AEROMODELLER

SEPT.
1950

1'6

E.D Mk. III Miniature RADIO CONTROL UNIT

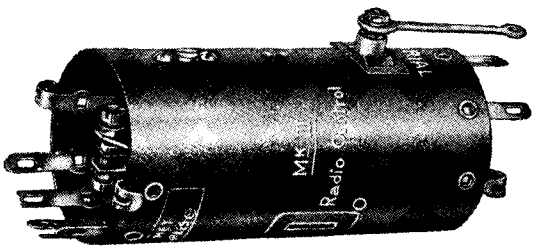
CRASH PROOF

ONLY 7½ozs ALL UP

PRICE £7.19.6 COMPLETE

The technical staff of E.D.'s proudly present the "Baby" of Radio Control Units after very extensive experiments, and our Mr. Honnest-Redlich can rightly claim that the world-famous principles of E.D.'s of "proving before production" have been well and truly carried out, resulting in this Gem of Radio Control. We forecast that even rubber-driven jobs will be under E.D. Mk. III "Miniature" Radio Control.

Miniature in size, weight and price. 101 per cent. reliable. **RANGE IS SO GREAT WE WILL LET CUSTOMERS MAKE THE CLAIM.**



THE RECEIVER

Carefully matched components to obtain 100 per cent. performance from the new gas-filled R.C. valve.

Tuning by variable inductance, eliminating difficult adjustments.

Small volumetric size achieved by tubular case.

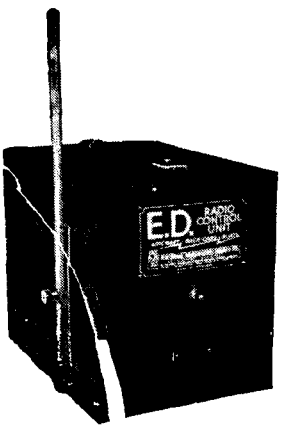
Special feature: Crash-proof.

Receiver weight only 1¾ ozs.

H.T. Two B 122 22½v. batteries, 2¾ ozs.

L.T. One half pen cell, ½ oz.

Price only £3 . 0 . 0



The Transmitter

THE TRANSMITTER

3A5 twin triode valve giving greater radiation than any other commercial transmitter. Up to four watts input. Entirely self-contained. Sectional 8-foot aerial. This transmitter will double the range of any known carrier-operated receiver. Prototype satisfactorily checked by G.P.O. for frequency stability and output within ½ per cent. limits.

BATTERIES: 120 volt Ever-Ready Winner.
1·5 volt Ever-Ready All-dry No. 1.

Price only £4 . 12 . 6

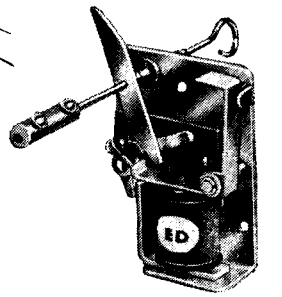
THE ESCAPEMENT

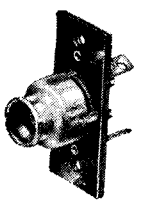
100 per cent. reliability due to robust and accurate construction of claw and rotor. Fitted with double winding and developed by the E.D. technical staff.

Weight ¾ oz.

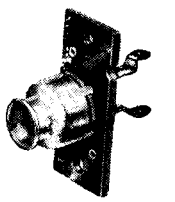
Escapement Battery: 3 half pen cells, weight 1½ ozs. Price only 18/6.

Total weight of receiver, escapement and all batteries only 7½ ozs.

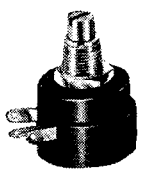




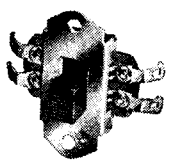
4-pin Battery Socket and Plug.



2-pin Phone Socket and Plug.



Potentiometer



On and Off Switch.

Price, complete with Transmitter and Aerial, Receiver Unit, Escapement Unit, Meter Socket and Plug, Battery Socket and Plug, On and Off Switch, Potentiometer, 5 strands of thin covered coloured Wiring, cored Solder (less batteries)—£7 . 19 . 6.

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Specially designed to suit the new ultra-lightweight R.K. 61 Radio Control systems with the "HIVAC" Thyratron Valves. Exceptional stability is due to the thick high lift wing section. On test the model lifted 12 ozs. of ballast with an E.D. Bee I c.c. after a straight take-off run of approximately 20 yards.
The realistic take-off, superb glide and life-like landing which can be attributed to this latest Veron model make it completely revolutionary in the field of model aeronautics

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IDEAL FOR LIGHTWEIGHT RADIO CONTROL & FREE FLIGHT

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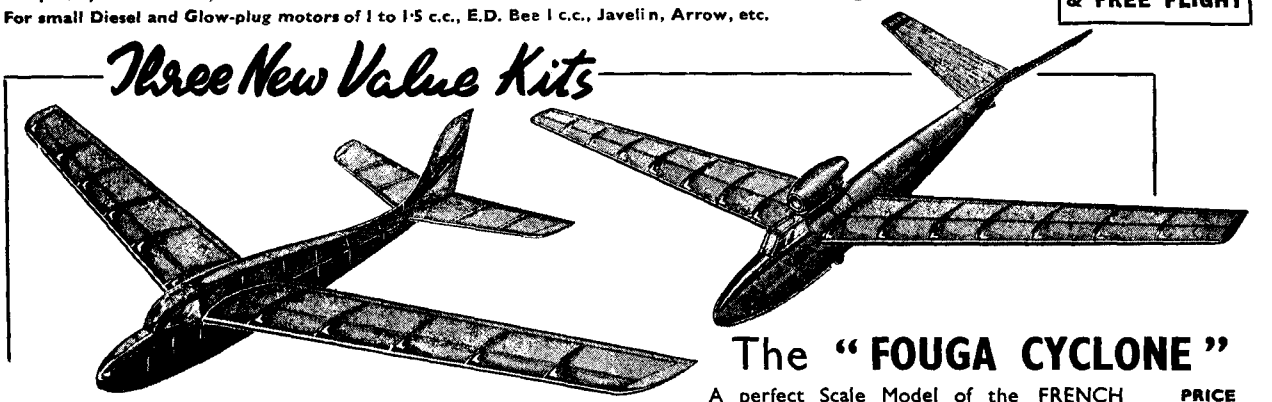


The "CORONETTE"

A slick little lightweight version of the larger "VEROSONIC 46". Of essentially simple design and construction, this appealing model is ideally suited for the newcomer to modelling, and has an unmatched flight performance for its class.
THE KIT IS THE FINEST VALUE FOR MONEY THAT VERON CAN OFFER!
Details given for "Adaptation" to Jetex 50 Power.

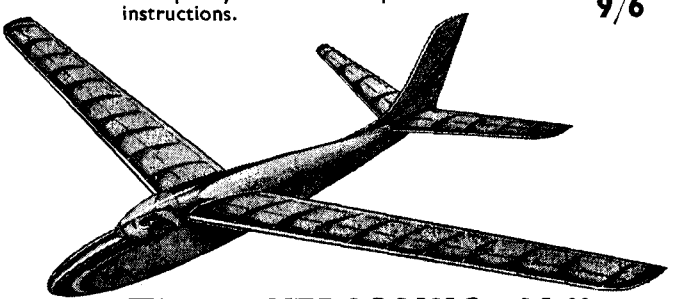
PRICE **3/3**

The "FOUGA CYCLONE"

A perfect Scale Model of the FRENCH "TURBOJET" ASSISTED SAILPLANE. A more perfect design suitable for "JETEX 50" cannot be found. The original sailplane has been faithfully reproduced as a quality kit, containing graded materials and a superbly illustrated plan with full instructions.

PRICE **4/6**

JETEX 50 MOTOR **9/6**



The "VEROSONIC 46"

A graceful F.A.I. soaring sailplane with the "Supersonic" look! Swept-back wings and empennage not only gives superb appearance but perfect towline stability and flight characteristics. Kit is complete with a ready-moulded plastic cockpit cover. Details given for "Adaptation" to Jetex 100 Unit Power.

PRICE **9/6**

★ NOW READY!

The New E.D. Light-Weight Radio Control Unit, Transmitter, Receiver, Actuator etc., etc.

£7.19.6

JUST THE UNIT FOR THE "SKY-SKOOTER"

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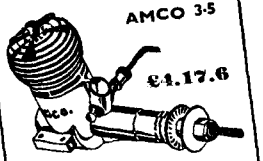
Buyer's Guide

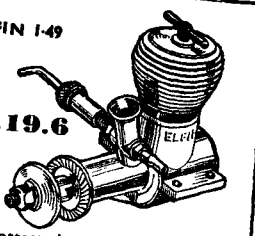
AMCO 3·5



£4.17.6

A hot motor with a superb performance, the established favourite of flyers everywhere. Low overall height, light weight, revs up to 13,000.

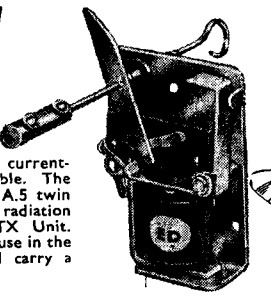
ELFIN 1·49



PRICE **£2.19.6**

The hottest class I motor which has a high power/weight ratio and turns over at 13,500. Top value for money here.

E.D. Radio Control Unit



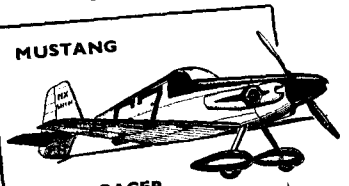
The crashproof R/C Unit which is small in size and weighs complete with batteries and escapement only 7¼ ozs. The escapement (*illustrated*) is fitted with a current-saving device and is 100% reliable. The transmitter is supplied with 3 A.5 twin triode valve and gives a greater radiation than any other commercial TX Unit. Up to 4 watts output. Ideal for use in the Veron Sky-Skooter which will carry a pay-load of 12 ozs.

Price for complete Unit

£7 . 19 . 6

ESCAPEMENT

MUSTANG



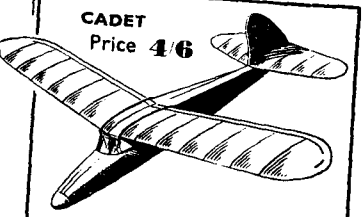
TEAM RACER

With an Amco 3·5 this model won the first International team race at an average speed of 65 m.p.h. The finest C/L kit ever produced.

Price **21/-**

CADET

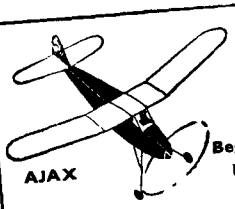
Price **4/6**



BEGINNER'S GLIDER

From cutting the first strip to launching the finished product this is the ideal beginners model. Span 30", the kit is provided with easy-to-follow instructions.

AJAX

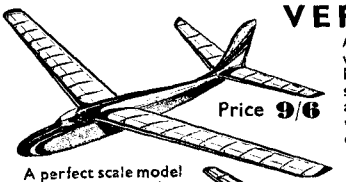


The Beginners Model that

—is simple to build and always flies. Thousands of this most complete kit have been sold.

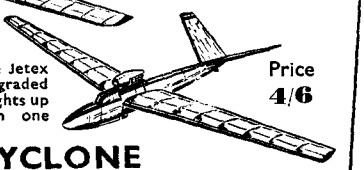
Price **6/-**

VEROSONIC



Price **9/6**

A new F.A.I. sailplane with the "supersonic" look! Perfect towline stability and flight characteristics. Kit complete with plastic cockpit cover. Span 46".



Price **4/6**

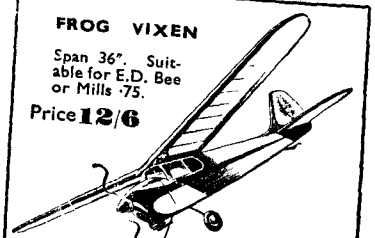
A perfect scale model of the French turbo-jet - assisted sailplane designed for the Jetex 50. A quality kit with graded materials. Span 30" flights up to 2½–3 minutes on one charge.

FOUGA CYCLONE

FROG VIXEN

Span 36". Suitable for E.D. Bee or Mills ·75.

Price **12/6**



A simple to build power model that is robust and always to be relied upon for good performance.

FROG POWAVAN

The amazing 2,000 ft. per minute model that has a contest winning — sailplane glide. Many pre-shaped parts in a bumper kit.

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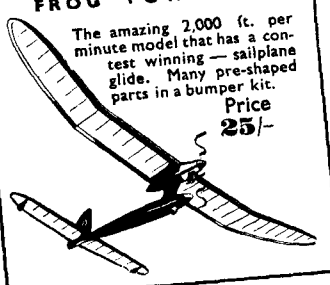

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The popular service which modellers make regular use of. Test information with each repair and reasonable charges.

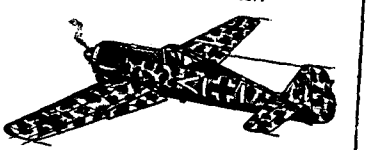
SUPERB VALUE at 8/6

This first book for R/C enthusiasts is packed full of live "gen" only. Contents include principles, power supply, circuits, relays, conversion to mechanical energy models, installation, operation, accessories, glossary, circuit symbols etc. Profusely illustrated and containing 128 pages, the book is well bound and presented. Three-colour dust cover.

BOOK OF THE YEAR

VERON FOCKE-WULF

Design of the original fighter makes it easily adaptable to modelling, attractive in appearance the kit is absolutely complete and the model a fine performer.



Price **19/6**

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The fastest *free postage* service in the country Orders in the morning post are despatched at 1 p.m. Orders in the afternoon post are despatched at 6 p.m.

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Esso Serves the Aero Modeller through Mercury Fuels

In the Esso Laboratories, over 80 formulations for diesel fuel and 150 for glow-plug engines have been investigated. Frequent checks maintain the high standard demanded of Mercury blended fuels. Constant research results in new fuels for improved engines.

SPECIALLY DEVELOPED IN Esso *LABORATORIES*

Here they are — a range of fuels to give you trigger-quick starting and a superb flexibility that will make even 'vertical eights' easy — a power output that will put you away out in front in Club Competitions. The name is MERCURY, the most successful and popular range of fuels in the aero-modelling world.

Unlike home-made 'dopes,' there is no hit-or-miss method in the make up of MERCURY fuels. Eighty diesel and a hundred and fifty glow-plug mixtures have been evolved and rigorously tested by Esso Laboratories in close co-operation with the Henry Nicholls Research Group and practical aero-modelling experts.

The result is a range of eight tip-top fuels that get absolute peak performance from every type of engine. There is one listed below which has been specially designed for *your* engine. If you would like further details, we will gladly send a fully descriptive leaflet.

MERCURY FUELS GIVE

- SWIFT STARTING
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- TOP PERFORMANCE
- MAXIMUM ENGINE LIFE

There is a **MERCURY FUEL** *specially blended for every type of Model Engine*

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KORDA WAKEFIELD	17/6
CAVALIER 30 in. Wingspan	5/6
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SKYLEADA 16 in. Wingspan (12 models) @ 2/-
Hurricane, Spitfire, Tempest, Mustang, Helldiver, Thunderbolt, Miles M18, Hellcat, Ascender, Curtis Owl, Typhoon, Boomerang.

SKYROVA JUNIOR SERIES (11 Models) @ 1/6
Auster, Tiger Moth, Messenger, Typhoon, Tempest, Barracuda, Firefly, Grasshopper, Mustang, Duration, 20 in. Glider.

GLIDERS

MIDGE, all Balsa	1/3
SWIFT, 20 in. Wingspan	2/6
WIZARD, all Balsa	3/-
JEEP, 24 in. Wingspan	3/6
THREE FOOTER	5/-

The New Skyleada Flying Scale Series

★ 26 in. Wingspan AUSTER

★ 26 in. Wingspan GRASSHOPPER

★ 20 in. Wingspan TIGER MOTH

Complete Kits 3/- only

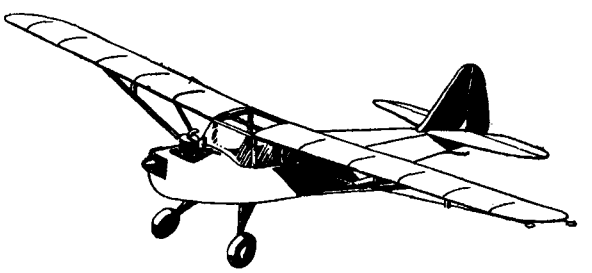
The finest value ever offered in Model Aircraft Kits.

SKYLEADA'S LATEST EXCEPTIONAL VALUE

Now available from your Local Retailer and proving the most popular kit of 1950.

27" WINGSPAN CONTROL LINE

AUSTER



Designed for the E.D. Bee and other small engines.

Complete Kit Price **7/6** only

EASY TO BUILD — DELIGHTFUL TO FLY

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	Complete Kits.	Plan and Printed Sheet Pack Only
ZIPPER, 44 in. Wingspan Contest Model	.. 21/-	7/6
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FLYING WING, Controliner	.. 17/6	6/-
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AEROMODELLER
INCORPORATING "THE MODEL AEROPLANE CONSTRUCTOR"

BRAVO FINLANDIA!

YET another Wakefield Trophy Contest has been "lost" and "won" and once again the Winner is that of the previous year!!

