast to meet the rules. Left: Bob Templeton and his semi-scale Navion Clipper, which awaits covering.


4°
2°
25"
17"
23½"
4½"
4"
5"
SHENANDOAH
BY
R. BURNS.
1953 CLIPPER
PROJECT.

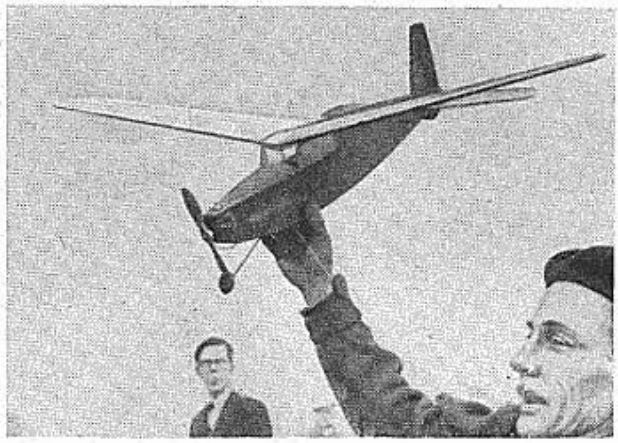

2·5°
0°
29½"
17"
3"
7"
5½"
PROJECT BY
J. G. MACARTHUR


22"
17"
18"
3"
6"
4"
DESIGN FOR
FROG 50.
BY
A. G. PATON


3·5°
1°
26½"
19"
5"
12"
6"
5½"
3¾"
9"
4½"
3¾"
CUTTY SARK
BY
R. BURNS.



Side view of Bob Templeton's semi-Navion shows simple but sturdy structure. At right, radio flier Sid Allen displays his converted Keil Kraft Gipsy Wakefield, which meets the Clipper specification, fitted here with an Allbon Dart.



The final rules are :—

(1) Engines to be any ½ c.c. (including the Dart) and fuel to be contained in a 4-inch length of 4 mm. bore fuel tube, which may be joined to the engine by a short length of smaller tube, as small and short as possible. Topping up before launch is allowed either by way of a detachable header tank or otherwise.

(2) Models to be over 8 ounces weight all up, to have total horizontal surfaces of Wakefield size, *i.e.* from 264 to 294 sq. ins., and fuselage cross sections of 10 sq. ins. or more. A fixed undercarriage to be fitted with wheels exceeding 4 ins. for the total diameter of all wheels fitted (say 2 of 2 ins., or 3 of 1½ ins. in a tricycle, etc.).

(3) Competitions to be for duration, with no limit to engine run other than from fuel supply.

We have been flying these models now for some months and the general verdict is very favourable. They are small, cheap, extremely portable, and have strength enough to survive hundreds of flights with little damage. They have an air of " rightness " about them, and you can get lots of fun just playing about with them. They certainly cut out as much of the trouble of long flights and searching for lost models as it is possible to cut out.

Yet with all this, it is not easy to get the utmost out of them. You can obtain 75 per cent. of the possible duration almost without trying if you use a propeller a little bigger than the one which runs your engine flat out, but hitting the right combination of oversize propeller, hot fuel and model trim is far from easy. Every change in one alters the other two as well.

In addition some of us have detachable engine units allowing substitution of another engine, and as a result a complete change in the model's behaviour, so you will see that we can hardly be said to have come to any final conclusions about the best design layout. Some of the models seen so far have been sketched and small G.A. drawings are given here, but the chances are that by next season we shall be using streamlined models, to eke out the power to the very utmost. In fact, you have to PERSUADE the duration out of these models, so every little helps.

We have found that there is ample weight for a strong aircraft. After all, rubber-driven Wakefields can be built very strongly with 5 ounce airframes, including the propeller unit. Take away this, and half the fuselage, and some of the fin area, and substitute our fixed undercart and ½ c.c. engine and the result would only weigh 6 ounces or so, so there is 2 ounces going spare for extra strength. So far we use a very little of this in the wings and take the rest out in sheet balsa fuselages, and the models fly out hundreds of flights with little damage. I have put in 27 flights in one evening, for example. I think the record is around 60 in a week. The freedom from repairs is a very attractive point indeed.

Average performance is not high as yet, around 2 minutes is about as good as you generally get, with occasional 2½ minute flights. These flights consist of a sports type climb at about 25° or so, to 150 feet or more, according to how you fly them, and after that the model goes into a Wakefield type glide, settling gently down, and since there is a good undercarriage, a high proportion of the landings are good and end up sitting on the wheels the right way up. You feel during the glide that the slightest thermal would waft the whole job away, but as the model is below the height where most thermals seem to work, there are few actual thermal flights.

Of commercial designs, few fit the rules. Cyril Shaw's " Envoy " comes closest, being on the low limit for wing area. A good many of our models have been " bashed up " by taking an old Wakefield wing and tail and building a sheet balsa fuselage, but as you can see, some people who are fond of team racers are owners of Clippers with team racing lines, while others with their own opinions are off on different lines. One of the best is a 40-inch span constant chord wing from an old Wakefield, with a squared up pylon fuselage. It has the only " lost O.O.S." so far to its credit, out of several hundreds of flights made by Clippers this year and the idea of using an 8 × 4 prop on the Dart to get a very long power run certainly worked well.

If your club wants something new, to fit ½ c.c. engines, and that with a bit more bite than sports flying, try this idea. You'll like it.

A PERFECT PAIR OF SIMPLE JETEX CONTEST DESIGNS WITH WINNING PERFORMANCE . . .

ARROW 50 & 100

by Ian Dowsett

Aged 20 . . . Serving in the R.A.F. . . . Member West Middlesex Club . . . In British Wakefield team 1951 . . . Main interest is in Wakefields . . . Other hobbies, Athletics and Table Tennis.

HERE'S a quickie for your Jetex, whether it be a " 50 " or a " 100 ". Ian Dowsett, whose connections with Jetex activities have already gained renown, designed this pair of models for contest work in the 1951/52 season—not without success. The Arrow 100 gained the following places :—

1st, R.A.F. Championship, 1951, with 2 flight total of 7 mins. 47 secs., all on a 12 second power run.

1st, Southern Counties Rally, 1951, with a 2 flight ratios of 13 : 1 and 8 : 1.

Best flight to date with this model is 18 minutes o.o.s., a good figure for any size of model, let alone this rather small job.

The baby version, for the Jetex 50, has the amazingly short building time of 3 hours, Ian Dowsett tells us, and its performance is parallel to its bigger brother. Full size plans are printed overleaf so why not pull out the board and try this one for your Jetex unit. The plans for the 100 Arrow can be obtained in the usual way through Aeromodeller Plans Service, price 3/– post free.

Construction

Since the models are similar in construction, the same building assembly applies to each of them, and it is best to start with the fuselage. Cut the side view from 1/32 in. sheet and add the centre lamination for the pylon mounting. When this is set, remove from the plan and cut out the top elevations of the fuselage, then fit these on to the side keel. Small formers of triangular shape are then added and the respective mounting clips fitted in the correct position, screwed into $\frac{1}{8}$ sq. blocks.

The sheet fin is then cut out and cemented in place, whilst sundry pins for wing retaining and dethermaliser action can now be fitted and the whole fuselage covered in lightweight Modelspan and given a couple of coats of dope.

The wing and tailplane structures are very conventional and need little explanation. The wings should be built in one piece, flat, on to the building board, and then cracked up in stages for the dihedral angles. Care should be taken that the flat plate tailplane is covered without uneven tension and is not allowed to warp out of true.

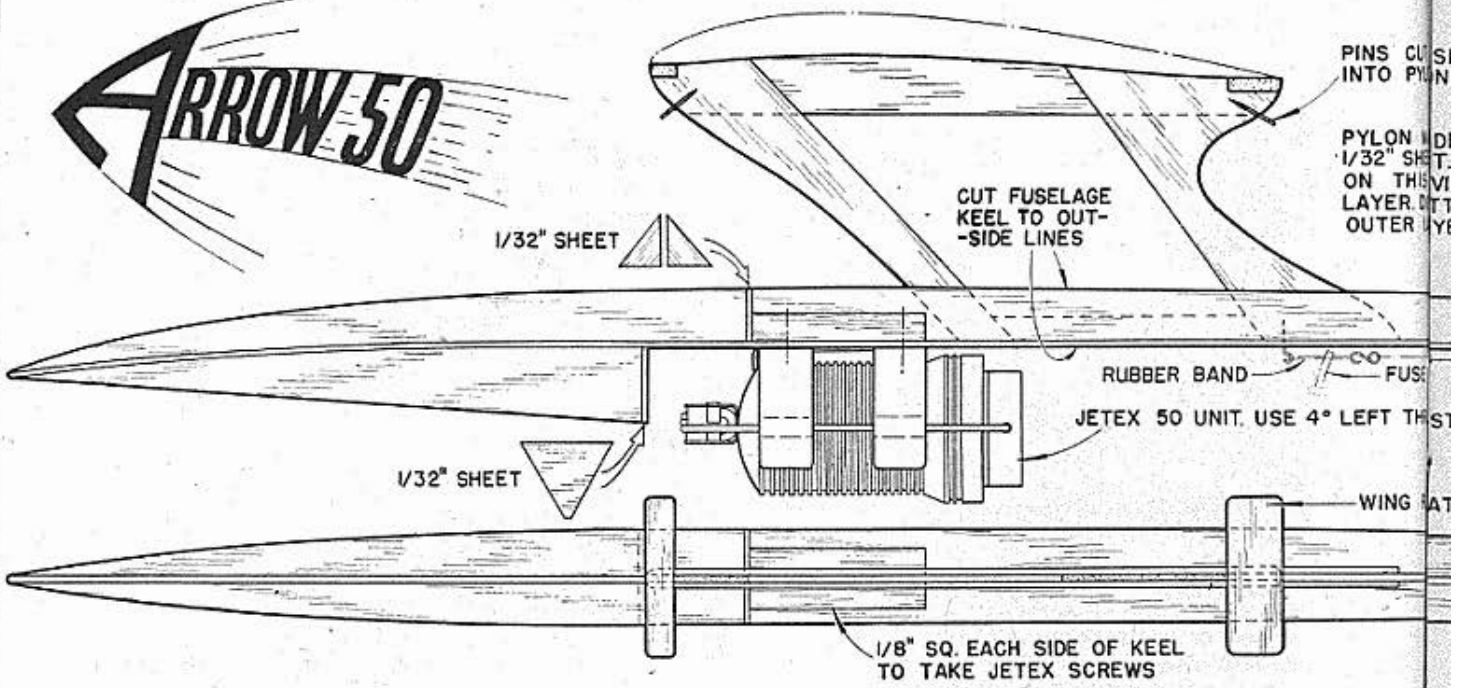
The tail is retained in place by an elastic band passing through the hole at the extremity of the fuselage and hooked on to the underneath of the leading edge. This will naturally pull the tail down to the " tip-down " dethermaliser position, and to keep the tailplane in its flying attitude, a length of thread is tied to the leading edge hook and this is pulled forward by an elastic band to the hooks underneath the fuselage. This elastic band is burned through by the d/t fuse and so allows the tail to tip down.

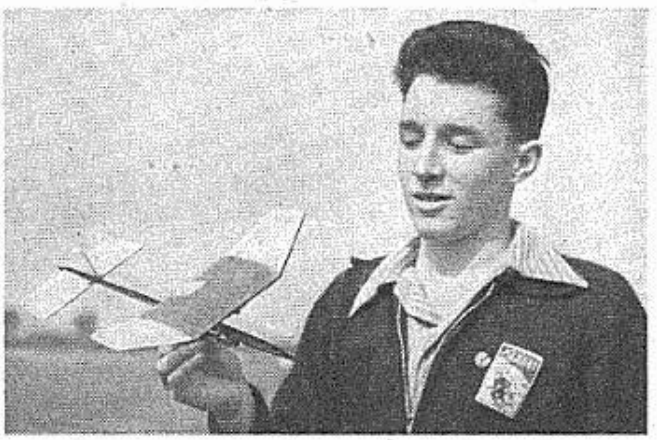
Flying the " Arrow " is simplicity itself. 8° port sidethrust was used for 100, & 4° for 50 prototypes and this was combined with offset rudder against the motor side thrust. The result is a dead straight climb under power and a nice right hand glide off the top. Test glide on a calm day, into wind, and over long grass, since it should be remembered that this is an ultra light-weight job. All trimming should be made to the tailplane and all test glides with *empty* Jetex units.

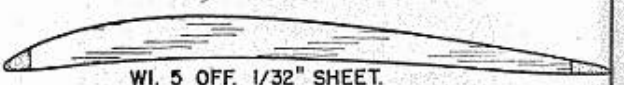
Materials List :—

1 Sheet $\frac{1}{32} \times 3 \times 18$	1 Sheet lightweight Modelspan
1 Strip $\frac{1}{8} \times \frac{1}{8} \times 18$	1 oz. bottle dope
1 Strip $\frac{3}{8} \times \frac{3}{32} \times 18$	1 tube cement
1 Strip $\frac{1}{4} \times \frac{1}{16} \times 18$	1 Jetex 50
1 Strip $\frac{1}{16} \times \frac{1}{16} \times 36$	

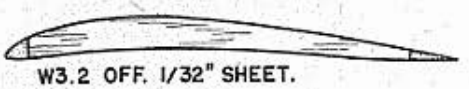
ARROW 50


PINS CU
INTO PY
PYLON
1/32" SH
ON THI
LAYER
OUTER
CUT FUSELAGE KEEL TO OUT--SIDE LINES
1/32" SHEET
RUBBER BAND
FUS
JETEX 50 UNIT. USE 4° LEFT TH
1/32" SHEET
WING
1/8" SQ. EACH SIDE OF KEEL TO TAKE JETEX SCREWS




WI. 5 OFF. 1/32" SHEET.


W2. 2 OFF. 1/32" SHEET.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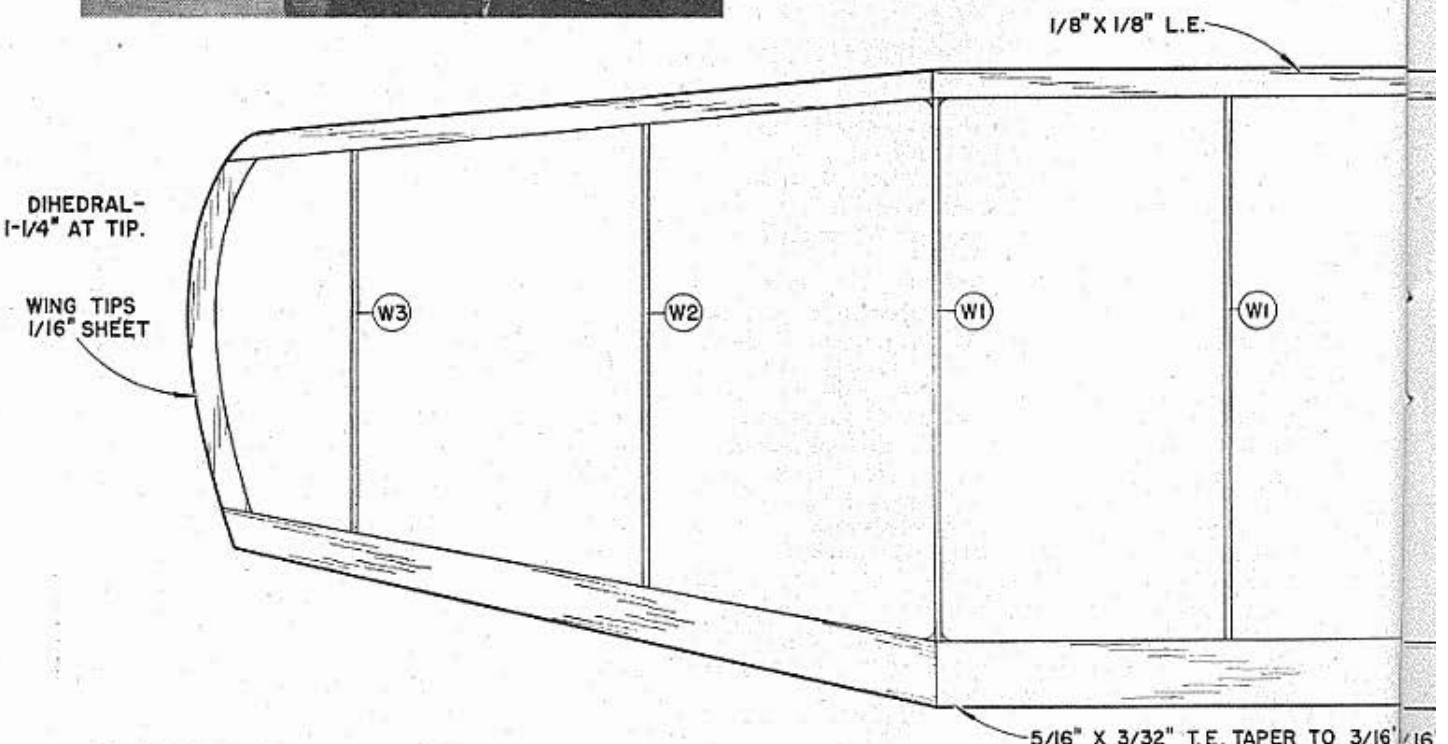
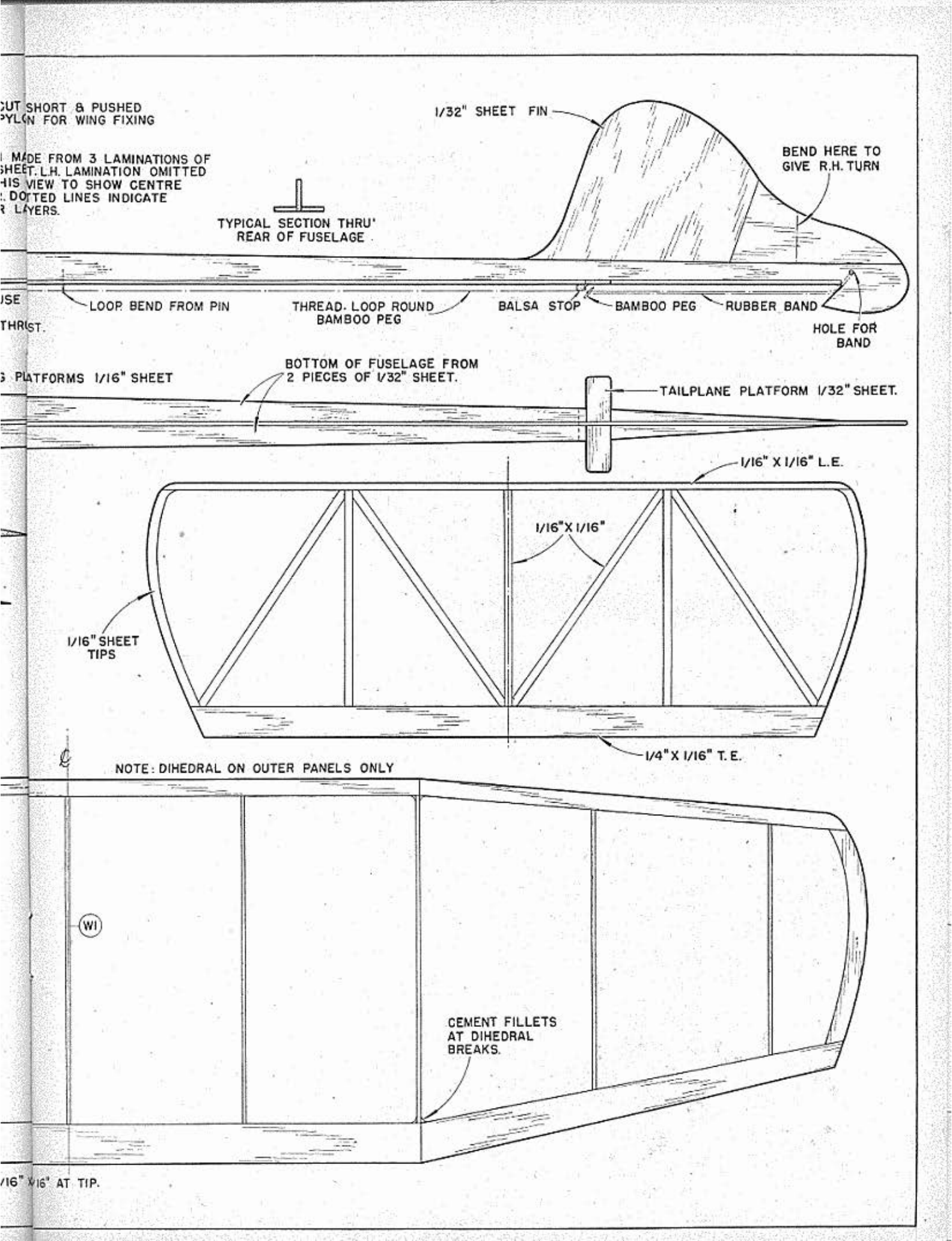

1/8" X 1/8" L.E.
DIHEDRAL- 1-1/4" AT TIP.
WING TIPS 1/16" SHEET
W3
W2
WI
WI
5/16" X 3/32" T.E. TAPER TO 3/16'


CUT SHORT & PUSHED
PYLON FOR WING FIXING
MADE FROM 3 LAMINATIONS OF
SHEET. L.H. LAMINATION OMITTED
HIS VIEW TO SHOW CENTRE
. DOTTED LINES INDICATE
R LAYERS.
USE
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TYPICAL SECTION THRU'
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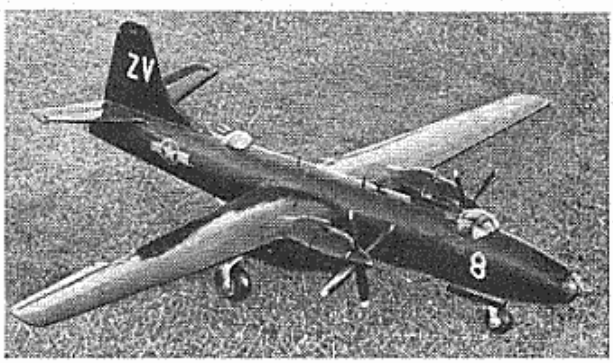
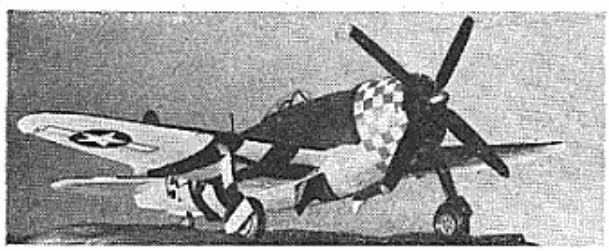
BEND HERE TO
GIVE R.H. TURN
LOOP. BEND FROM PIN
THREAD. LOOP ROUND
BAMBOO PEG
BALSA STOP
BAMBOO PEG
RUBBER BAND
HOLE FOR
BAND
PLATFORMS 1/16" SHEET
BOTTOM OF FUSELAGE FROM
2 PIECES OF 1/32" SHEET.
TAILPLANE PLATFORM 1/32" SHEET.
1/16" X 1/16" L.E.
1/16"X 1/16"
1/16" SHEET
TIPS
1/4"X 1/16" T.E.
NOTE: DIHEDRAL ON OUTER PANELS ONLY
W1
CEMENT FILLETS
AT DIHEDRAL
BREAKS.
/16" X 16" AT TIP.

