MODEL Aircraft

In this issue

MARCH 1952

1'6

Digital Edition Magazines.

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

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

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

AeroFred Gallery Free Plans.

http://aerofred.com/index.php

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★ Every kit is carefully designed to give—HIGHEST PERFORMANCE. GREATEST STRENGTH. EASE OF CONSTRUCTION.

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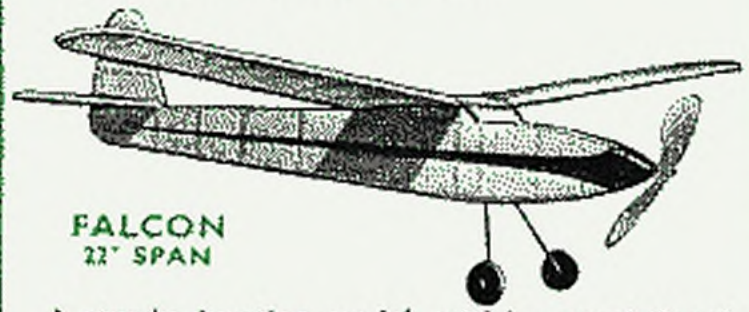
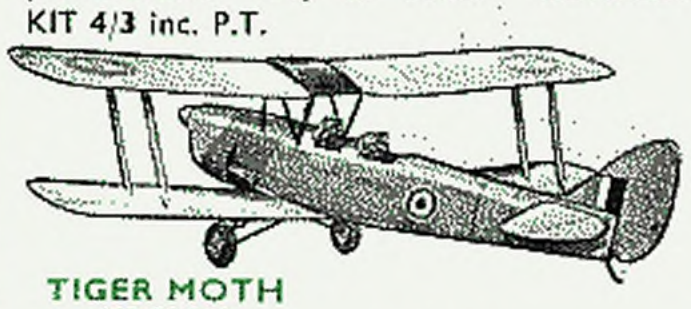
24 SPAN

An authentic flying scale model. Powered by E.D. BEE. Elfin and similar engines.
COMPLETE KIT 19/- inc. P.T.



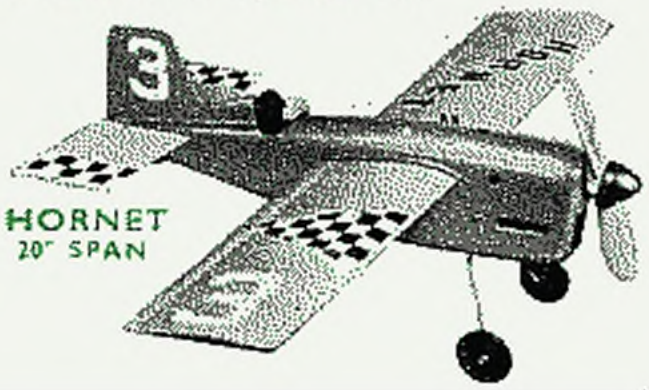
FALCON
22" SPAN

A sturdy duration model, with an exceptional performance. Easy to build. COMPLETE KIT 4/3 inc. P.T.



TIGER MOTH
20" SPAN

One of the Skyleada 3/8 Flying Scale Series—all complete kits including rubber, cement and fully shaped propeller.
COMPLETE KIT 3/8 inc. P.T.



HORNET
20" SPAN

A class " A " Team Racer but also easy to build beginner's model. Suitable for engines from 1 c.c. to 2.5 c.c. capacity.
COMPLETE KIT 10/5 inc. P.T.

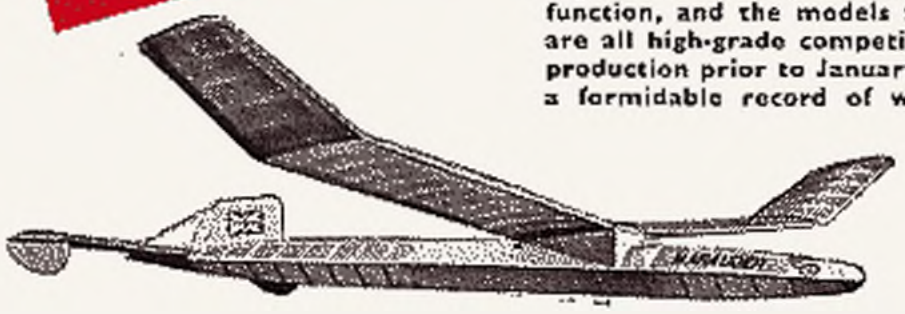
Manfd. by **BRITISH MODEL AIRCRAFT MFG. CO. LTD.**

180, LONDON ROAD, MITCHAM, SURREY

MERCURY Competition Designs

KITS THAT WIN FROM THE START

Each Mercury design is individually planned, flight-tested and produced to fulfil a specific function, and the models featured this month are all high-grade competition jobs. Those in production prior to January, 1952, already have a formidable record of wins to their credit.



MARAUDER C.524

SAILPLANES

NORSEMAN 55 in. Nordic A/2. 24/9.

MARAUDER C.524 65 in. span. For Nordic A/2 and other contests 17/9 (new kit)

CONTROL-LINE

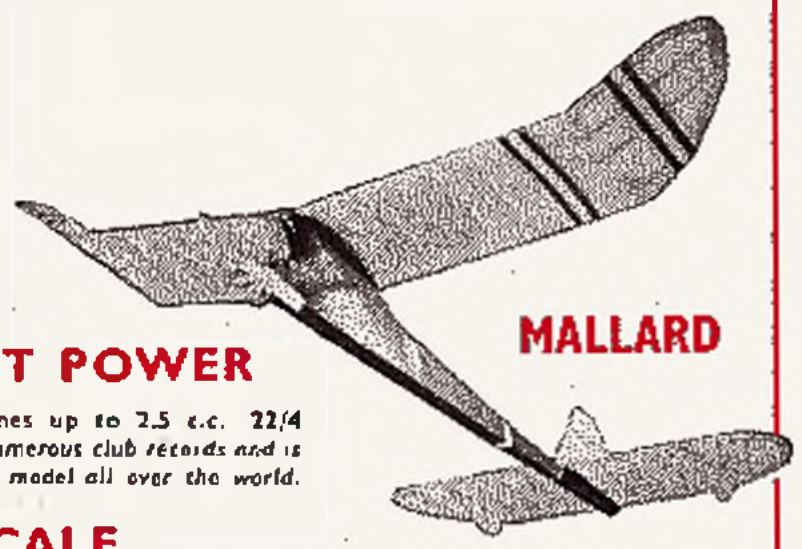
MIDGE C/L speed for Class I engines 6/5

Mk. I TEAM RACER 22/4

Mk. II TEAM RACER 17/6

MONITOR 48 in. Stunt for 3.5-5 c.c. motors 22/4

MUSKETEER 48 in. Stunt for 5 c.c. motors 24/9



MALLARD

FREE-FLIGHT POWER

MALLARD 48 in. for engines up to 2.5 c.c. 22/4
Semi-pylon model, has made numerous club records and is considered a most outstanding model all over the world.