Arne Ellilä has shown, in no uncertain manner that adherance to a carefully thought-out design, supportedby an equally carefully thought-out flying policy, can produce an extremely consistant performance under widely different conditions.

At Cranfield in 1949, Ellilä had experience of our typically "British" summer's day—with its bursts of sunshine and drizzle, accompanied by a strong wind.

This year at Jämi-Järvi, centre of Finland's glider movement, conditions for the contest were relatively ideal.

There was no high wind to smash up models, *or* "blow" them up high, and there were certainly no thermals, with the contest starting at 7.0 p.m., and finishing about 7.0 a.m. on the Sunday morning!

How consistent was Ellilä's performance may be seen from a study of his times for each of the three rounds. Performances of the "runners-up" were equally consistent, proof of all-round excellence of flying and flying conditions.

1st	A. Ellilä	(Finland)	238·0	271·5	222·6	732·1
2nd	E. W. Evans	(Gt. Britain)	209·6	232·8	217·6	660·0
3rd	A. Leardi	(Italy)	224·0	192·1	228·7	644·8
4th	P. W. Seton	(Holland)	208·5	200·7	210·4	619·6
5th	H. R. Stevens	(Gt. Britain)	177·6	214·1	226·7	618·4
6th	L. I. Salisbury	(U.S.A.)	207·0	199·2	199·8	606·0
7th	S. Lustrati	(Italy)	193·0	196·5	208·2	597·7
8th	B. Bächli	(Switzerland)	184·1	207·0	206·0	597·1
9th	E. Sadorin	(Italy)	176·8	192·6	204·0	573·4
10th	R. H. Warring	(Gt. Britain)	182·0	174·8	196·9	553·7

We are pleased to see as many as six countries represented in the first ten placings—and congratulations Messrs. Evans, Stevens and Warring in obtaining the second, fifth, and tenth positions respectively.

The 1950 Wakefield Trophy Contest, organised under the personal direction of the Secretary General of the Finnish Aero Club, R. Winter, was supported "full-time" by both the Club's President, and Vice-President, the British Air Attache, the President of the aeromodeller section of the Club; and many other members and supporters of the aeromodelling movement in Finland.

The organization of the contest was excellent—whilst the organization of welcoming and providing for the welfare of close on 100 visitors from some sixteen different countries is worthy of the highest praise. Certainly a new "standard" of welcome to a Wakefield Contest has been established by the Finns. Above all, this was an *aeromodellers* contest; and all those associated in *any way* in assisting in the entertaining and welcoming of the contestants and accompanying of visitors were genuinely interested in the contest—they understood what it was all about and they all played their part in making the contest the most friendly, and most efficiently organised one that has yet been held.

PROGRESS IN PARISH PUMPPOWER FLYING

OUR dossier of press cuttings on the attitude of local authorities toward model flying in their public open places continues to grow, and with it our stupefaction at the attitude adopted by those who have been elected to promote the amenities of the districts concerned. The usual type of heading that we have collected reflects the unfortunate Bumbledom of sundry local authorities. To quote one or two headings from our collection we have: "No model planes!" "No room for these planes", "Model planes banned" "Model aircraft barred from parks", "Protests about model planes". In much the same way these rural Hitlers have now turned their minds to banning our associated sport, the running of model power boats on local lakes and ponds. It is indeed distressing that so many local authorities are considering the Home Office Model Byelaws as restricting, when in fact the Home Office specifically states "... local authorities will recognize that through the construction and flying of model aircraft a real contribution may be made to the science of aviation ... The Byelaws are not intended for the restriction of flying, but to make it possible to permit flying ...". We do not quarrel with those unfortunately placed authorities who have only limited open space in a mainly Urban district. We do see red, however, when we read that, in such a district as Beckenham, Kent, which probably enjoys a greater area of public open space within its boundaries than any other within 30 miles of London, the Borough Council should recommend the banning of model flying. Particularly so, when Councillors make such misguided and ignorant statements as: "These mechanical contrivances are a menace and they are dangerous", and then, without qualifying their remarks, continue with the hope that the Borough would find no place for them. We would remind this worthy councillor and any others of similar mind, that many of the valuable advances in modern aviation were only made possible by model research, and without our inventors, his peace might once again be disturbed by the even noisier and more dangerous contrivances of modern aerial warfare.

Contents

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Wanted—a pilot! Only the empty cockpit gives away the fact that this is J. Greenland's model, and not the real Zaunkonig.

ALL SET FOR THE AEROMODELLER INTERNATIONAL RALLY

Coincident with the arrival of this number of the AEROMODELLER, many foreign enthusiasts will be setting out on the first step of their journey to the AEROMODELLER International Rally at Eaton Bray. As we go to press we are happy in the knowledge that contingents will be coming from Monaco, France, Belgium, Denmark, Holland, New Zealand, and, it is hoped that Italian, Swiss and Yugoslavian visitors will also be present.

In a year when International Events have been taking place in most European countries, and finance is by no means unlimited, we are happy to think that so substantial a measure of support is forthcoming.

It only remains for our own British aeromodellers to provide opposition worthy of the challenge from overseas, so that we shall see a quality of flying unequalled in this country before. All intending British aeromodellers, who have not as yet advised us of their intention to take part, are urged to let us hear from them as soon as possible, as contests are definitely pre-entry, and it is not our wish to have so many contestants in each class as to necessitate last minute efforts to complete the rounds to schedule.

We would again remind both those who intend to fly and those who will come merely to look and learn, that there are adequate camping sites where visitors may stay with their own tents, do their own cooking and generally enjoy a very cheap week's holiday, while for those who would like a little more comfort and somewhat closer contact with the competitors, we can still house a few more enthusiasts in the main contest buildings. We have already published details of the events taking place from day to day, and it should therefore suffice to say that there will be model flying daily from Thursday the 17th to Tuesday the 22nd of August, together with all the other hours of the day and night for the exchange of aeromodelling gen in that universal lingua franca of the hobby that finds no language difficulties sufficient to stop the enthusiast describing his latest dreamplane.

SHORT TERM INSURANCE COVER FOR RALLIES.

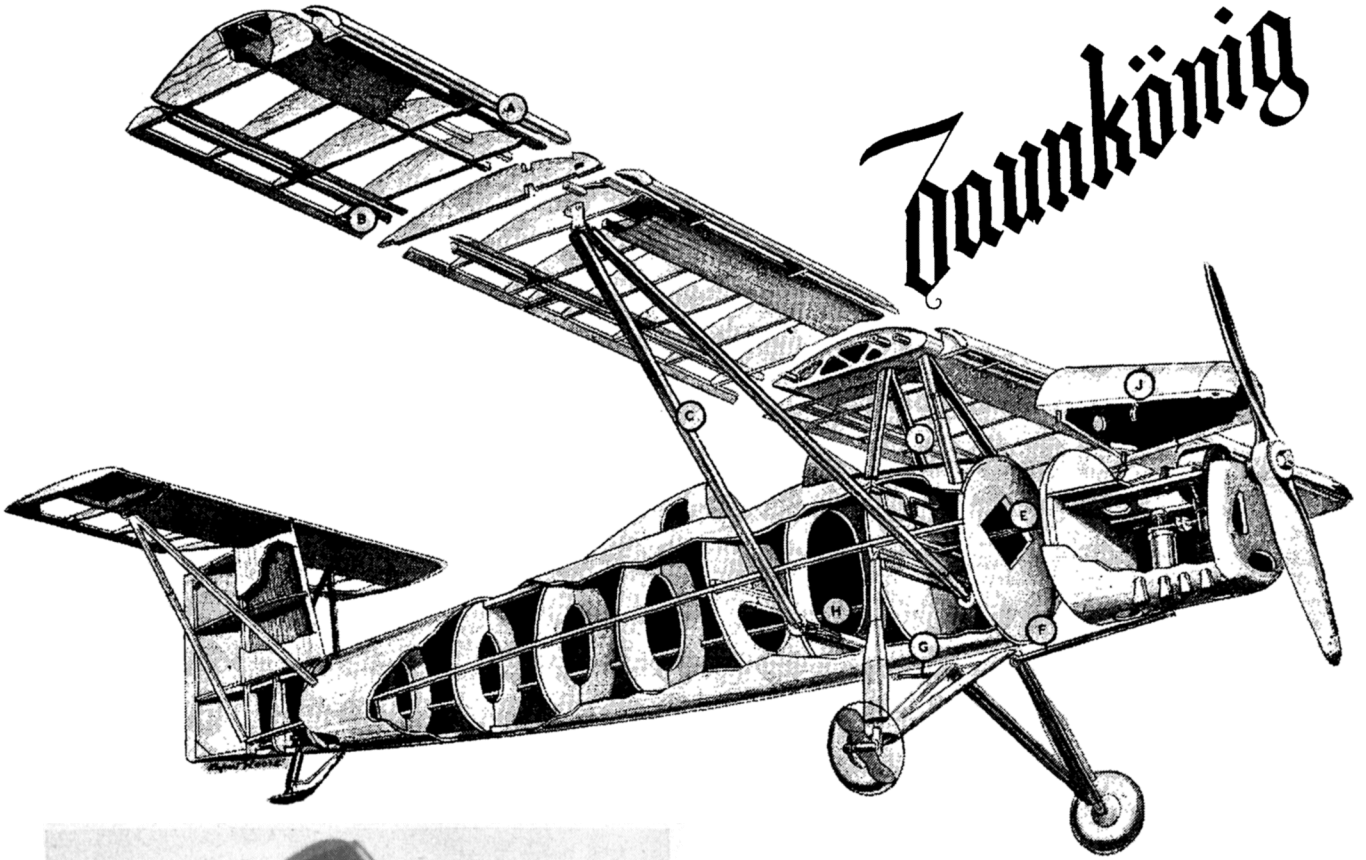
Following representations to their Underwriters, N.G.A. Ltd. are pleased to announce that they can now undertake the issue of special one-day cover notes to the organisers of rallies, competitions, etc.

We know of a number of instances where the use of a particular airfield is provisional on the organisers taking out a policy indemnifying themselves and/or the owners against claims, and it has always been possible for the organisers to negotiate a suitable cover note.

The charge is extremely reasonable and full particulars can be obtained on application to N.G.A. Ltd., Allen House, Newarke Street, Leicester.

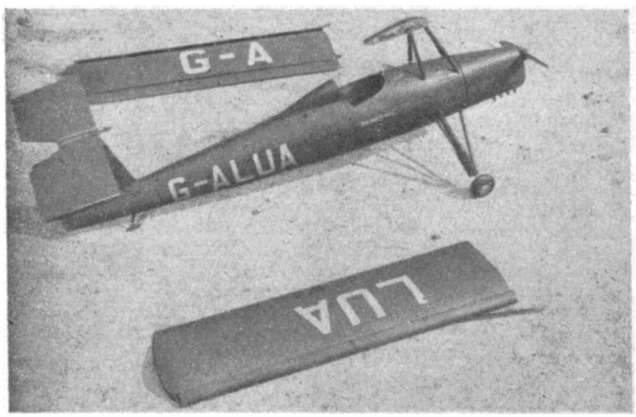
A 39¼ in. span Flying Scale Model by John Greenland

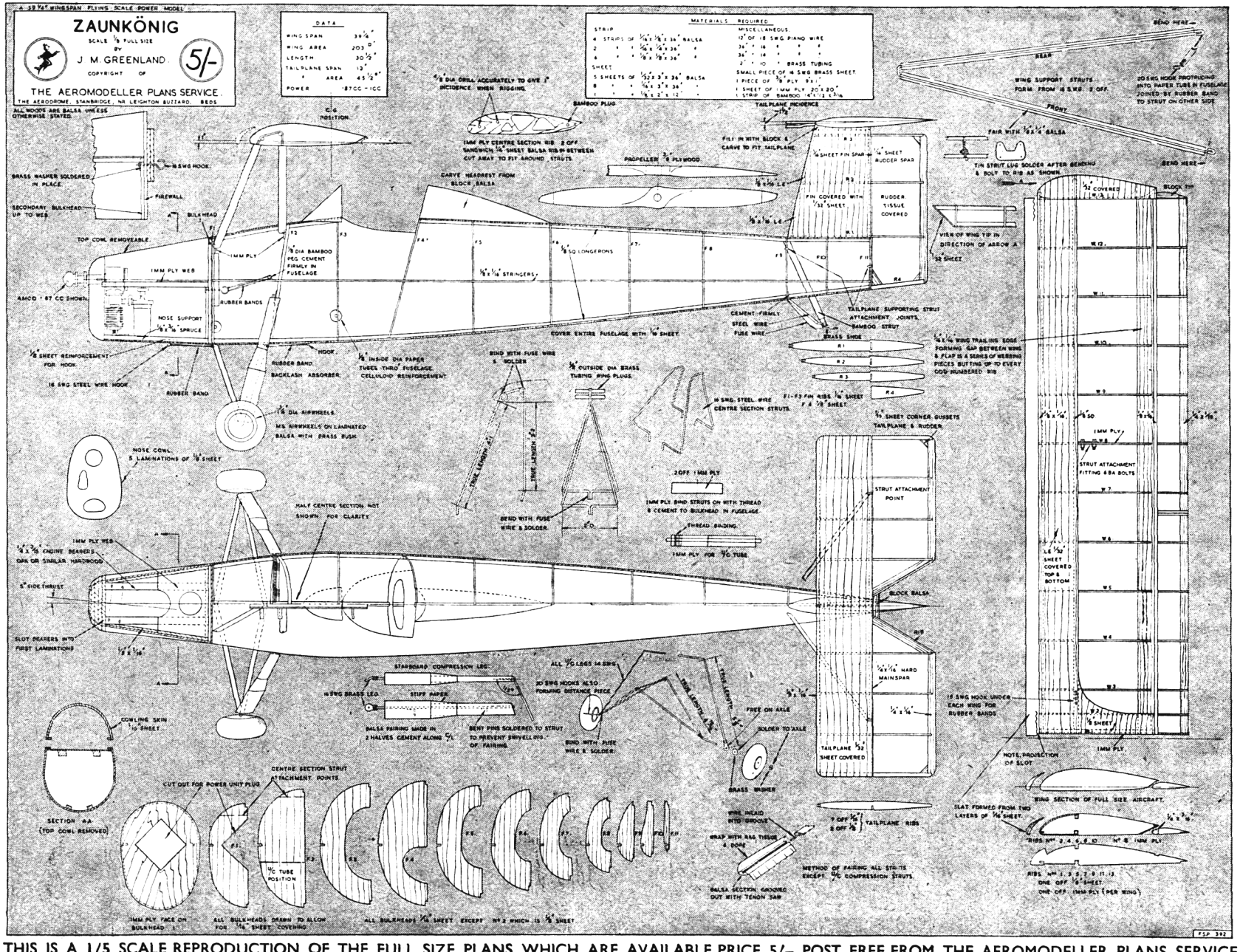
Baunkönig



WHEN John Greenland first flew his prototype at Eaton Bray, the manner in which this deep blue parasol lightweight dragged its high-cocked tailplane around flat turns, drew sighs of appreciation from our scale-loving colleagues. For, not only is this job built to perfect scale, and realistic in all views, but it also flies exactly as does its full-scale counterpart. You'll notice in the reduced scale plan that scale extends even to the airscrew in this unusual free-flighter. Note too, how the designer has made the wings detach in the proper manner to facilitate transportation . . . and also that undercarriage which will take the hardest of knocks, yet spring back into place ready for another test flight.

Accuracy of this model is assured, for every line has been scaled exactly from the original German student drawings—



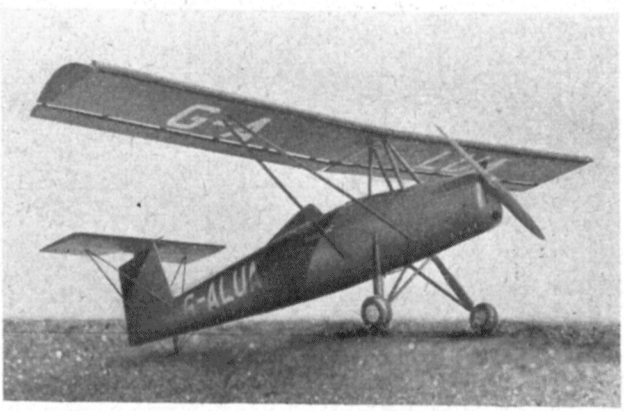


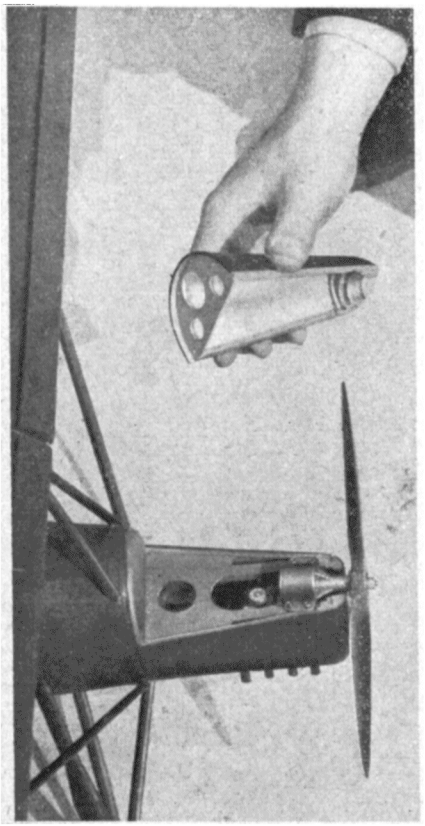
THIS IS A 1/5 SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE PRICE 5/- POST FREE FROM THE AEROMODELLER PLANS SERVICE

now happily in the hands of the Ultra Light Aircraft Association. The full-size job, a very much "one-off" aeroplane, is more fully described elsewhere in this issue, and, you will notice, is the subject of our cover painting this month.