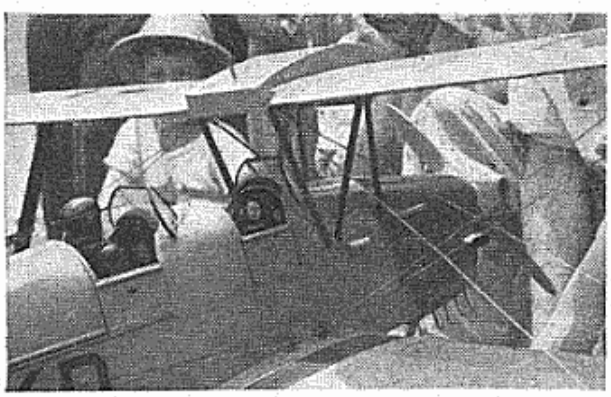
THE SIXTH

Australian Nationals

by JIM FULLARTON







THIS year's Australian National Meeting, having been allocated to the State of Victoria, was held at Bendigo, a large inland city about 100 miles north of Melbourne. There were about 170 entrants, representing a drop from last year's peak of 250, but this was not a surprise, in view of the tightening of finance in the past year, while import cuts and the remoteness of the venue undoubtedly had some effect.

Contestants were housed in pavilions on the Bendigo Showground, where there was a really first class arena for C/L flying. There were 23 events in all, and the meeting lasted seven days, from December 27th to January 2nd, with one indoor, two C/L and four free flight days. As sleep was hard to come by, due to nocturnal repair and construction efforts, the meeting became quite an endurance test. Outstanding constructional effort was that of Bill Evans, who with assistance from A. Coppock, ran up a large 5 c.c. free flighter complete in one day and two nights.

Once again we must give credit to Bob Rose for his sterling organisational work, in which he received valuable assistance from Bendigo club members, Grahame Davies and Alf Elliot, and numerous others.

Free flight was held at Raywood, where there was a clear 2,000 acres without a single tree. As this was covered with tinder dry grass and ripe crops, there was a distinct bush fire menace, and special precautions had to be taken with D/T fuses. Weather was fine and hot throughout, and thermals and downdrafts were generated in profusion with an occasional "Willy-Willy" (a sort of miniature tornado) thrown in. At times there was quite an impressive mirage, giving the illusion of a great lake stretching to the horizon.

National Champion once again proved to be Alan King, of Victoria for the *third* year in succession. He entered in no less than ten events this year, building a fleet of models to make sure of his title. Free flight power was again popular, especially in the under 1·5 c.c. class, and there was much less crashery than hitherto, indicating that our power loading of 8 ozs./c.c. is having some effect. Leading models were all the usual pylon types, with quite a sprinkling of King's very successful "Flying Pencil" designs, Stuchbury's class 1 winner being of this type. Highest standard was in class IV, where young Noel Harding, who has been coached along by Alan King, put up a very solid challenge against his mentor. Harding used a McCoy 29 "Pencil" of 7 ft. span, while the winner flew his well known 6 ft. 6 in. span Dooling 29 model.

The Nordic event was keenly contested, but once again the same name finished at the top of the lists, a feat which was all the more creditable, as it was Alan's first venture into the sailplane field. Stowe flew a Monk's "Quickie" into second place.

In the R/C event, the most interesting model was not allowed to fly. This was Keith Hearn's jet powered entry, which had made a successful test flight in Melbourne, but in view of the fire risk at Raywood, the officials reluctantly decided to ground it.

We had a good batch of scale models this year, split into two events. In the C/L section, Arthur Wilde of Sydney, scored his third successive win with a beauti-

Top left: Nats Champ for third year running, Alan King and Dooling 29 Flying Pencil. Time 20: 53. Next, Max Nicoll's twin Amco 3·5 Martin Mercator. Below: Arthur Wilde's beautiful winning P-47 Thunderbolt, uses Fox 59 motor, is fully detailed. Bottom: Huge scale Tiger Moth by L. Baker uses Australian 10 c.c. Tempest motor, weighs over 9 pounds, see text.

fully finished Thunderbolt, using a Fox 59 motor. It flew well (no stunts were called for in the rules, but spoiled its landing when the three wheels came adrift and set off in separate directions). Arthur almost met his match in Mr. L. Baker, a previously unknown modeller from Rye, Victoria, whose big Tiger Moth gained top appearance points. This model had everything, streamlined wires, sprung oleos, a real working compass in each cockpit, and as a final touch, the pilot even rocked back and forth as he moved the stick for up and down elevator. But all this added up to over 9 lbs. weight, and despite the best efforts of the "Tempest" motor, it failed to struggle into the air for a qualifying flight. Max Nicoll gave us a thrill with his Martin Mercator (2, Amco 3·5 c.c.), as it was the first successful twin most of us had seen.

The new event on the programme was the C/L payload, which provided some interesting competition. This event has a minimum of rules and of luck element, being judged on the weight lifted per c.c. of motor displacement. It provides an acid test of aerodynamic, motor and propeller efficiency, and to lift over 2 lbs. per c.c. you just have to be good. Some strange and wonderful designs were to be seen, including several Burnelli type lifting fuselages, extra thick, high lift airfoils, automatic flaps and so on, but the more conventional types seemed to be more efficient. The winning model had strong free flight influence, and lifted the incredible weight of 50 ozs., using an Elfin 1·49 motor and a one bladed propeller.

It was no surprise to us to see Don McLaren take the Senior Stunt event, as this lad who has just come up from the junior ranks, is a really gifted flier. His model, "Wildfire II" has a 58 in. span, fully flapped wing, and uses an Anderson Spitfire motor on ignition. John Lamont came a very good second with one of the Hearn Bros. latest designs, the "All Australian" Stunter. This is an import cut special; it uses one of Gordon Burford's Sabre 49 motors, made in South Australia, while everything in the kit is of local manufacture even including the rubber wheels.

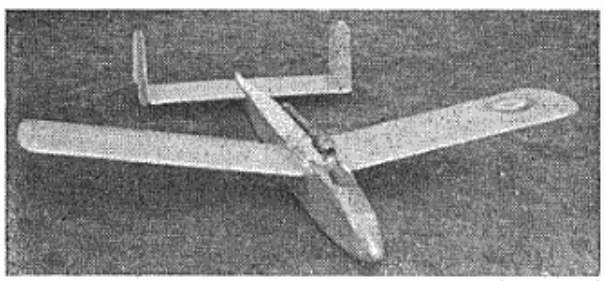
Personally, I am not very partial to Team Speed, but in this, I appear to be in the minority, as both classes "A" and "B" were well supported. The outstanding model was John Brehaut's blue racer, with a reworked Ohlsson 23 motor. It seemed to be in the air most of the day, screaming around while the others were refuelling or cranking. On 60 ft. lines he was getting 72 laps at 76 m.p.h., so that in the final 10 mile race, he spent only 11 secs. on the ground.

Straight speed was not very well supported. Most interesting technical note was the launching catapault used by former class VI record holder, Herb Henke. Operated by rubber bungy cords, it got the model away all right, without stopping the motor, but he failed to clock an official flight.

The flying concluded on the Friday with the usual inspired lunacy of the one hour power scramble. In that time, Queenslander Ron De Chastel put in 27 flights for a total time of 18 minutes 5 seconds, and could hardly walk for days afterwards as a result.

Before finishing this, I had better mention the Free Flight scale event. This was another hard luck story. Ken De Bomford from Tasmania, had a clear lead on appearance points with his Heath Parasol, a really classy job with a Frog 250 motor. It had been performing well in test flight, and Ken only had to fly to win, but when the day of the contest came round, he was not on deck, having found the heat too much for him.

Top : Stunt winner Don McLaren, and trophies — may be seen in Europe this season with his big stunters. Next, Bill Bowden's O.S. ·29 Racer won Interstate Race for South Australia. Right, Unlucky Ken de Bomford with his Heath Parasol. Below : Keith Hearn's R/C Free Flight jet, built by an A.T.C. class, not allowed to fly. Bottom : Fred Hartshorn and F.F. Scale winning Howard G.H.1.



AEROPLANES IN OUTLINE — NUMBER 8 BY G. A. CULL

FIVE years ago a significant sign appeared on the green of Hertfordshire in the shape of a 2,000 yd. strip of concrete. This was the runway from which would fly the " big job " under way in the adjoining Hatfield factory.

The idea of a jet airliner was conceived during the war, and at the end of 1946 the final layout was fixed after many layouts had been considered. Twin boom, tailless and tail-first arrangements were dropped because of lack of experience in these fields, but three D.H.108's were built to investigate the tailless design. The new design was the D.H.106 and, destined to be a world beater, became the Comet, a name justifiably borrowed from the D.H. 88 racer which shook the world in 1934. As early as 1947, fourteen Comets were ordered for B.O.A.C., and two years later the first Comet's maiden flight took place on July 27th, 1949, with John Cunningham at the controls.

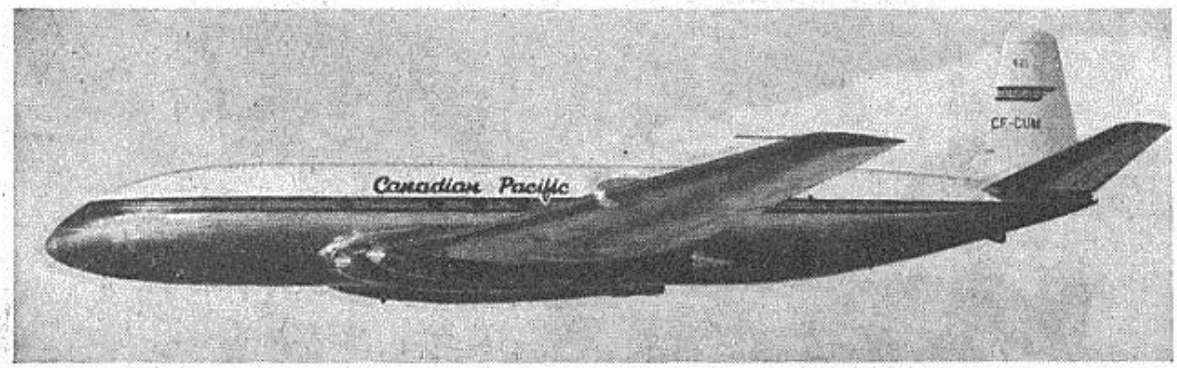
At one stroke Britain came to the forefront in the civil aircraft field for the Comet cruised half as fast again as the best airliners then in service, and that at 40,000 ft. above the weather and ice, with a superior level of passenger comfort that the smooth running jets endowed.

The first Comet was G–ALVG, built for M.O.S., and intensive flying proved it a success in every way. This machine had large external mass balances on its tail controls, which were deleted on later machines which had larger rudders, and had two large single wheels to its main undercarriage. Wing leading edge fences were later fitted to become standard on subsequent aircraft. On Oct. 25th, 1949, 'VG commenced eye-opening in earnest and made her first overseas trip—to Castel Benito and back the same day, averaging 440 m.p.h. on the way out and 458 coming back. On March 16th, 1950, 'VG set up records both ways between Hatfield and Rome by averaging 447 m.p.h. going and returning at 442, and on March 21st made 454 m.p.h. to Copenhagen and returned at 420 to put two more records in the bag.

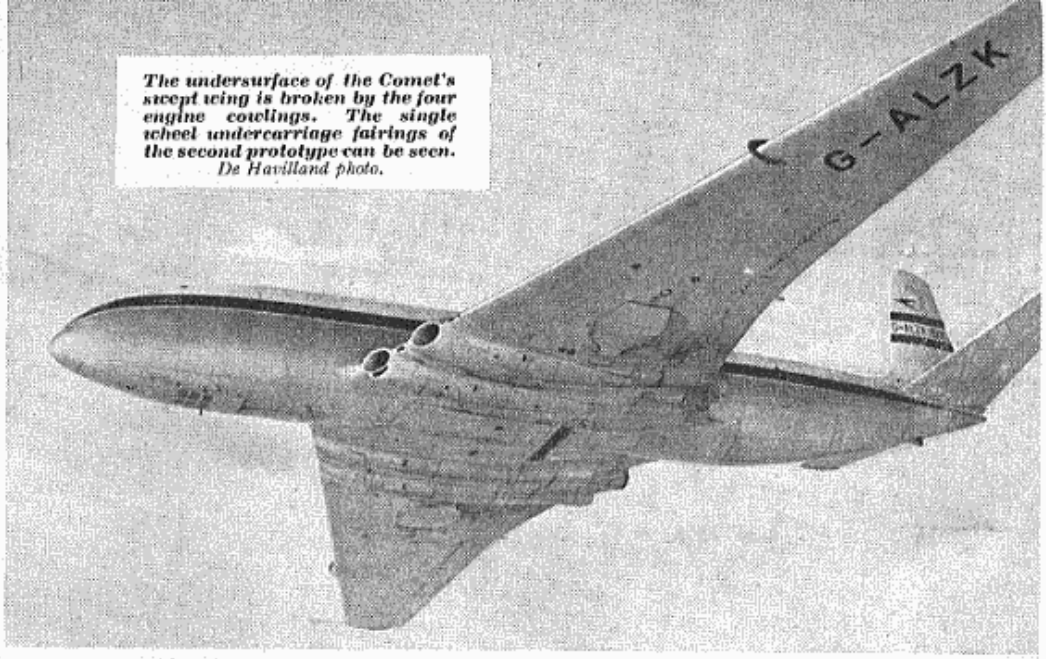
A year to the day after 'VG's first flight, the second machine, G–ALZK, also for M.O.S., flew for the first time on July 27th, 1950. Like the first, this machine had the single wheel U/C units, but an improved 4-wheel bogie unit was being developed to spread the weight over a larger area. The new undercarriage was fitted to 'VG in Dec., 1949, and 56 trial landings were made with the U/C fixed down, as the single-wheel wells would not accommodate the bogies. With tests over, 'VG was refitted with the single wheels and on April 24th, 1950, was off for tropical trials in Africa. The second Comet, however, was to undertake more overseas flying and was loaned to B.O.A.C. on 22nd March, 1951, for a series of twelve overseas tours to evolve operating techniques, and these proving flights paved the way for the passenger services to come. 'ZK finally returned on Oct. 19th, having flown 91,000 miles, involving 91 landings at 31 airports, the most distant being Singapore. The next Comet, G–ALYP, was the first production machine and had the bogie undercarriage, which was put to good effect in a landing on the comparatively small and soft grass aerodrome at Luton when Hatfield was fogbound. This same machine inaugurated, on May 2nd, 1952, B.O.A.C.'s first Comet service and the world's first regular jet service. This was to Johannesburg, scheduled at 18 hrs. 40 mins., compared to 28 hrs. 12 mins. of the best (Constellation) service. A service to Colombo started on Aug. 11th and a third service to Singapore commenced on Oct. 14th. Next route will be to Tokyo, for which training flights began on Dec. 9th. On one of these a Comet reached 658 m.p.h. with a tailwind.

All nine Series I Comets for B.O.A.C. have been delivered and are registered G–ALYP, 'YR, 'YS, 'YU, 'YV, 'YW, 'YX, 'YY and YZ, but the last of these was destroyed at Rome on Oct. 26th, 1952, in a take-off crash attributed to pilot error. The Series I has four 5,000 lbs. thrust D.H. Ghost 50 turbojets, and there is provision for a Sprite

Seen at the S.B.A.C. show, Farnborough, last year, the first export Comet series 1a bears the red and white colour scheme of Canadian Pacific Airlines and registration, CF-CUM in same size lettering as B.O.A.C. Comets. C.P.A's. Honolulu—Sydney service starts April 28th. *De Havilland photo.*



The D.H. 106 COMET



The undersurface of the Comet's swept wing is broken by the four engine cowlings. The single wheel undercarriage fairings of the second prototype can be seen. De Havilland photo.

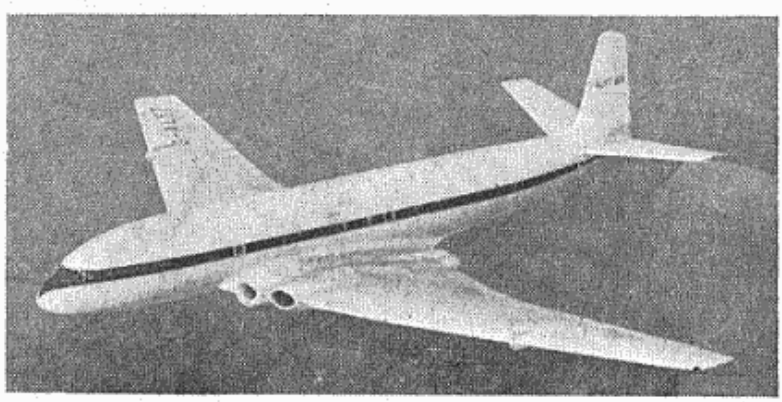
rocket motor between each pair of tailpipes. The pair of Sprites deliver an additional 5,000 lbs. thrust each for a few seconds at take-off to ensure adequate performance at high altitude tropical aerodromes. These are, in fact, fitted solely to the first Comet as yet, which demonstrated a very quick take-off at the 1952 S.B.A.C. Show. The Comet's normal cruising height is 35–40,000 ft., which requires pressurisation at 8 lbs./sq. in. differential (each sq. ft. of fuselage internal area bears ½ ton pressure). B.O.A.C. Comets seat 36 with a stewardess and four crew, but arrangements for 44 and 48 are possible. Comets Series II and III are being developed with increased accommodation and will operate longer non-stop journeys.

The Series II will be produced by Short's in N. Ireland and has R.R. Avon engines. Initial all-up weight will be 115,000 lbs. and 44 passengers will be accommodated in a slightly longer fuselage. This Avon-Comet will be for transatlantic flying and the prototype, G–ALYT, has been flying since Feb. 16th, 1952, and is distinguishable from the Series I by the enlarged engine air intakes. B.O.A.C. has eleven on order and deliveries start in 1954. Able to carry a payload of 13,000 lbs. over 2,000 mile plus stages, the Series II is an attractive proposition to foreign operators, who have placed orders in preference to the Series I.

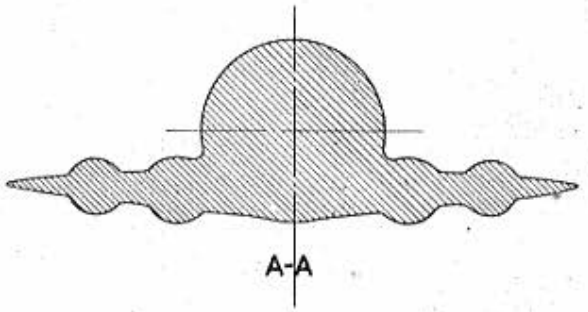
The Comet III will be powered by 9,000 lbs. thrust Avons and will have a much lengthened fuselage for 58 first-class passengers at a full payload of 17,300 lbs. over 2,600 mile stage lengths, or as a 78 seater tourist "coach" carrying 20,000 lbs. over 2,400 mile stages. The necessary increased fuel tankage is largely provided by two 400 gall. permanent tanks projecting well forward of the leading edge to avoid C.G. change as fuel is consumed. The prototype will fly in 1954, and late '56 should see the first production model.

Of the Series I only 21 will be built, including the prototypes. Now that B.O.A.C.'s order is complete, Comet Series Ia's are in production for overseas buyers and have methanol/water injection which increases thrust by 12 per cent. Tankage is increased to 7,000 gallons and all-up weight is brought up to 110,000 lbs. The first of these to be exported was the first of three for Union Aero de Transport and, registered F–BGSA, flew to Le Bourget on Dec. 17th. Two Series Ia's have been completed for Canadian Pacific Airlines and one, CF–CUM, was at the 1952 S.B.A.C. Show.

The keynote of the Comet is simplicity, and this has resulted in great ease of maintenance. Engines, brakes, tailplanes, and elevators are interchangeable. The underside of the engine cowlings hinge down and allow servicing from ground level. A notable proof of servicing ease was when all four engines were removed, inspected and re-installed ready for flying by twelve men in 16 hrs. Tanks are integral with the wings and underwing refuelling valves enable 150 galls. per min. to be loaded. De-icing is by hot air bled from engine compressors. The extreme cleanness of the aircraft is enhanced by the lack of the usual mass of rivet heads, due to the use of Redux bonding.



The first prototype of the longer range Comet Series II, and the enlarged intakes for the Rolls Royce Avon engines are seen in this view of G-ALYT. The full name DE HAVILLAND COMET, is painted on the fuselage stripe, beginning aft of the pilot's cabin. De Havilland photo.