FREE FLIGHT SCALE

The Aeronca Sedan is the first commercially produced kit to conform to S.M.A.E. contest specifications when built exactly to plan. True to scale in all details, it can be entered for contests without modification. The Stinson 105 already has wins to its credit.

AERONCA SEDAN 69/6

FREE KITS

Mercury Model Aircraft Supplies Ltd. will present any kit to choice in the current Mercury range free of all charge to modellers in S.M.A.E. contests who win first place with a built-to-plan Mercury kit. Details should be fully corroborated when claiming and winners' names and details will be published in our advertisements.

No other make of commercial kits has anywhere near the consistent record of important wins gained by MERCURY over the last 2 years

Outstanding successes include

MIDGE C/L SPEED
Class I Speedster—6/5
West Essex Gala 1950—1st. (75 m.p.h.)
S.E. Area Rally 1950—1st.

MONITOR C/L STUNT
3.5-5 c.c. model—22/4
West Essex Rally 1950—1st.
Norwegian Championship 1950 (Oslo) —1st.
International Week, Eston Bray 1950—1st.
Rotherham Rally 1949—1st.
Doncaster Rally 1949—1st.
N. Area S.M.A.E. Championship 1950—1st.
Mansfield Rally 1950—1st.
W. Essex Gala 1951—1st.
S.M.A.E. Festival of Britain Championships 1951—1st.

MUSKETEER C/L STUNT
5 c.c. model—24/9
Geneva and Milan International Contests—3rd.
S.E. Area Championship 1950—1st.
Sunderland Contest 1950—1st.

MALLARD
48 in. F/F Power model—22/4
E. Anglia Rally 1950—1st.
R.A.F. Championships 1950—1st.
London Area Junior Championships—1st.
Victoria, Australia Championships 1951—1st.

MK. I TEAM RACER
To S.M.A.E. Specification—22/4
S. Counties Rally 1950—1st.
S. Counties Rally 1951—1st.

NORSEMAN
A/2 Sailplane—24/9
2nd place in British A/2 contests for 1950 and 1951.
Concours d'Elegance, R.A.F. Halton, 1950—1st.

STINSON 105
Scale model—28/8
All-Britain R.A.F. Championships F/F scale 1951—1st and 2nd.

WON WITH KITS BOUGHT OVER THE COUNTER AND BUILT TO PLAN

TRADE ENQUIRIES : H. J. NICHOLLS LTD., WHOLESALE, 308, HOLLOWAY RD., N.7.
EXPORT ENQUIRIES : BUTLER, ROBERTS & CO. LTD., 4, DRAPERS GDNS., E.C.2.

Most Popular Name on model shop shelves

Just take a look at the shelves and windows of any model shop and the most noticeable thing will be the number of Keilkraft kits on show.

This alone is sufficient proof of their amazing popularity among discriminating model builders.

NEW! Pacer

Class B TEAM RACER

PRICE **18/4** INC. TAX

Wingspan - - 30 in.
Wing Area 126 sq. in.
Length - - - - 20 in.
Weight - - - 16 oz.

Model builders everywhere have long since acclaimed the RANGER as the top commercial design for class "A" team racing. Its simple construction, easy handling characteristics and "real-aircraft" appearance have made it famous in team race circles and repeated requests have been reaching us for a Class "B" design of the same high calibre. The PACER is the answer to these requests—a rugged, easy-to-build "B" size racer that HAS BEEN DESIGNED TO TAKE the Amco 3·5, ETA 29, E.D. 3·46, D.C. 350, Frog 500—and the "big" Class "A" E.D. 2·46 and Elfin 2·49 motors. Main recognition features of this distinctive model are the straight tapered flying surfaces, radial type cowl and bubble canopy

Latest Addition to 3/8 FLYING SCALE SERIES

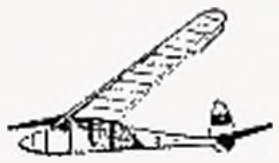
Other Jetex models in this range include
Hawker 1067
Attacker
Panther
Sabre
MIG-15

de Havilland
VENOM F.B.1

A newcomer to our popular range of Jetex 50 powered flying scale models. These kits are very complete and are fine value at 3/8 inc. tax

GLIDERS

20" Cub (Jetex 50) 3/1
30" Cadet 4/11



36" Soarer Baby ... 6/1
46" Soarer Minor ... 9/9
60" Soarer Major ... 14/1

50" Minimoa ... 8/7

40" Invader ... 7/11

64" Chief A-2 ... 22/8

F/F POWER

32" Slicker Mite 11·7
42" Slicker ... 21/5
50" Slicker 50 ... 30·6
60" Super Slicker 42/9

41" Ladybird ... 22/8

32" Southerner Mite 12/10

52" Outlaw ... 27/6

All prices given in this advertisement include purchase tax

F/F RUBBER POWERED

23" Pixie ... 4/11

23" Orion ... 4/3

20" Playboy ... 4/-

24" Achilles ... 4/11

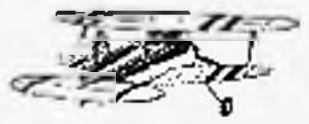
30" Ajax ... 7/4

32" Senator ... 6/9

CONTROLINERS

24" Ranger "A" T/R 12/10

40" Stunt Queen ... 25/8



20" Scout Biplane ... 27/6

26" Skystreak (Stunt) 11/6

21" Phantom (Trainer) 22/8

16" Phantom Mite ... 14/1

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Manufactured by E. KEIL & CO. LTD. LONDON E.2.

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Mills DIESEL

. . . not just because the Mills saves you money from the moment you buy it ; though today the economic advantage of this trouble-free engine is reason enough for the steadily growing demand.

The Mills, being built to last, also offers longer service at peak performance . . . with quick and easier starting to give you more flights per hour.

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inc. Tax

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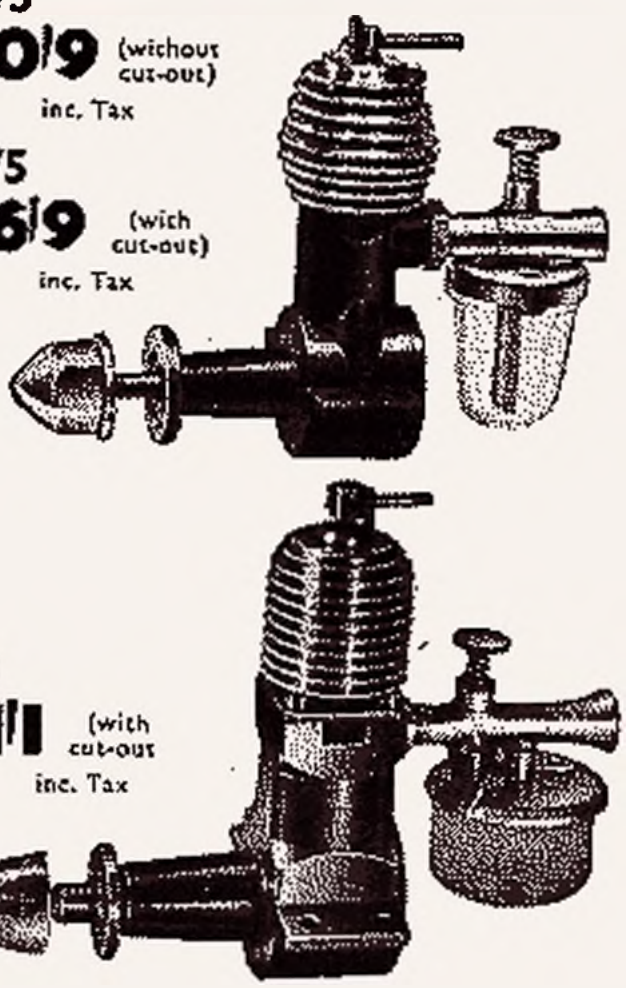