If you want to build one of these unusual but fascinating scale Zaunkoenig models, full-size drawings for the 39¼ in. replica, complete with a reprint of the cut-away drawing and full instructions on building by designer Greenland, are available from A.P.S., price 5/– post free.

Designed around the Amco ·87 diesel, the model was also tried with one of the new type 1·5 c.c. diesels which proved to be too powerful. Top limit should be around the 1 c.c. mark in diesels, and up to 1·5 c.c. in Glow plug motors. With the Amco, and an 8×5 in. prop., a shallow climb to the left, with an equally shallow glide was the trim of the prototype.

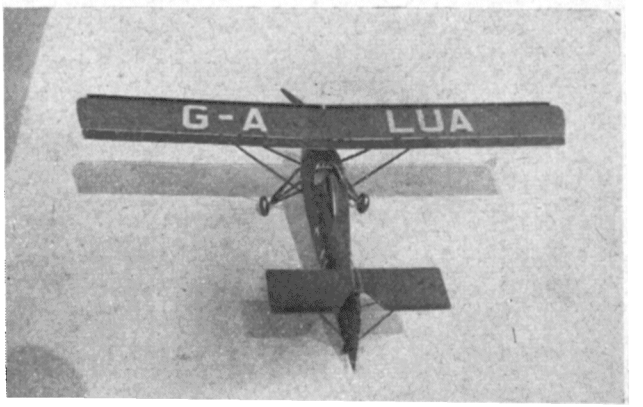


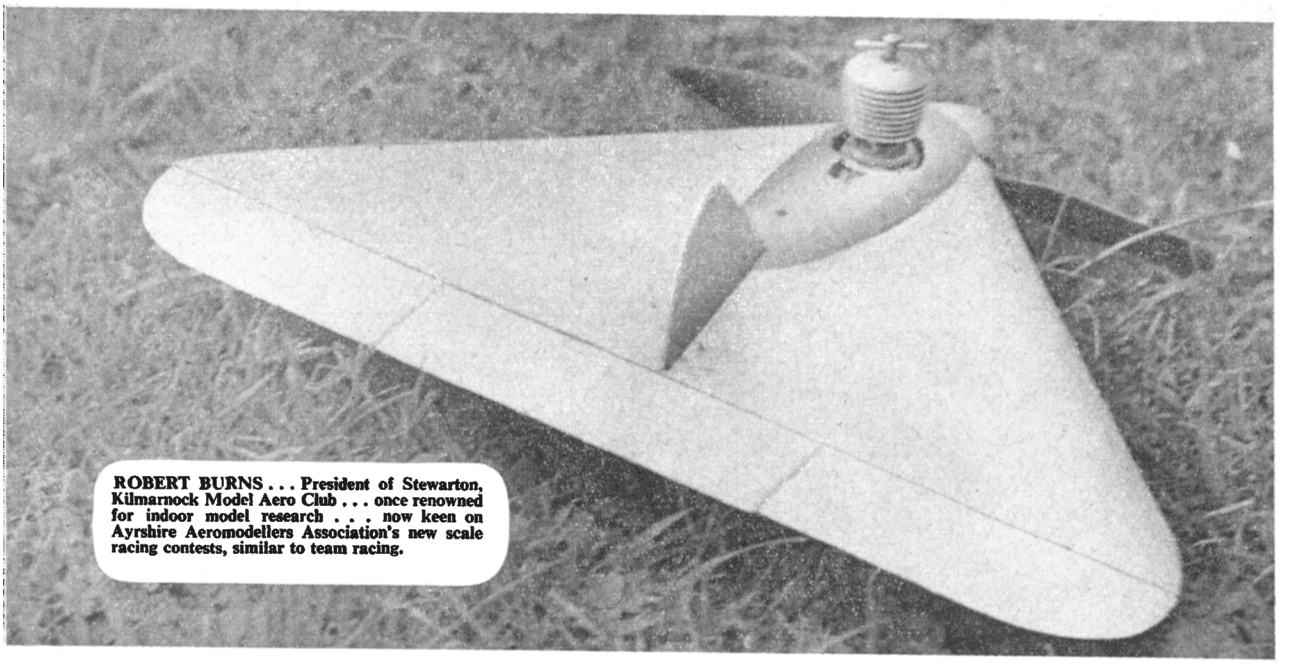


Cutaway Code :

A–slats
B–ailerons
C–wing struts
D–C/S struts
E–front bulkhead locating hole
F–rubber bands
G–rubber bands
H–wing strut bands
J–removable cowling

Top photos : full scale, left, model, right. Note that scale extends even to the airscrew. Two general views of the model have between them a shot of the designer and two members of the Aeromodeller Technical Staff, making pre-flight adjustments. Left is shown the accessibility of the engine, and the ply-web strengthener over the engine bearers.





ROBERT BURNS . . . President of Stewarton, Kilmarnock Model Aero Club . . . once renowned for indoor model research . . . now keen on Ayrshire Aeromodellers Association's new scale racing contests, similar to team racing.

Speedwing

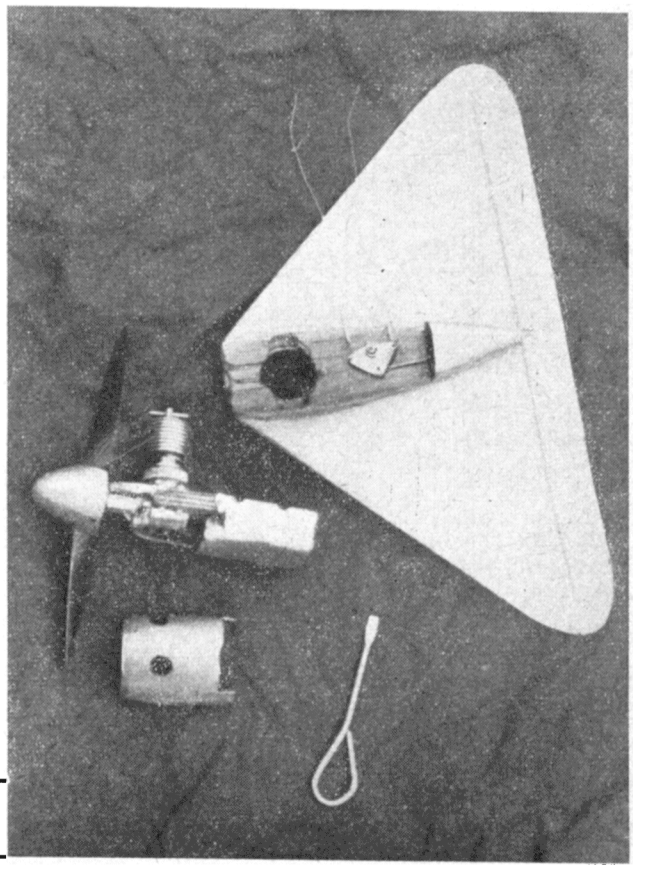
A DELTA TYPE FLYING WING SPORTS MODEL BY ROBERT BURNS

IF you feel fired with an impulse to make " something out of the ordinary ", then try this little flying triangle that is easily built in two evenings. Speed Wing is the outcome of a decision to construct a Delta type wing to relieve the monotony of conventional design.

By virtue of its paper dart-like shape, it never fails to catch the fancy of the public during demonstrations at the Stewarton football matches. It is almost unbreakable too, so, if you are wanting to build something quickly for your 2 c.c. engine, something that will be hard to bust and will always give you good fun, then try this model.

Construction. Cement the three, $\frac{3}{8}$ in. sheet parts of the wing, the top and bottom plywood stiffeners and the spruce rear edge together. Sand the wing to a symmetrical aerofoil section in two stages; first to taper, then to airfoil. Drill the control plate and horn to fit the wire pushrod closely and fix in place, noting the use of flexible stranded wire for the lead outs which are passed through tubes buried in the lower wing surface. Attach the elevator after cutting, as shown on the drawing, and twisting the outer portion upwards; this will cure any tendency for the model to roll inwards. Take care that the lower plywood plate fits the engine mounting lugs neatly, and cut away only just enough of the wing to clear the engine. Make up the lower engine mounting pod, complete with 22 s.w.g. aluminium cowling and the fuel tank. Attach the engine and assemble the pod to the wing by wood screws, then add the upper balsa fairing on the top surface of the wing. When dry, dismantle and fuelproof all parts likely to be in contact with fuel or exhaust. Add the plywood fin and cover the whole model with Modelspan before doping to the desired colour.

Because this model has no fuselage to hold for a hand launch, it must be launched " underarm " by gripping the fin and throwing with a " bowling " motion. Though unorthodox, the launch is soon perfected after practice.



Photo, Right; shows simplicity in maintenance and assembly of the Speedwing. Screwdriver is the only tool required to dismantle. Note, in the upper photo, that the elevator is trimmed to make the wing roll outwards.

SPEEDWING BY ROBERT BURNS

CUT HERE & RAISE ELEVATOR T.E. BY 1/16"

ELEVATOR MOVEMENT 30° UP & 30° DOWN.

BIND & SOLDER LOOP IN FLEXIBLE LEAD-OUT WIRES.

ELEVATOR FROM 1/8" SHEET.

20 SWG DURAL ELEVATOR HORN.

THIS HOLE TO BE EXACTLY BELOW L.E. OF ELEVATOR.

KINK TUBE TO CLEAR PLYWOOD CENTRE.

KNOT IN WIRE.

1/8" X 3/8" SPRUCE OR HARD BALSA.

CUT STOPS HERE.

GRAIN.

SLOTS FOR FIN.

WING IS CUT FROM 3/8" X 3" MED BALSA SHEET ADD SPRUCE REAR 1/16" UP FROM BOTTOM SURFACE. TAPER WING TO 1/8" AT TIPS ADD PLYWOOD CENTRES & SAND TO AIRFOIL SHAPE

TOP WING PLATE SHOWN DOTTED

THIS SPACE CUT OUT OF ENGINE BEARER PLATE ONLY

CONTROL PLATE PIVOT BOLT HOLE.

CUT OUT ON FULL LINES FOR ENGINE BEARER PLATE.

CUT OUT ON CHAIN DOTTED LINES FOR LOWER WING PLATE.

1/16" PLY FIN

1" WOODSCREWS.

HARDWOOD INSERT.

BALSA FAIRING.

1/16" PLY TOP WING PLATE

3/8" BALSA WING

1/16" PLY LOWER WING PLATE.

3/8" PLY ENGINE BEARER PLATE.

16 SWG PUSH ROD.

3/16" SHEET FAIRING.

GROOVE FOR LEAD-OUTS

MAKE ONE FOR PUSH PULL ROD.

20 SWG DURAL CONTROL PLATE.

16 SWG LEAD-OUT TUBES.

SMALL WOODSCREWS.

CUT AWAY ENGINE BEARER ON LOWER SURFACE 1·9 CC "K. KESTREL" POWERED MODEL.

BLOCK BALSA

OUTLINE OF TOP BALSA FAIRING

FUEL TANK.

22 S.W.G. ALUM. ENGINE COWL.

USE 3/4" DIA SPINNER.

1" WOODSCREW.

GRAIN.

20 SWG DURAL CONTROL PLATE.

1" WOODSCREW IN HARDWOOD INSET.

HOLE TO CLEAR ENGINE HEAD.

C·G

HOLE FOR FEED PIPE.

CUT TO OUTSIDE FULL LINE FOR ENGINE BEARER PLATE & LOWER WING PLATE.

2 TUBES 16 S.W.G. BORE BURIED IN LOWER SURFACE TO GUIDE FLEXIBLE LEAD-OUTS

NOTE. NYLON PATCH TO STRENGTHEN WING.

APPROX SHAPE OF 22 S.W.G. ALUM: ENGINE COWL CHECK MODEL FIRST BY PAPER TEMPLATE.

TEMPLATE FOR TANK COVER BEND OVER TOP PART & ENDS & SOLDER. SIDES EXTEND TO TOP OF ENGINE BEARER PLATE & ARE SCREWED TO IT. INSERT USUAL FILLER & VENT.

CUT OUT FOR NEEDLE VALVE & CARBURETTOR ON 1·9 CC "K. KESTREL" DIESEL POWERED MODEL.

TANK TOP & ENDS. BEND UPWARDS ON DOTTED LINES.

SCALE. FULL SIZE.

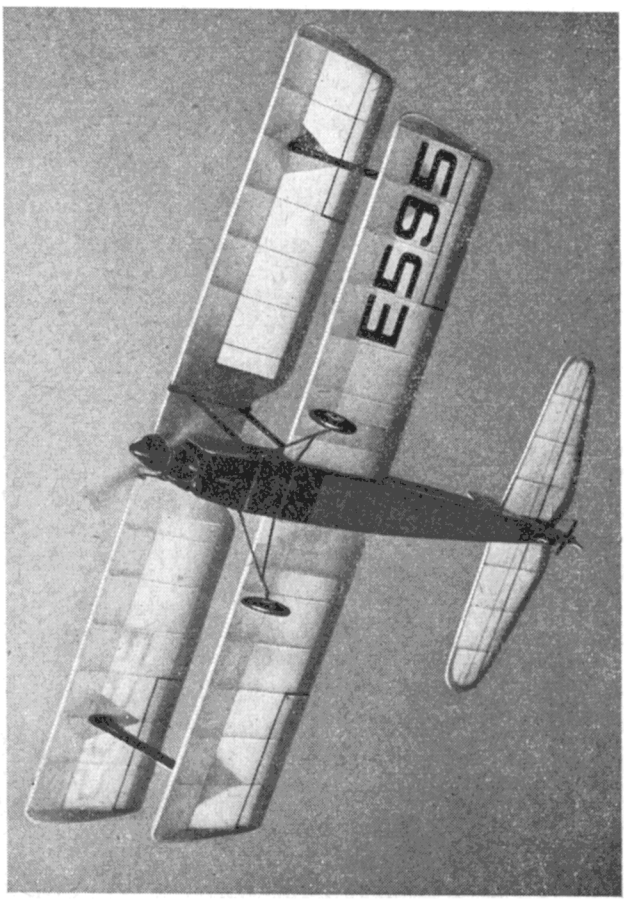
Venture

A 42 INCH SPAN SEMI-SCALE BIPLANE BY M. CAMPBELL

"SPORTY" and "Coquette" have already proved that there is something about a biplane that catches the admiration of all aeromodellers. Now we present another bipe that is as easy on the eye as it is to build and fly. Larger than its predecessors, Venture is well suited to the wide range of 2 c.c. motors, though, judging by the assortment of power units used in versions of "Sporty" (in spite of its original stipulated 1 c.c.), there is little doubt that Ventures will be flying with larger motors than those for which it was designed. We would not advise anything greater than 3·5 c.c., or you will find yourself with a rocket on two wings. For realistic flight, 2·5 c.c. should be a maximum, and 2 c.c. ideal, though the prototype completed hundreds of trouble-free flights with the Mills 1·3 c.c.

Note, too, that the pendulum is employed in this model, it is a sure safeguard against unwanted spiral dives and we would not advise its omission in any circumstance.

24 year old . . . Costing clerk . . . keen interest in powered scale models and pylon jobs . . . two years in India . . . member Eastleigh & D.M.C. . . . winner 1949 "Southern Counties Power Trophy"



CONSTRUCTION

Start the **Fuselage** by building the two conventional sides over the plan. Cut out the wing struts from $\frac{1}{8}$ in. ply and cement securely to the formers. Assemble the fuselage sides together, fitting all formers, engine bearers, and the nose-block. Construct the wing box, noting that it must be cranked in the centre to allow for the dihedral of the lower wings. Cement it lightly in place. Make up the pendulum rudder control and fit into the fuselage, leaving sufficient surplus on the control lines for fitting to the rudder. Form the cockpit from block, fit the tail wheel assembly, add the wing runners and undercarriage.

Now construct the **Lower Wings** and fit them temporarily in the fuselage box. Check for the $1\frac{1}{2}$ in. dihedral at the tips and cement the box securely. Add sheet around the fuselage nose, and construct the cowling with two layers of 1/16 in. sheet cemented at cross grains. Cut out a panel for engine access and fit the linen hinge. Add the motor (5° right side thrust was used on the prototype).

Build the **Upper Wings** in the conventional manner. Bind strut hooks securely in line with ribs.

Make the **Wing Struts** by forming paper tubes around 3/16 in. dowel. Sandwich between balsa sheet, before sanding to shape. The **Tailplane** and **Fin** are built in the normal way, cement the fin to the tailplane and temporarily fix to the fuselage to line up the locating dowel. Make up small hooks, clip to rudder bar hooks and connect the control lines. Note that the lines should not be tight, but equally tensioned. Allow rudder movement of $\frac{3}{4}$ in. to the right and $\frac{1}{2}$–$\frac{3}{4}$ in. to the left. Cover all surfaces with Modelspan, and give two coats of dope with a final coat of the desired colour.

A 42" WINGSPAN SEMI-SCALE FREE FLIGHT BIPLANE

VENTURE

DESIGNED BY M. CAMPBELL. 5/-

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THE AEROMODELLER PLANS SERVICE

THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.