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DE HAVILLAND 106 COMET (SERIES 1)

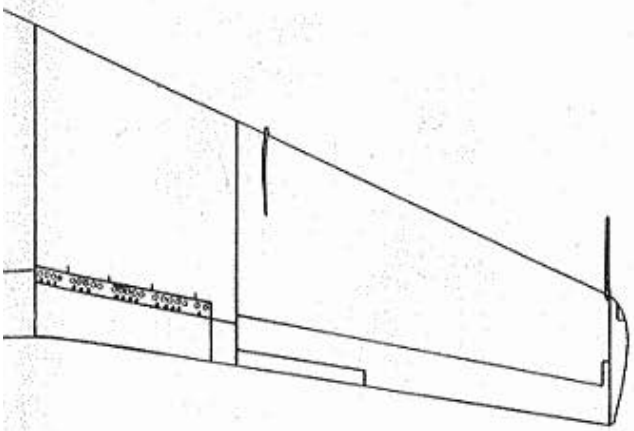
1/144th scale "N" type reprints and 1/72nd scale "M" type blueprints of this draw

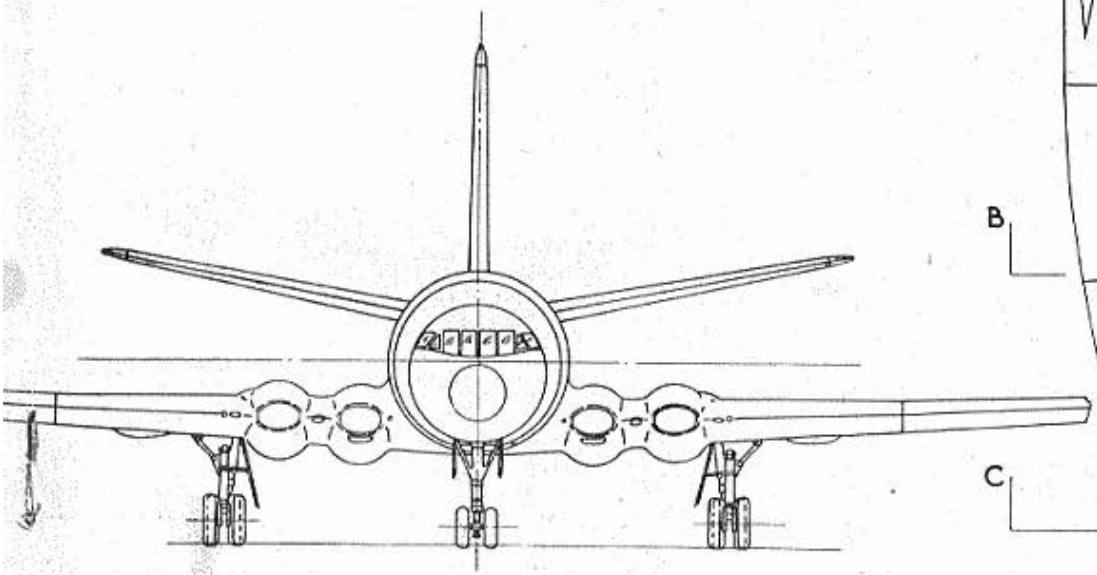
UCTION.—Airframe is stressed skin on conventional lines. Fuselage has frames and close spaced igers with a hemispherical bulkhead ("pressure dome") in the rear fuselage forming aft end of pressurised section of fuselage. Wings have two spars and diaphragm ribs, as tail surfaces. Wing fuselage skins bonded to structure by Redux resin under pressure and heat. Hydraulically operated are in three sections. Two plain flaps are outboard, split flap inboard follows contours of tailpipes and jet motor fairing each side. All flying controls hydraulically operated. Radio aerials are suppressed in the airframe, nosewheel retracts rearwards, main bogie units sideways and fairing doors close wells when undercarriage is down.

ATION.—Series 1. Span 115 ft. 0 ins. Length 93 ft. 0 ins. Height 28 ft. 4½ ins. Wing area 5 sq. ft. All-up weight 105,000 lbs. Cruising speed 490 m.p.h. Maximum range 3,540 miles.

T.—Fuselage roof, fin and rudder are white. Blue band down fuselage side and round windscreen, two ds across fin and rudder have registration between them, also Union Jack on rudder. "Speedbird" re tip band. "B.O.A.C." above windows. Registration above starboard, below port wing tips. panels and lettering B.O.A.C. blue (deep royal blue). Rest of airframe is left bright alloy finish.

FOR MODELLERS.—Wing protrudes below bottom line of fuselage. Only two centre panels windscreen are duo-curved, rest are flat.





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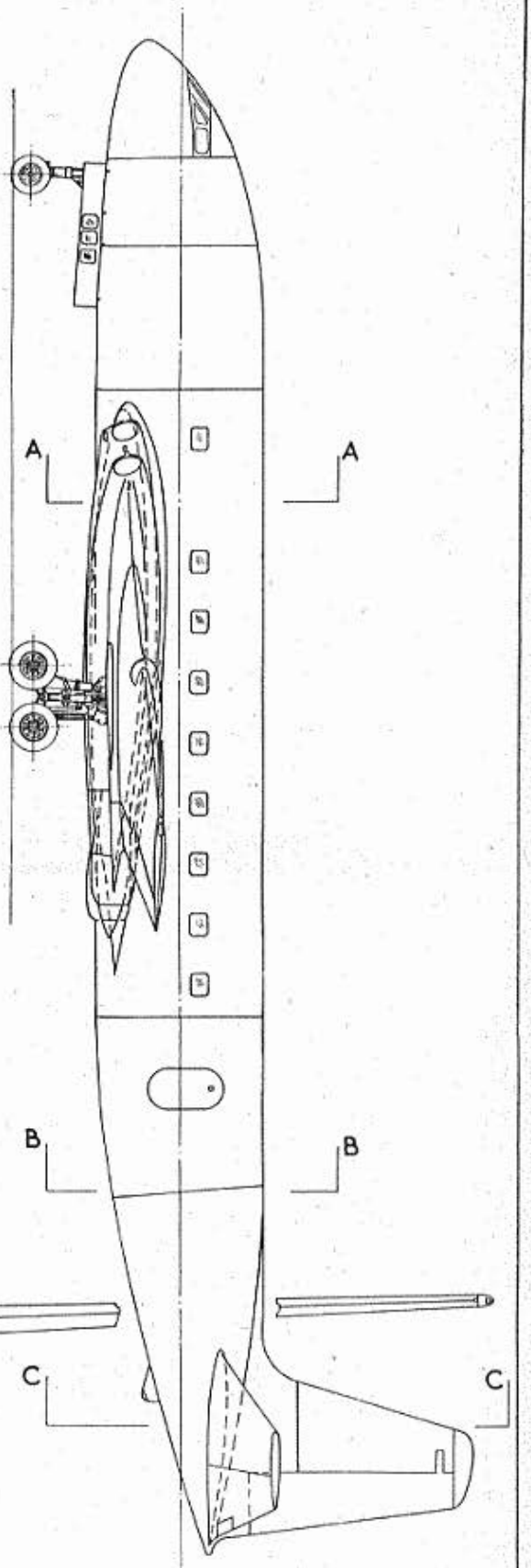

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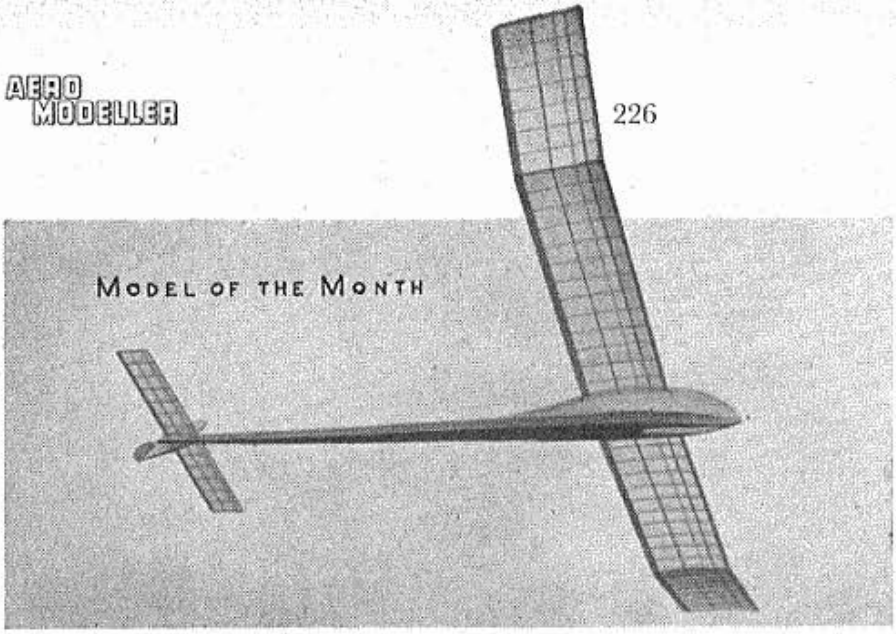
awing are available price 1/- and 3/- respectively from the Aeromodeller Plans Service.

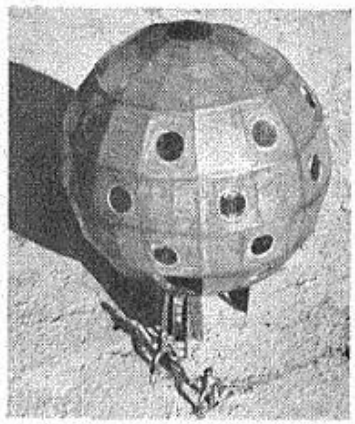


MODEL NEWS

FOR keeping up with the modern trend in every one of its design lines, and providing us with a practical slab-sider World Championship class glider, the title of " Model of the Month " goes to the illustration of D. Ridley's effort, seen above. In this photo, taken by West Middlesex clubmate P. Law, we see the " 1953 " look. Short nose à la Gunic B.G.44, long tail moment à la Czepa Toothpick, coupled with constructional features for quick and easy building, make this a very attractive design. Facts and figures are :— Wing Area, 450 sq. ins. ; Tail Area, 60 sq. ins. ; Weight, 14¾ ozs. ; and wing section designed by the builder.

We really could not let Francis X. Gruber's Space Globe slip by without publication this month, so there it is at right. Francis, from Albany, New York, tells us that this is a model of the first Space Exploration to land on the Moon. 24 ins. in diameter, it is covered with 1/32 sheet, and stands on legs to make it 27 ins. high. Power ? Well, Mr. Gruber has no less than *five* Jetex 350's to try to raise it ; but his neighbours have uncooperative views on the smell and noise generated !

Over to No. **1** a control-line scale stunt Fokker D.VIII, fitted with a petrol ignition Forster 29. This one was built by one of the American modellers now based in the British Isles, Lieutenant E. E. Wolfe of the 1737th Ferrying Sqdn., U.S.A.F.—one of the few American aeromods. who prefer diesel to glowplug. In No. **2** we have another scale job, this time from one of our service lads, L.A.C. Winters, with the R.A.F. in France. His beautiful little 26-in. Arrow Active is free flight, for the Frog 50 diesel. Total weight is only 6 ozs., and a pendulum controlled rudder is used to aid stability. Careful detail, and correct paintwork in authentic black and silver colouring make it a job worthy of any exhibition stand. This particular full-size 'plane has one very attractive feature in its design which should make it popular for scale controliners. We refer to the relationship of the nose depth to the rest of the job. Just about any of even our " stove-pipe " type diesels could easily be accommodated within the cowl, and only the compression control need protrude.

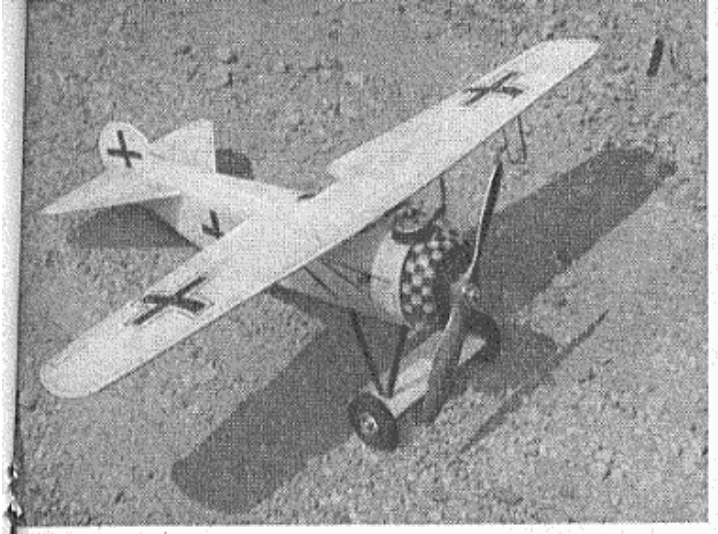


We have had a 1953 glider, now for a '53 Wakefield. In **3** there's Bill "Vindskreenviper" Henderson of Grange Club, showing off the criss-cross pattern of his wing and tail structures. Fuselage is "geodetic", weight all-up is 8½ ozs., rubber is 14 strands of Pirelli, and two-blade folder, 24 ins. diameter. Later in the year, Bill is leaving for Toronto—Canadians look out !

A stunt biplane is always nice to look at, and S. Rymill's Biplane G. WHIZZ, in No. **4**, 28 ins. span and has an E.D. 2·46 Racer, for which it was specially designed. No. **5** makes quite a change. It's an A.P.S. model of the ABC -" Robin ", originally designed for rubber power, and converted in this case by Bob Berry in Vancouver, Canada, for an O.K. Cub ·049 glowplug motor. Look's like a very lightweight model, Mr. Berry ; it should have quite a good performance.

A KeilKraft Chief will be no stranger to our readers, and the one in No. **6** by J. Holderness of Sleaford will be easily recognised. We make no excuse for including this as a " news " picture, other than the fact that this smart framework is Mr. Holderness's first A/2, and on its very first flight, covered of course, it was up for over 3 minutes. Good effort ! Smiling boy in **7** is none other than St. Albans Cheekie Chappie, George Fuller, plus his 36 ins. long, 3-ounce Helicopter—you work out the wing loading !

Yet another Piper Cub without struts, and poetic license with the fin shape appears in No. **8** Last month we published a similar job caught in flight ; this uncovered view is from M. F. Sedgwick of Skipton in Craven, Yorks. When covered, this model was tested with an E.D. Bee, afterwards replaced by a Mills ·75.



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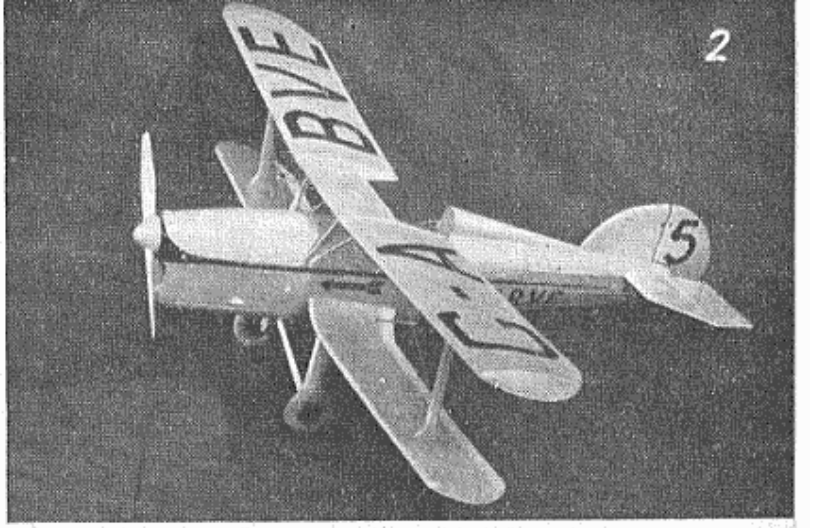

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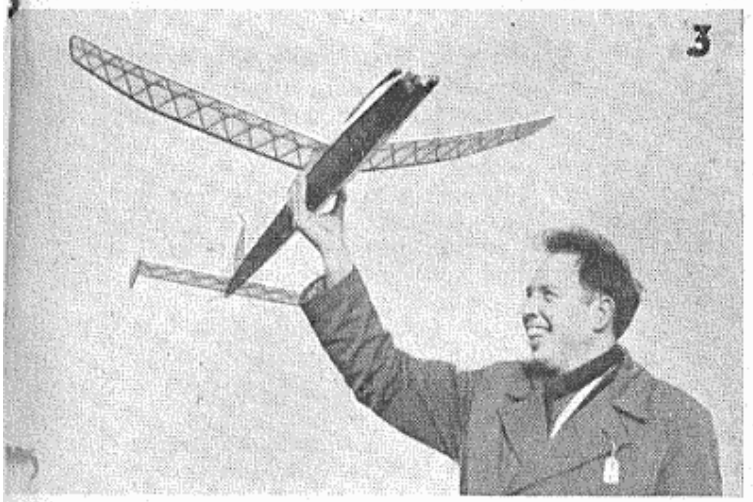

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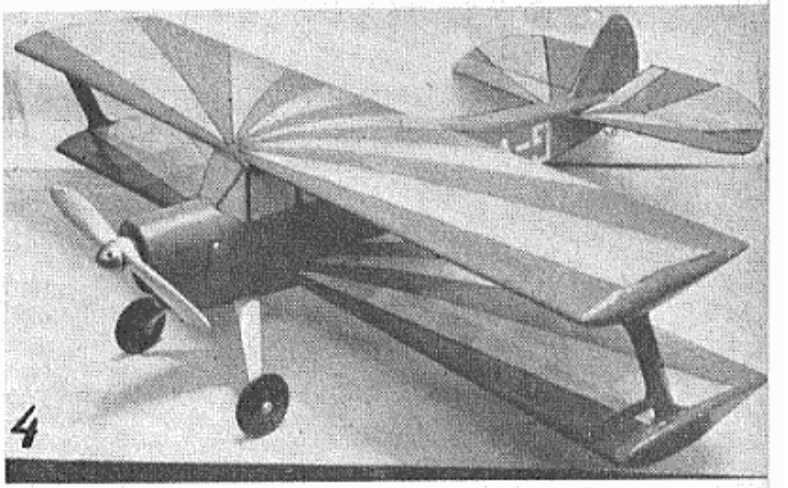

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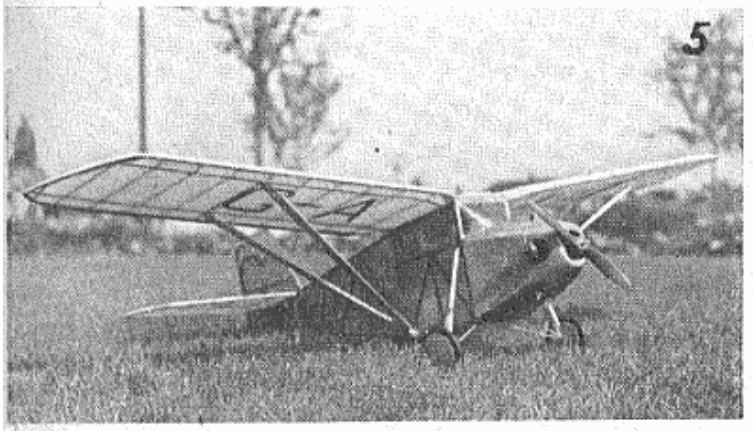

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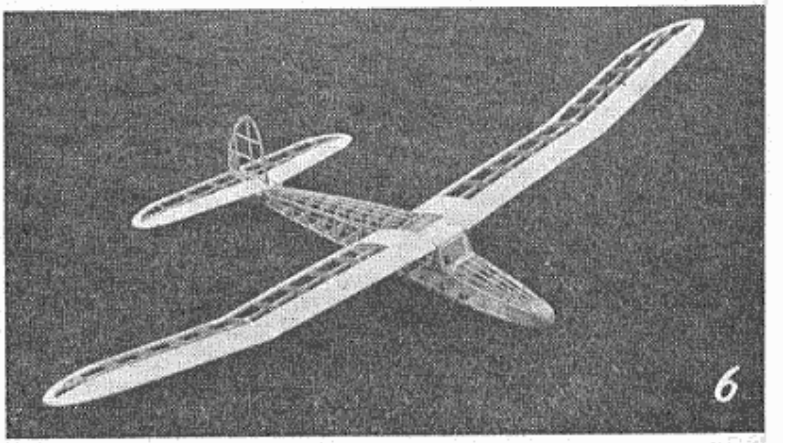

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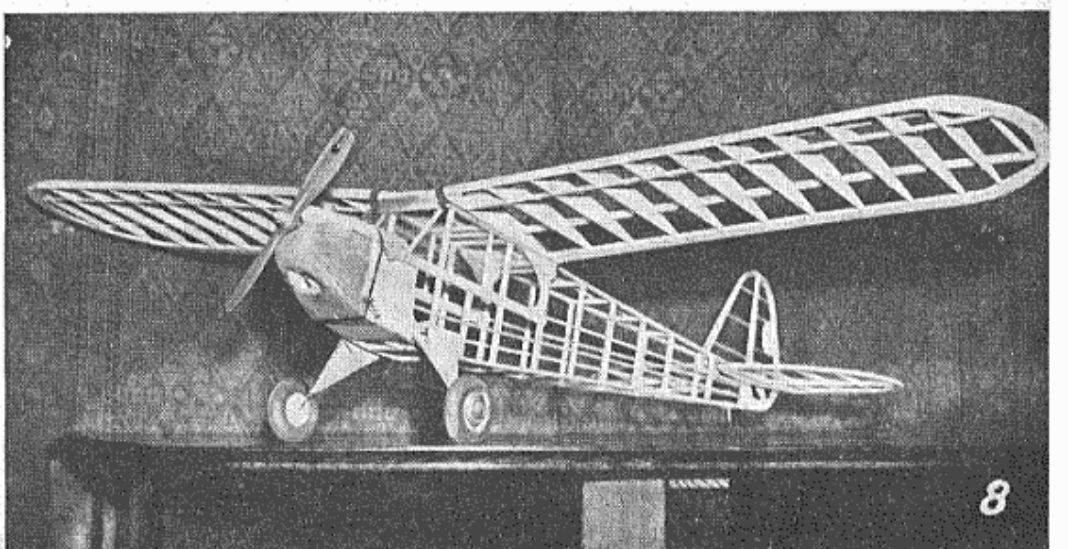


8

Engine Analysis No. 9 (New Series)

The Mk. II Allbon DART

By Ron Warring

THE Allbon Dart is an exceptionally well produced little engine. One cannot help but be attracted by these tiny half c.c. power plants and it is undoubtedly a tribute to the designers of modern miniature aero-motors that they are so relatively easy to handle. Not so many years ago any " diesel " was just about as sensitive to the controls as it could be—developed " temperament " with varying weather conditions and often needed a special concoction of fuel to run at all. The smaller the size of these engines the more it demanded an expert's touch to get them going. Yet the current production half c.c. models are characterised by relative insensitivity of control and ease of starting. The Dart, Mk. II, is certainly no exception in this respect—and probably develops the same power as many of the early diesels of twice the capacity, or more.