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inc. Tax

wherever there's model flying—

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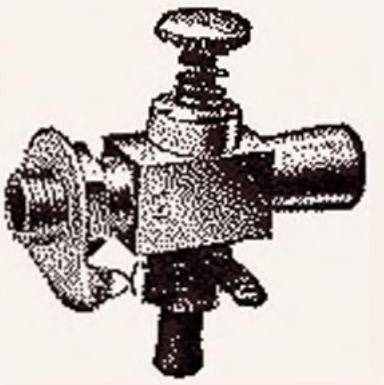
AUSTRALIA—Model Aircrafts, 1, Bond Street, Sydney.
ARGENTINA—G. S. King-Prime, Reconquista 682, Buenos Aires.
CHINA—Eastern Model Airplane Co., Nathan Road, Kowloon, Hong Kong
INDIA—Traders & Distributors Corp., 128 Park Street, Calcutta.
KENYA—Model Engineering (East Africa) York Street, Nairobi.
MALAYA—Robinson & Co., Raffles Place, Singapore.
NEW ZEALAND—Collinson & Son Ltd., The Square, Palmerston North.
SOUTH AFRICA—A. W. Yardley Ltd., P.O. Box 814, Johannesburg.
Jack Lemkus Ltd., 49A, St. Georges Street, Capetown
SWEDEN—Eskadet, Gumshornsgatan 8, Stockholm.
U.S.A.—Polk's Model Craft Hobbies, 314, Fifth Avenue, New York.

THE MILLS THROTTLE 8/3
inc. Tax



MILLS BROS. (MODEL ENGINEERS) LTD. 143 GOLDSWORTH ROAD · WOKING · SURREY

MODEL Aircraft

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A. F. HOULBERG, A.F.R.Ae.S.

Advertisement Manager :
J. V. FORBES-BUCKINGHAM

MARCH 1952 VOL. II No. 3

Contents

EDITORIAL

With the Gamage Cup Contest which is to be held on March 23rd, another season of S.M.A.E. competition flying gets under way. Although the programme is basically the same as last year's, it does, we feel, contain something for everybody—not enough for some perhaps, but that is not the fault of the S.M.A.E. The contests are those which the clubs asked for—or at least those that voted. The clubs that did not bother to vote cannot complain anyway—but they will, of course!

There is no doubt that in the past year there has been a considerable increase of interest in flying scale models, and many scale enthusiasts may feel that they are not too well catered for in the 1952 programme. The main difficulty is devising a reasonable set of rules for a flying scale contest. Obviously if points are to be given for authenticity, detail work, etc., it would be impossible to organise such a contest on a decentralised basis as there would not be uniformity of judging. Even run as a centralised event the flying scale contest presents a problem if the true scale model is to have a chance against the freak lightweight type of "scale" model with which we are all familiar. If anyone has any bright ideas which might help to solve this problem they would be welcomed by the S.M.A.E. Competition Secretary.

One aspect of competition flying which has always puzzled us is that comparatively few affiliated clubs take any part in S.M.A.E. contests—less than 50 per cent. in fact. Lack of suitable flying grounds may be the answer in some cases, but it does seem that many more clubs could, with a little effort, support at least the de-centralised events. If they did, it would help to swell the S.M.A.E. Funds and we might hear a little less of "What do we get out of the S.M.A.E. ?"

Cover Story

Ray Monks, of Birmingham, who placed 4th in the World A-2 Glider Contest in Austria last year, is a real "all rounder," and on our cover he is seen launching his McCoy 19—powered P.A.A.—load model in the International Power Contest held at Radlett last Whitsun.

THE JOURNAL OF THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

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Here and There

THE EDITOR COMMENTS ON CURRENT TOPICS

F.A.I. CALENDAR

Details have just been circulated by the Federation Aeronautique Internationale of the events which have been included in their 1952 Contest Calendar. These are as follows :

April 20th. France. *Glider Contest.* (Aero Club of France and Lille-Roubaix-Tourcoing Area.)

May 18th. France. *Control-line meeting.* (Aero Club of France and Lille-Roubaix-Tourcoing Area.)

May 30th-June 2nd. Belgium. Namur. *Anglo-Belgian C/L Meeting.* (Royal Aero Club of Belgium.)

June 1st. France. *Power contest.* (Aero Club of France and Lille-Roubaix-Tourcoing Area.)

June 7-8th. Italy. Milan. (a) *Speed C/L* ; (b) *Stunt C/L.* (Aero Club of Italy and Milan M.F.C.)

*July 4-7th. Belgium. Knokke. *Control-line Championships.* (a) *Speed* ; (b) *Stunt* ; (c) *Team Racing.* (Royal Aero Club of Belgium.)

*July 10-14th. Sweden. Norrkoping. *Wakefield Contest.* (Aero Club of Sweden.)

*August 13-17th. Austria. Gratz. *Nordic Cup for A-2 gliders.* (Aero Club of Austria.)

August 17th. Great Britain. Woodford. *R/C Contest.*

August 23-24th. Ireland. Dublin. (a) *International Contest for Wakefield-type Rubber Models* ; (b) *F/F power.* (The Model Aeronautics Council of Eire.)

September. Italy. *Rubber Contest, F.N.A. Cup.* (Aero Club of Italy.)

*September 14th or 21st. France or Switzerland. *For F/F F.A.I. power models.*

October 11th-19th. Spain. *International Contests for* :—(a) *F/F power* ; (b) *C/L Stunt and speed* ; (c) *Gliders.* (Royal Aero Club of Spain.)

The four World Championship Events are marked with asterisks.

Although we note that the R/C contest which the International Radio Control Society are proposing to hold has been included in the calendar, we understand that the North Western Area Committee, who are the organisers of the *Daily Dispatch* Rally, have declined to give permission for this contest to be included in the programme of the Rally, which it is hoped will be held on August 17th.

THE HERD INSTINCT

Whenever there is a competition solely for rubber models or gliders and the flying weather is reasonable, inevitably a large number of power models also appear, which their owners proceed to trim or fly for fun. That is all very right and proper, with each modeller to his own particular interest. But what we can never understand is why the majority of these power modellers seem always to conduct their flying within the bounds of the contest area where rubber and glider models are being launched. It must be that some instinct draws them towards the crowd, whereas safety precautions and a proper sense of responsibility should dictate that power models should be flown *away* from crowded areas on such occasions.