DATA	
WING SPAN	42"
WING AREA	525 "
LENGTH	30 ¾"
FUSE MAX X/AREA	9·95 "
TAILPLANE SPAN	20"
" AREA	84·6 "
ENGINE	1 CC - 1·5 CC

MATERIALS REQUIRED		
SHEET		
1 SHEET OF	1/16 x 2" x 36"	BALSA
2 " "	1/8 x 2" x 36"	"
1 " "	1/32 x 3" x 36"	"
2 " "	1/16 x 3" x 36"	"
4 " "	1/32 x 3" x 36"	"
STRIP		
9 STRIPS OF	1/16 x 1/8 x 36"	BALSA
7 " "	1/8 x 1/8 x 36"	"
4 " "	1/8 x 1/8 x 36"	"

MISCELLANEOUS	
1 BLOCK OF	4" x 2" x 3" BALSA
1 " "	3" x 3" x 1½" "
12" OF	⅜ SQ HARDWOOD
1 PR	2" DIA WHEELS
1 —	¼" "
1 LENGTH OF	14 SWG TUBING
1 " "	14 " WIRE
1 " "	16 " "
1 " "	20 " "
6 SHEETS OF RAG TISSUE	

MODEL TO BALANCE HERE.

WING STRUT.

PLANK FROM FORMER A TO F4 WITH 1/16 SHEET ON TOP OF FUSELAGE ONLY.

SOFT BLOCK COWL HOLLOWED OUT.

20 SWG HOOKS.

⅛ LOCATING DOWEL IN FORMER.

1/16 PLY FORMER A1.

1½ SPINNER.

PLASTIC TUBING. CELLULOID WINDSCREEN.

FORM COCKPIT FROM SOFT BALSA.

ALL STRINGERS ⅛ x ⅛"

FORMER B.

⅛ SHEET.

⅛ x ⅛ TAPER TO ⅛ x ⅛

¾ x ⅛ STRIPS

⅛ SHEET.

SEE DETAIL R4

⅛ x ¼

20 G. ALUM TUBE RECESSED IN RUDDER.

⅜ SOFT SHEET RUDDER.

CONTROL HORN.

⅛ DOWEL FOR ⅛ ELASTIC BAND.

FILL IN WITH ⅛ SOFT SHEET.

⅛ DOWEL.

22 SWG BOUND TO DOWEL

SMALL HOOK FOR LINE ATTACHMENT.

⅛ SHEET TIPS

⅛ SHEET.

COVER TOP & BOTTOM WITH 1/32 SHEET.

3/16 SQ L.E.

⅛ x ¼

T.E.

T1

T2

T3

T4

A

LATCH FOR DOOR. PIVOT ON PIN PRESSED IN BEARER. HINGE DOOR WITH LINEN. COWL CARVED FROM BLOCK.

PLANK WITH CROSS GRAINED ⅛ SHEET. 2 LAYERS.

HOLE FOR ELANC TIMER.

⅜ HARD BALSA TONGUE IN WING.

14 SWG UNDERCARRIAGE FRONT LEG 5½" TRACK 11"

WB 1.

WB 2.

FILL IN NOSE TO THIS LINE WITH MEDIUM ⅛ SHEET BOTTOM OF FUSELAGE TO BE SHEETED AS WELL.

⅛ HARD SHEET BALSA BOX IN FUSELAGE.

⅜ SQ LONGERONS HARD BALSA.

⅜ SQ UPRIGHTS.

⅜ SHEET

⅛ SHEET

⅛ SLOT LEAD-OUT FOR CONTROL LINE.

DIA TAIL WHEEL.

HOLE FOR ALUM TUBE.

R4

2 OFF ⅛ PLY

4 OFF BRASS OR TIN BENT & SOLDERED ON RUNNERS.

PAPER TUBE TO TAKE WING STRUT HOOKS. STRUT IS HELD IN POSITION WITH RUBBER BANDS.

FORMER A1. 1/16 PLY.

BIND & SOLDER HOOKS TO INSIDE OF LEGS TO TAKE RUBBER BANDS FOR HOLDING LEGS IN TUBES

VIEW IN DIRECTION OF ARROW 'A'

2" DIA WHEELS.

6 BA BOLTS FIXING TIN PLATE WITH 14 G BRASS TUBING TO FORMERS A & F1.

SHAPE BEARERS TO FIT

⅛ HARD SHEET

⅛ HARD SHEET

A ⅛ PLY

F1

F3

WING STRUT.

B 1/16 PLY

TAILWHEEL WIRE BOUND TO FORMER.

BEND BACKWARDS HERE.

SLOT CUT OUT TO LOCATE ON STRUTS.

F5

F6

F7

F2, 4, 5, & 7 FROM ⅛ SHEET

F2

F4

18 SWG WING RUNNERS.

ST-80 RUNNER

PORT RUNNER

FRONT STRUT 2 OFF ⅛ PLY

REAR STRUT 2 OFF ⅛ PLY

⅜ SQ HARDWOOD BEARERS

PLY BRACE 'C'

CUT TO DOTTED LINE FOR C'S RIBS.

MAIN WING RIB 28 OFF 1/16 SHEET - 8 OFF ⅛ SHEET. 22 x 1/32 x ¼ RIBLETS

TOP WING C'S RIB 6 OFF 1/16 SHEET. 2 OFF ⅛ SHEET

T2

T1

T3

T4

ALL TAIL-PLANE RIBS FROM 1/32 SHEET

WB 1 ⅛ SHEET

WB 2 ⅛ SHEET

W.T.1 ⅛ PLY 2 OFF

W.T.2 ⅛ PLY 2 OFF

SHAPE OF WING HOOK

HOLES FOR CONTROL LINES.

20 SWG BIND & CEMENT WELL

⅛ PLY

STAM. D

20 SWG WIRE

BEND TAGS UP

ITEM C

HOLE FOR 20 SWG.

BEND DOWN

LEAD WEIGHT

ITEM B

⅛ PLY

SLOTS FOR TAGS ON 'B'

HOLE FOR 6 BA BOLTS.

ITEM A

6 BA BOLT WITH 4 WASHERS & 3 NUTS POSITIONS AS SHOWN

ASSEMBLY

L.E. OF WING MAY BE COVERED WITH 1/32 SHEET IF DESIRED.

PORT TOP WING

PORT BOTTOM WING

TUBES FOR ⅛ DOWELS ON TOP WING ONLY.

⅛ HARD SHEET TONGUE BOTTOM WING ONLY.

NOTE: COVER ALL SURFACES WITH RAG TISSUE.

1½" DIHEDRAL BOTH WINGS.

STARBOARD TOP WING

STARBOARD BOTTOM WING

WING STRUT HOOKS BOUND TO SPAR

3/16 SQ L.E.

1/32 SHEET RIBLETS

⅛ SHEET RIBS ON BOTTOM WING ONLY

⅛ x ¼ HARD BALSA MAINSPARS

1/16 SHEET RIBS

WING STRUT HOOKS BOUND HERE ON TOP WING

1/16 PLY BRACES

COVER CENTRE SECTION TO THIS RIB WITH 1/32 SHEET TOP & BOTTOM

GUSSET

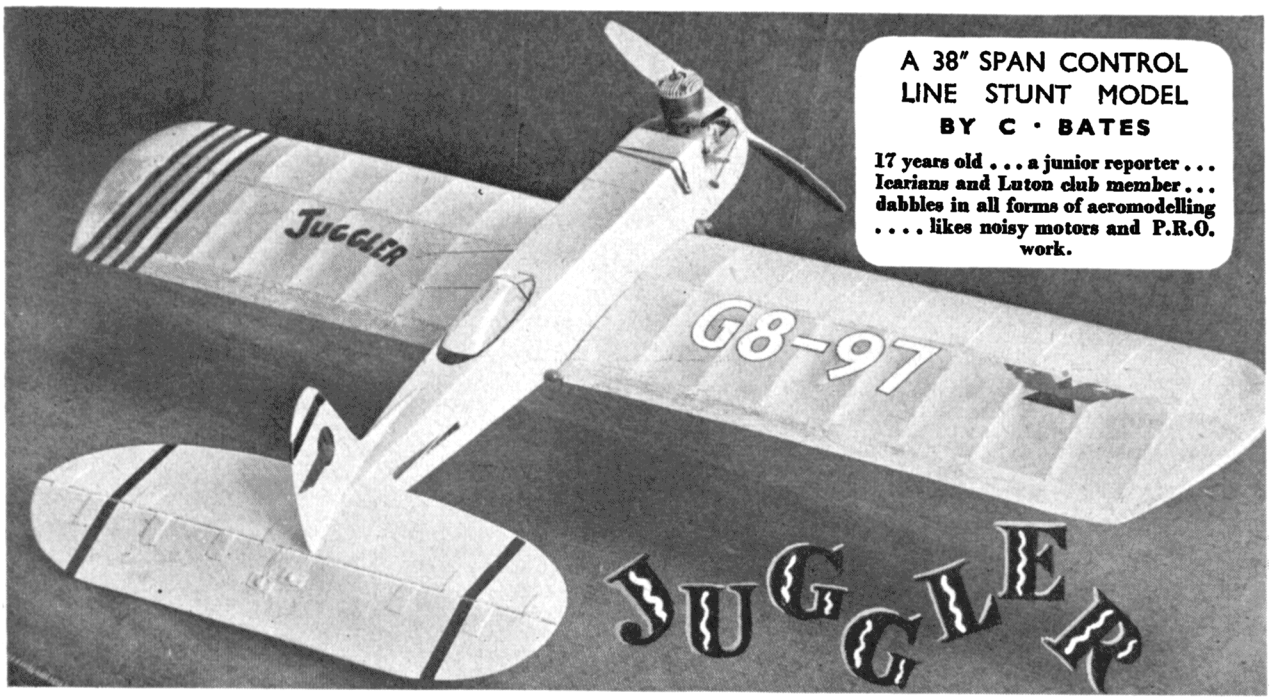
⅛ SHEET L.E.

⅛ SHEET OR SOFT BLOCK TIPS

1/16 SHEET SHAPED TO SUIT SECTION

PET 391

THIS IS A 1/5 SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE PRICE 5/- POST FREE FROM THE AEROMODELLER PLANS SERVICE



A 38" SPAN CONTROL LINE STUNT MODEL

BY C · BATES

17 years old . . . a junior reporter . . . Icarians and Luton club member . . . dabbles in all forms of aeromodelling . . . . likes noisy motors and P.R.O. work.

WHEN considering his 1950 programme, the designer realised the need for a medium-powered stunt design in his stable. The model needed to be simple, quick and economical to build and repair, yet possess reasonable appearance, able to withstand the inevitable prangs, and have maximum stunt performance.

The purchase of one of the new Frog 500 motors solved the power plant problem, and so round this motor grew the " Juggler ".

That all the required features had been obtained was apparent from the first take-off. " Juggler " will take the book in its stride, yet remain docile enough for the newcomer to higher powered stunt flying to feel completely at ease.

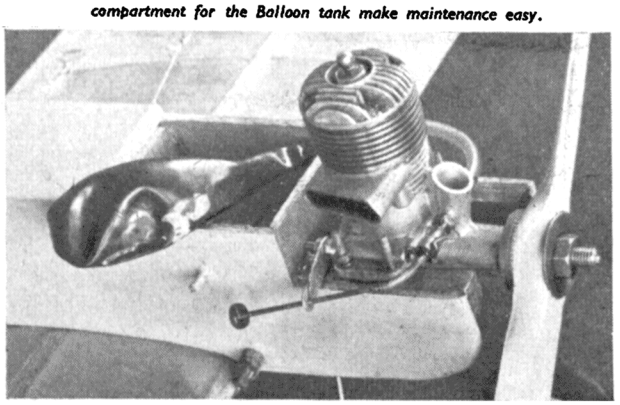
Fuselage and Tail.

Commence construction by cutting the engine bearers to length and bolting the motor to them. Cut out formers A to C, and cement them into position on the bearers, pre-cementing all joints. While this assembly is drying, cut the two fuselage sides from hard sheet, making sure that the two are identical.

Cement the sides to the bearer assembly, again pre-cementing all surfaces, and cement the rear ends of the sides together. Former D is now inserted. Cut out the tailplane and elevator from medium sheet, sand to shape and hinge with linen hinges. Bolt the elevator horn to the elevator. Cement this unit into position on the fuselage.

Cut out the bellcrank anchor block and bolt the pivot bolt to it, slot into the fuselage sides and cement firmly. At this stage fix the gussets on the anchor block, and also at the end of the bearers. Bend the push rod to correct length and hook one end through the elevator horn, fixing the other end to the bellcrank, holding it in place with a soldered washer. Firmly cement the U/C box to former A, and add reinforcement strips between the bearers, fix wing dowels into place. Complete the fuselage by adding top and bottom decking, the fin, bubble canopy and tailskid.

Below : Simple installation of the Frog 500 motor and the box compartment for the Balloon tank make maintenance easy.



Wing.

Cut out nineteen ribs from medium sheet and sand the T.E. to shape, notching for ribs. Pin the bottom spar to the plan, pack T.E. up 5/16 in. off plan and pin into position. Slot all ribs into place, and when dry add tips, L.E. and top spar in that order.

When this assembly is dry, remove it from the plan and fix root spar webs into position, sheet the bottom of the centre section with medium sheet and fix the outside wing weight to the starboard tip.

Give the fuselage and tail two coats of sanding sealer, rubbing down between each coat with fine garnet paper. Dope over this with three coats of the chosen colour and give the whole model a coat of fuel proofer.

Cut a portion of the top decking away to form the lid to the balloon box, cementing $\frac{1}{8}$ in. square strips round its inner edge to form a plug. The lid is held in place with a rubber band stretched over it from the box dowel. Make sure that the exit hole for the fuel feed pipe on the port side of the fuselage is on a level with the spray bar of the motor used.

In addition to the Frog 500, suitable power units for " Juggler " are the Yulon 30 and 29, Eta 29, K. & B. Torpedo (Glow), McCoy 29, Forster 29 and Dooling 29.

The ideal prop is a 9×6 ins. " Stant ", and normal line length is 60–65 ft. On normal Glo-plug fuel most ordinary toy balloons will last indefinitely, but if you experience difficulty with balloons, try a Woolworths Fish as suggested in " Gadget Review ", July, 1950.

JUGGLER

DESIGNED BY
C. BATES.

3/-

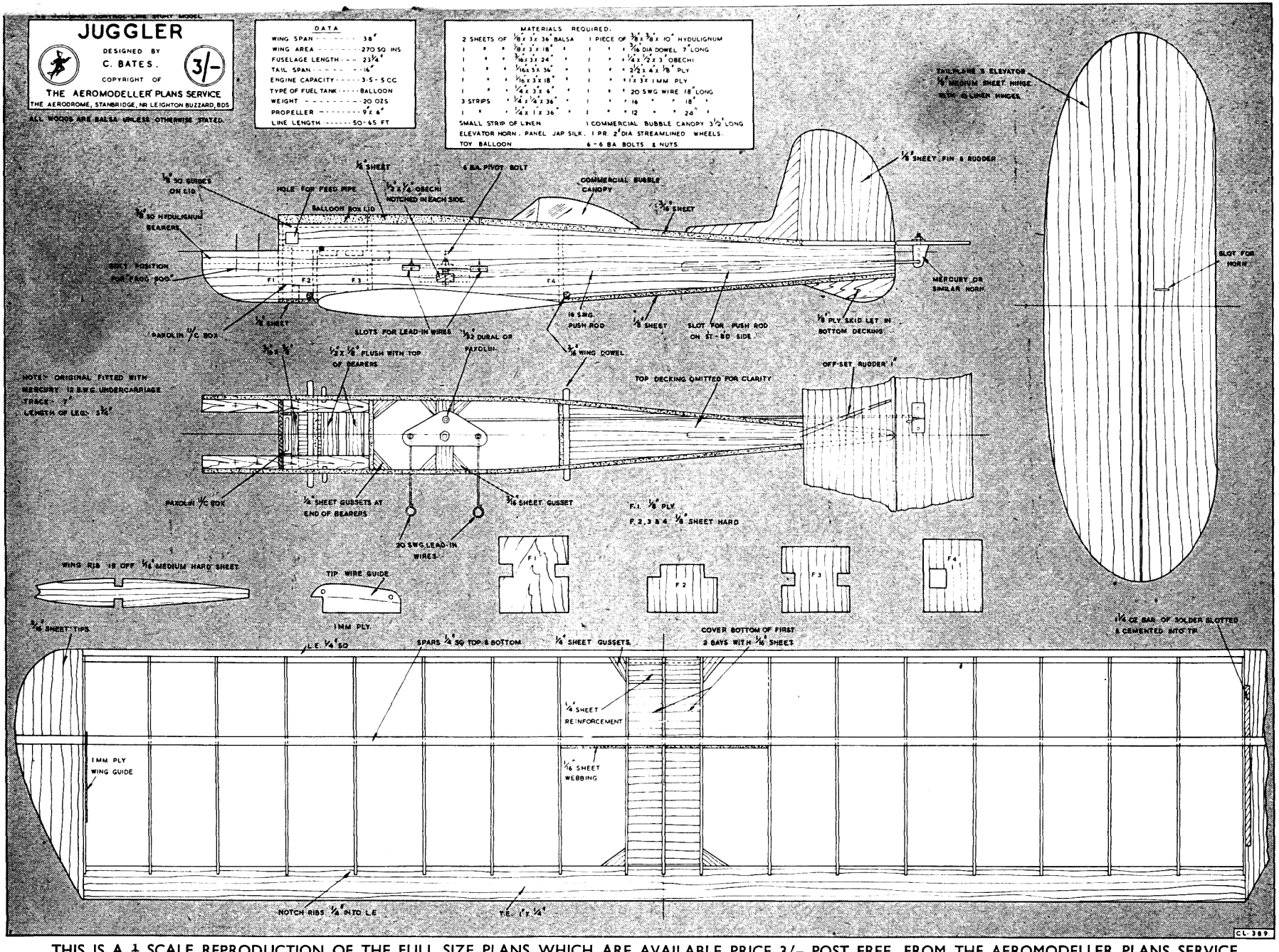
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.