The Dart was set up and started with no reference to recommended control settings, using Mercury No. 8 fuel. It took a little time to find that the needle valve needed to be several turns open to produce the required mixture, but after that restarting from cold or hot was a matter of seconds. Both the compression setting and needle valve control could be left alone, the engine primed through the exhaust and the propeller flicked over smartly to produce almost instant starting. Finger choking was almost equally as effective. Normally, one tends to find that use of the compression control does assist starting, but this was not necessary with the Dart, except when using very light loads (*i.e.*, very small propellers) when there was a tendency to get too much neat fuel in the cylinder head.

The engine ran so well from the very beginning with an oversize propeller that a rather unusual running process was adopted. Having found the best running settings, which took about half a tankful of fuel, the Dart was re-started and left to run continuously without a break, topping up the tank at intervals. Although the r.p.m. figure was quite moderate we were quite prepared to find the engine overheating, but nothing of this sort took place. In fact, over a total running time of just forty minutes non-stop, the Dart barely faltered at all. R.p.m. figure went up very slowly as the running time increased and when the speed showed no signs of increasing further, the engine was allowed to stop. It was not unduly hot and a check re-start made almost immediately took two flicks of the propeller for the engine to burst into life again.

As a matter of interest, the gradual increase in r.p.m. produced by this running in was as follows :—

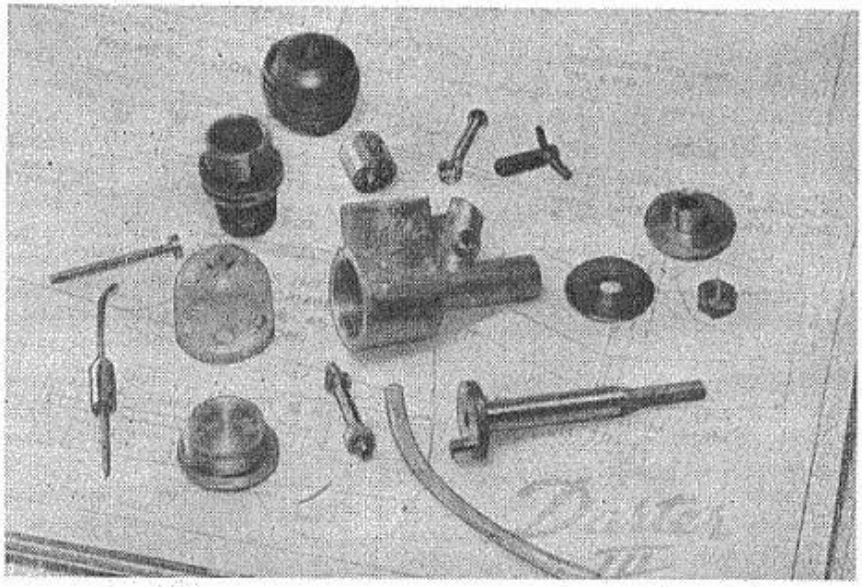
Initial r.p.m. 5,400.		
After 10 minutes	..	5,600 r.p.m.
After 15 minutes	..	5,800 r.p.m.
After 20 minutes	..	6,000 r.p.m.
After 25 minutes	..	6,150 r.p.m.
After 30 minutes	..	6,200 r.p.m.

No further increase in r.p.m. with running time up to 40 minutes.

A further short running-in period was then undertaken with a smaller propeller producing about 10,000 r.p.m. when there was a similar, but smaller, increase in speed with running-in time. In the interests of getting absolutely peak performance from the engine this could have been continued for a longer period than was practical at the time of the test.

If a *continuous* run is used during the initial " breaking-in " period then it is important that the r.p.m. should be held down to moderate figures at first. In normal practice, running-in time in the 6,000 r.p.m. region would not be prolonged as much as in this instance. About ten minutes running at each speed in steps of roughly 1,000 r.p.m. up to 10 or 11,000 would probably be best, injecting a little castor oil into the intake during the high speed runs at the slightest signs of the engine slowing up.

As regards handling, the Dart should please most aeromodellers. We have already emphasized that it is easy to start and runs consistently. However, the example tested did show signs of being far less



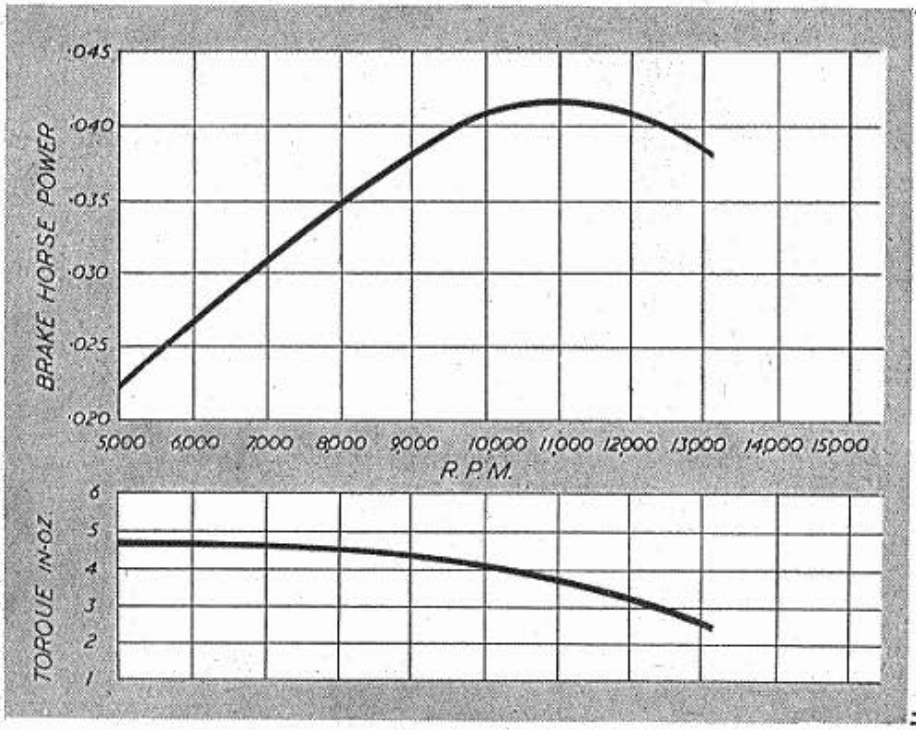
Minute parts of the Dart are made with watch-like precision. Distinctive features of this Mark II version are the new type transfer passages cut into the outside of the cylinder liner, and the new integral tank and revised backplate.

docile at high r.p.m. It was extremely difficult to carry out hand-starting with 4 and 5 in. diameter propellers (corresponding to normal operating speeds in the region of 11 to 13,000 r.p.m.). The propeller has to be flicked over *very* smartly to get it going at all and the running at the very highest speeds was not quite as consistent as it was in the 6 to 8,000 r.p.m. region. This, no doubt, would have been improved by further running-in.

A possible range of half a turn on the compression setting control indicates good flexibility. With too little compression the engine misses, but goes on running. The control has to be turned back more than one quarter of a turn from the best running position to make the running so erratic that the engine stops. Nearly a quarter of a turn past the optimum setting was necessary to increase the compression to the point where the Dart laboured to a halt.

The best needle valve setting established at the start of the tests was four turns open. Screwing down another one and a half turns had no effect, nor did opening up another turn or two (except that the needle valve assembly fell off its thread). Thus the control range of the needle valve is from shut to about three turns open. It appears that you can err on the side of having the needle valve too far open and still get easy starting. If it is closed down beyond one and a half to two turns, however, the Dart starves out.

The compression control was quite easy to handle, in spite of its small size. The contra-piston was also free enough to respond without sticking. The needle valve control, in common with so many other engines, is rather too near the propeller disc



ALLBON DART (Mk. II)

Displacement : 0·55 c.c. (·0336 cu. in.).
Bore : ·350 ins.
Stroke : ·350 ins.
Bore/Stroke ratio : 1·0.
Bare Weight (including tank : 1¼ ozs.
Mounting : Beam.

Material Specification

Crankcase : aluminium alloy.
Cylinder liner : nickel chrome steel.
Cylinder jacket (integral head) : aluminium alloy.
Piston : Meehanite.
Contra-piston : Meehanite.

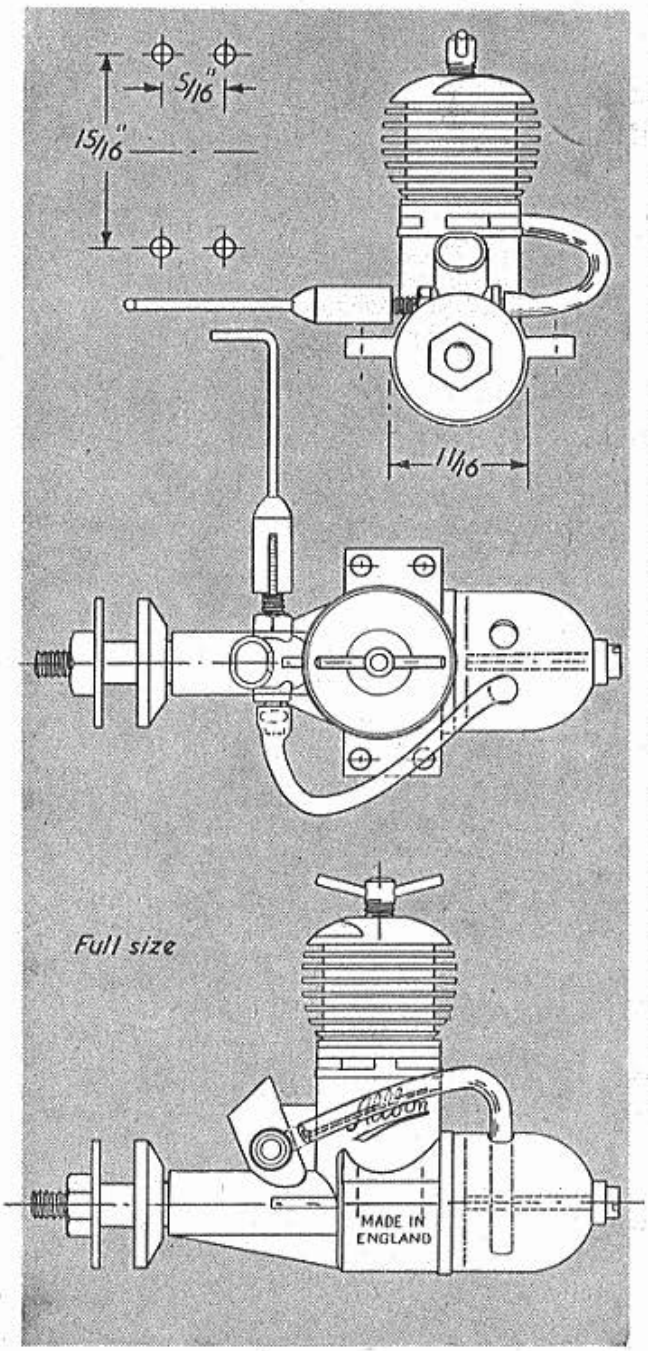
Manufacturers

Davies Charlton and Co., 13 Rainhall Road, Barnoldswick.

Retail price : £3. 7s. 6d. (including purchase tax).

for carefree handling. Fortunately it can be left well alone once the best running position is found.

Best performance with any given load (*i.e.*, size of propeller) was with the minimum compression setting, consistent with no missing. As speeds went up, an increase in the compression was required. At 11,000 r.p.m., for example, the compression had to be screwed down about a quarter turn more than that at 6,000 r.p.m. to prevent missing. A corresponding beneficial adjustment is slight closing of the needle valve.



The Dart is certainly a powerful engine for its size and could well be operated " flat out " for a " contest " performance, or perhaps in a ducted fan model. For sports flying, however, maximum engine power is seldom a major criterion. Within reason, if an engine is operated at a slower speed, wear is reduced and the life of the engine prolonged. Some of the modern model engines are only happy when operating at high speeds in the region of their peak horse power, but the Dart is such a beautifully consistent runner at around 8,000 r.p.m. that, given the choice, this would appear to be the ideal operating r.p.m. where sheer performance is not the main aim, *e.g.*, for sports flying. A 7 *d.* × 3 *p.* propeller would be about the right size to hold the engine to this r.p.m.—an 8 *d.* × 3 *p.* propeller if you wish to slow the r.p.m. to around the 7,000 mark.

For " performance ", optimum choice for control line would appear to be a 4 in. pitch propeller, diameter trimmed to produce a static r.p.m. figure around 10 to 11,000 r.p.m. For free flight, preference would be for a larger diameter and correspondingly smaller pitch, if only for the fact that the Dart is not all that easy to hand-start with small diameter propellers.

If any potential customer doubts that small engines are " worth the money ", or sticks to the old standard " the smaller the size of the motor, the lower the price ", he ought to examine a dissembled Dart in detail, just to appreciate the degree of accuracy and the amount of fine workmanship which does go into such products. Materials themselves account for an almost negligible proportion of the total cost of producing a miniature aero-motor, so very little cost is saved by the reduced volume of materials required for half c.c. engines. Fits and tolerances, however, have to be even more accurate than their larger counterparts and design standards just that more exacting.

The Dart is certainly not the smallest of the half c.c. motors, in overall size, but it is certainly one of the neatest and one of the best production jobs. It would be difficult to fault it on the constructional side. About the only point which could rightly be criticised on the test example was that the connecting rod big end was drilled slightly off centre, leaving a rather thin wall on one side and providing a source of potential failure. But every other detail design feature is worthy of the highest praise.

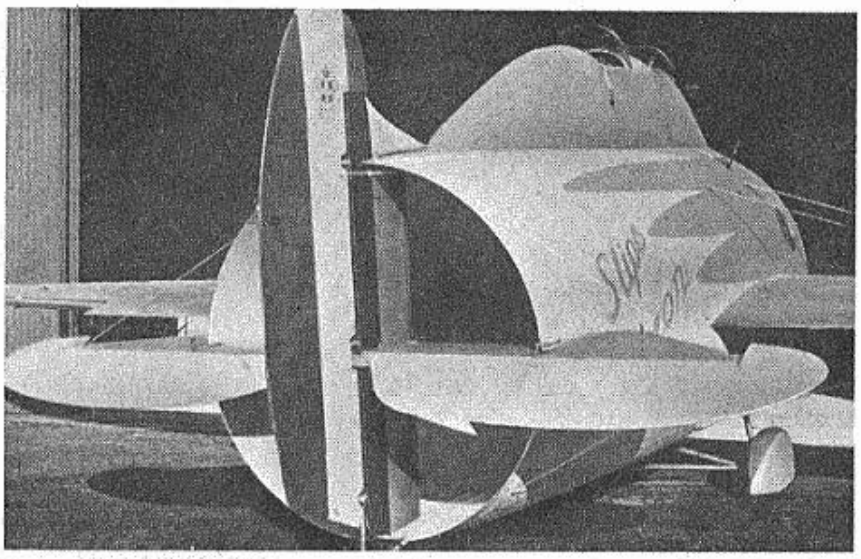
Prop. Tests

(Mercury No. 8 Fuel.)

Propeller Dia.	Pitch	R.P.M.
5	4	12,400
5	5	10,600
6	3	11,100
6	4	10,350
6	5	8,250
7	5	6,350
7	4	7,400
7	3	9,300
8	4	6,100
8	3	6,750

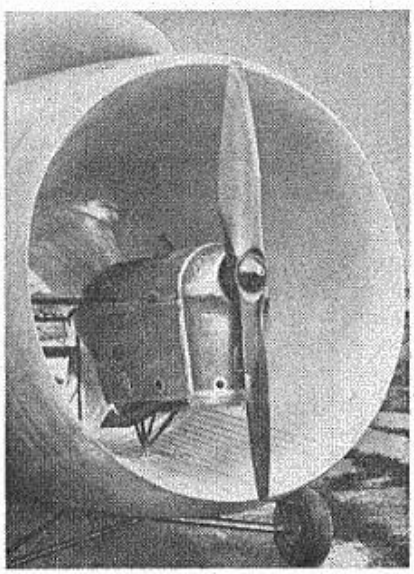
Ducted Fans

Authentic gen on a new approach to the ducted impeller system.



THANKS to the grand efforts of Phil Smith, Veron kit designer, and his "Imp" ducted impeller system in their La17, and coming models, more and more ducted designs are to be seen on our flying fields. Quite a number of individuals have made their own experimental designs, using varying impellers, ranging from clipped two bladed airscrews to 24 blade fans, and among these we have witnessed a number of remarkable flights. Peter Holland of Apsley, better known for his A/2 glider achievements, is one modeller who developed a ducted Delta more than a year ago, and others have been seen at London's late airfield—Fairlop.

Among our correspondents on this new and interesting form of propulsion is Mr. K. Newbold of Hamble, Hants. So successful is his unit that we think it worthy of description, and the accompanying photographs, sketch, and resumé of how it came to be developed, should serve to put a good many would-be ducted fan designers on the right lines.



At left and above, are intake and outlet views of the original full-size ducted airscrew 'plane, the Italian Stipa Caproni. Scale modellers should find this a novel subject, though accurate plans are not available. At least it should be easy on props!

Italian full-size ducted aircraft

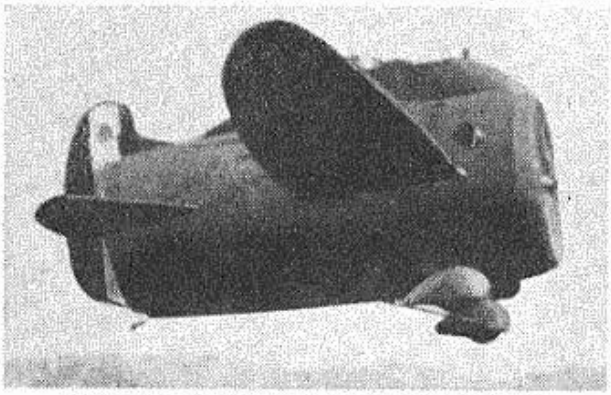
Before we proceed with the description of the Newbold Ducted Impeller, we cannot let this opportunity pass without reference to one of the original aircraft of this type, which was developed from 1927–1932 in Italy.

Ing. Stipa, of the Italian Air Ministry, began investigating the possibility of a Venturi tube fuselage as a means of increasing the airscrew thrust. Wind channel tests were made, and eventually an experimental two-seater was made around a tubular fuselage, using a Gipsy III engine. The results exceeded all expectations and a claim was made that the fuselage contributed no less than 37 per cent. of the lift. Future prospects of a similar design with abbreviated wings did not, apparently, materialise; but at least, Ing. Stipa, and the aircraft built for him by the Italian Caproni company, have provided us with a most unique flying scale subject. As far as we are aware, plans of the aircraft are not available. Dimensions were: Span, 46 ft. 10 ins.; Length, 19 ft. 4 ins.; Height, 10 ft. 7 ins.; Wing Area, 204 sq. ft.; Fuselage diameter approximately 8 ft. at the maximum outside dimension, and 4 ft. 6 ins. at the minimum inside, tapering fore and aft. Photographs of the Stipa are given here; but further information is not available.

Now, over to Mr. Newbold's system . . .

De-H. Venom Control Liner

Mr. Newbold has always been interested in scale models, especially control-line models of jet aircraft. To date there had been no satisfactory means of propulsion except pulse-jets, which he did not relish, due to fire risk, etc.



Like a barrel in the sky, the Stipa had remarkable lifting qualities, and pleasant elliptical shaped wing and tail surfaces. Power was a Gipsy III driving approximately 6 ft. 9 in. prop.

The idea which he incorporated into the model " Venom " was first started when a friend showed him an article describing an American model jet with the engine mounted internally on a streamlined engine bearer, and driving an 8 bladed fan. This had a " super-sonic " spinner on the front to assist the flow of air, and the intake was a hole in the nose.

This did not seem to be altogether satisfactory. Firstly, because the engine bearers were only joined to the fuselage by two streamlined struts and did not seem very strong, and secondly it was impracticable for any scale jet with side air intakes.

He decided to experiment with the idea, putting the engine ahead, with the impeller behind, making it a pusher. Now the fan ; the outlet hole was to be 3 ins. in diameter and the fan 5½ ins. diameter. First he made a six bladed fan similar to the fans used for cooling and ventilation, placing this in a tapering tube 9 ins. long.

On a test-bench run, this set-up did not seem to be very good at all—hardly any air coming from the rear. It seemed that the blades of the fan were stalling, due to the pressure being built up in the tube. Mr. Newbold thought that if he made the total blade area the same as an average 10-inch prop., and gave it an amount of air to work on, the same cross section area as the outlet hole, no internal pressure should be built up, and the air should go straight through.

This offered two possibilities. One, a small diameter fan similar to the one he had used ; but a fast enough periphery speed would not be obtained to equal a propeller. Two, a larger size fan with the blades around the circumference like a turbine. As the fuselage was to be 6 ins. diam. with a 5½ in. dia. fan, this second method seemed to be the only way.

A dural fan, like that in the drawing, was made, but the inside diameter was 4½ ins., and it had 16 blades. These were twisted to give an 8-inch pitch. This fan was mounted inside the tube again and the engine started. These experiments were carried out in a shed, and a torch used to examine the flow of the exhaust gases by shining it through the tube at an angle which showed the gases up against the dark background.

Although the air was coming out of the tube at high speed, it did not seem to be following the tube, but converging into a stream before it reached the rear of the tube, leaving a cone of clear air in the centre. It was then he remembered the cone at the rear of a real jet engine behind the turbine blades. A balsa-wood cone was fitted behind the fan and nearly reaching the end of the tube. The air and gases should just fill the remaining space. Also, with a real jet in mind, (the static flow straightening blades), he decided to put 8 curved pieces of balsa-wood at equal distances around the entrance to the tube. These also served the purpose of supporting the cone within the tube.