We saw an example of this form of exhibitionism at the recent Anglo-American meeting at Fairlop Aerodrome, when the flier of a large pylon-type power model persisted in launching from the contest area.

These remarks, of course, apply both ways. If a power contest is being run, then it is up to the rubber and glider fliers not to " trespass " on the contest area. But somehow these latter fliers are seldom offenders in this respect.

PHOTOGRAPHS FOR EXHIBITIONS

Most model aircraft clubs, at some time in their careers, organise displays of models, or contribute a stand in a local exhibition. It is often quite a problem for the organisers to find suitable display material with which to cover up the inevitable brick wall background, and provide additional interest to visitors.

We have had a number of enquiries from clubs for assistance in this matter, and accordingly our Photographic Department has prepared a collection of photographs especially for display use, and we are prepared to lend these, free of charge, to clubs who may be in need of such material.

There are some 25-30 photographs, all by MODEL AIRCRAFT staff photographers, and they cover every aspect of model flying, from microfilm to R/C. The prints are 10 × 8 in. in size, and each is on a stout card mount, size 12 × 10 in., with a caption of a general non-technical nature.

Club secretaries who may wish to make use of this service should notify us as early as possible of the date when they will require them, for if two functions clash, it will be a case of " first come—first served."

CLUB REPORTS

The pages in MODEL AIRCRAFT devoted to news from the clubs are popular with our readers, and we always try to give fair representation to the clubs who send us accounts of the activities of their members. We should, therefore, like to give a few points for the guidance of club P.R.O.s in preparing their reports. Adherence to these points will enable us to edit the reports quickly, and ensure that accurate news is published as early as possible.

(*a*) Reports must reach this office by the 15th of the month before publication.

(*b*) They should not normally exceed 200 words.

(*c*) If possible they should be typed, double-spaced, on one side of the paper only, and with a one-inch margin on the left of the page. This enables the compositor to follow the manuscript easily, and allows us to insert alterations and corrections between the lines.

(*d*) If not typed, reports should be clearly hand-written, and ruled foolscap paper is more suitable for this than club headed notepaper. Again, allow enough space between the lines for editing.

(*e*) Send the report as a separate manuscript, headed by the name of the club, rather than start half-way down a letter. A covering note will suffice.

(*f*) Remember that reports are not primarily intended to furnish information to the club's *own* members, but to pass on news and information of general interest to members of *other* clubs.

(*g*) Finally, while we are always pleased to receive Area and Club News Sheets, we cannot undertake to sort out from them the information for publication. So—please send us reports written specially for Club News, on the lines given above, and post them to: MODEL AIRCRAFT, 23, Great Queen Street, London, W.C.2.

PEN PALS WANTED

We have received enquiries from three overseas readers who wish to correspond with modellers in England. Anyone interested is requested to write to them direct, and we publish their addresses below.

V. KOUKAL,
Mladonovicova ul. 1922/3,
Prague XI,
Czechoslovakia.

ARNE NILSSON,
Vattengatan 33,
Norrkoping,
Sweden.

ARTHUR GUTTMANN,
St. Josephshaus,
Davos Platz,
Switzerland.

CORRECTION

Due to a printer's error the name of the author of the article entitled "A New Rudevator Mechanism" which appeared in last month's M.A., was given at T. H. Ivers instead of T. H. Ives.

Many of our London readers spotted this mistake and we offer our apologies to Tommy Ives, who is, of course, well known as the designer of the "Ivy" R/C receiver which has proved so popular with R/C fans.

It is hoped to include further articles describing equipment designed and developed by Mr. Ives in forthcoming issues of M.A.

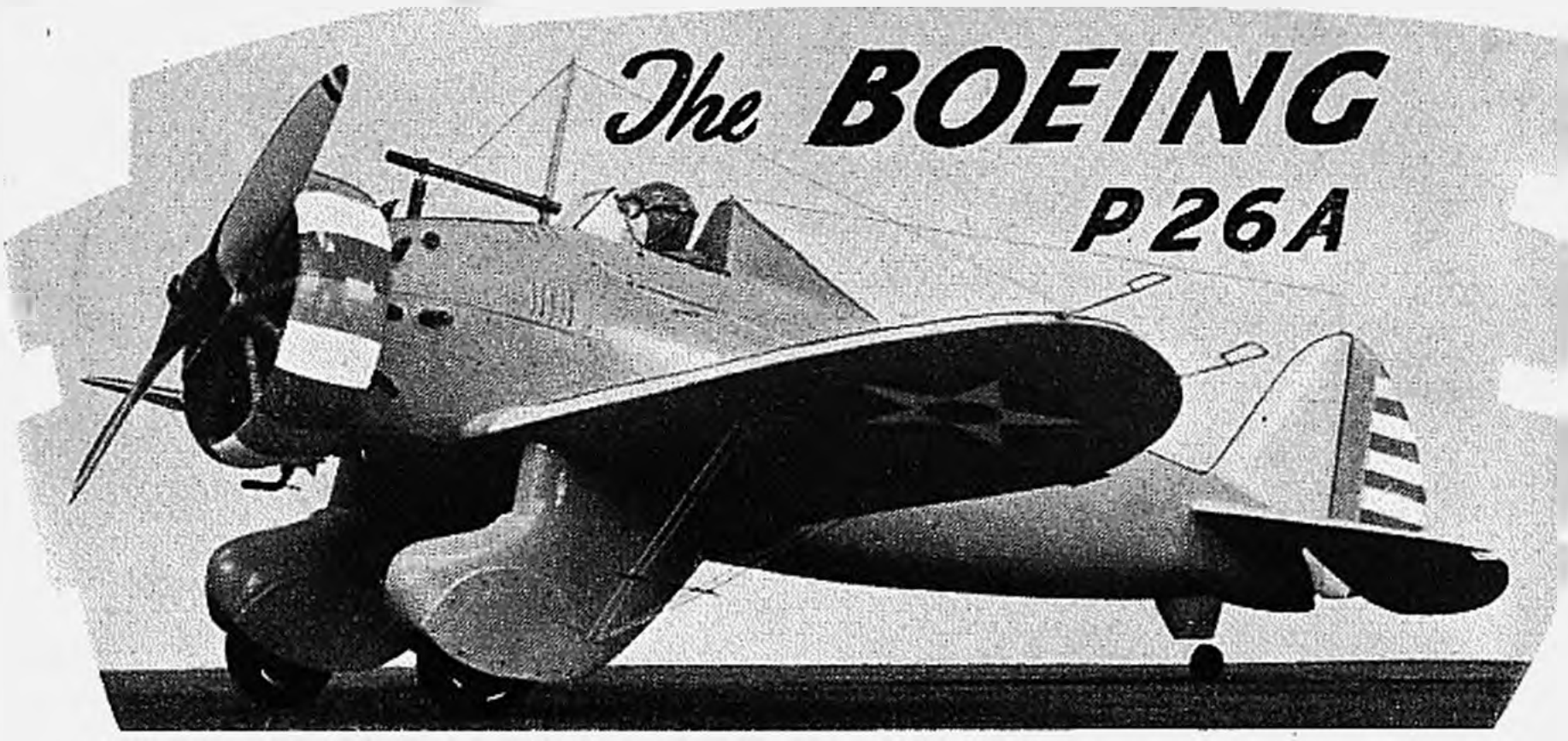
A WELCOME SIGN

With the 1952 season "one contest old" (the Blackheath Winter Gala), this year bids fair to produce a greater variety of design than ever before. Hitherto it has been the Americans to whom we have looked for unorthodox layouts, but it now seems that British designers are tending to break away from strictly conventional outlines for contest models. Whether this will also influence the layout of sports models remains to be seen. The trend here appears mainly towards scale and semi-scale appearance.