DATA	
WING SPAN	38"
WING AREA	270 SQ INS
FUSELAGE LENGTH	23¾"
TAIL SPAN	16"
ENGINE CAPACITY	3·5 - 5 CC
TYPE OF FUEL TANK	BALLOON
WEIGHT	20 OZS
PROPELLER	9" x 6"
LINE LENGTH	50-65 FT

MATERIALS REQUIRED.

2 SHEETS OF 1/8" x 3" x 36" BALSA	1 PIECE OF 3/8" x 3/8" x 10" HYDULIGNUM
1 " " 1/8" x 3" x 18" "	1 " " 5/16 DIA DOWEL 7" LONG
1 " " 3/16" x 3" x 24" "	1 " " 1/4" x 1/2" x 3" OBECHI
1 " " 1/16" x 3" x 36" "	1 " " 2 1/2" x 4" x 1/8" PLY
1 " " 1/16" x 3" x 18" "	1 " " 1" x 3" x 1MM PLY
1 " " 1/4" x 3" x 6" "	1 " " 20 SWG WIRE 18" LONG
3 STRIPS " 1/4" x 1/4" x 36" "	1 " " 16 " " 18" "
1 " " 1/4" x 1" x 36" "	1 " " 12 " " 24" "

SMALL STRIP OF LINEN
1 COMMERCIAL BUBBLE CANOPY 3½" LONG
ELEVATOR HORN. PANEL JAP SILK. 1 PR. 2" DIA STREAMLINED WHEELS
TOY BALLOON
6 - 6 BA BOLTS & NUTS



CL. 389

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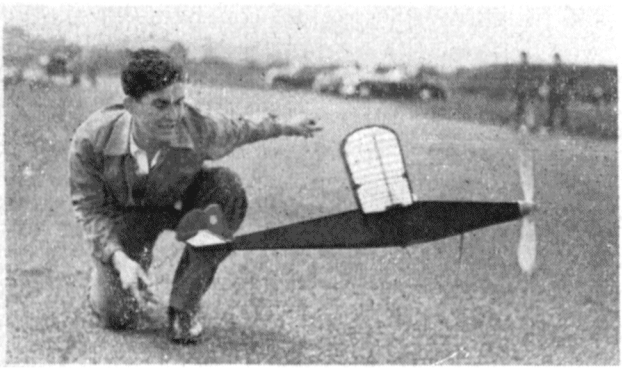
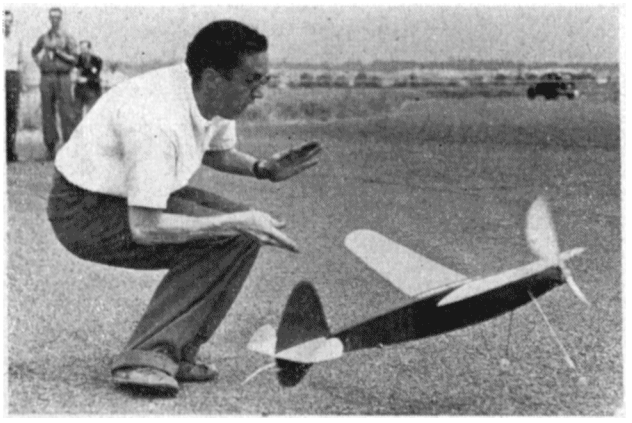




CAPTION

Twelve photographs by N. H. Groves of Wakefield models at the moment of take-off are displayed. In each of them the modeller has been caught by the camera in the attitude in which he released his model. You'll laugh, no doubt, but just think what you must look like sometimes.

It is felt that it should not be difficult for readers to supply suitable captions for these pictures and one guinea will be awarded for each of the best captions, in the opinion of the Editor, up to a total of twelve guineas.

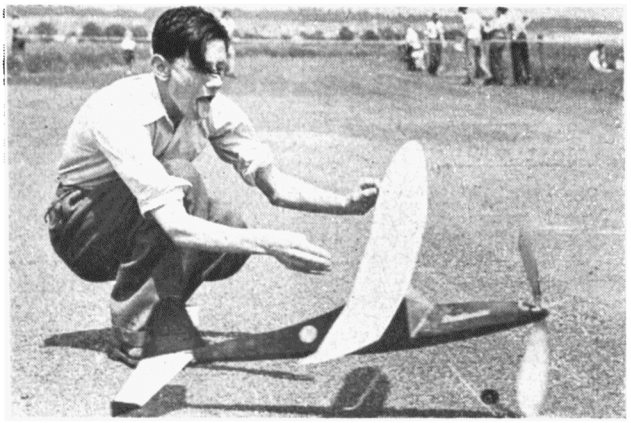
The simple Rules of the Competition are as follows :—

1. Entries should be sent in on a piece of paper numbered from 1 to 14 and having the name and address of the entrant in the top left-hand corner. The words " Caption Competition " should be written in the top left-hand corner *of the envelope*.

2. Only one caption for each of the photographs will be accepted from each entrant, i.e., a maximum of twelve.

3. As the guineas are being awarded for the best individual captions, it is still worth

Photos numbered **clockwise** *from top left :—1, Elmes, Ilford ; 2, Russell, Kentish Nomads ; 3, Davidson, Fylde ; 4, Marcus, Croydon ; 5, Hinks, Luton ; 6, Draper, Hatfield ; 7, Haines,*



CONTEST

sending them in even if you cannot think of one for every picture. The chances are that the money will be won by several entrants, although one really good entry could win twelve guineas.

4. The captions should be short and as humorous as you can make them, and need have nothing to do with the actual subject matter of the photo. For example, No. 3 might be " Say, aaaah ". This is not very funny, but is on the right lines !

5. The best captions will be chosen by the Editor, whose decision is final.

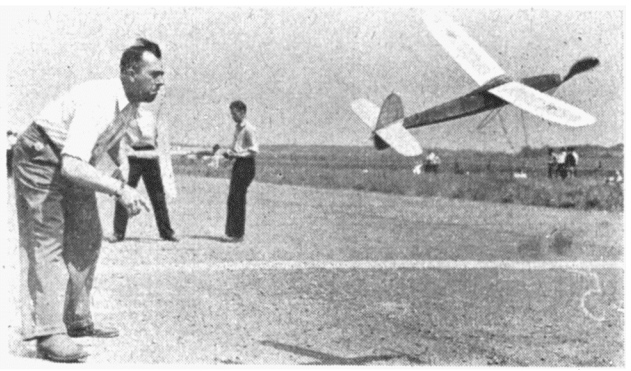
6. The closing date of the Competition is the 15th of September, and all entries must be received by this office *before that date.*

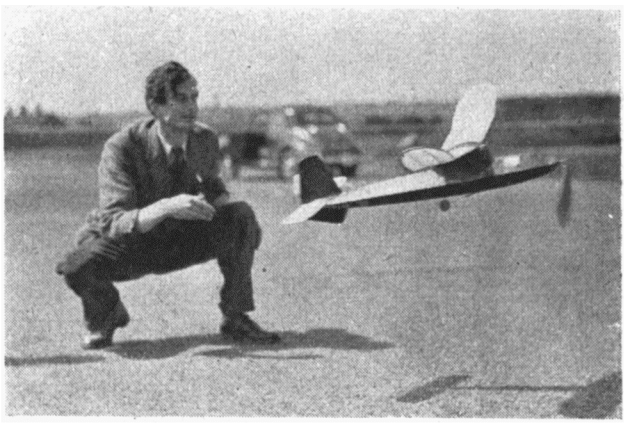
7. The names of the winners and the best dozen captions will be published in the November issue.

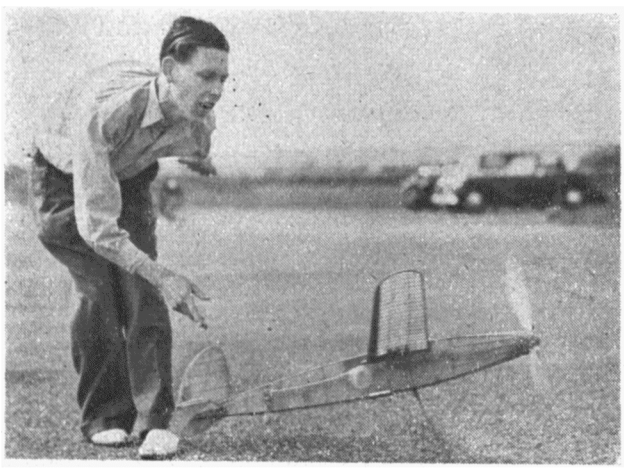
8. Members of the Staff of Model Aeronautical Press Ltd., and its Associated Companies, are excluded from this Competition.

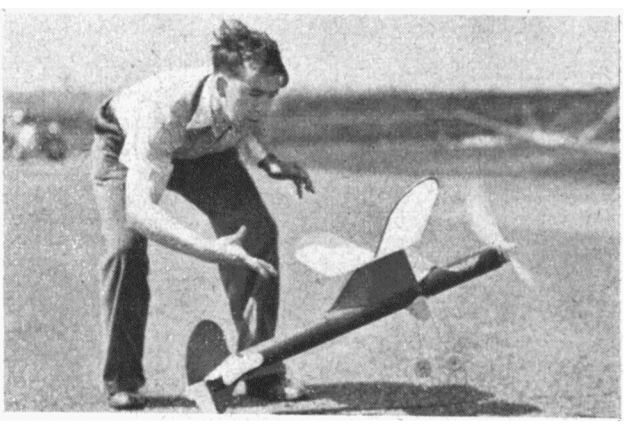
There is no entrance fee for Captions Contest, so get out the paper and pen . . . what can you lose ?

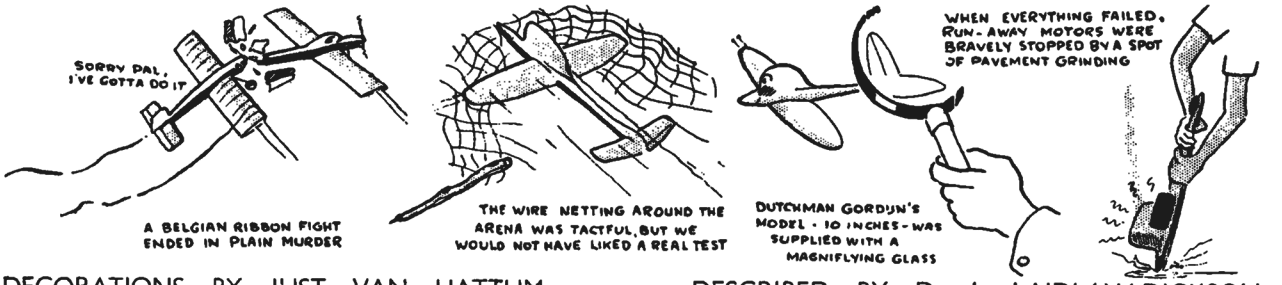
Thames Valley; 8, Jessop, Surbiton; 9, Stewart, Park; 10, Warring, Zombies; 11, Gilbert, Pharos; 12, McKenna, Park.





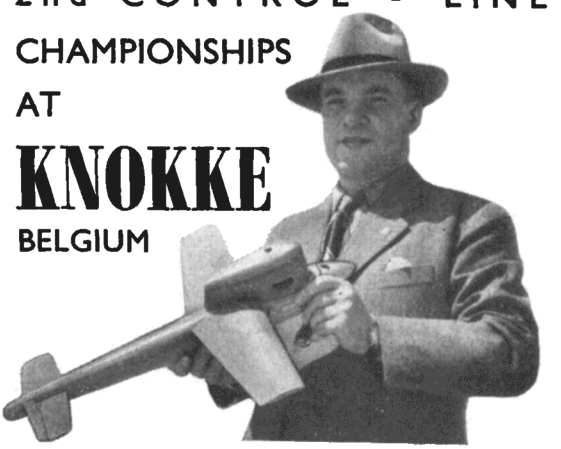


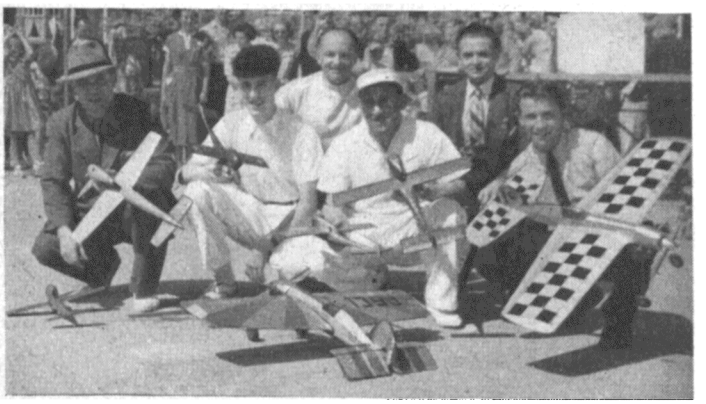


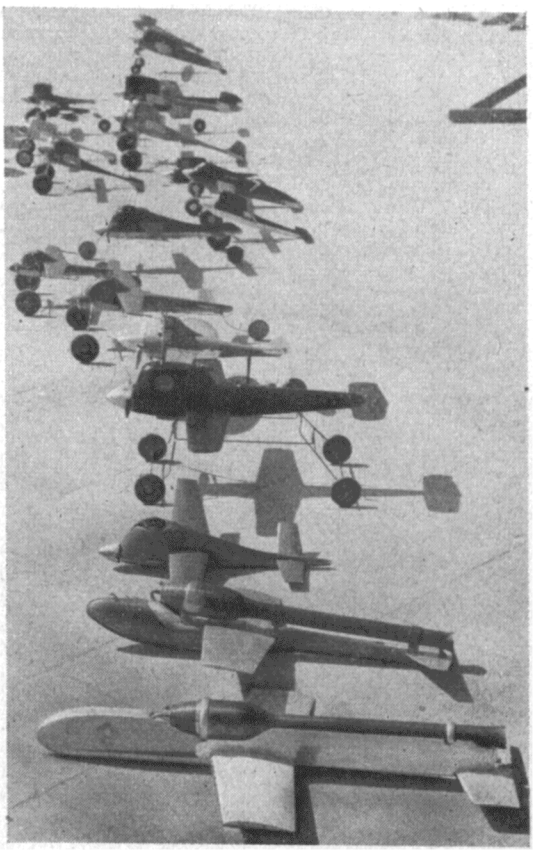


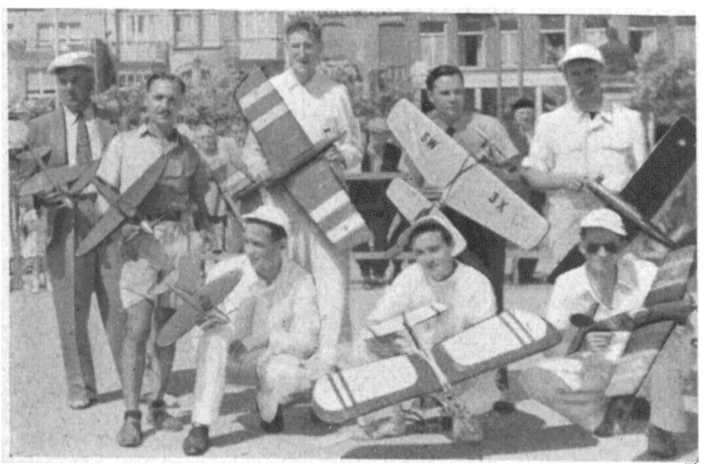
DECORATIONS BY JUST VAN HATTUM · DESCRIBED BY D. J. LAIDLAW-DICKSON

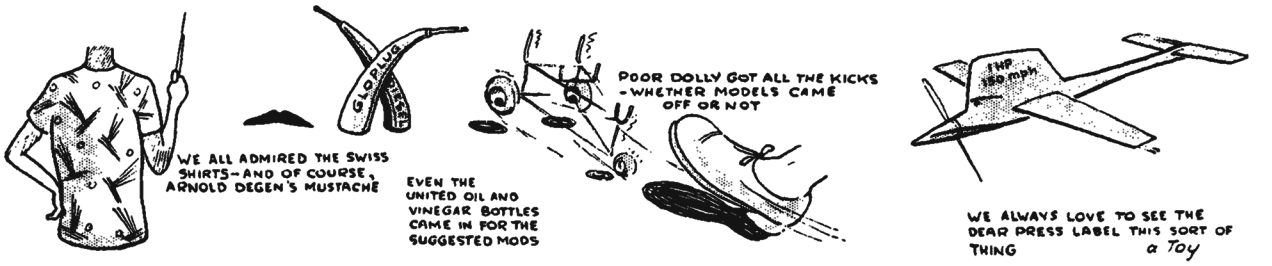
2nd CONTROL - LINE CHAMPIONSHIPS AT KNOKKE BELGIUM







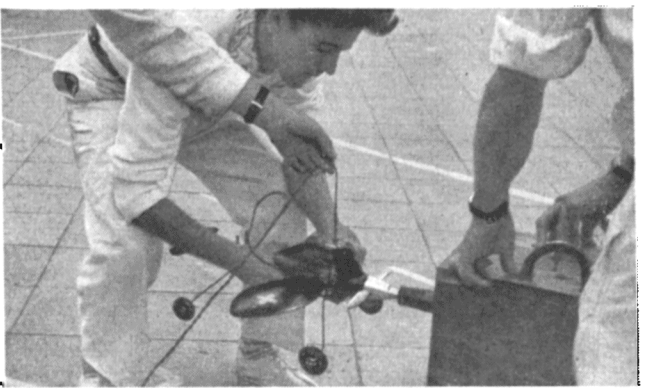




THE Second European Control Line Championships, held at Knokke-sur-Mer on the Belgian littoral from 8–11th July, fulfilled the expectations raised by their first meeting last summer. Official teams were entered by Switzerland, France, Holland, Belgium and—for the first time since the Frauenfeld meeting in 1947—a British team of power modellers appeared on foreign soil.