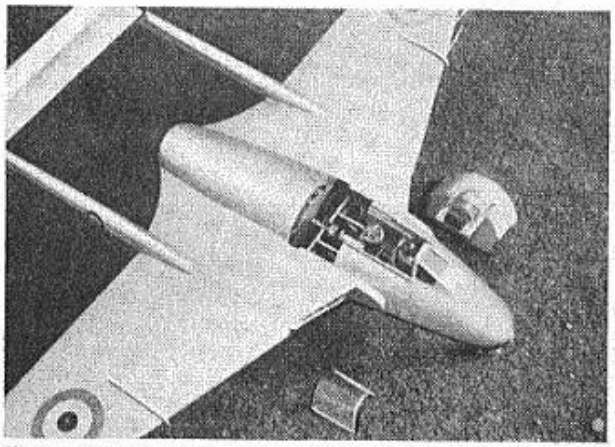
By means of a small pivoted flag it was found that the air left the blades at about 30° to the axis, so the pick-up point of the static blades or flow straighteners was bent to this angle. The cone was also supported by four steadies, which were sanded to streamline shape and cemented in the position shown in the diagram (as this was only an experiment, the tube was not fuel-proofed inside, but this must be done in other models.)

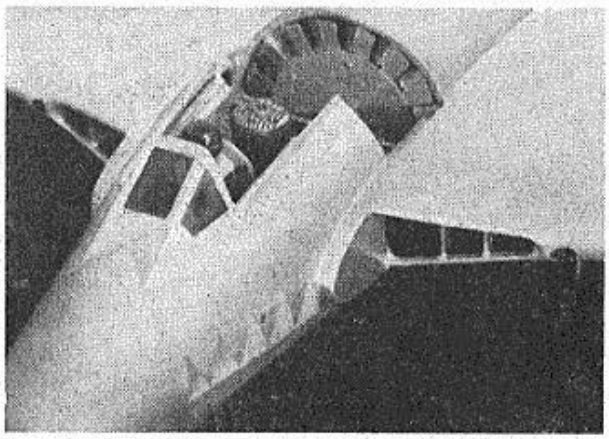
When the E.D. 3·46 was started the results exceeded wildest hopes, but he tried a further experiment. This was to make the outlet hole smaller, to try to boost the velocity. Strangely enough it succeeded, and the best result is found when the cross-section area of the outlet is 2/3 the cross-section area at the entrance to the tube (between tube and cone).

Rather than alter the outlet hole, the blade area was enlarged, so the whole unit was altered to the dimensions shown. Now there was a miniature gale coming from the tube, which could be felt up to 20 feet away.

A replica of this unit, using an extension shaft supported in a ball race held in the base of the cone, is the unit installed in the " Venom ". The total intake cross section area is the same as the outlet hole, consisting of two triangular holes in the wing-roots, and a faked entry through the nose wheel undercarriage doors. Air through this aperture is made to travel upwards by a bulkhead covering the bottom half of the fuselage, then past the engine, under the head and shoulders of the " pilot ". This keeps the engine cool. If a nose intake is used this would not be necessary.

Another excellent application of the nosewheel aperture or nose intake, is to use " thrust control doors " to restrict the actual air intake. By means of a third line, it could be possible to blank off the intake area altogether, and so minimise the thrust. This would give simulated " braked " take-offs, power—on approach landings, and also provide the means for circuits and bumps. The Venom has been so equipped in its latest form, and the four-ounce extension shaft removed, so that the fan is





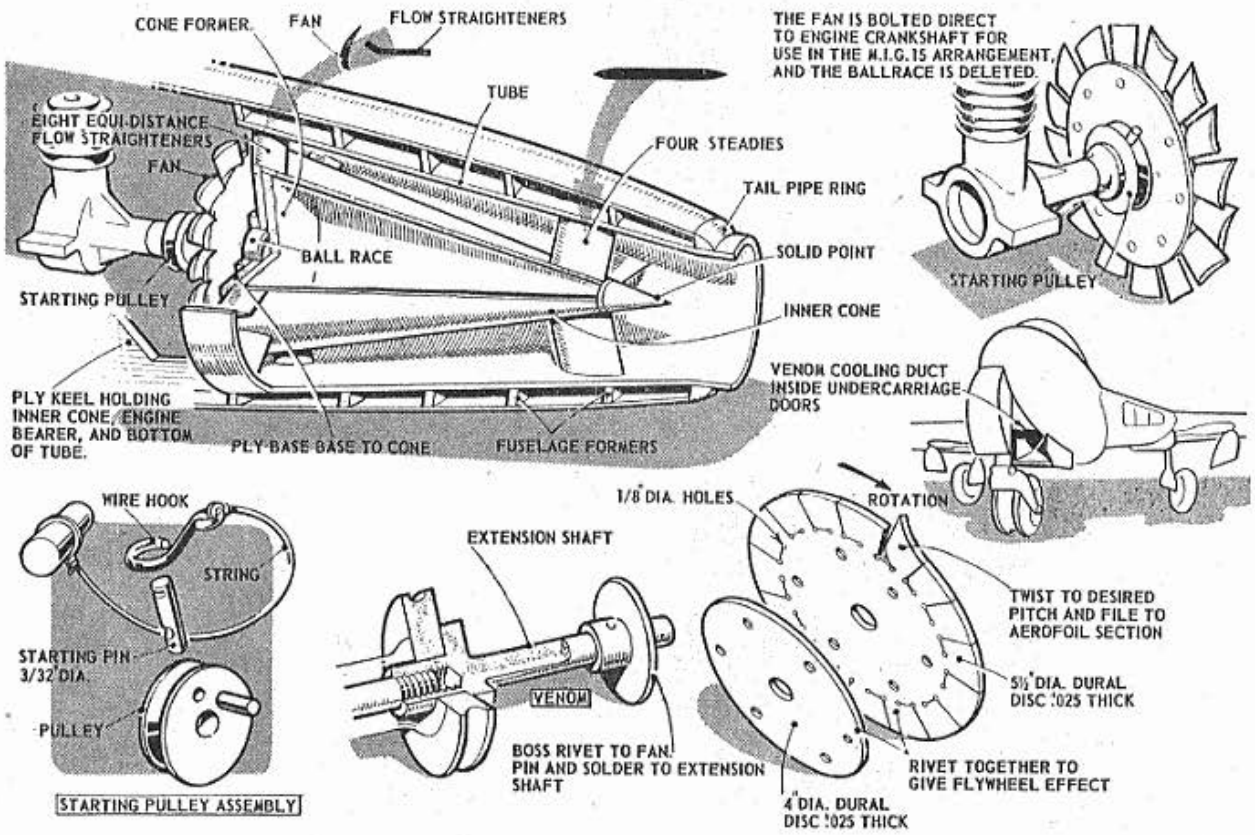
These two views of Mr. Newbold's scale De Havilland Venom show the installation of the E.D. 3·46 diesel and the impeller. Access for pulley and cord starting is through the removable hatch, and engine control is simplified by the removable rear half of the cockpit cover. Actual scale wing root air intakes are used as well as supplementary air through the nosewheel aperture.

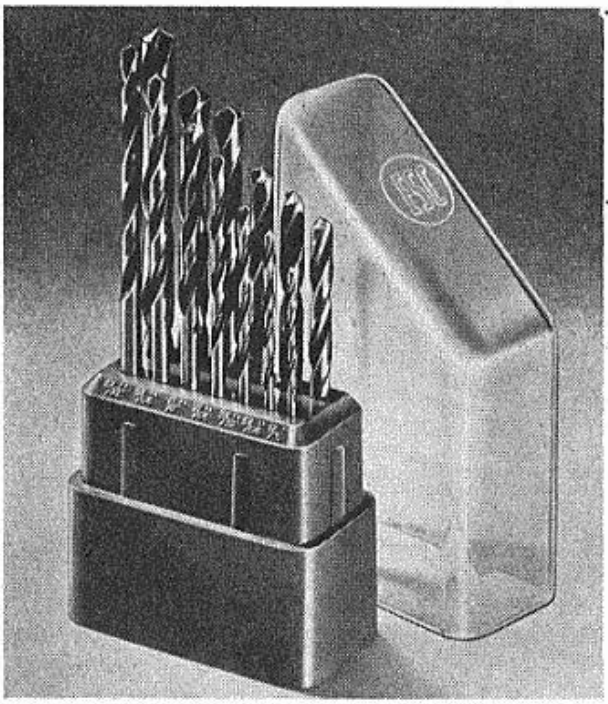
mounted directly onto the crankshaft in the manner of the MiG 15 (see sketch). A snappier take-off is now possible, and with thrust control doors shut, the aircraft taxies around at about 10 m.p.h.

Flights so far with the " Venom " have been at ¾ max. engine revs., and this unit has definitely plenty of power to fly the 3½ lbs. of model. The acceleration is very impressive and with the exhaust gases shooting out the back looks almost like the real thing—the noise is equally impressive of course !

As an afterthought, if someone had 4 E.D. 3·46's or similar engines, and enough money, and considering that my thrust-measuring gadget measured 1 lb. plus, actual pushing power when stationary, a really spanking model of the " Comet" could be constructed, with something over 4 lbs. thrust providing the necessary " urge " !

THE NEWBOLD DUCTED IMPELLER



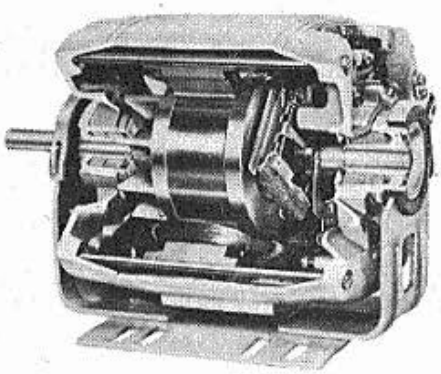


TRADE NOTES

ALL aeromodellers are constant drill users and the new **"EASICUT" DRILL PACK,** as illustrated, should be invaluable to them. Thirteen high performance drills ranging from 1/16 in. to ¼ in. are neatly stacked in a red plastic base with a perspex cover providing protection when not in use. The drill sizes are clearly marked on the base of the pack and each drill can be speedily replaced without fumbling. At 20/6 this little outfit is an economical asset to any modeller's workbench.

Those modellers who use power tools know the value of a really reliable electric motor as a power unit. Messrs. Hoover, at their Cambuslang factory near Glasgow, are now producing a range of **FRACTIONAL HORSEPOWER MOTORS** of exceptional adaptability, finish and engineering precision. We examined a motor and were very impressed indeed with the workmanship.

Technical details we will keep to a minimum, sufficient to say that they are available in all the standard voltages, either single phase or three phase, at speeds of 1,425 r.p.m. and 2,850 r.p.m. The range extends from 1/6th to ½ h.p. Various shaft sizes are available, e.g., with flats, threaded, keyed, etc., and the overall size of the units is approximately 6½ ins. wide by 6½ ins. high by 11 ins. long.



In short, if you are contemplating a lathe, a mechanical sander or a bench drill, then consult your nearest Hoover Agent when it comes to the power plant. There will inevitably be a Hoover Motor suited for your job. Full technical details can be obtained from Messrs. Hoover (Electric Motors) Ltd., Cambuslang, Lanarkshire, or from Messrs. Hoover Ltd., Perivale, Middlesex.

Mercury Models and Accessories

One of the casualties of that gallant but unsuccessful battle against the iniquitous Purchase Tax imposed on the model trade by the Customs and Excise were Messrs. Mercury Model Aircraft Supplies Ltd. This company has in fact been wound up, but we are happy to report that the ubiquitous Mercury Trade Mark has been purchased by H. J. Nicholls Wholesale Ltd., who with the co-operation of good friends in the Trade will continue to produce the excellent range of Mercury Kits and Accessories prized by modellers everywhere. Not only are H.J.N. and his happy band continuing production of the present range, but they also have six new designs appearing very shortly.

The famous range of Mercury Fuels needs no introduction, and any addition to the range is welcome news to we modelling finger bashers. **Mercury 6R** is produced in co-operation with the manufacturers of **"REDeX",** the well-known motor fuel additive, which has been added to the standard Mercury 6 fuel to give this new racing diesel brew.

We tried a test bottle with our own E.D. 2·46, comparing the results against a standard fuel. The rev. counter showed an increase of just over 500 revs. and we had a feeling that this might be improved on, had we had more time for conclusive tests. **"REDeX"** does its stuff by strengthening the oil film, and reducing oil drag, so minimising friction and in turn saving engine wear. However, the oily handed brigade will undoubtedly try a bottle and see for themselves, so we'll let it go at that, muttering words regarding "proof of the pudding, etc., etc."

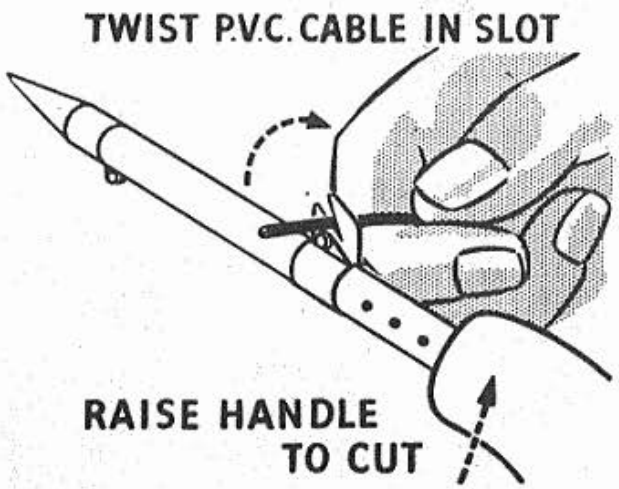
We've already mentioned **REBORING** in past "Hangar Doors", and you've noted the regular ads. for this new service in each issue. We decided to try them out, and no names, no pack drill, sent two of our hack motors away for rebore and overhaul. A worn-out, hard-to-start Fox 35 went to one, and a locked up Australian Gee Bee 2·5 diesel

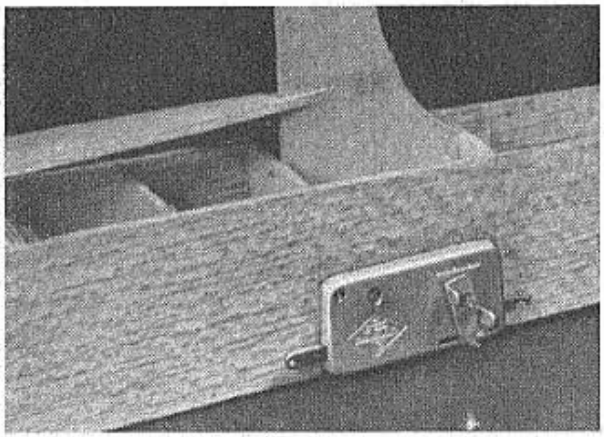
went to the other—minus needle valve and in sad mechanical state. Within days, both were back. The Fox, rebored, thumped over on compression better than ever. Maybe that shiny ring around the piston is a deposit of chrome, but whatever the boys up north did to the inside so quickly, we have a better than new engine for a few extra shillings. The Sabre was more of a repair. It came back pristine as new, with a very smart new-type needle valve assy., and wizard compression. As it went away with a solid piston lock we had little hope for future use of the engine, but now it's ready for top-grade contest work—a tribute to the craftsmanship of the repairers.

We had a spot of bother coercing the firm's Frog 150 into action the other day ; maybe it was that corn cure we added to our unidentifiable fuel ! Anyhow, it was about time we purchased a can of decent brew, so we decided to try the NEW **SHELL POWAMIX** introduced by the I.M.A. people. At 2s. 6d. per can, with the reversible screw top pourer, this Frog line is now a well established trade item. The new fuel contains ether, and the can is distinguishable for its extra red label band around the tin. The test ? Well, the Frog 150 sparkled into life in a matter of a few flicks, no bother at all, and we definitely noted cooler running in our nearly all-enclosed engine.

Also from the Frog Company comes the new range of **NYLON** Props. Our test ones have been 8 × 5 and 6 × 3 ins. They were a milky white colour, and virtually prototypes ; but the increased durability was noticeable. We all know the plastic prop is not unbreakable, we even managed to split the Nylon 6 × 3 on icy ground, but these new props are tougher than before, and lighter, too.

It could quite easily be said, and we speak as eye-witnesses, that the 1952 World Power Championship was won for Gt. Britain by a combination of good model, good modeller and good **CLOCK-WORK TIMER.** So impressed were we by the reliability of the clockwork unit and its constant ability to get a 19·8 seconds power run, that all of





our future power contest jobs will incorporate this item. Two of the **E.D. TIMERS** were recently bought off the shelf by us, price 8s. 9d., and each is now fitted in a contest model. Weight is just under 1 ounce, a small amount considering the advantages, and actual pull is about 7 ounces, sufficient to trip any fuel valve or auto-rudder. Maximum timing can be 60 secs., or abbreviated with extra pull, to 19 secs., and of course, a brake is fitted to hold the mechanism during ground tests. Photo shows "Eliminator" installation.

Another item, important to International Contests as well as home events, comes with the subject of **CONTROL LINES.** How many will realise that every one of our "Gold" trophy stunt contests since 1949 has been won by modellers using **RUSSELL MODELS** ·010 Stainless Steel Cable ? This multi-strand, bright and shiny cable can be supplied to any length on returnable wooden spools, and in 8, 10 and 13 thou. sizes. Price, per 100 ft., is 6s., 6s. 9d. and 7s. 6d., respectively, and breaking strains are 7, 11 and 20 lbs. We checked the large size, found no sign of stretch up to 20 lb. pull, and breakage came way above this figure. From the same address (see Classifieds this issue) galvanised single strand wire in any of the four sizes can be obtained, and this has been used for many speed records.

Wolf Electric Tools Ltd. announce that Wolf Solderguns type numbers 31 and 41 and Soldering Irons numbers 32 and 42 will in future be fitted with a **PATENT WIRE STRIPPER** for stripping plastic covered wires prior to soldering. The stripper is conveniently fitted to the barrel of the tool and in a position for correct working temperature, i.e., with its forward edge $2\frac{11}{16}$ in. from the front end of the soldergun barrel. It can be used on all sizes of plastic insulated wires—single or stranded—without damage to the internal wire or stranded conductors.

Last, but by no means least, Messrs. RIPMAX announce that they are able to supply kits of parts for the **AEROMODELLER TRANSMITTER & RECEIVER**—good news, indeed !

Running a School Model Club

By

J. F. CHAPLIN

Art Master, Canterbury School,

Morden, Surrey

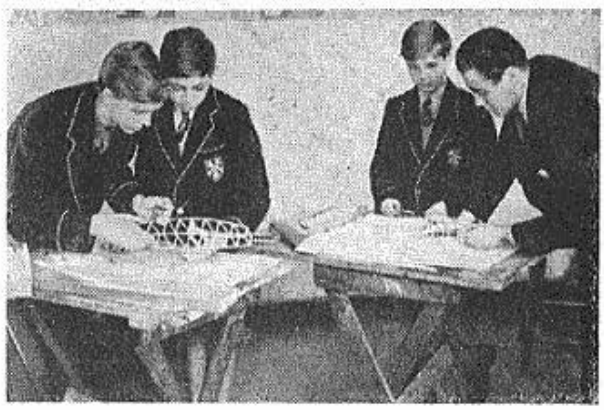
FOR the last three years a model club has been in successful operation in this school and a word or two on the operation and organisation of the club may be of interest to readers of the AEROMODELLER.

The area in which the school lies is not a rich one and therefore expenses have to be kept down to a minimum. The school itself is a mixture of secondary and technical streams of boys up to and including sixteen years of age. There are well equipped metalwork and woodwork rooms, and though the club operates in the art room, we are able to use these workshops for specific jobs (soldering and sawing, etc.) with the co-operation of the masters concerned.

The club first started when a boy brought a model diesel engine to school and asked me if I was able to start it for him. I had never seen one before so I had hurriedly to set to and read up a little on the subject and eventually I managed to get the engine running! A number of boys had shown obvious interest in the proceedings and I heard a few remarks to the effect that " You may see them on any Sunday up on Epsom Downs ". I asked a few of them if they would like to see a model club started in school. The boys were obviously very keen due, I think, to the fact that they were not allowed to " make a mess " at home. Within a couple of weeks it was noticeable that a long-felt want was being filled.

The local model shop proprietor was very helpful both with advice and practical assistance. It was decided to charge a sixpenny entrance fee and a weekly subscription of threepence. The money is used for necessities such as cement, clear dope, knife blades, etc. The kits are bought by the boys themselves plus extras such as coloured dopes and tissues. Once again the model shop proprietor proved helpful in allowing boys to purchase models at so much a week, or to purchase second-hand diesel engines on similar terms.

Heading shows the School Club at a Building Session in the art room. The Master is at hand for instruction and to answer queries. Left: The local model shop is ready to give guidance. Below: Helping the younger members over the initial stages.



When we first started only older boys were admitted until they became proficient in careful workmanship such as making true joints, lining up the fuselage, covering and generally turning out craftsmanlike jobs. Younger boys were then accepted and were looked after carefully right through their first model until they had it flying successfully on the school field. This " monitor " system is still successfully in use.

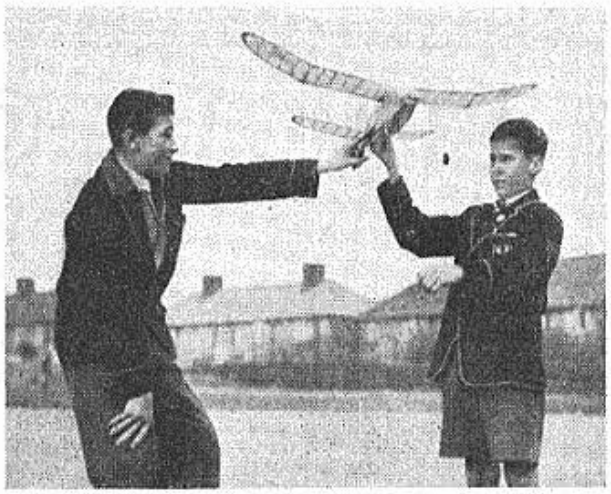
I have found that if a boy is guided carefully during the building of his first model so that it flies truly and well, that boy becomes a convert to aeromodelling ; if, on the other hand, the model is badly built and crashes on its first flight the boy usually loses all interest in the hobby. I make it a rule that the first model is built SLOWLY AND CAREFULLY and that the boy understands what is being done. When he realises that the *building* of the model, in all stages, is of primary importance he is on his way to becoming a competent aeromodeller. A boy is usually far too keen to get his model into the air and is not at all particular how he does it. When the first model is ready to take the air I have found it necessary to give a detailed explanation and demonstration of trimming and flying. When the boys have really grasped the fundamental principles of flying a model aeroplane, little difficulty is encountered with future models.