On the contest field, long fuselage designs are becoming increasingly common, calling for most ingenious construction to maintain the necessary strength and still keep the weight within reasonable limits. Currently, the long fuselage trend affects both rubber and glider, although we do not see why it should stop here. It seems just as logical to adopt a long moment arm layout for power models. Instead of an exaggerated tail size, much of this area could then be concentrated in the wings with a resulting reduction in wing loading. All other things being equal, the lighter the wing loading the better the potential glide performance.

The record for the longest of the long fuselage designs we have yet seen goes to a Nordic glider—eight feet of stick fuselage, (see photograph below). This is not a "joke" model, either, for it was produced by one of our best glider fliers—Roy Yeabsley.

The BOEING P.26A



SCALE CONTROL LINE MODEL · · · · · **By P. M. H. Lewis**

THE Boeing P.26A was a most attractive little low-wing fighter used from 1933-1936 by a number of the Pursuit Groups of the U.S. Army Air Corps. The span was 28 ft. and the engine the 600 h.p. Pratt and Whitney 9 cyl. Wasp R-1340-27. The machine reached a top speed of 234 m.p.h., and the construction was of metal, covered over-all with stressed skin. The aircraft makes up into a very colourful scale model of simple, yet strong, construction.

Fuselage

Start by transferring the outline of the fuselage crutch from the plan view on to a sheet of $\frac{1}{8}$ in. medium balsa. Drill the engine bearers to suit the engine to be used, and cement them firmly into place in the crutch. Cut the slots at the rear of the crutch to accommodate the control-rod and stern-post, then cut out the formers and cement them above and below the crutch as indicated. Cement the stern-post into place, and fit the tailplane saddles at this stage; 3/32 sq. stringers are next fitted into the slots in the formers at top and bottom, together with those between formers 2 and 3, either side of the cockpit. Tailplane and fin are cut from $\frac{1}{4}$ in. soft sheet sanded to streamlined section and cemented in position. The elevator hinge is formed from 20-gauge wire as shown, and the horn bound and soldered to it together with the two inner prongs. The unit is secured to the tailplane by four wire eyes, whose prongs are pressed into the sheet balsa. The upper half of the fuselage is now planked, the cockpit being cut out when this is completed. Next shape the undercarriage wire, and sew and cement it firmly on the front of F2. The control plate is bolted so that it pivots freely on its hardwood support, which in turn is cemented between the $\lfloor = \frac{1}{8}$ strips between F2 and F3. At this stage fit the push rod and leadout wires. The tailwheel axle should be bound and cemented to F6. Fit the tank below the engine bearers, fitting extension tubes to the vents if necessary. The fuselage planking may now be completed and sanded to a smooth surface all over, leaving holes to take the leadout wires.

THE DESIGNER . . .

Age 29 . . . Married . . . Engaged in Retail Furnishing and Decoration . . . Started aeromodelling at the age of 9 with solids and has since built all types except radio-control . . . Now mainly interested in scale, both flying and non-flying . . . Held British rubber-driven flying-boat record 1938-1940 . . . Also interested in photography, music and painting . . .

Wing

Note that the leading and trailing edges extend 1 in. into the fuselage. Rib W1 is cemented at an angle as shown in the front view. The ribs in the port wing are slotted to take the leadout wires, and two short lengths of 18-gauge brass tube are bound and cemented to the tip as guides. A balance weight of strip solder is fitted inside the starboard tip. Cover both wings with $\frac{1}{16}$ soft sheet in as far as W1, and sand to a smooth surface.

Spats

Each spat is built up from three laminations of $\frac{3}{16}$ in. medium balsa, the centre one being cut away for the undercarriage leg. Two outer pieces of $\frac{1}{16}$ in. hard sheet are added and when dry the unit is sanded to shape. Finally add the imitation wheel covers of card.