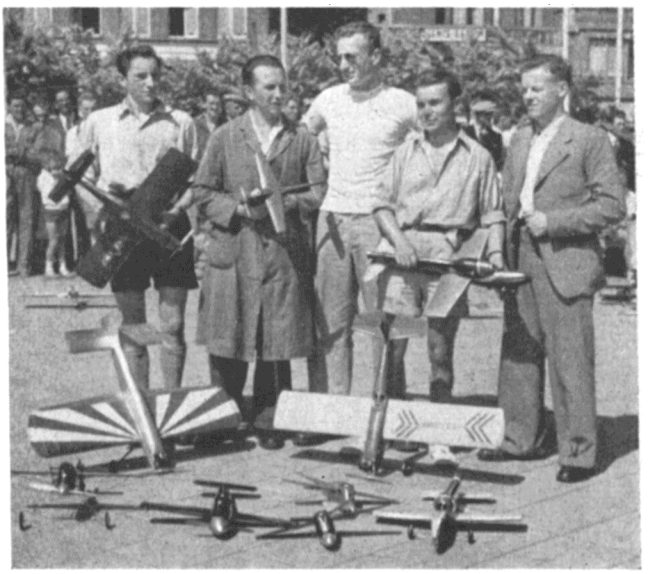
Contestants and officials were all housed in the Bon Accueil Hotel, which lived up to its title of "Welcome", and had in addition, a lively little nightery—The Club White Horse on the premises, to provide for those intent on celebrations for one reason or another. Even the weather was kind producing traditional holiday poster weather for the main flying days.

Following the Concours d'Elegance, won by Dr. Millet's beautifully finished polished wood speed model which afterwards showed its paces to the tune of 138 m.p.h., the competing teams were allowed twenty minutes each to show their skill as a group. Here France offered speed and stunt in the circle together—a somewhat hazardous proceeding; the Belgians provided ribbon cuttings which entered in tail pranging; the Swiss put on a riotous comedy act in Edwardian bathing rig and false whiskers: all to be eclipsed by our own Hewitt and Eifflaender who gave their usual stunt schedule. This started

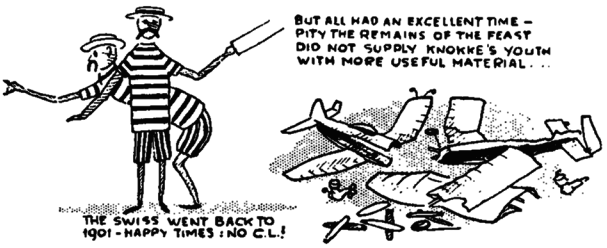


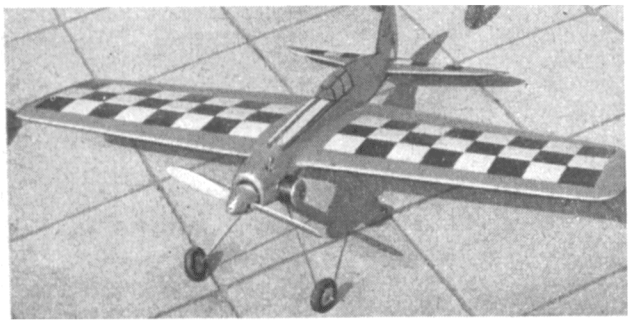
Top left: British team, left to right, Hewitt, Eifflaender, Shaw, Powell, Houlberg. In front: Non-team visitors Mackness and Salter. Centre left: French team, back row left to right, Millet, Chabot, Chapart. In front, Devillers, Labarde, Malfait. Bottom left: Swiss team, back row left to right, Peclet Senr., Degen, Peclet Jnr., Autre, Vallet. In front, Marchon, Meuwli, Senn. Title picture: Dr. Millet with his Concours-winning speed model. Below: Line-up of speed models.

On the right: Top: Gordijn, Holland, with his 10-in. span baby speed model. Below: Meuwli, Switzerland, with his double-elliptic winged model which has acquired a cowl since the Geneva meeting. Bottom pictures: Dutch team, Bremer, Bouter, Gordijn, Van Hattum, Kreulen and Lunteren. Belgian team: Janssen, Lippens, Bruyninkx, Cordier and Vermeiren.



THERE WERE MANY VERY INDIVIDUAL STYLES: M LABARDÉ, F, KEPT A STIFF UPPER LIP AND DOCTOR MILLET, F, ACTED THE ROUNDABOUT VERY EFFECTIVELY, WHILE M CORDIER, B, PUT ALL OF HIS PLENTIFUL MUSCLE INTO THE SHOW





things off very nicely and assured the British team of one piece of silverware to take home!

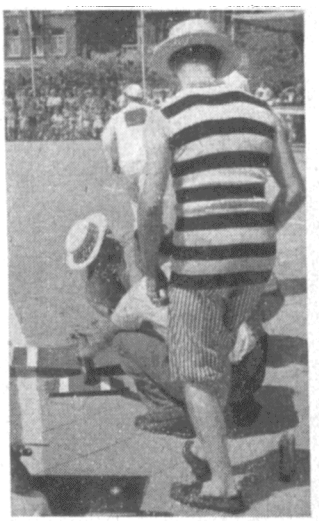
Any early optimism for an all-British clean up was quickly damped by the form of continental speed flyers generally combined with the inability of our own experts in the shape of Cyril Shaw and Powell to coax life into the 5 c.c. class. Nor could the two individual British visitors Mackness and Salter do much in this direction. The first round finished with Peclet of Switzerland leading the 5 c.c. at nearly 121 m.p.h., and his country man Vallet in the 10 c.c. at 140 m.p.h. Stunt was held by Eifflaender at 310 pts., Hewitt at 294·6 and Frenchman Malfait third with 277. Hewitt, incidentally, had gained maximum appearance points with his elegant Stunt Queen.

Second day flights showed every vital rev. in action, Peclet increasing his 5 c.c. speed to 123.6 m.p.h., and Swiss Meuwli displacing Vallet in the 10 c.c. at 143.3 m.p.h. Millet and Labarde (France) were close behind, with Lippens and Cordier (Belgium) also well up. British and Dutch speeds were negligible, Cyril Shaw showing best at 109 m.p.h. in the 10 c.c. Only the stunt remained for British skill to triumph—and even here it was a very near thing for Malfait (France) came within 3 points of catching Eifflaender and took second place. Hewitt was unfortunate in forgetting to fly inverted in the first round, and tangling his lines in the second, while conditions favoured Eifflaender and enabled him to reverse Gold Trophy placings on this occasion.

Final placing for the Championship gave Switzerland a one point lead over France, with Belgium third, Great Britain fourth and Holland fifth. Organisation throughout was first class, a large crowd thrilled all the time, and our only wish for the future is that a larger flying circle may be possible than that provided in the main square. May we in conclusion, say thanks to our hosts the Belgian Model Federation and the triple towns of Knokke, Zoute and Albert Plage.

Top: Malfait's stunt model. Note the spun alloy cowling housing his Micron. Semi-scale "team-racer" lines are most attractive and second only in appearance points to Hewitt's Stunt Queen. Above: Unlucky Salter and Mackness from East London M.A.C., who shared the official team's inability to get cracking.

Fashion parade, left to right: Mackness' shirt excited envy of contestants. Fair helper who made up the "ecurie Bruyninkx" besides doing a roaring business with programmes. Swiss misters in their best bathing rig and Edwardian whiskers. The Sheik of Knokke—Dr. Millet discards more orthodox headgear for the burnous.



E. W. EVANS

presents the

FEATHERING PROP

As featured on his 'Vansteed' Wakefield (2nd place 1950 contest)

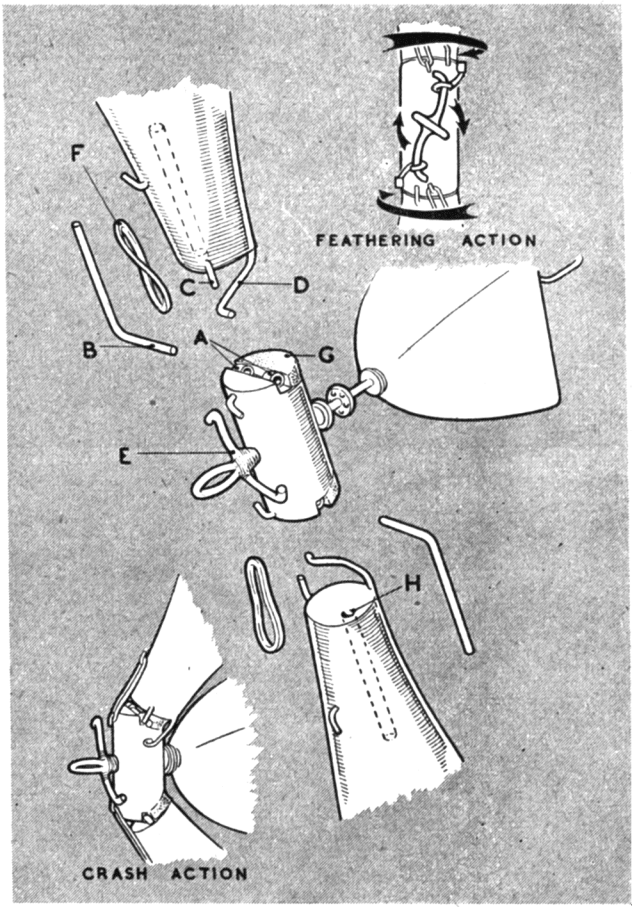
THROUGH countless years, Ted Evans, second man in the 1950 Wakefield, has developed Wakefield design with a series of detail innovations. He gave us the " Jaguar ", the 1948 Wakefield winner, with its pot-belly for stability, the ingenious wing fixing and the pop-up tail D/T. Then came the " Clipper " with incorporated cabin, new look hoop-style undercarriage and shock mounted wing. Now, for 1950, Ted has a place on the team with his " Vansteed " which employs his latest brainchild . . . the low-drag feathering propeller.

To many, its almost crash-proof property arouses greater interest than its aerodynamic qualities. Ted once had the unpleasant experience of a full-power prang into concrete which bust everything—except the prop.

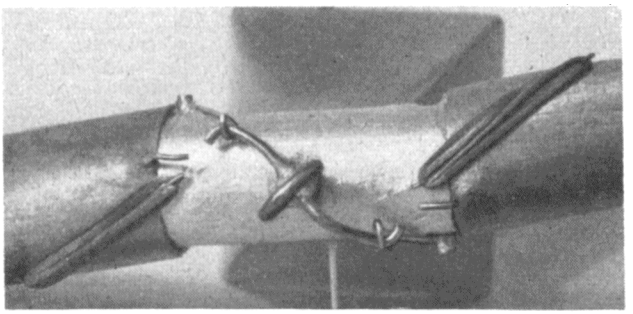
The feathering prop is really another form of double-bladed folder which enjoys the advantage of not altering the all-important C.G. position. It rotates so very slowly, movement is hard to detect, and, unless some wizard turns out a special prop-vanishing cream, it will probably remain the ultimate in reduction of drag for many years to come.

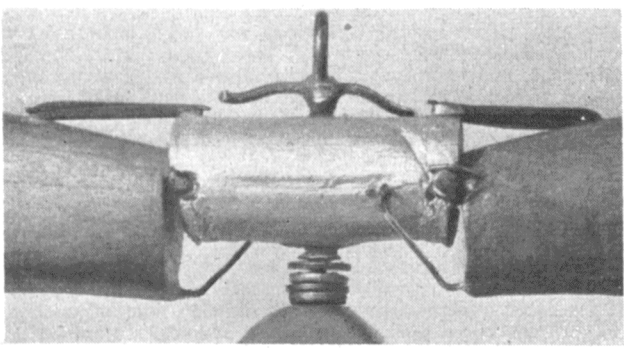
How it Works.

At each end of the round section boss, two pivot holes (A) are mounted at right angles to the propeller shaft. Through these pivots passes a 16 gauge shaft (B), bent at right angles to carry the blades and also housed in the tubes (H), in the leading edges of the blades. This arrangement allows each blade to feather and also to move backwards in the event of a crash.



The above diagrams explain the feathering prop mechanism when studied in conjunction with the text. At left, is an actual photo of the prop when feathered. Lower (top), is a view of the boss 'engaged', (bottom) the boss when feathered.





Wire parts (C) and (D) are bent from one piece of 22 s.w.g. piano wire. Part (D) engages on the double pick-up arm (E), and thus firmly locks the blade at " action stations " when there is sufficient power in the rubber motor. Part (C) is a stop which is positioned to determine the feathering angle of the blade, and stops against the portion of (B) which projects through its pivot points in the boss. Since the hooks (D) absorb only half the torque, it is possible to make these of 22 s.w.g. wire which is light enough to flex should the blades move back through a crash whilst still under power. When feathered, with the pick up arm disengaged, the blades are free to knock back in any crash and damage to the boss and blade is avoided by fitting a sorbo pad (G) to the rearmost corners of the boss. Elastic bands (F), tensioned between hooks on the blades and boss are fitted slightly diagonally to retain the blades in normal feathered position and also to impart a twisting force to the blades.

It must be appreciated that every pivot point must be made without tolerance. The long tube connection in the leading edge of the blades must particularly be precise; in fact those of the prototype were hand lapped to fit. That the original propellor weighed no more than one of normal construction is attributed to the use of dural and extremely careful construction.

Whether or not we can hope for another twenty or thirty seconds with this type of propeller, Ted Evans is not prepared to state, since it is but one of many new features incorporated in his latest " Vansteed " Wakefield. However, we are sure that this ingenious drag saver will give Wakefield enthusiasts plenty of material for discussion.

IRISH NATIONALS

THE Irish Nationals has become synonymous with an easy-going, friendly atmosphere, that gives everyone a good time (officials included), and this year's affair was no exception. For the first time official English entries competed, the S.M.A.E. having nominated Copland, Warring and Brockman for the rubber event, and Dudley in the power section.

Held once more at Baldonnell Aerodrome, the usual wind was in evidence, though not quite as strong as in the past two years.

Eddie Cosh having been persuaded to judge the Control Line event—in spite of dire threats and hints as to his eventual fate—the meeting got under way with Pete Westbrook (Zombies) flying from the midst of a circle of highly interested spectators. Despite the gusty wind, Pete made a fine showing, and, though he cracked up on his second flight following refuelling, he was so far ahead on points that he romped home an easy winner. The only other fliers to get going were Jim Bellew (now back in his native land) and Daley of Belfast.

Main interest was undoubtedly centred on the Wakefield class models, which performed extremely well in view of the conditions.

Thirty fliers competed in this contest, Marcus of Croydon being additional to the nominated team, and Jimmy Tangney upholding the American tradition. The Irish competitors included their '49 Team members, and that their selection was no accident was soon seen when both Fitzpatrick and Osbourn lost their models on the first flight. This happened also to Copland and Warring, though Bob was fortunate enough to get his model back later in the day in time to make his second flight.

This was a real corker, the model climbing to a good height and contacting a hefty thermal which defied the tip-up tail dethermaliser. In fact, the machine seemed to climb even faster once the D/T had operated, and my eyes were running tears when I clocked off well over five minutes! Warring did not retrieve his job, and had to be satisfied with a one flight result, but as he intended staying in Ireland for a fortnight, he had a good chance of getting the model back!

Don Brockman was out of luck on his first flight, the model being out of trim for the conditions, and only clocking 5·2 seconds. However, he turned in two good flights later, sufficient to place him fourth in the final listing. Marcus was another to get a maximum flight, but did not have quite enough on his other two flights, eventually finishing behind Tangney who plodded in three nice steady flights.

Fortunately for Copland, his two flights were enough to secure top place for him, for his model was well and truly lost, and he could not have made a third flight. Osbourne and Fitzpatrick, both of whom could have won given normal luck, had to be content with one-flight totals.

With many fliers away looking for lost Wakefields, the power event got under way with some forty entries. All types and sizes of model were on show, all showing signs of much use, and mostly exhibiting troublesome engines. In marked

contrast were Osborne, Dudley and Marcus, whose motors started with commendable readiness—and ran beautifully.