There are two boys appointed to specific jobs. One sees that the younger boys are kept busy because he is in charge generally and boys refer to him for advice regarding their models if I am not available. The other senior boy is the " buyer ". He takes charge of the weekly cash receipts and visits the shop every Friday during the lunch hour to purchase the weekly supply of cement and balsa wood ready for the activities after school. A boy may find that he needs an extra strip of balsa wood or the odd piece of wire ; if so, he writes his order down on a piece of paper and hands it in when he pays his weekly threepence to the buyer who then makes the purchase.

There are one or two very useful tools to have available in the room. These are a strong pair of pliers, a number of balsa knives (KeilKraft knives I have found most satisfactory), sandpaper, pins, candles for waxing plans, strong cotton, razor blades, cabinet files and, if possible, a small vice.

I have found that very small, cheap models are not suitable for beginners but that those with a wingspan of about thirty inches fill the bill admirably. The younger boy will lose patience very quickly with finicky bits of balsa such as are needed for wing ribs or tricky fuselage curves. Simple chuck gliders are best for beginners, followed by larger models which are not hard on the pocket, such as the Mercury Magpie, K.K. Soarer Baby, K.K. Senator, and the Frog Vespa. These are ideal because they are straightforward to build and are very reliable fliers. Scale models should be avoided as primary models owing to their trickiness to build and fly.

Chuck glider competitions have proved extremely popular and at threepence a head entrance fee prizes of model kits may be awarded, leaving a small sum over for the club funds.



Above : First try-out with a newly built rubber model. Below : Discussion around the first control line model reveals that the boys soon become expert.

On school open days a number of well finished model aircraft make a very welcome addition to the school display.

On the above lines the Canterbury School Model Club has been running well for the last three years. It includes seasoned campaigners who have gained awards in competition and every grade down to the eleven year old who has never tried before. If our experience is likely to be useful to any other aeromodellers we shall be pleased to help.

It's a Flying Saw-Sir ! !

RADIO CONTROL NOTES

A miscellany in which HOWARD BOYS introduces two new forms of rudder control, a novel "beep" box selector switch and latest circuit developments.

THE scheme for operating a proportional rudder control by means of a governor mechanism has been sent in by more than one person, but Doug Bolton sent along a photo of the equipment in a model, that was giving very good results. The model hid some of the parts so he made a "mock-up", a photo of which appears in Fig. 1.

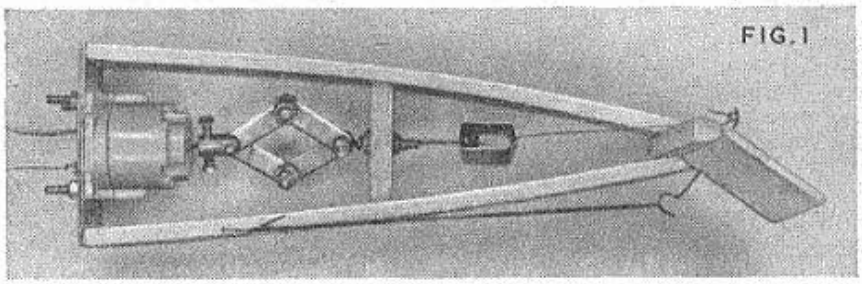
The actuator consists of a small electric motor, a Frog Tornado, or Mighty Midget, to run from 1½ volts for preference, driving four small arms loosely pivoted, and a shaft with a coupling and link to the rudder.

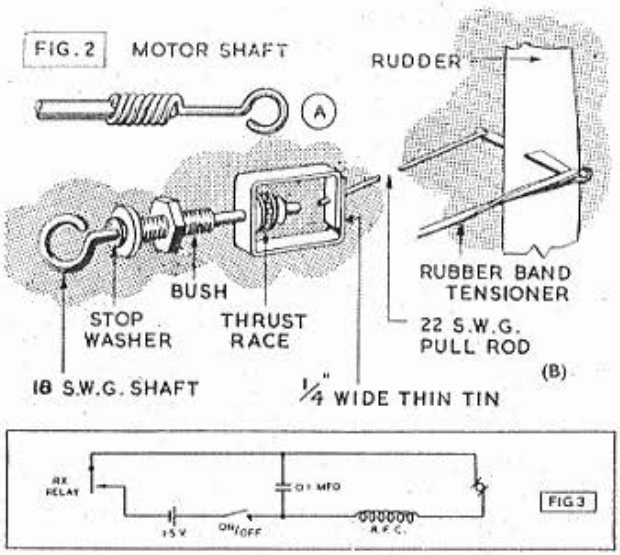
A short length of brass rod, drilled axially at one end for the motor shaft and tapped for set screws, has the other end slotted and drilled for the governor arms. A simpler fitting that would probably do just as well is shown in Fig. 2a, and is made by bending a piece of steel wire about 22 s.w.g. into a loop at one end, and a tight helix for the motor shaft at the other end. It could be soldered, but a tight fit would be better. The four arms are made from thin sheet metal such as tin, about ¼ in. wide by 1 in. long with a hole at each end, about ¾ in. apart. The weights are made from 6 BA bolts with three washers and three nuts on each. The other ends of the arms are bolted to a shaft that rotates and slides in a bush that must be fixed in line with the motor shaft. All bolts through the arms must be loose with the nuts locked, so that when the arms rotate the weights will fly outwards. On the end of this last shaft is a tin loop that does not rotate, but is pulled when the weights swing out, and in turn pulls the rod which is linked to the rudder. On the other side of the rudder is a rubber band to pull the rudder back. These parts are shown in Fig. 2b.

Doug Bolton adds the following notes.

The successful operation of an actuator of this type depends to a large extent on the ability of the motor to always start itself. Experience with the Frog "Tornado" has shown that the 10 BA bolts securing the brushes will probably need tightening, and the brushes themselves may need adjustment.

FIG. 1





In the photograph above, and diagrams 2 and 3 are shown the Doug Bolton scheme for operating a proportional rudder control by means of a governor system driven by a miniature electric motor. The special mock-up in the photo shows the simplicity of such an arrangement, hardly more complicated than the normal two or four pawl rubber driven actuator. See text for details.

When used with a push button transmitter, the actuator gives left rudder (say) with no signal and the motor stopped, and right rudder with signal when the motor will be running. The relatively slow speed with which the rudder moves however, gives a much smoother control than normally possible with a " bang-bang " mechanism.

Alternatively a mechanical pulse rate of as low as two or three per second may be used on the transmitter, giving a truly proportional control especially if a small flywheel is fitted to the motor. In this case the motor need never stop, thus eliminating the danger of failure to self start. Further, it is possible to arrange an engine cut-off when the rudder is fully over either way, thus stopping the engine in the case of radio failure.

Other advantages are that a single 1·5 volt cell only is required the current drain being about 150 m/a intermittently, and the power of the motor gives a good indication of the state of the cell.

As with most actuators employing electric motors, engine vibration has little effect, but electrical interference will occur with most receivers. A simple suppression system in the actuator circuit will be required as shown in Fig. 3. The R.F.C. should have a low resistance.

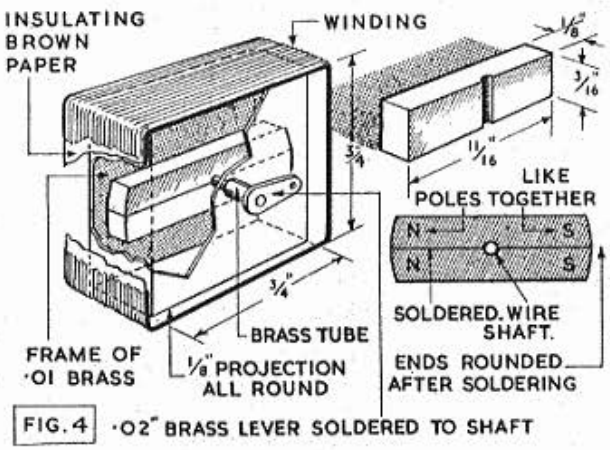
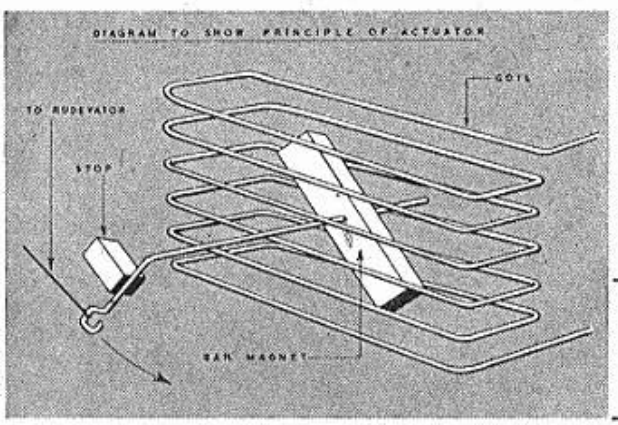
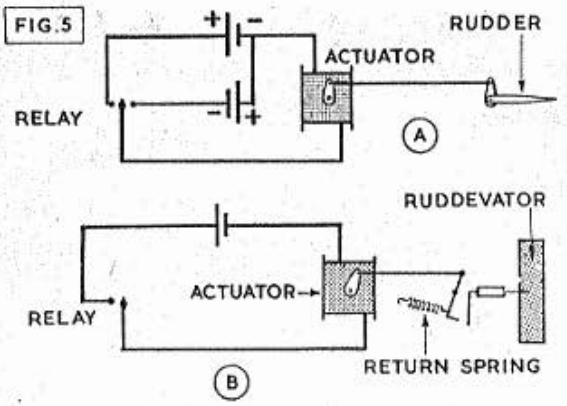


Fig. 4 shows the Pike single acting actuator.





Pike Single Acting Actuator

A number of people have requested details of Geoff Pike's economical single acting actuator, and these are given in Fig 4. A piece of brass tube or a bush is soldered to the centre of the top plate to take the shaft and it should be as square as possible. The two magnets are then grooved and soldered to the shaft, which is pushed through the bush and should project slightly to have the lever soldered on. This should be assembled so that the magnet will revolve freely but not have much endways movement. The side and back plates can be fitted, and then the end plates, which should project about $\frac{1}{8}$ in. all round. A layer of paper is then wrapped round for insulating purposes.

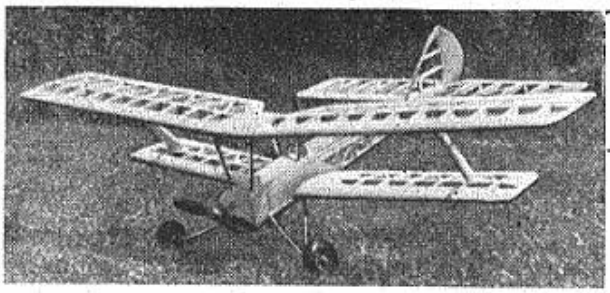
The winding depends on the purpose for which the actuator is required. If it is used to operate the rudder direct for say proportional control it is wound with 34 s.w.g. enamelled copper wire to a resistance of about 15 ohms, which requires about 42 yards. The connections to batteries and relay for this system is shown in Fig 5a. It will then turn one way with signal and the other way without signal.

For the most economical system the actuator should be used to operate a single acting ruddevator stop. A light return spring is needed, but a single pen cell or U8 is good enough for the operation. The winding for this use is about 56 yards of No. 36 s.w.g., or to a resistance of 30 ohms. Diagram for this use is Fig. 5b.

A Selector Switch

A gadget commonly known as a " Beep " box is not very popular with model fliers in this country, probably because they are generally a bit complicated. The simplest so far seen by the writer has been sent in by Mr. Bowker of Leamington Spa, and is shown in Fig. 6.

Diagrammatic sketch, left, shows the principle of Geof. Pike's lightweight actuator unit. A car ammeter works in much the same way. Windings should be in this direction and not as indicated in Fig. 4.

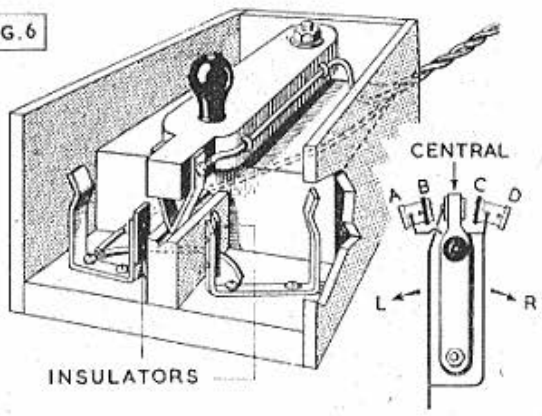


Radio controlled biplane at left, is the work of Mr. Burchell at R.A.F. St. Eval in Cornwall. With an all-up weight of 60 ounces, the job has a wing area of 877 sq. ins. and uses an Amco 3·5 c.c. diesel.

Moving the lever to the right gives right rudder and to the left gives left rudder, providing you don't change your mind half way through a movement. With the knob in the centre the rudder will be central, ready to go right. If it is now moved left, it touches contact B on its way giving a flick right before coming to rest on contact A which is left rudder. For the movement back to central, the contact B is insulated, so the rudder gets no flick, and is ready to go right again. In moving the knob to right, contact C is insulated so contact D gives right rudder. On the way back to centre, the rudder is given a flick to left by contact C, and so is ready to go right again from central position. By making all movements deliberately and completing a movement once started, there will be no error.

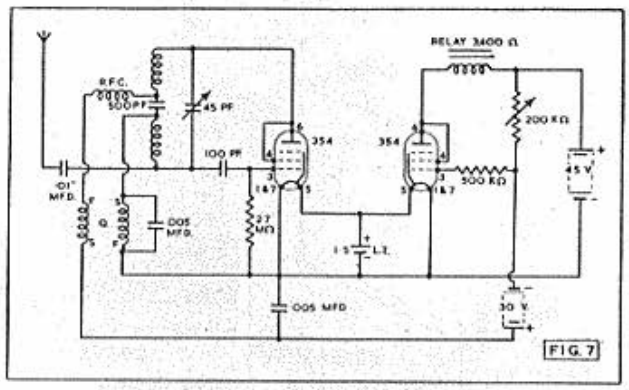
Now for construction. Hardwood is used throughout and the main block is slotted on the underside for the wiring, and drilled for pivot bolt with a hexagon recess for the bolt head. The bolt is secured with Durofix, and the block glued to the $\frac{3}{8}$ in. thick base. The small block at the front is notched for the handle's V brass strip and secured to base and main block. The handle is drilled for the pivot bolt, has a saucepan lid knob near the front, and the V shaped brass travelling contact bolted on. Two pieces of springy brass are bent to a rough U shape as shown, and paxolin or ebonite masks are riveted on to overlap by 1/32 in. at the top and sides. Note carefully which sides they are. The rivets must be below the level of the travelling contact. Screw the contacts to the baseboard. Bolt down the handle, preferably with spring loading to give a constant tension. Complete the wiring, and put on the sides. The top wire may be bound to the handle, and both wires must be securely fixed where they leave the block.

FIG. 6



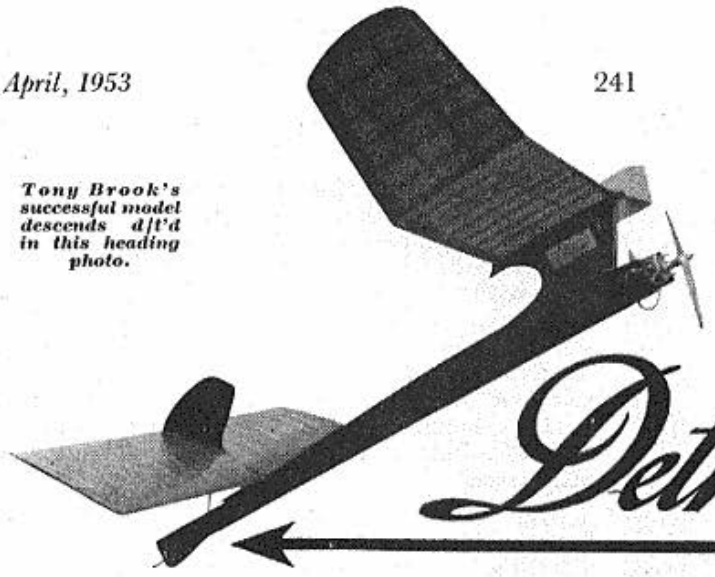
Another Receiver

Mr. Burchell of the R.A.F. St. Eval, has been experimenting with various receivers with mixed success. He was unable to get a Bolton No. 1 set working satisfactorily, but then tried the quench type circuit given in the 1951 AEROMODELLER ANNUAL, and followed it with an amplifier similar to the Bolton No. 2 receiver. The 600 ohm variable resistor was omitted and the quench coils were wound on separate formers. The receiver weighs $3\frac{1}{2}$ ozs., measures $2 \times 2\frac{1}{4} \times 2\frac{1}{2}$ in. and gives a current rise of 2–3 milliamps at a range of over a mile from an E.D. transmitter. The circuit is given in Fig. 7.



This receiver was being put in the biplane shown top left, details being: Span top 60×9 in. chord. Span bottom $45 \times 7\frac{1}{2}$ in. chord. Engine Amco 3·5, and weight all up 60 ounces. In his last letter, Mr. Burchell said he was looking forward to a fine day with high hopes even if it did end with a digging session!

It is strange how some people have trouble, and others success with a particular receiver. In this instance Dennis Neale of Ashford had trouble with the above mentioned quench receiver, but overcame it by using his own quench coils consisting of 650 turns of 40 s.w.g. wire in each slot. He then obtained a current drop from 2·2 to 1·2 milliamps at 1,000 yards but did not check for maximum range. He would like to warn R/C fliers that dew will sometimes condense on air spaced condensers (nothing funny meant) and put the receiver out of tune. He has had it happen.



Tony Brook's successful model descends d/t'd in this heading photo.

● FOCUS ON "BRING 'EM BACK, SAFE AND SOUND" DEVICE WHICH IS NOW AN ESSENTIAL TO ALL CONTEST MODELS.

Dethermalisers

DURING the past few years the dethermaliser has become as essential a part of the duration model as any of the main structural components.

The standard of model flying has advanced considerably during the last decade. The rubber model has grown up into the highly specialised Wakefield whose loss may be quite serious from the point of view of time spent in its construction. Power driven models have also appeared in numbers and the loss of an expensive motor on an out-of-sight flight is not to be considered with favour. Glider standards have improved out of all recognition and without some form of semi-automatic recovery would be lost wholesale on any good flying day.

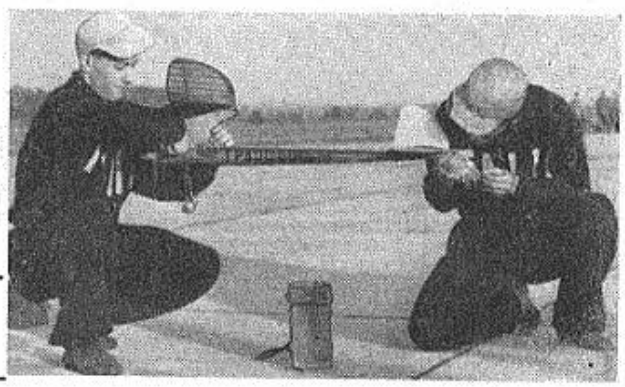
Without some form of control, in other words, the present day duration modeller would be faced with the fact that his new creation could only be expected to have a short life. The better it was the greater the chance of losing it—hardly an encouragement to develop better and better models! Thermals are no stronger and no more abundant than they were ten years ago, but model performances are so much better than we would hazard the guess that, without dethermalisers, duration interest would rapidly die out. Even the beginner should remember that if he builds a duration model he has created a machine which is potentially capable of long thermal flights and he should start in the right way by accepting a dethermaliser as an integral and very necessary part of his model. No expert would contemplate flying a contest model without such a device. New machines have been lost on test flips due to such omissions, setting the builder back many hours in producing a duplicate.

To the few people to whom a dethermaliser may still be something of a mystery we will say, quite simply, that it is a means of bringing the model down swiftly and reasonably safely to earth after a pre-determined time. It spoils the flying characteristics of the model and makes it sink rapidly.

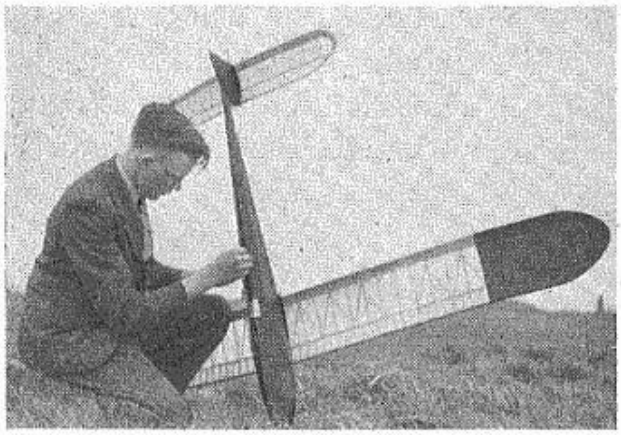
With a dethermaliser one can limit the distance which a model will drift by estimating the flight time to take the model out of the field and setting the dethermaliser for a slightly shorter period. Thus it is possible to trim a contest model safely on full turns, a full power run or the full towline length in conditions which would normally carry the model well outside the flying field but, by intelligent use of the dethermaliser, terminate the flight within the boundaries of the field.

Another use of the dethermaliser is in trimming out the climb on a power model. If a number of flights are made with the dethermaliser set for a definite time—say 30 seconds—making small adjustments to the thrust line or changing propellers—the best climb will be the one giving the best overall flight time (since it can be assumed that the model will descend at the same rate each time when dethermalised).

Extremely powerful thermals are not as frequent as the more moderate kind. In nine cases out of ten a dethermaliser *will* be effective in a thermal. In the tenth case, well, even throwing the wings off on a light model, or the complete tail unit might not bring the model out of the thermal. In other words, such a high rate of descent would be necessary for the dethermaliser to bring the model down through the lifting air that, used under normal conditions, the model would be smashed on reaching the ground. We must accept the fact that in some cases the thermal may be powerful enough to even continue to lift the model.



Pre-flight preparations at the 1952 World Power Championships. Two Italian competitors, one setting the motor, the other lighting the dethermaliser fuse.