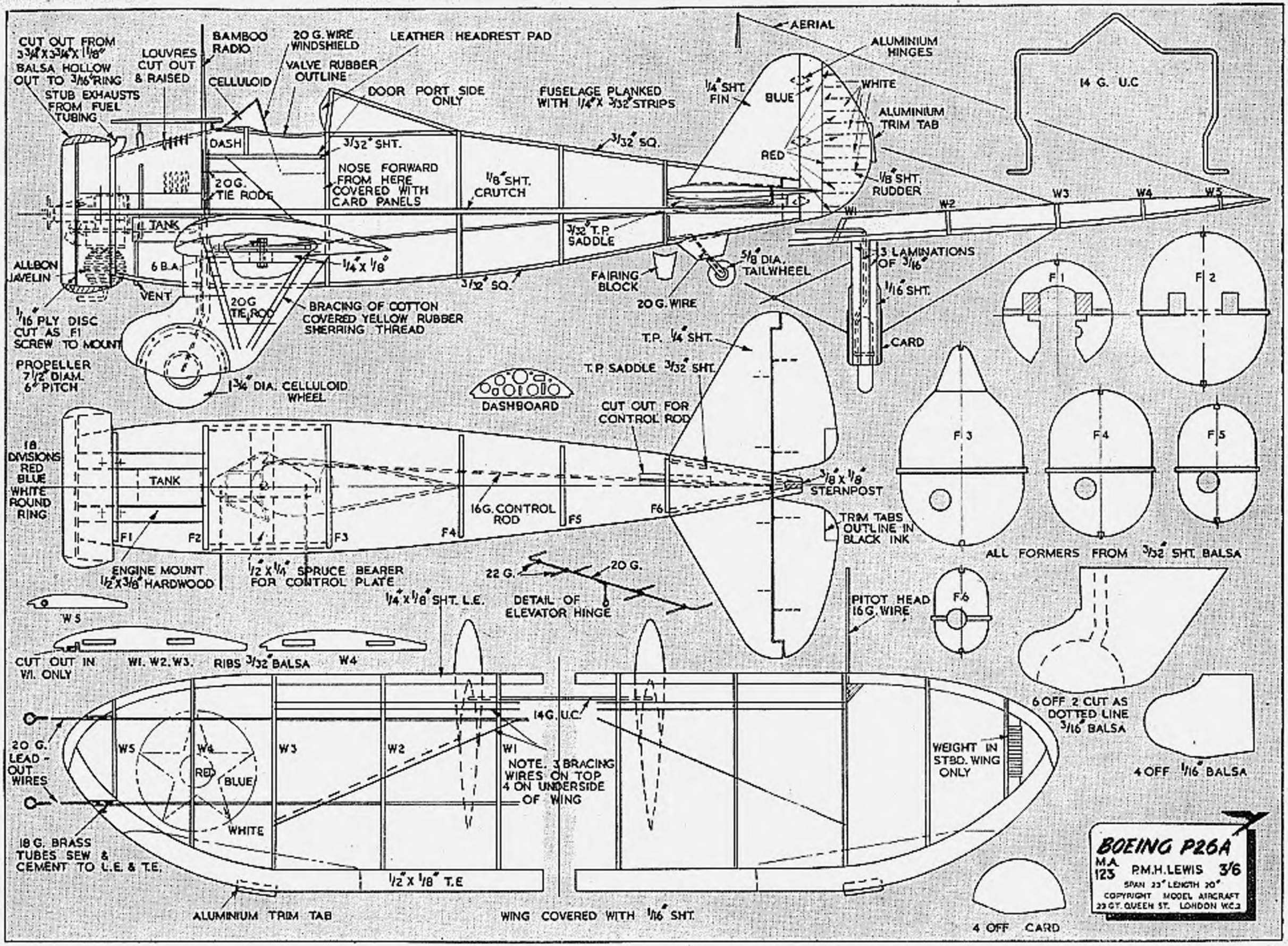
Cowling

This is made from balsa block, with the grain running from front to rear. Shape the outside first, then hollow out to leave a $\frac{3}{16}$ in. maximum section. A $\frac{1}{16}$ in. ply disc is cut to fit inside the cowling and cemented in place. The complete cowling is screwed to the front of the bearers.

Finish

The whole model is covered with lightweight

(*Continued on page* 140)



FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 23, GREAT QUEEN STREET, LONDON, W.C.2., 3s. 6d., POST FREE.

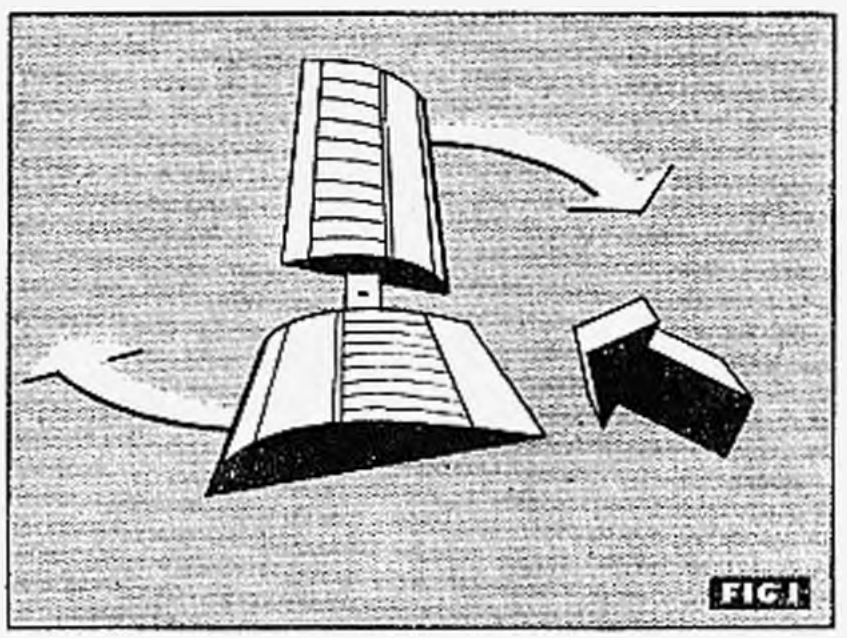
Autogiro Gen

by C. W. Carson

MODEL autogyros can be made to fly very well. Properly designed and trimmed they have a terrific climb which must be seen to be believed. At the end of the power run the model just sinks gently to a perfect three-point landing. The only disadvantage is that rotorplanes are really happy only in calm weather, but they undoubtedly have a tremendous fascination, and to see one's model borne aloft on whirling rotors brings a feeling of satisfaction and achievement such as no orthodox type can give.

An autogyro is nothing more than an ordinary aircraft with the fixed wings replaced by rotors. Forward motion is imparted to the aircraft by an ordinary tractor airscrew. Unlike the helicopter it has a freewheeling rotor, the blades of which are set at negative pitch. The rotor axis is tilted backwards so that the airflow will strike the blades from below and cause them to windmill as they are towed through the air. This rotation in turn generates lift.

The whole secret of success with rotorplanes lies in getting the correct pitch angle on the rotor blades. This pitch angle is very critical and unless it is correct, the model will just roll over on to its back with disastrous results. Negative pitch, that is with the leading edges of the blades depressed, ensures that the blades rotate leading edge first. With a positive angle on the blades rotation is " backwards," that is trailing edge first. (Fig. 1.)



An ordinary fixed wing model could easily be converted to a rotary wing type by replacing the wing with a rotor system and adjusting the tailplane incidence. Fig. 2 gives the rigging angles which have been found to work well in practice. The tailplane platform should be built up until it is at a positive angle of 8 deg. relative to the datum line. Total rotor blade area required will be less than the original wing area, about 75 per cent. being a good figure to work on. This area is then divided into two or three blades. Tailplane area will now be about 50 per cent. of the total blade area which is ideal. A detachable pylon is constructed (Fig. 3) with the rotor axis tilted back 12 deg., and attached to the fuselage by rubber bands at a point that will bring the c.g. a little in front of the rotor axis. It will of course be necessary to draw these angles on the plan. Down-thrust should be increased very slightly to be on the safe side. If it is possible without major structural alteration, the undercarriage track should be increased to give better stability on r.o.g. flights. A final point and a rather obvious one is that the rudder is best placed right out of the way of the rotors under the tailplane.

Though most experimenters have favoured three or four bladed rotors, two blades are considered quite satisfactory, and are definitely lighter and less vulnerable in crashes. They also have the advantage of allowing a much less complicated rotor hub fixing, and, of course, there are only two sets of ribs to cut out, a sufficient reason by itself! There seems to be a feeling that the rotor blades would only lift on the forward sweep and thus produce violent rolling, but

this is quite untrue. Lift is generated over the whole of the swept circle, and indeed it would be quite in order to use a counter-balanced single-blader, with a saving in weight and consequently increased performance. It is true that a two-blader *vibrates* more than a three-blader, but vibration is always present in rotary winged aircraft in horizontal flight and the effect on performance is negligible. For a high performance model a two-bladed rotor is strongly recommended. Air-foil sections can be any of the usual ones employed on duration models, but good results have been obtained with Clark Y type sections and hand-drawn sections having maximum camber at 50 per cent. chord. For ease of construction the flat undersurface sections are, of course, best and in practice they seem to perform quite well with no obvious vices.