Probably the best flight was that of Norman Marcus, whose job went straight up to an amazing height, and was eventually lost after clocking 3 : 28. Dudley, after two average flights, managed to beat this time in his last effort, the job disappearing after a time of 4 : 20·5, his total time being well ahead of the rest of the field.

Altogether, nine models were lost, and there was a hiatus at the end of the day when it was found that Dudley was also missing ! However, when he had been given up for lost—and arrangements made for keeping his dinner hot !—he turned up in Bellew's car, the pair commiserating with each other on similar losses. Bellew was flying an interesting pusher type job, and lost it on a very good flight towards the mountains.

The evening function at Jury's Hotel was very pleasant, and enlivened by a number of speeches during which due acknowledgement was given to Air Lingus, and those other persons without whose efforts this annual series would not come into being.

	WAKEFIELD	secs.
R. Copland	Northern Heights	573
J. Tangney	Croydon & U.S.A.	535.5
N. G. Marcus	Croydon	508.4
D. Brockman	Zombies	501.2
D. Browne	Drimnah A.M.	362.8
D. Gleeson	Drimnah A.M.	285.95
	POWER	**secs.**
J. D. Dudley	Satyrs	524.8
F. McDonnell	Belfast	283.3
S. Wells	Dublin M.F.C.	265.2
Dr. H. Charles	Dublin M.F.C.	231.7
N. G. Marcus	Croydon	208.7
J. Fesemeyer	Dublin M.F.C.	200.7
	C/L STUNT	**points**
P. Westbrook	Zombies	64
M. J. Daley	Belfast	25
J. B. Bellew	Dublin M.F.C.	16

On opposite page : Top, the entry tent, centre, N. Marcus (Croydon) and Trunnion (Dublin) show their paces in the Wakefield event. Bottom, N. Osborne (Belfast) with his power model—note the Jaguar-style pod. This page : Clockwise, Billy Brazier and crumpled Wakefield which might be taken for a Helicopter. P. Westbrook assists J. Dudley (Satyrs). Don Brockman ruefully studies the remains of P. Westbrook's stunter. Doc. Charles and Banshee. Jim Bellew and Yogi. The smallest ('K' 2 c.c.) and the largest power entries (Ohlsson 60). Bottom, Some of the Irish entries showing the popularity of large power models.

GYROSCOPIC GREMLINS

BY R · MUSGROVE

MR. B. V. HAISMAN successfully traced the history of the aeromodeller's interest in spiral stability in his article in the March issue. Reference to that article will also reveal that Mr. Haisman collated the various theories on this subject that have so far been offered to the aeromodelling world. There are several factors, however, that he omitted to mention and I feel that they are of sufficient importance as to warrant this manuscript. My theories are the direct result of the observation of a wide variety of model aircraft on the flying field, and the factor that I believe to be the major operator in the spiral stability of the power model is gyroscopic torque.

Diesel and rubber powered models, and even a rubber powered autogyro, have behaved in a manner that can be explained accurately when the gyroscopic torque of the rotating parts is considered. But before an adequate explanation of the phenomenon, as it affects stability, can be given it will be necessary for you to know a little about gyroscopes. I propose to set out that knowledge, and then to illustrate the theory with actual examples.

Roll a penny along a table. It continues to roll in a straight path until it slows down and begins to lean over. As soon as this happens the path begins to curve, and the slower the penny rolls the more it leans, and the more curved does the path that it traces out become. Eventually this path becomes a spiral of ever decreasing radius and the penny finally falls flat in the centre. This simple phenomenon is caused by gyroscopic torque. Now imagine a circular flywheel spinning on its axis OX (diagram 1). We say that it is spinning in the right hand sense if it is rotating clockwise when viewed from O to X. This fact can be easily understood if we think of the action of driving a right handed screw into wood, for we must twist our screw-driver clockwise in order to do it, *i.e.* in the same direction in which the flywheel is spinning when we look along the axis into imaginary wood at X.

This rotation suits our purpose very well, for the vast majority of model airscrews are carved so that they rotate in a right hand sense when viewed in the direction in which the model travels. If, in diagram 1, we cause the axis OX to rotate horizontally in the direction shown, then the gyroscopic theory indicates simply that another force is developed which tends to rotate OX in a vertical plane so that point X drops in relation to O. This rotation in the vertical plane is called precession. Moreover, should we rotate OX horizontally in the opposite direction to that shown in diagram 1, then the precession induced is such as to cause X to rise in relation to point O. The forces causing precession are a couple, or torque, and the magnitude of this gyroscopic torque can be shown to be $Iw\Omega$ where :—

I = The moment of inertia of the flywheel,
w = The rotational velocity of the flywheel,
Ω = The rate at which OX is turned horizontally.

How does this torque affect the model in flight? Well, first of all, in place of the flywheel we must substitute the airscrew and any other revolving parts such as the crankshaft. Then the axis OX becomes the thrust line of the model and the force which causes the axis to rotate horizontally is supplied by the rudder. In diagrams 2 and 3 we will take the case of a prop rotating in the right hand sense as previously described. Diagram 2 shows a model in a turn to the right and R is the force causing this turn. The rule for finding the direction in which the gyroscopic torque acts is as follows :—

" The direction of the gyroscopic force is found by rotating the turning force through 90 deg. in the same direction as that in which the airscrew revolves."

This means that in diagram 2 the gyroscopic force on the nose of the model is pointing vertically downwards as drawn, and so we see that a power model which is trimmed to fly to the right under power suffers a downward force on the nose, a set-up which can cause no end of trouble, and often does! Diagram 3 shows the same model turning to the left. Apply the rule and you will see that we now have an upward force acting on the nose. This is definitely safer than a downward force but again can cause trouble with looping and stalling if not properly used.

Thus we seem to be between two fires, for firstly in a right hand turn we have to cope with a downward force on the nose that may cause a spiral dive on an otherwise stable model. Secondly in a left hand turn there is an upward force acting on the nose which may lead to stalling and looping and thence to a spin. This explains why many power jobs and some of those not-so-docile rubber models require really careful trimming.

Reverting to the expression that I gave you previously for the magnitude of the gyroscopic torque. We can reduce this expression to a much more palatable form by deriving expressions for I, Ω, and w, substituting and then simplifying. To do the actual calculation would serve no useful purpose here, sufficient to say that instead of " gyroscopic torque = $Iw\Omega$ " we can now write :—

$$\text{Gyroscopic torque} = \frac{\cdot 0033 W k^2 n V}{r}$$

In this equation :—

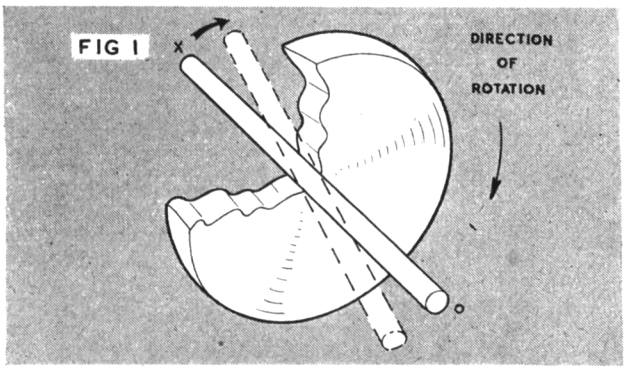
W = weight of the rotating parts (prop., crankshaft, etc.),
k = radius of gyration of these parts,
n = r.p.m. of the rotating parts,
V = forward velocity of the model, and
r = radius of the circle in feet in which the model flies.

Now to calculate the actual force involved for a particular model and airscrew-engine combination would be a difficult and tedious task, so, if you will permit the expression, we will skip it. Rest assured, though, that the forces involved are not negligible, as for an average 2 c.c. diesel powered model the force may easily be of the order of two or three ounces. Just imagine the effect of bunging a weight like that on the nose or tail of your latest model!

Even if we do not work an example we can see from the above equation which factors of design and trim govern the gyroscopic torque. Clearly as (W) is in the numerator we must endeavour to keep the weight of the prop low, this being the only weight factor that the average modeller, not able to make his own engines, can hope to control. Furthermore, keeping the weight of the propeller down helps to reduce the engine revolutions attainable for any given pitch-diameter combination. Therefore choose wood for airscrews well and avoid heavy synthetic materials for serious competition work. As (n), the r.p.m. of the engine, is also in the enumerator it is apparent that careful consideration must be given to the choice of engine, or in the case of rubber models to the number of strands of rubber, for free-flight work. Low r.p.m. consistent with good brake horse power should be the target. The forward velocity of the model, another numerator factor, is decided by the design of the model. In a fast flying contest duration model we have to pay for the high speed by an increase in danger from gyroscopic torque. The force on the nose of such a model may be increased 300% over that of a free-flight " goat," from which we seldom experience any trouble. The radius of gyration, (k), of the rotating parts is controlled by the distribution of mass of the airscrew, etc. Diagram 4 shows the manner in which different airscrew shapes can alter the value of (k). In most cases it is advisable to have some taper on the prop blades. The one other factor not constant in the equation is (r), the radius of the flight circle, and this is the denominator. A tight turn, *i.e.* small value for (r), will give a larger value for the gyroscopic torque whereas a wide turn will decrease the torque value by virtue of a larger (r). On the other hand a tight turn to the left, whilst increasing the relative value of the upward force on the nose, will help to reduce stalling tendencies. We must not forget though that engine torque also tends to roll the model to the left.

Please note : it is possible to draw one very important conclusion from the final equation, this being the fact that the length of the nose of a model does not in any way affect the gyroscopic forces involved.

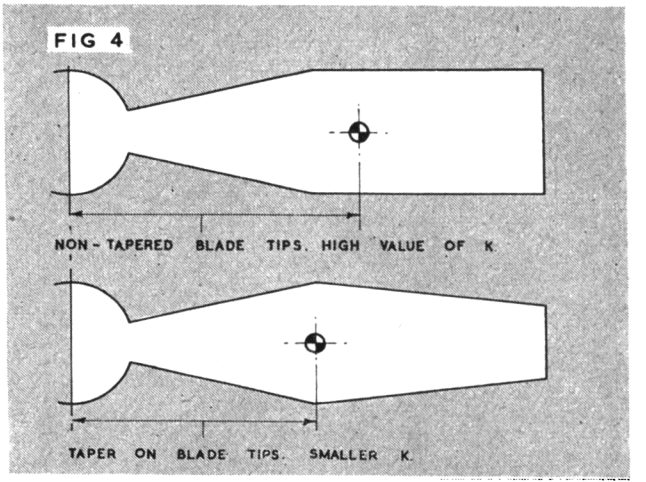
Most of the foregoing remarks apply equally well to rubber jobs, though to a much lesser degree. In actual fact only those rubber models utilising motors of abnormal cross-

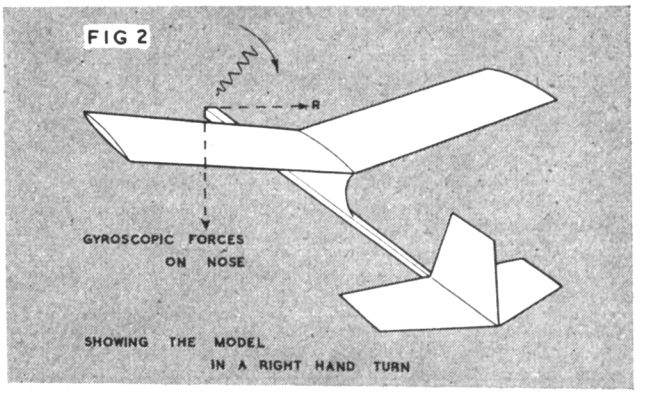


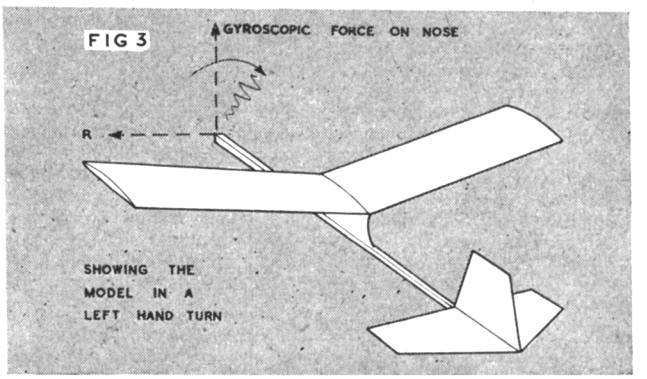
section, and large heavy props, are likely to cause trouble. For example, it is well known that model autogyros will only operate well when they have a high power to weight ratio. The combined gyroscopic effects of airscrew and rotor blades on a model autogyro, built by Len Gabriels of the Oldham Club, made trimming extremely difficult. It was never possible to pack on full turns and on one occasion the model did a complete barrel roll almost immediately after release. Even indoor microfilm models are not immune from gyro effects, especially free flight jobs with carved balsa propellers. With this type of model the forward speed and r.p.m. values are low, propellers are extremely light and as a result the gyroscopic torque has a low value. It cannot be ignored, unfortunately, due to the small overall of these models, and left turns invariably produce a slight stall, or right hand turns slight under elevation, at the beginning of the power run.

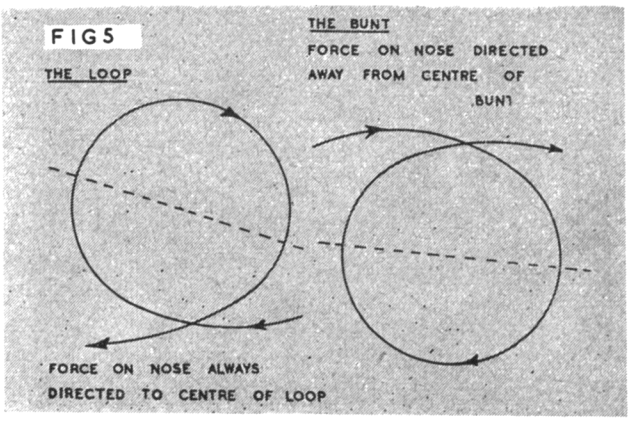
Diagram 5 represents a C/L stunt model circling anti-clockwise (in level flight). The paths of a loop and bunt are shown. The effect of gyroscopic torque on the manœuvrability of a stunt job can be easily worked out by dividing both loop and bunt paths into semi-circular parts with a horizontal line, shown dotted. For the period of the lower half of the loop (*i.e.* the beginning and recovery quarters) the plane is still circling in the main in the anti-clockwise direction. Apply the rule, given above, and you will see that the model has an upward force on the nose. For the top half of the loop the plane is inverted and travelling in a clockwise direction. Apply the rule again and you will find that the plane now experiences a downward force on the nose. Thus the gyroscopic force in both phases of the loop is assisting the model in looping. In the case of a bunt it will be found that the gyroscopic forces act against the bunt making the manœuvre harder to complete. In all probability most stunt fans have noticed this. The net result is that on a more or less symmetrical stunt model, rigged to fly anti-clockwise, it is generally necessary to apply a larger degree of elevator movement in order to complete a bunt than is necessary to complete a loop. If a stunt model flies in a clockwise path then the reverse of this applies. Furthermore, we can go on to consider the precession caused by turning in the loop itself. It will be found that the force arrangement is such as to produce an outward force on the nose of the model, and vice versa in the case of a bunt. Thus in a loop gyroscopic torque aids the tension.

We have seen how gyroscopic torque affects the stability of powered models and also the manner in which it helps to govern manœuvrability of C/L stunt models. There are many more applications, in the model world, of the gyroscopic theory but as I have given to you enough of the basic theory to enable you to work these for yourself I will not comment on them here. If the points given in Mr. Haisman's summary and the gyroscopic theory are carefully considered it should be possible for you to design and trim your latest model for perfect spiral stability, and the next time that your "perfectly safe" model spins in after replacing the airscrew with one of another pattern—remember you have been warned! Even so, you will be able to mutter something about "wrong propeller," an excuse which I hope Mr. Haisman will now admit as legitimate.



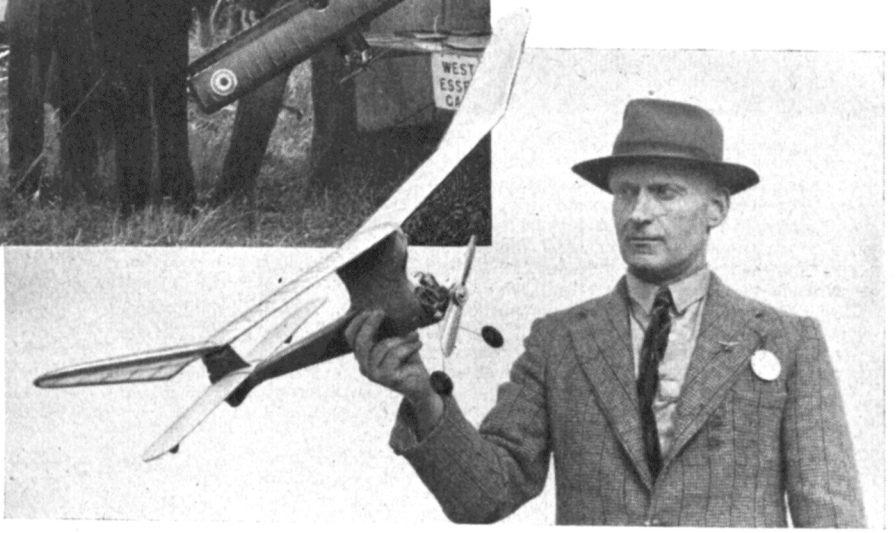






WEST ESSEX GALA

Popular with London area modellers, this Gala was held at Fairlop, on 18th June. All W. E. A. members are engaged in administration of the event and not allowed to compete with their guests.