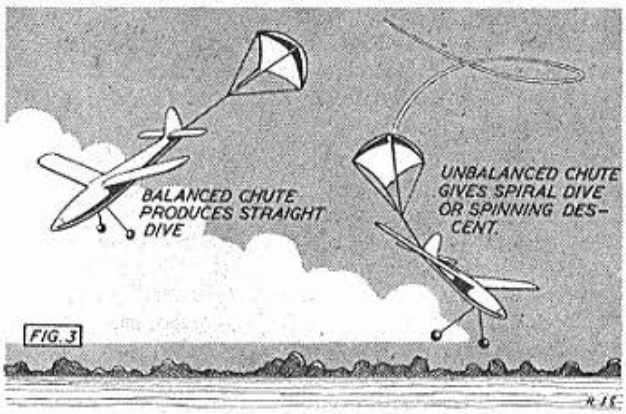
Roy Grasmeder of West Essex sets the D/T on his glider before a contest flight. In this case, the dethermaliser fuse is fitted amidships, like that on the "Arrow", which has a tip-down tail, on page 217.

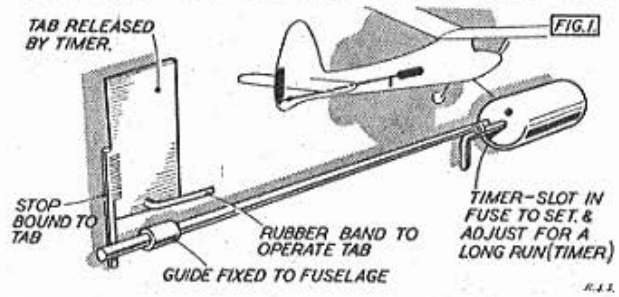
The other limitation in the use of dethermalisers is not so much the fault of the dethermaliser as the requirements of the modern contest. Winning times are creeping nearer and nearer to the fifteen minute maximum aggregate. In other words, the standard chance of winning, the contestant has to set the dethermaliser for a five minute flight each time in nearly all conditions.

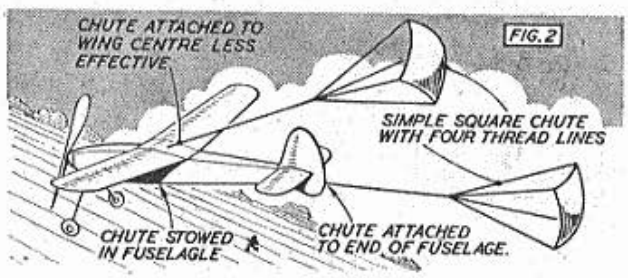
One of the first persons to use a dethermaliser on a contest model was Dick Korda. In the early 1940's he appeared with a timer-operated trim tab on a rubber model. After a pre-set time the tab flicked over, putting the model into a spin to bring it down rapidly to earth. This method was quickly taken up by other modellers both in this country and America. Norman Lees was, as far as we can trace, the first British modeller to adopt the idea.

However, spinning the model down had one basic disadvantage. The model hit the ground pretty hard and so ran the risk of damage. A more gentle "let down" was desirable, at the same time preserving a reasonably high rate of descent for true "dethermalising" action. Norman Lees, Bob Copland, and Ron Warring developed the parachute dethermaliser as an alternative which appeared to answer this problem completely, at the expense of the weight of the parachute (roughly three-quarters ounce on Wakefield models)—Fig. 2. All, incidentally, followed Korda's original idea of using an "airdraulic" timer, but whereas Korda used a commercial timer, British modellers built their own light weight units weighing about one-fifth ounce.

Drag parachutes had also been tried in America, but they appear to have made the mistake of attaching the 'chute to the centre of the wings, or near the centre of gravity of the model. With such an attachment the "let down" is quite safe, but the rate of descent is low. To be fully effective the 'chute has to be attached near to the end of the fuselage when it pulls the nose of the model down. The descent is then a steep, but not too fast dive. If the 'chute is not "balanced" or does not fill properly, the model will also spin as well as dive—Fig. 3. Both forms of descent let the model down without damage in most cases.





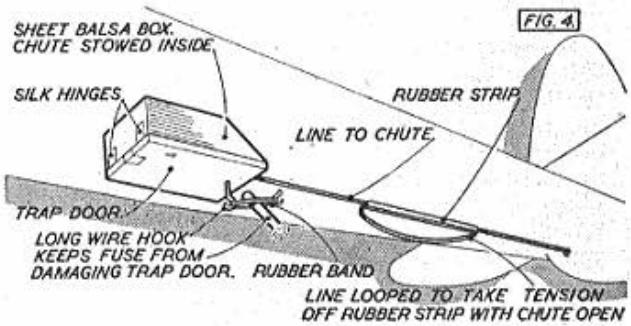


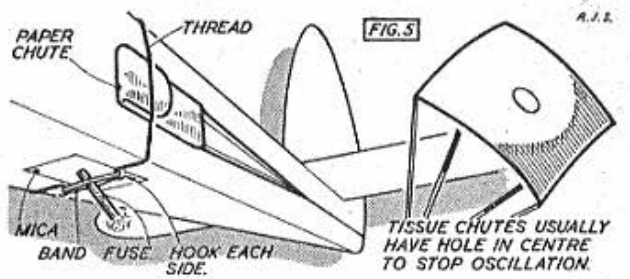
The necessary release mechanism for this is simplicity itself. The 'chute (generally made from silk) is stowed in a suitable hatch in the fuselage, the trap door of which is held shut by an elastic band. The 'chute lines emerge from the hatch and terminate at the tail of the fuselage. A length of fuse slipped through the locking band burns through the band, breaking it and releasing the trap door. The 'chute is then ejected, either by the pull of the 'chute line (given by incorporating a length of rubber strip in the line), or by a spring action from within the hatch. Typical details are summarised in Fig. 4.

On many models this scheme is simplified still further. The 'chute is folded up and straps to the side of the fuselage, released by the fuse burning through the rubber bands completing the strap—Fig. 5. With this scheme, too, tissue paper is often used for the 'chute instead of silk. It is particularly adaptable to rubber models of all sizes, and small

gliders, where the designer wishes to instal a dethermaliser with the minimum trouble.

The 'chute type dethermaliser was by no means accepted as the ideal solution. A variety of other devices were tried out, ranging from drag flaps or spoilers opening out from wings or fuselages; releasing the wing; or tipping the wing up to a high incidence; releasing a spool of thread tied to one wing tip; and so on. Drag flaps and spoilers prove amazingly ineffective; most of the other schemes failed by virtue of their relative complexity or difficulty in positive anchorage of the "control" components or the weight penalty involved. Carl Goldberg, however, was early in

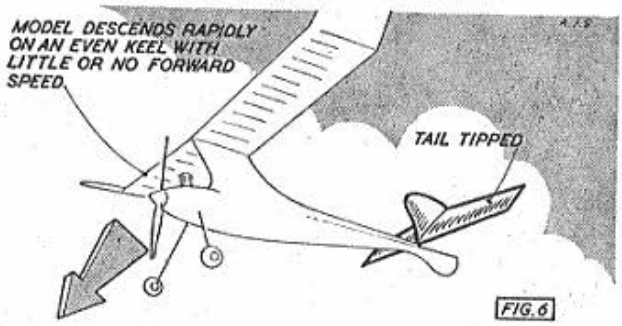




the field with a very simple device which, over the years, has proved about the best of all types of dethermaliser for every class of model. His idea was simply to release the trailing edge of the tailplane so that a high negative angle put the model into a super-stalled condition—Fig. 6.

If a model is completely over-elevated in this way it becomes amazingly stable and sinks smoothly on an even keel. The rate of descent can be varied by altering the angle of tailplane tip so that you can adjust the speed at which the model strikes the ground. This method provides a better "let down" than the 'chute type dethermaliser since the model is substantially horizontal when it reaches the ground and the main impact is taken by the undercarriage or the underfin, not the nose.

With due consideration to all the types of dethermalisers which have been developed and tried the tip-tail method is by far and away the best for almost every type of model. It is simple and positive. It also adds little or no extra weight. The necessary release mechanism can be incorporated very simply on most models, using the tailplane hold-down band to affect the tipping

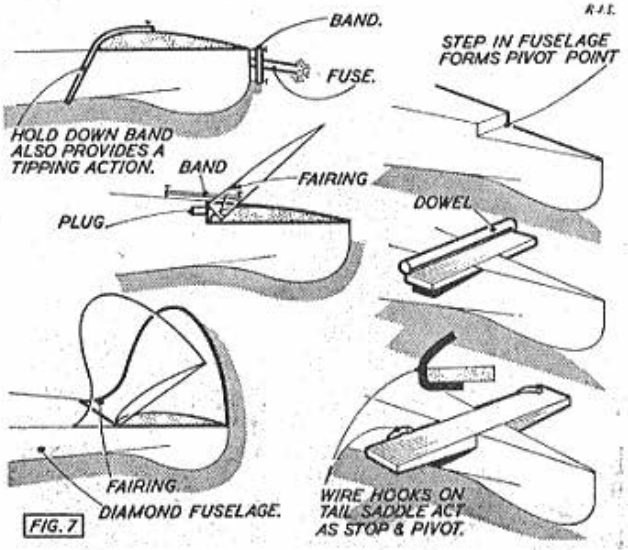


action as well, once the rear hold-down band is burnt through by the fuse. Some practical applications are shown in Fig. 7.

The actual angle of tip is important. If you care to experiment, starting with a moderate angle, say 15 degrees, you will find that tipping the tail puts the model into a series of violent stalls. Increase the angle still more until when you reach about 25 to 30 degrees tip the model rears up into one initial stall and then sinks down in a nose-up attitude.

A 30 degree tip gives a safe, smooth descent, but hardly fast enough for effective dethermaliser action. A 35 degree tip angle is about right for most models, Fig. 8. Increasing the angle still further only results in bringing the model down faster than is necessary—and good for it on landing!

There are various ways of limiting the tailplane tip. The most obvious is to fit a stop line of cotton or thread, the length of which is adjusted to give the required angle—Fig. 9. If the tailplane is mounted on top of the fuselage a twin-line bridle will be effective in keeping the tailplane rigid in the tipper condition. If the tailplane slews or tilts to one side when tipped the model will have a spinning descent. If possible, then, it is better practice to so shape the tailplane components of



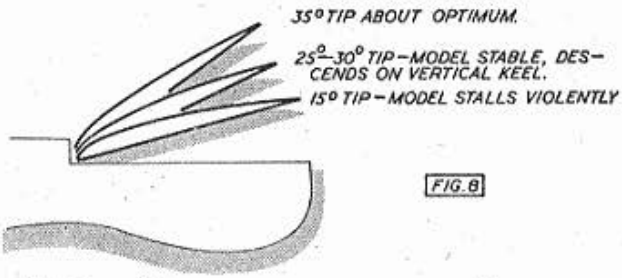
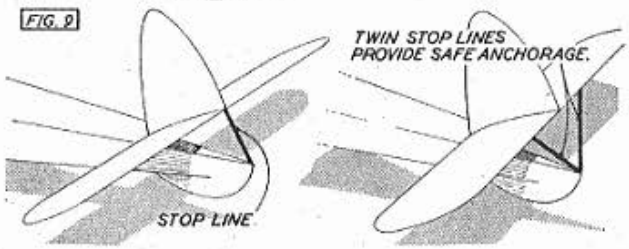


FIG. 8



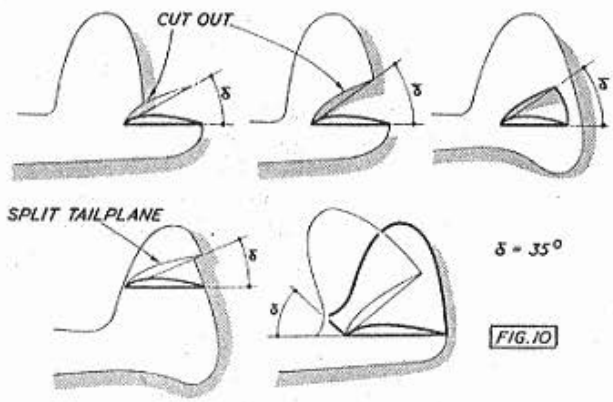
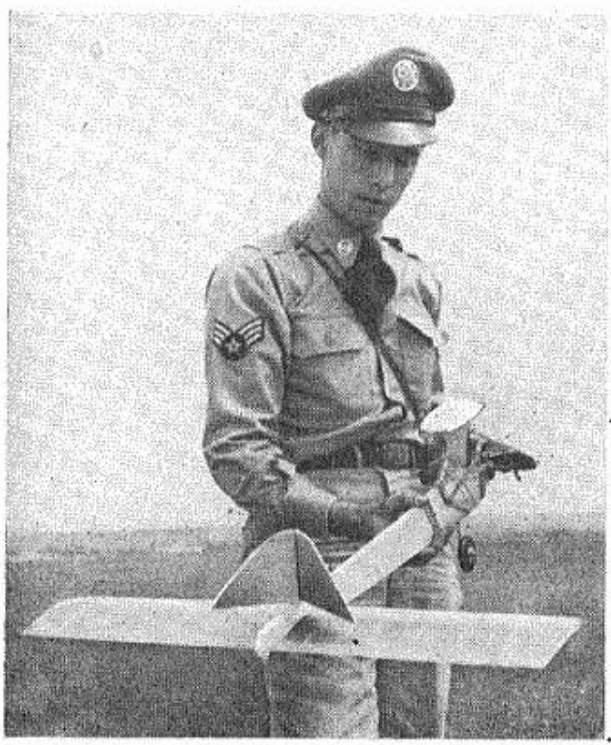


FIG. 10



the model that these themselves act as a suitable " up " stop. About the best method yet devised is the use of a fin with a cut-out as in Fig. 10—applied first to flyers, then finding favour for power models and subsequently Wakefields.

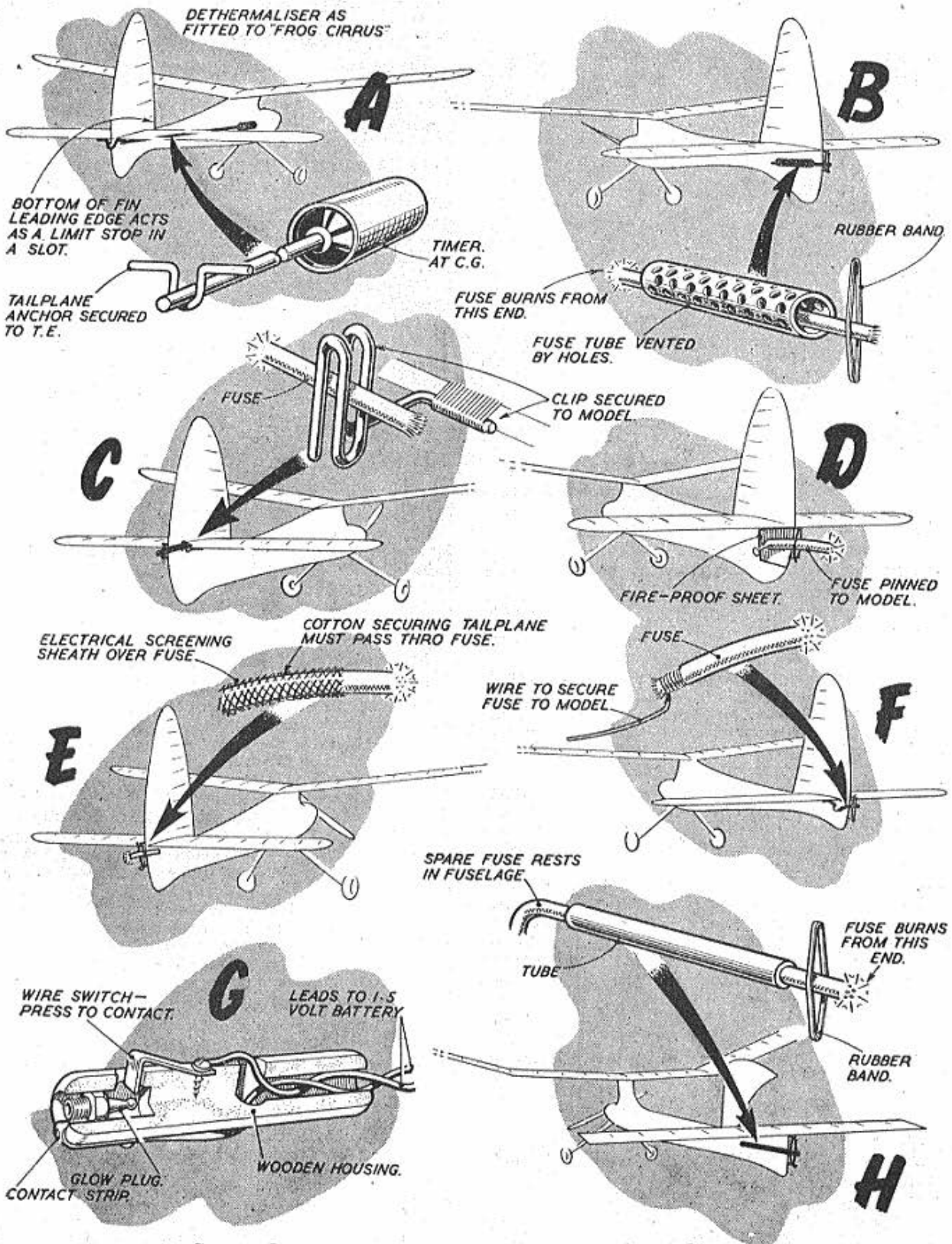
One other very good reason for adopting the tip-tail type of dethermaliser is that the design can be arranged so that setting the dethermaliser after each flight demands no more effort than replacing a small rubber band, which is necessary, in any case, to hold the tailplane down. Slipping a length of fuse through this band is a matter of seconds only. Hence the design *encourages* the flyer to use the dethermaliser each flight. It is better to be wise before the event than sorry after . . .

All sorts of materials have been used for fuses. The Croydon and Bushey Park clubs popularised the fuse in this country at a time when dethermalisers themselves were in their infancy. Good quality white string soaked in a saturated solution of potassium nitrate and then allowed to dry remained a favourite fuse material for many years, but untreated string often proved equally successful. Treated fuse string is now out of fashion, ordinary cotton lampwick of between 3/16 and $\frac{1}{4}$ in. diameter being quite reliable and needing no special preparation. This burns at a rate of something like two minutes per inch, or ninety seconds " between marks " (i.e., between adjacent coloured marks on the outer covering of the wick). Fuses with higher burning rates are not recommended ; nor are fuses with an extremely slow rate of burning, since these may go out in flight.

The fire hazard from the rejected " end " can be reduced by employing a device to trap the fuse end after the dethermaliser has tripped, instead of letting this be thrown off. Such a device, although adding slightly to the complication of the system, is thoroughly recommended. There have been no accidents as yet directly attributable to a burning fuse dropped onto crops, etc., but it only needs *one* to result in drastic action being taken to prevent a repetition. A number of workable safety devices suggested by readers in response to an earlier editorial appeal are summarised in the page of sketches. Of these, one of the simplest, and certainly one of the most effective in use, is the "snuffer tube" into which the fuse is fitted. Once the dethermaliser is tripped, the fuse end burns down into the tube, is automatically extinguished.

D/T Safety Devices opposite are: **A,** ***mechanically operated unit in I.M.A. Cirrus kit design.*** **B,** ***Drilled Jetex wick tube on fuselage outside shields burning fuse, by G. Hodgson.*** **C** ***is a simple paper clip device submitted by A. Hancock and C. Anderson, which holds burnt fuse.*** **D,** ***from Barry Venville, is simpler.*** **E,** ***electrical screening prevents fires, by J. Underwood.*** **F,** ***another variation by H. Gilbert.*** **G,** ***American safe glowplug fuse igniter, and*** **H,** ***Ipswich club system of feeding fuse through a tube in fuselage, which snubs the light when it burns flush with the end.***

Photo at left shows Lt. G. Evans Codding's split fin dethermaliser which we described in Gadget Review, December '52, destroys tailplane lift and imparts considerable drag. Works perfectly.



D/T SAFETY DEVICES—

R. J. S.

SCOTTISH PAGE

THE N.E. Area take the stand this month, credit for the gen going to C. M. Christie of Bucksburn.

In the N.E. Scottish Area competitions for the "Strathmore" Cup in 1952, Dundee led with 2983·5 points, second and third being Montrose and Bucksburn with 1687·5 and 1569·5 points respectively. Dundee won the Power and Scale competitions, Bucksburn the Rubber and Sailplane events, but the C/L events were not well attended, Perth and Monifieth winning the A and B Team Races by merely flying.

Next year the free-flight events have been increased by introducing Wakefield and Nordic classes, and it is hoped to present the champion C/L club with a shield, instead of mixing the two types of flying.

DUNDEE M.A.C. is fairly quiet just now, with little flying at Buddon until better weather comes along.

Flying Scale is popular, and some "on the way" include a "Seagull" amphibian, "Tiger Moth", American cabin jobs, Avro "Commodore", and Avro 504K.

PERTH M.A.C. Ian Dunn is busy with a modified, scaled-down "Smoothie" (Palmer's) for a 2·46, and cleaning and repainting his 2·46 team racer, which has done 80 m.p.h. Ron Irvine is also keen on team racing and has designed a new one round the B.B. Amco now that his "Vanfire" is complete.

MONTROSE M.A.C. observes "keen aeromods over 16 make very good R.O.C. men and need very little teaching while the pay comes in handy". Results of this are that the clubroom is deserted on a Wednesday night, and that many scale models are being built. Building has almost totally eclipsed flying which is quite a good thing as there is usually too much last-minute stuff for competitions. There are no control-liners on the stocks right now, this being a sign of the general trend away from this type. Scale models being built range from Whyte's "Hadrian" (A.P.'s), to Campbell's "Argus" (begun in 1948) and a "Tiger Moth" by Smith ("the only successful junior in five years!").

Whyte and Campbell are working side by side on their 1953 Wakefields, fuselages are about 40 ins. long, and both designs are similar, except that Whyte is using a folder and retracting u/c., while Campbell is returning to a free-wheeler and fixed u/c.

The junior is an unreliable species and we find that they soon lose interest when they find that they need a lot of patience and hard work before they can have any joy flying. Nothing spoils a young aeromodeller more quickly than giving him old models to "fly".