One of the disadvantages of working on experimental types is that one hasn't the time to try out all the refinements that suggest themselves. One evolves a design which shows promise and then a lot of time is taken up with structural modifications as

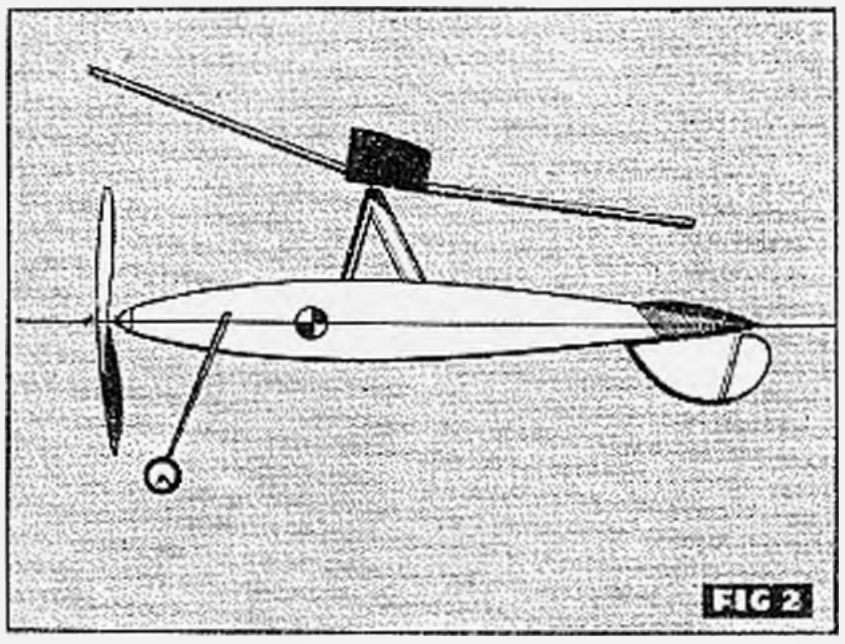


FIG 2

weaknesses in the airframe show up during trimming. Also one has to feel one's way carefully, adjusting each component in turn, so that the effects on flight performance are easily tracked down to one particular thing. The design on which the observations in this article are based was basically the same through three models. The only major change was the building of a slightly longer fuselage to take a longer motor in an attempt to push up the duration to over the minute mark. Thus such things as ideal aspect ratio of rotor blades are matters for speculation and experiment. The original model had rotor blade aspect ratio of 5 to 1 and this has worked quite well. What the effect would be of increasing this aspect ratio, and thus the area of the swept circle, the writer has no clear idea! It is probable that the greater the rotor diameter (with a given total blade area), the greater the power required, and it is suggested that whilst a three-bladed rotor could safely use an aspect ratio of 5, a two-blader should be reduced to 3 1/3 (each blade) in order to cover the same swept area. In other words the ratio of blade area to swept area (or "solidity") used has been in the region of 20

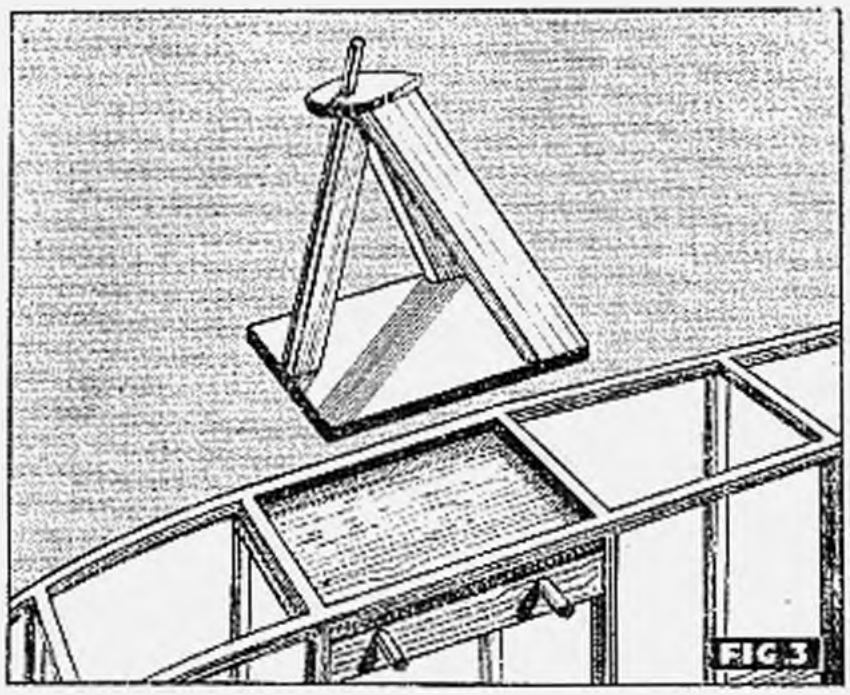


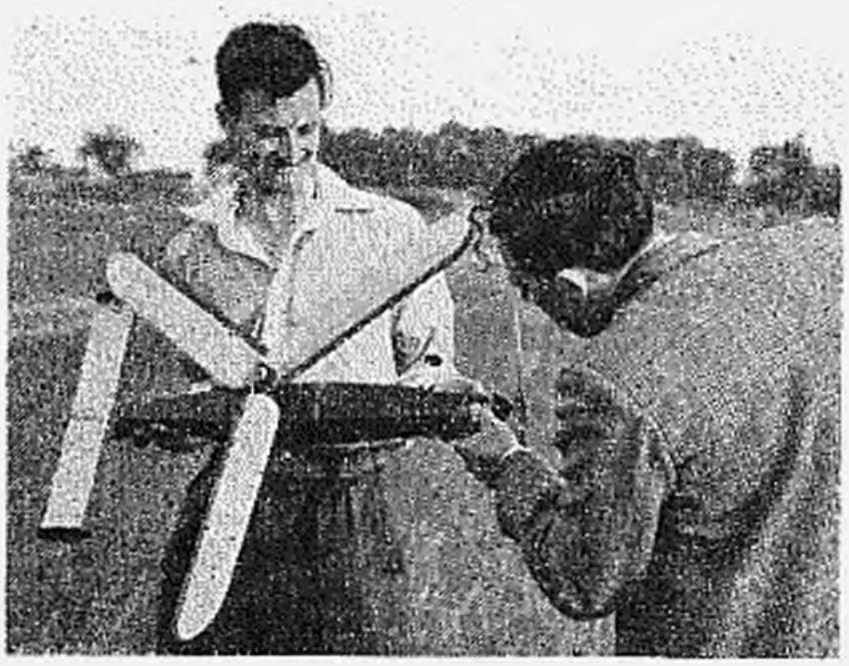
FIG 3

per cent. and works well, though probably it is not the ideal figure.

Trimming Procedure

Owing to the complete absence of glide, the model must be trimmed under power right from the start. Long grass is essential if the job is to live through the trimming stage. All rigging angles must be checked carefully, and the pitch of the blades must be correct. As mentioned before, this angle is extremely critical, and a few degrees can make all the difference between stable flight and disaster. It is obviously essential then to use a rotor fixing that will allow positive adjustment of the blade pitch, and details of a fixing that has proved itself in practice are shown in Fig. 4.

Fortunately there is a very simple practical way to ensure that the blade settings are correct. Starting with zero pitch, the trailing edges of the blades are packed up evenly until they will rotate when held up in a breeze and tilted slightly backwards as they would be on the model. It is surprising how fine a pitch is necessary for autorotation. Now here is the test. Stop the rotor and start it rotating backwards,



J. Netherclift assists the author to prepare for flight

i.e., trailing edge first without altering the pitch. If it will continue to rotate quite happily with no sign of slowing down, the pitch is right.