Above: Flanked by Pete Westbrook with Orwick 64 Stearman PT.17, and R. Reffells with Anderson Spitfire Avro 504k, Doug. Gordon, Secretary of W.E.A. and the S.M.A.E. welcomed the Mayor and Mayoress of Ilford at the opening ceremony.

Right: Engine designer A. Allbon won one of his own 'Arrow' diesels with this model,—an achievement since repeated at the Sevenoaks Gala !

THIS third annual gala was started with a bang as Norman Taylor comfortably reeled off a 115·2 m.p.h. (McCoy 60) with his Lazybones II. Others in the speed circle seemed keener than normal when vying for a turn at the pylon, but most fell foul of the three minute start rule, or flipped the dolly on the unkind surface. From a field of dozens, Fred Guest came top among the " Tens " with an extra long flight at 121·5 m.p.h. (Dooling 61), and Pete Wright eclipsed the 5 c.c. record with a smooth 103·2 m.p.h. (Eta 29) Mk. 1. Both models have the new-look open top cowling á la Hellrazor.

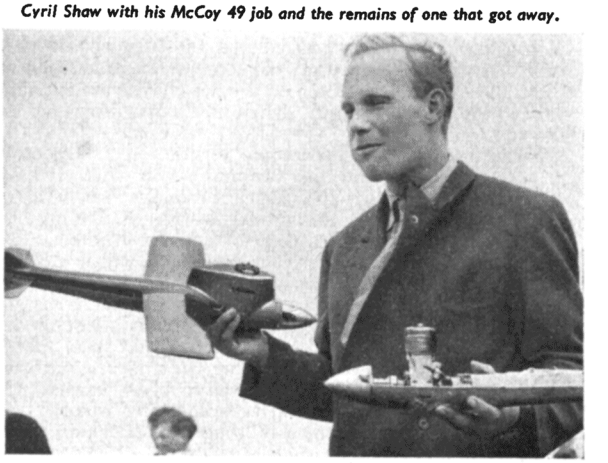
Alone in the baby class, but obviously not slow when without competition, Cyril Shaw set another, yet unclaimed, record for the 1·5's with 75·4 m.p.h. (Javelin powered Midge) and won the handicap event by a slim 1·8 per cent. Despite " doubting Thomas's," the handicap system worked extremely well, and resulted in only 2·8 per cent. difference between first and third places, which included representatives from classes 1, 2 and 6.

While the rubber boys (*winner—Jack North, Croydon, 577·2 seconds for two flights*), free flight power fans (*winner—Alan Allbon, Bushey Park, 43·7 : 1 ratio for two flights*) went about their own contest unobtrusively and the stunt event (*winner—Pete Russell, Worksop, Amco 3·5, Monitor*) ran off without much attention from the crowd, most interest centred on the new sport . . . Control Line Team Racing.

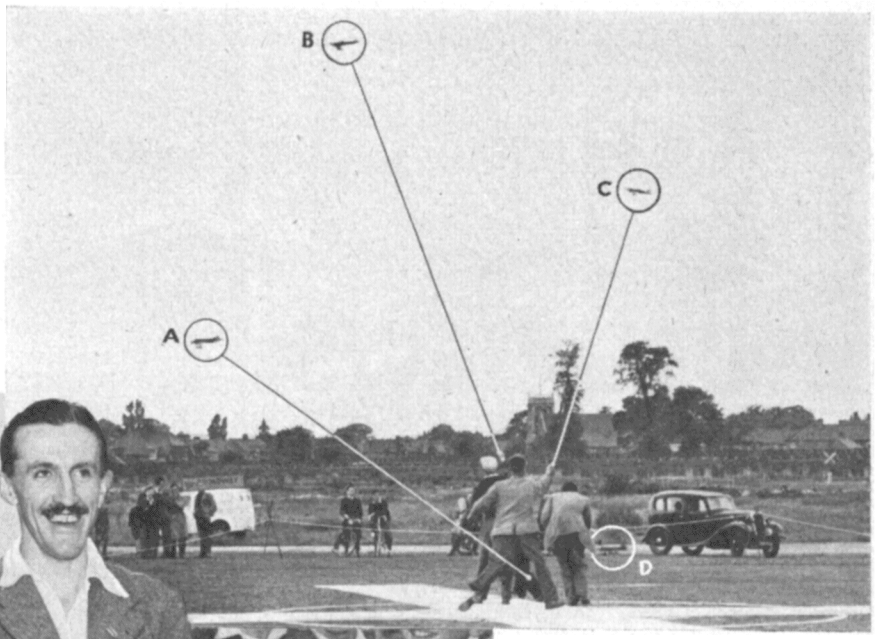
Perhaps incited by the stirring display at Brighton over Easter, eleven teams entered this second big match, and the four finalists provided such a thrilling finalé that Fairlop air has been buzzing with team-race chatter ever since. Working on the " long-range " theory, Norman Butcher (Croydon) surprised all by finishing his 5 mile eliminator non-stop, using an E.D. IV ; yet he was beaten by Johnny Nunn (Barking), whose fastest-ever team completed two refuellings in approxi-

Sid Allen prepares his converted ignition Frog 500 in the radio contest.

Cyril Shaw with his McCoy 49 job and the remains of one that got away.



Right: Soon after the start of the team-race final. Nunn (A) is in the lead with Rowe (B) about to overtake with his slightly faster model. Butcher (C) is in the act of overtaking Wilson (D) who is very low and afterwards got mixed with both Nunn's and Butcher's lines. Team racing calls for fast work from pilot and model as evidenced in this photo where Butcher appears to be airborne and on the way up to his racer.



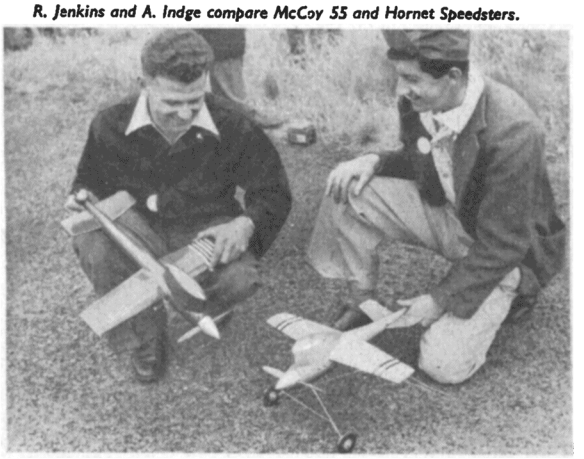
Left: 'Skipper' Capt. D. W. Rowe, of Godalming club, and his pilot D. West. Skip holding his winning racer, refuelled and restarted his Amco 3·5 c.c. diesel lone-handed five times during the 10 mile race. Model was one of the first team racers made in London area and features all balsa structure for durability. Using a commercial 9"×10" prop. clipped to 8", the model averages 30—35 laps each tankful. Pilot West was commended by others for good co-operation in the centre of the circle.

mately 30 seconds each. Butcher was a close enough second place to warrant fourth place in the final, where he repeated his long range flight; but was obviously handicapped by his lower speed. With four in the circle, anything can happen. T. Wilson (Malden—E.D. IV) was very unfortunate in getting his lines wrapped around Nunn and Butcher, each of whom flew left handed while trying to get untangled, and perhaps Johnny Nunn (Frog 500) was more unfortunate in losing 05 of his 125 sq. inches on "Skipper" Rowe's forehead as the latter refuelled his Amco 3·5 winner.

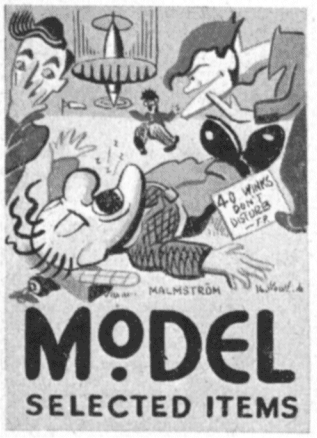
Aside from the control-line circles, the Radio-control contest progressed happily despite strong winds. None of the entries completed the set schedule, but an affable result gave Sid Allen (Battersea) and his Rudderbug first place.

E. Higlett with flapped Elfin stunter.

R. Jenkins and A. Indge compare McCoy 55 and Hornet Speedsters.



N. Butcher and long range team-racer.



OUR heading this month should be a warning to the open-mouthed snoozers brigade. Even if you do feel like forty winks at the next speed contest, make sure you are well clear of the flying area first!

Fliar Phil's selection of the month comes in plural this time with five of P. E. (Natznees) Norman's heavyweight free-flight stunters. P. E. has no less than 52 of these pendulum controlled scale jobs, one for each Sunday of the year! All diesel powered, they are built to withstand high speed landings and do just about everything a control-liner can do . . . without lines. Here we have an S.E.5a, Fokker D.7, Sopwith Camel, Sopwith Pup (now missing in the Langley area), and the very attractive Gloster Gamecock. Total weight of this small group is around 12 lbs.

Top right F. P. presents a pylon model with evidence of unusual patience from builder A. S. Bailey. Seen at the Northern models exhibition, Meteor V, as it is known, attracted a lot of attention with its highly polished speed job type cowling. Coming from Cheadle, the motor simply MUST be an Arden, though photographer D. Hughes does not mention so.

Yes, that really is a balloon in the picture (1) on the opposite page, and quite a whopper, too! Built by the Hon. T. F. D. Pakenham and helpers at Ampleforth College, this Montgolfier in not-so-miniature is made from 48 sheets of 20 ins. × 30 ins. red and yellow tissue, and is 9 feet high. Flying on its own thermal, created by a 15 minute "motor" (Meths. and cotton wool), this balloon is the eighth of a series and has made two flips of over one hour each, reaching an estimated 5,000 feet. One way to have fun on a calm day! Equally enterprising is Kit Carson's rotorplane seen in picture (2). Caught by Ed. Stoffel's camera at Fairlop, this Autogiro has so far made 25 secs. on half turns and Kit hopes later to have a crack at the now ancient 39·5 secs. British record established by Sam Crow in 1936. The 31 in. diameter rotor has a total of 135 sq. ins. in its three blades, weight is 5¼ ozs.

Picture (3) shows the work of Cpl. Newman and A/C Way at R.A.F. Station Sylt in Germany. Converted with a twin nose wheel undercart, the Falcon in the foreground is radio controlled, using a sidewinder super-Cyclone for power. Also with a twin nose-wheel, the ¼ scale Chrislea Ace is a comparatively heavy model and needs a long take-off run. Once airborne, however, it flies at a delightfully slow speed and with endearing realism. A 10 c.c. O.K. 60 petrol engine provides the necessary.

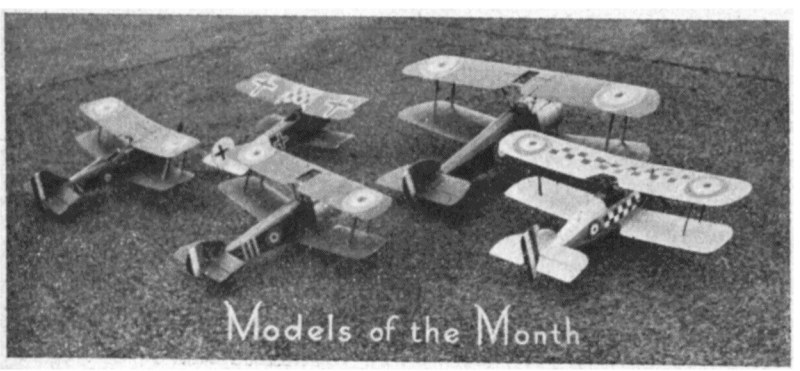
Number (4) is a Leica IIIa shot by K. Miller of Norman Marcus' latest and very successful pylon contest job. First of its victories this year was the winning of the Halfax Trophy from a field of 455 entries with a three flight total of 623 seconds. Note the side-mounted Elfin 2·49 c.c. diesel and the wire hoop undercart. F. P. wonders what Norman had in mind when he christened this potent performer with such a frustrate title as the "Jaded Maid".

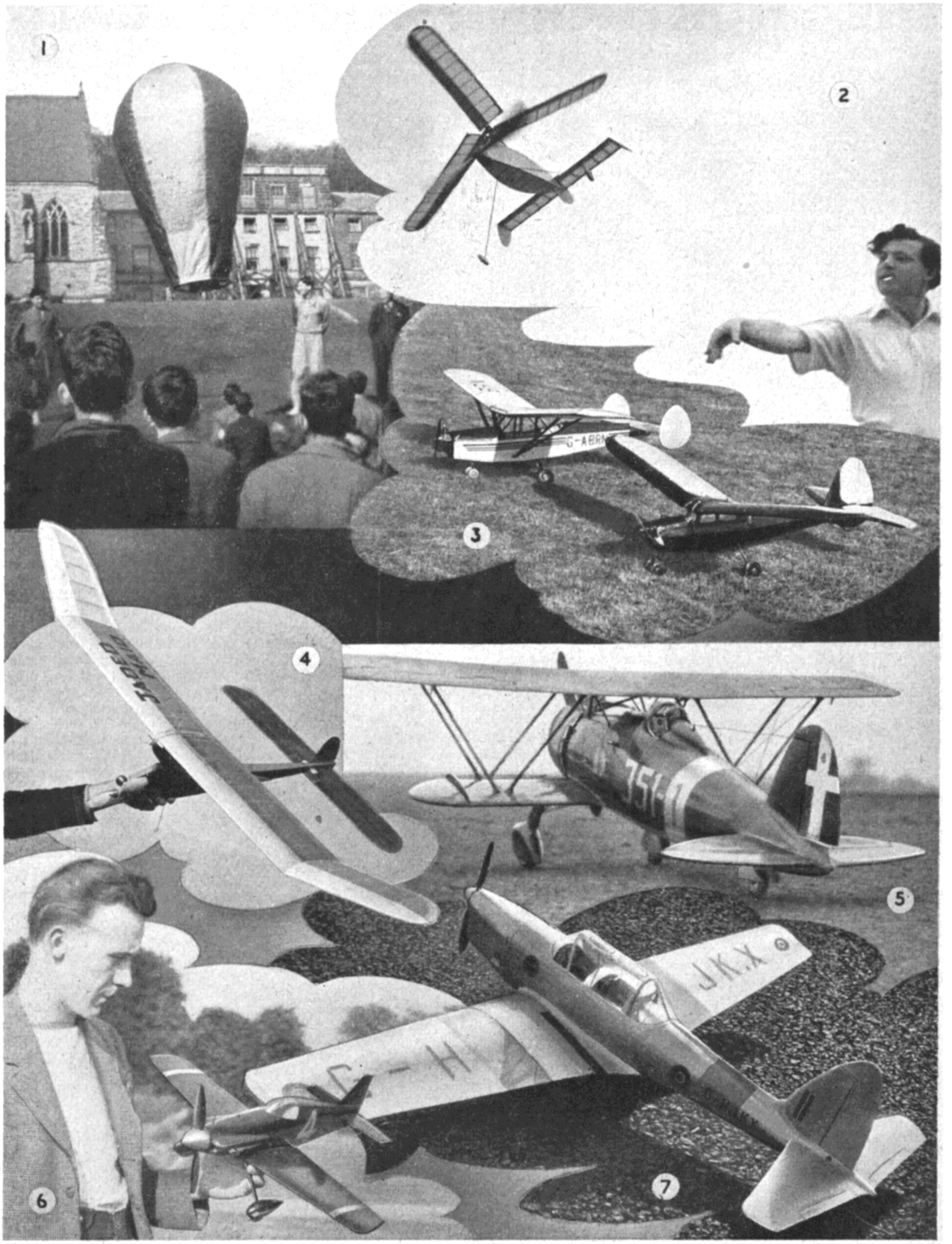
A one-time crack parachutist of the Italian Regia Aeronautica, Capt. Cesare Milani of Kensington made No. (5) as his choice for scale stunt with a Frog 500. Absolute accurate detail in this Fiat C.R. 42 was ensured by close study of his wartime snaps, and a good memory. Colour scheme, squadron markings and cockpit detail make this model almost indistinguishable from the real thing. Unfortunately the design falls short on the stunt side, by virtue of the built-in drag from a mass of wires and struts, and the voluminous fuselage. Speed is approximately 50 m.p.h. with a 9 ins. × 8 ins. propeller.

More speedy, perhaps, is D. Moller's "Midget Mustang" (Photo No. 6), made from the well-known kit. Using an Amco 3·5, as in the prototype, this one has a sheet covered wing for improved durability. The photo was taken by one of the new British Agiflex cameras, exposure 1/50 at F.8.

Lastly is yet another excellent picture from Ed. Stoffel's collection, this time number (7), of the ever-popular A.P.S. De Havilland "Chipmunk". Mills powered, the job was made by H. Kalinke, who was caught in the midst of ground tests. Mr. Kalinke uses a piece of cord attached to the tail-wheel of the Chipmunk, starts the motor, and then allows the model to taxi as he runs along behind. Which carries F. P. back to his early model reading when the Managing Editor recommended and illustrated this method of testing models, preferably by an athletic friend, in that classic, "The Design and Construction of Flying Model Aircraft," (Page 198).

Now how about some Rubber job and Glider pics Boys? The kind that are out of the rut and really different.

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