ARBROATH M.A.C. "At the beginning of the Winter season we had quite a number of junior members, but within the last few weeks they have been gradually disappearing . . . Generally these young fellows are all quite keen but they would rather fly models than build them."

". . . we had a very successful Club Christmas Dance and the company of over 70 fully enjoyed themselves, and will be back next Christmas."

". . . we were due to reaffiliate to the S.M.A.E. a week or so ago, but decided to let well alone and break away from the Society", this being due to the increased affiliation fees.

BUCKSBURN A.T. Team champion for the year was Urlan Wannop, who amassed 371·6 points by our system, having three club wins to his credit. Bucksburn has improved on last year with four firsts and a third in competitions.

Last month saw the Team at its busiest, with a succession of calm, frosty days, which brought the Juniors and some of the seniors out trimming. We have been able to keep Junior interest high by means of a Team Glider, designed by two of the members. The plane is of simple construction, and yet has a fair flight performance, so that interest is never lost in building and flying. Best flight by a Junior so far is 2 m. 0·5 sec., off a moderate towline length.

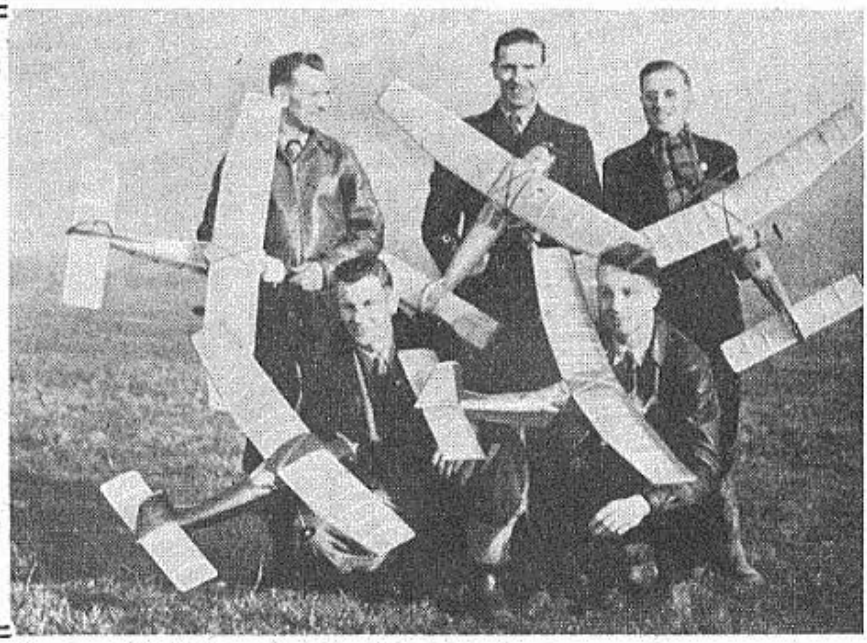
The new rubber changes not yet published, the Team has been a bit uncertain about how they will be modified. Christie has designed a small (180 sq. in.) rubber job, to the 1/3 rubber : plane ration, i.e., 2·15 oz. plane, just over 1 oz. rubber. Best flight so far is about 2 min. which is about the maximum available from the plane in still air. He has also modified his "Sunday Girl" by reducing the power to 2½ oz. for 4½ oz. airframe, and was surprised when the plane got 2 m. 58 sec. o.o.s. on its first flying after modification. Strongly opposed to this 345 sq. in. job is Urlan Wannop, whose 3 1/3 oz. lightweight of 152 sq. in. is getting 2 m. 43 sec. on 750 turns of a possible 1000 in dead calm air. Apart from these planes, Wakefields with geodetic surfaces are on the way, all the rubber models having compensating folders, to a modified design of Sandy Mackenzie.

Mac here again with a cut from the current West Coats Aeromodelling Club news sheet. They're staging a model aero show in the West Coats Cambuslang. H. G. School, April 25th, 2–5 p.m. We're out of space, so the rest of the excellent report from the above club will have to be held over 'til next month, as will reports from Prestwich, Lanark and Glasgow.

MAC.

Neat "Valkyrie", 6 ft. 0 in. cabin job for the E.D. 3·46 diesel is by Jim Robbie of the Mercury M.A.C., Musselburgh, Midlothian. Background is the Club's Macmerry airfield, used by permission of the Edinburgh Flying Club.

CLUB NEWS



The plan and instructions published in our December 1952 issue for the 'Debutante', caused so much enthusiasm among TAME MAC (Stockport) members that they ran a 'one-model' contest for it. Five prize winners are seen here—their opinion, "A first class sports model".

WELL, by the time this reaches your hands, the contest season will be under way—and a pretty hectic time it will be for those who intend entering the majority of national contests. However, let's hope for a fair share of decent weather to make it worth while, though such is the make-up of the average aeromodeller, he'll fly come flood and high water!

As expected, this month sees a whole batch of secretarial changes in the clubs, for unfortunately very few clubs seem to be able to retain the services of one individual for very long at one time. Which perhaps confirms the general opinion that aeromodellers in the mass are a perty hard bunch to please, and it's an extraordinary bod who is tough (or blasé) enough to keep the job for more than twelve months at a time!

South Eastern Area

Salaams all round, plus one red carpet laid to the door of the editor of "Seadog". Seems my little dig went home somewhere last month, for shortly after publication there arrived the long lamented gen-sheet with the news that the scribe had been laid up with the usual 'flu. Apologies all round, for we recognise that no one can help sickness. This Area is up against it—at any rate for the start of the season—for its flying ground in the Isle of Sheppey is put u/s with the recent floods, and an alternative venue is being sought for the opening contests in '53. Godalming M.F.C. has resigned from the Area and linked up with the London group.

The **SOUTHERN CROSS A.C.** are well known for their outsize gliders, seen at all the best meetings each year. It has been decided that, commencing next year, club rules will debar any model over the F.A.I. maximum standards, so the boys have this season to build anew or modify their oversize giants. Club Treasurer has estimated that income will fall short of the required annual amount by some £5–£6, to meet the increased affiliation fees, and an all round increase will be proposed at the forthcoming A.G.M.

North Western Area

Biggest batch of reports comes from this quarter, starting with the Area P.R.O's report of the Winter Rally staged at Tilstock on the 8th February. Contestants were treated to everything the Weather Man could lay on, including a full scale snow-storm. Despite this, the keen types kept flying all day, a queue always being ready at the control point. Early birds were lucky to get good conditions with light drift and very light snowfall—in fact, almost "still air". Of course, Mike Thomas had to prove that lift was present, and scored the only 3 minute max. with his unconventional glider stick design, featuring maximum area behind the wing in the form of a pod-cum-fin. Wing section is on the Czepa principle, with very thin trailing edge. Fellow clubmate Tom Smith had a very promising light-weight glider of phenomenal glide, the section again being similar to Thomas's. In the rubber contest, standard Wakefields were in greatest use, with the Ashton boys using their well-tried free-wheeler designs. Two minutes appeared the best with this set-up. The O'Donnell family favoured the single blader featherer fitted to the standard club design of diamond pylon, lead ballast being added to the c.g. (John O'D had bad luck when reverse winding to pick up a broken strand—the winder unscrewed, resulting in a wrecked fuselage.)

Power models were affected to a greater extent by the poor visibility, and high altitude gained on the 10-second motor run proved to be a disadvantage. Undoubtedly Smith of Blackpool had the fastest climb, and his Elfin 2·49 powered job, weighing 9 oz., had everyone agog. With straight leading edge, and swept forward T.E., this L.S.A.R.A. design will be a major threat in the new rules contests, the model having averaged ratios of 30–1 in test flights. Horwich of Whitefield took first place with a model featuring a timer operated auto-rudder, the model otherwise being a fairly conventional pylon of simple construction.

Results :—

Rubber	H. O'Donnell	Whitefield	6 : 14
	C. Wyatt	Ashton	5 : 20
	A. Lees	Oldham	5 : 05
Glider	J. Stanley	Wavertree	5 : 48
	J. O'Donnell	Whitefield	5 : 28
	T. Smith	Blackpool	5 : 23
Power	E. Horwich	Whitefield	4 : 40
	C. Gardiner	Cheadle	4 : 15
	E. Lord	Accrington	3 : 14
Team race	E. Pumford	Wallasey	10 miles in 15 min.

MERSEYSIDE'S 11th ANNUAL SLOPE SOARING MEETING has been fixed for June 28th.

Nearly seventy members and friends attended the annual dinner and prizegiving of the **CHESTER M.F.C.,** trophy winners also receiving an S.M.A.E. tie through the generosity of the Club President. (A good idea—anyone who likes to do likewise.)

After extensive work on the part of the Club Chairman and Secretary, the **URMSTON M.A.C.** has rented a flying field and clubhouse on the Urmston Meadows. Clubhouse has been decorated, and is just the thing. A control-line trainer has been built and proved very successful, whilst one member has carried out experiments with liquid fuel rocket motors. Any bets how long the clubhouse lasts ?

CROSBY M.A.C. member P. G. Tubbs caused a bit of a sensation when notified that his glider had been found on Moel Fannon, some 30 miles away, the local press making great play with the feat. However, the model had been launched from a mountain close by last June—though the model is reported to be in very good condition after its long outdoor sojourn.

Membership in the **SHARSTON M.C.** has passed the 25 mark, with interest shown in all types of flying. After suffering from field trouble, we hear rumours that this has been rectified—but not a word to Cheadle !

WHITEFIELD M.A.C. started the 1953 season with a chuck glider contest, held in conditions for which the mildest description would be " very windy ". This event developed into a struggle between J. and H. O'Donnell, John gaining the victory with a 1 : 29 aggregate, best 3 out of 9 attempts.

South Midland Area

With preparations for 1953 well advanced, the **HIGH WYCOMBE M.A.C.** looks back on 1952 with every feeling of satisfaction. They concentrated on Class A team racing with the result that they collared four 1sts, two 2nds and two 3rds. Dick Edmonds has converted a Fox 29 to diesel with quite good results, and is now looking for a chap with five spare fingers to flick it ! ! The job does 40 laps in a Class B team racer at an airspeed of over 70 m.p.h. ½A team racing is very popular with Javelins and Elfin 1·49's doing 40–60 laps at 55–65 m.p.h.

London Area

With Fairlop lost to the Londoners, things are not easy in this Area pending a new ground turning up. We hear rumours that the Area will subdivide into North and South groups for Area contests.

EPSOM D.M.F.C. is already booked to give demonstrations of r.t.p. Jetex speed models at Radlett next August, demonstrating the models they have made their speciality. Present speed record stands at 128 m.p.h. for Jetex 50, and 118 m.p.h. for Jetmaster. Present trend is towards semi-scale, and models reminiscent of the Vampire, MiG. and Panther. A model of which the club has great hopes is a job with which it is hoped to cross the English Channel. The result of two years' work, the job is based on the Junior 60, and though first equipped for magnetic or gyro compasses, engine vibrations upset the controls. These attempts have now given way to radio, and it is hoped to make the Channel attempt this Coronation year. Powered by a D.C.350 supplied by a tank of 500 c.c., the model will weigh around 4¾ lbs. fully loaded. Radio will operate rudder only, and pendulum operated elevators will give automatic trim compensation.

Flood waters invaded the clubroom of the **GRAVESEND M.A.C.,** but fortunately little damage was done owing to prompt action by club members. Loss of ground is the top complaint, and activity has mainly centered on team racing. Alec Holland had a good season in 1952, winning the trophy for general efficiency; the Bailey trophy for the longest official flight in 1952.

Sunday, January 18th, saw probably the first 1953 International contest, held on a decentralised basis between the Washington Sky Lancers and the Cement Squeezers—**ST. ALBANS M.A.C.** to the " higerant ". The first of a series, a return match will be held later in the year. Weather was clear and calm at St. Albans, but it was overcast in Washington, though about 10 degrees warmer with sporadic thermals to offer some advantage. The new three-minute rule and other modifications were introduced, and no difficulty of any kind was experienced. Final results showed St. Albans tops in Glider, with Bruce Rowe setting three maximums, but the American boys won both Power and Rubber classes. Results were based on the two highest placings in each section, and this type of contest is ideal in keeping enthusiasm alive during the winter season. Results were :—

Rubber	B. Rowe	St. Albans	9 : 00
	R. McLellan	Washington	7 : 45
	C. Wheeley	Washington	6 : 18
Glider	I. Crawshaw	St. Albans	4 : 15
	J. Simeons	St. Albans	4 : 14
	W. Harris	Washington	2 : 55
Power	C. Wheeley	Washington	7 : 55
	J. Simeons	St. Albans	4 : 20
	J. Albertson	Washington	3 : 48

South Wales Area

The Area will hold a rally at R.A.F. St. Athan station on July 5th, commencing at 11 a.m. Contest will be for unrestricted rubber, glider and power, with line length of 164 ft. and motor run 10 secs. C/L fans will be catered for by stunt and A and B team racing, and all interested are requested to contact J. H. Phillips, " Cartref," Ty-Glas Rd., Llanishen, Cardiff.

The last day of the old year saw a duration contest for kit models of less than 25 in. span organised by the **CARDIFF M.A.C.** Put on especially for the junior and less experienced fliers, the event attracted a few cold seniors—and no juniors, though a couple of the latter could be seen flying a twin-engined scale controliner ! Best flight in the contest was set by Bob Aldridge whose little model clocked 1 : 26.

Northern Area

When the **WEST YORKS M.A.S.** hears some bod screaming about contests without rules, they ignore him ! They tried it, and found chaos. Meetings are held alternate Tuesday evenings at Victoria Central School, Dewsbury (near the Baths) and subs. are 5s. a quarter seniors, half-price juniors.

CONTEST CALENDAR

Events for March and April

March 15th	**C/L SPEED TRIALS.** F.A.I. Class 1, 2, 3.	(Cent.)
March 22nd	**S.M.A.E. Cup.** 1953 A/2 Eliminator **Farrow Shield** (P). Team Rubber. **Women's Cup.** Unr. Rubber/Glider.	(Area Cent.)
Apr. 5th	**Flight Cup.** Unr. Rubber. (Decentralised.) **Hamley Trophy.** Unr. Power. (Decentralised.)	
April 11th	**Irish Open Control-Line Championships'** College Park, Dublin.	
April 19th	**WESTON CUP** (P.) 1953 Wakefield Eliminator. **ASTRAL TROPHY** (P). 1953 F.A.I. Eliminator.	(Area Cent.)

Clubs are invited to send in details of Special Galas or Open Days for inclusion in this regular Calendar.

Following universal custom this time of the year, members of the **BRADFORD M.A.C.** are busy developing and building new models for the '53 season. In the power field there is little to suggest any radical change, the " san-de-Hogan " seemingly having been adopted as the club standard. Arthur Collinson has built one scaled down to F.A.I. specification, and powered by an Elfin 2·49 modified to radial mounting. Silvio has also built one, and first tests have proved very satisfactory.

Although the **WORKSOP AEROMODELLERS** tried combat flying a long time ago, it has only lately become popular, and since Xmas there has been little else. Everyone uses the Frog 150 engine to ensure a reasonable measure of equality, and this has made the competitors very keen on gaining best performance.

Midland Area

During the winter months, **SOLIHULL M.A.C.** member Bishop's new 1·49 pylon job has been put through its paces and has the fastest climb seen for some time. Hanson has had great success with a similar model, and it is likely that the club will adopt the job as a standard club design.

Membership of the **HINCKLEY M.A.C.** has reached the 40 mark, and members are currently experimenting with delta layouts.

Word from the **FORESTERS (Nottingham) M.F.C.** is chiefly about Geoff Pike's success with his super R/C job, using his patented actuator to work independent proportional rudder, steerable tailwheel and engine control. This is all worked with a little joystick on the transmitter. Model is 8 ft. span and weighs 13 lbs. The design is based on the " Shrimp ", and an Anderson Spitfire is prominent with its 2-speed contact breaker. The first flight was most impressive; the model was taxied along the peri-track, throttle opened, and away roared the " Skyflirt " on its maiden flight. After a few circuits it was landed back along the runway and taxied up to Geoff standing at the transmitter. It was the nearest to full-size flying yet witnessed, and promises great things.

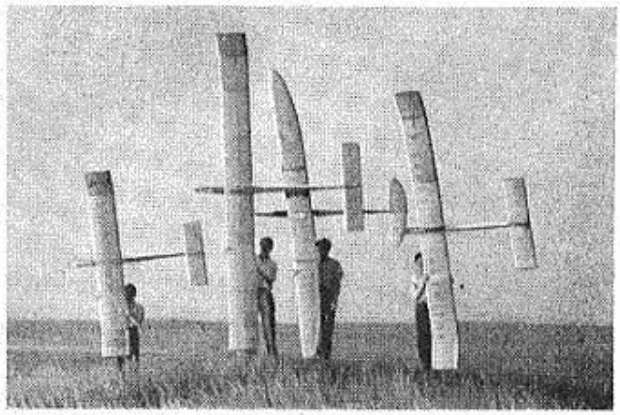
Western Area

With increasing membership, the **ILMINSTER & D.M.A.C.** has entered its second year, and is progressing favourably. A display of static models was arranged in the window of a local shop, and it is hoped to shortly obtain the use of the local aerodrome for club members. Some of the original members participated in the Seaton Open Rally late last season, and R. Satin gained a third in the glider comp.

Southern Area

Despite a number of difficulties, **WEST HANTS M.A.S.** had a very successful 1952 season, and its position and prospects appear very good indeed. A fair number of demonstrations and inter-club events have been staged, all being entirely successful. The first event of the new year, an exhibition staged at Ringwood on the 24th January, while doing little more than clear its costs, was nevertheless a good achievement. The club mag. still appears, and remains a very good production.

Another club to find the benefit of a club mag. is the **BOURNEMOUTH M.A.S.,** whose initial effort has just reached me. News is mainly domestic, but the production is good and should prove of great help to the members.



Big Stuff! R. E. Delves—" Cloud Liner " (8' 0"). E. W. Gravett—" Cloud Duster " (15' 0"). G. K. Gates—" Halcyon 3 " (14' 0" 1952 Pilcher Cup winner) and K. Donald—" Super Thermal Rider 3 " (13' 0").—All members of Southern Cross A.C.

WINCHESTER M.A.S. tried out the 150 ft. towline for their event on January 18th and found it good. It was a windy day, and the short line limited the distance covered—and saved the members' legs.

With the news that Harry Botkowsky of 644, Water Street, New York (2), N.Y., U.S.A., wants to contact a pen-pal interested in swapping plans, motors and R/C ideas, I sign off for this month. The CLUBMAN.

NEW CLUBS

SOUTHDOWN AEROMODELLERS.
W. J. Slaughter, 14, Church Road, Burgess Hill, Sussex.

HALESWORTH M.A.C.
R. J. Bray, 53, Quay Street, Halesworth, Suffolk.

GALSTON & DISTRICT M.C.
I. Gilroy, 7, Maxwood Road, Galston, Ayrshire.

WICK M.A.C.
A. S. Matheson, Ackergill Street, Wick, Caithness.

SECRETARIAL CHANGES

SOUTH BIRMINGHAM M.F.C.
V. George, 61, Masshouse Lane, Kings Norton, Birmingham, 30.

CHELMSFORD M.A.C.
E. G. W. Summerfield, " Elmdene," Joe's Lane, Downham, Nr. Billericay, Essex.

CROSBY M.A.S.
J. S. McKechnie, 27, Regent Rd., Gt. Crosby, Liverpool, 23.

HULL PEGASUS M.F.C.
G. A. Gooding, 112, James Reckitt Ave., Garden Village, Hull, E. Yorks.

SHARSTON & D.M.S.
D. Cook, 63, Stancliffe Rd., Sharston, Wythenshawe, Manchester.

SOUTH BRADFORD M.A.C.
R. Watmough, 5, North St., Oakenshaw, Bradford, Yorks.

EPSOM DISTRICT M.F.C.
W. Tinker, 28, Easteroft Rd., West Ewell, Epsom, Surrey.

BLACKHEATH M.F.C.
K. Churchill, 9, Dairsie Rd., Eltham, S.E.9.

WHITEFIELD M.A.C.
J. O'Donnell, 2, Park Rd., Pendleton, Salford, Lancs.

SPALDING & DISTRICT M.A.C.
N. D. Earth, 30, Willow Walk, Spalding, Lincs.

WEST HANTS A.M.A.
R. Wheatley, 5, Alum Chine Rd., Westbourne, Bournemouth, Hants.

NEW MILTON M.A.C.
F. W. C. Sivier, 1, New Inn Cottages, Battramsley, Nr. Lymington, Hants.

SOUTHAMPTON M.A.C.
B. G. Pierce, 104, Shaftesbury Ave., Portswood, Southampton.

EDINBURGH M.F.C.
U. A. Wannop, 11, Craiglockhart Drive South, Edinburgh, 11.

SLEAFORD & D.M.A.C.
A. P. Ward, 43, Eastgate, Sleaford, Lincs.

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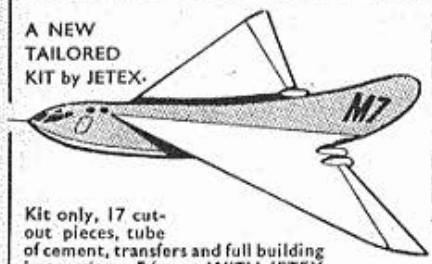

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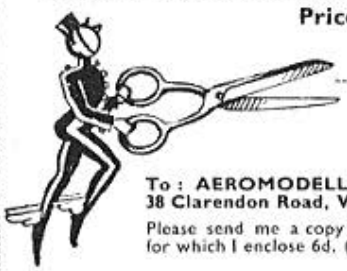

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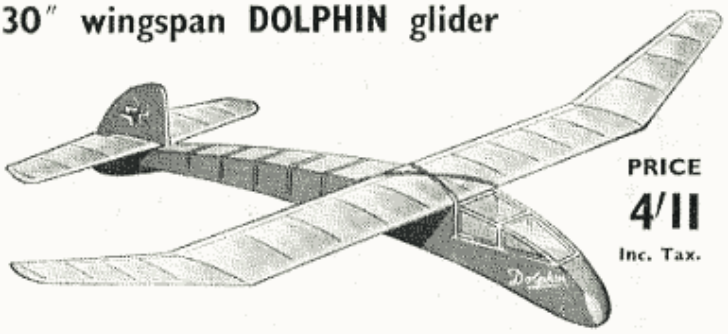

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