If the blades will not move backwards in this way, they have too great a negative pitch and some of the packing must be removed. Make sure however, that if the rotor is stopped and allowed to start turning by itself, it will always turn leading edge first. In other words, with the correct negative pitch the blades have a natural tendency to turn leading edge first, but can be made to turn backwards if given a start that way. Unless and until this condition is achieved, it is useless to continue making trimming flights.

Another important point is the c.g. position. On a medium sized rubber job (31 in. rotor diameter) this worked out at about ¼ in. in front of the rotor axis. An incorrect c.g. position shows up more readily on the descent than on the power flight, and if too far back the model will pitch violently from nose to tail on the way down.

Having checked everything, about 70-80 hand turns are put on. It will be necessary to walk or run forward until the rotors are windmilling nicely before releasing the job. Autogyros do not stall in the normal fashion, they climb steeply and then slide backwards into the ground. This indicates that the rotors are tilted back at too great an angle. The remedy is to pack up the rear of the pylon and try

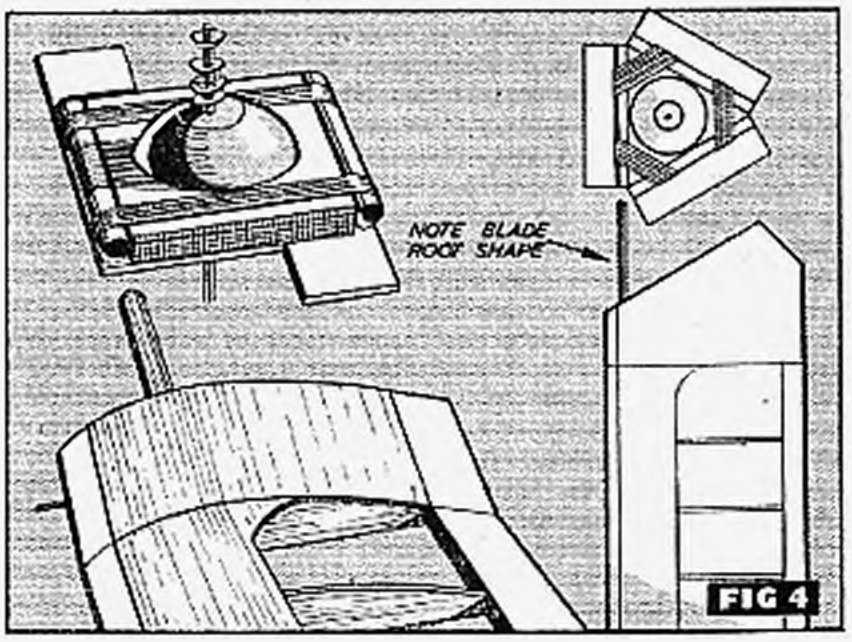


FIG 4

again until a steady climb is achieved. If this is ineffective the power should be increased. If the model dives into the ground immediately on release, the front of the rotor pylon needs packing up. Violent turns in either direction are counteracted by sidethrust, or by tilting the rotor axis in the direction the model is required to take. That is, if the model turns to the left, tilting the rotor to the right will correct the turn. As a last resort, weighting the opposite undercarriage leg with plasticine helps, though if any difficulty is experienced in achieving circling flights there is no objection to trimming the model for straight flight, as forward speed is low and the descent is pretty well vertical. As soon as possible a couple of hundred turns should be put on the motor. This will give a better opportunity of spotting faults, but make sure that the front of the pylon is held down by plenty of rubber bands even at the expense of "knockoffability," or the rotor will tilt right back in the first burst of power and may foul the tailplane.

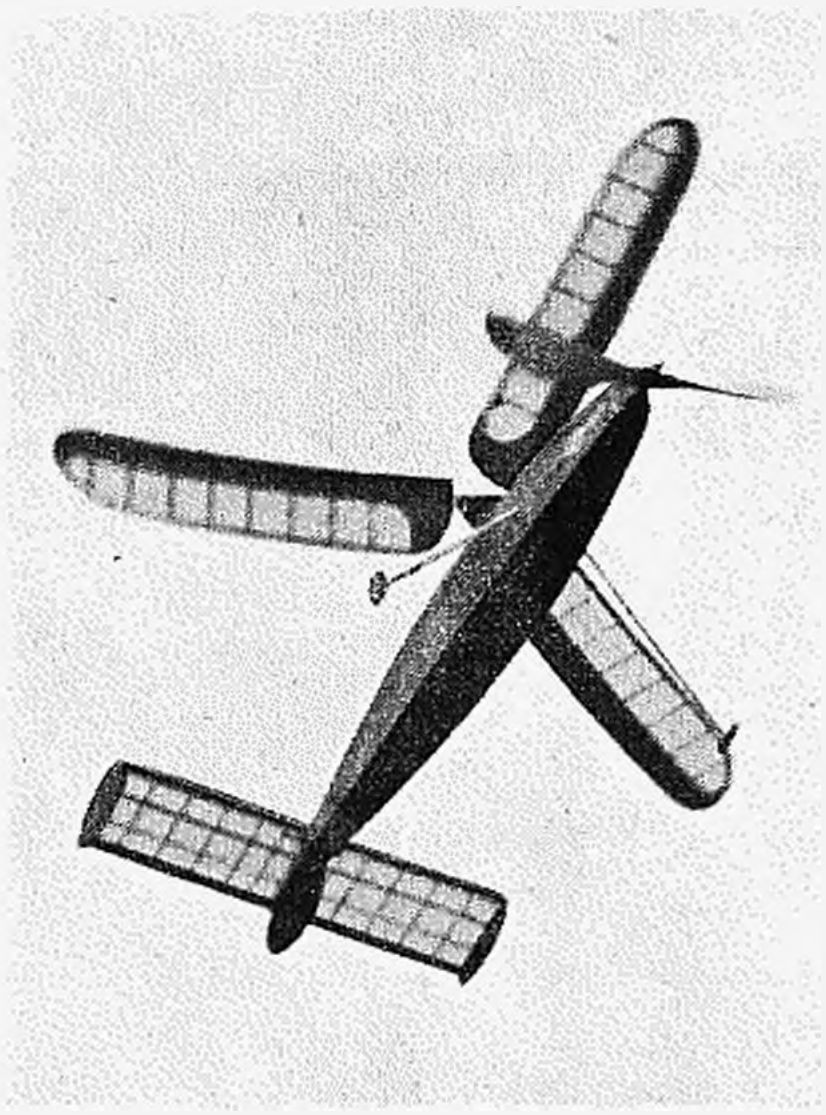
With a diesel powered model, the best trimming technique is probably to run the motor at low revs and allow the model to take off.

For r.o.g. in calm weather give the rotor a twirl before release in order to reduce the take off run. With a slight breeze this should not be necessary, and the model will leap straight off the deck if the rotors are turning at the right speed, so remember to get well clear.

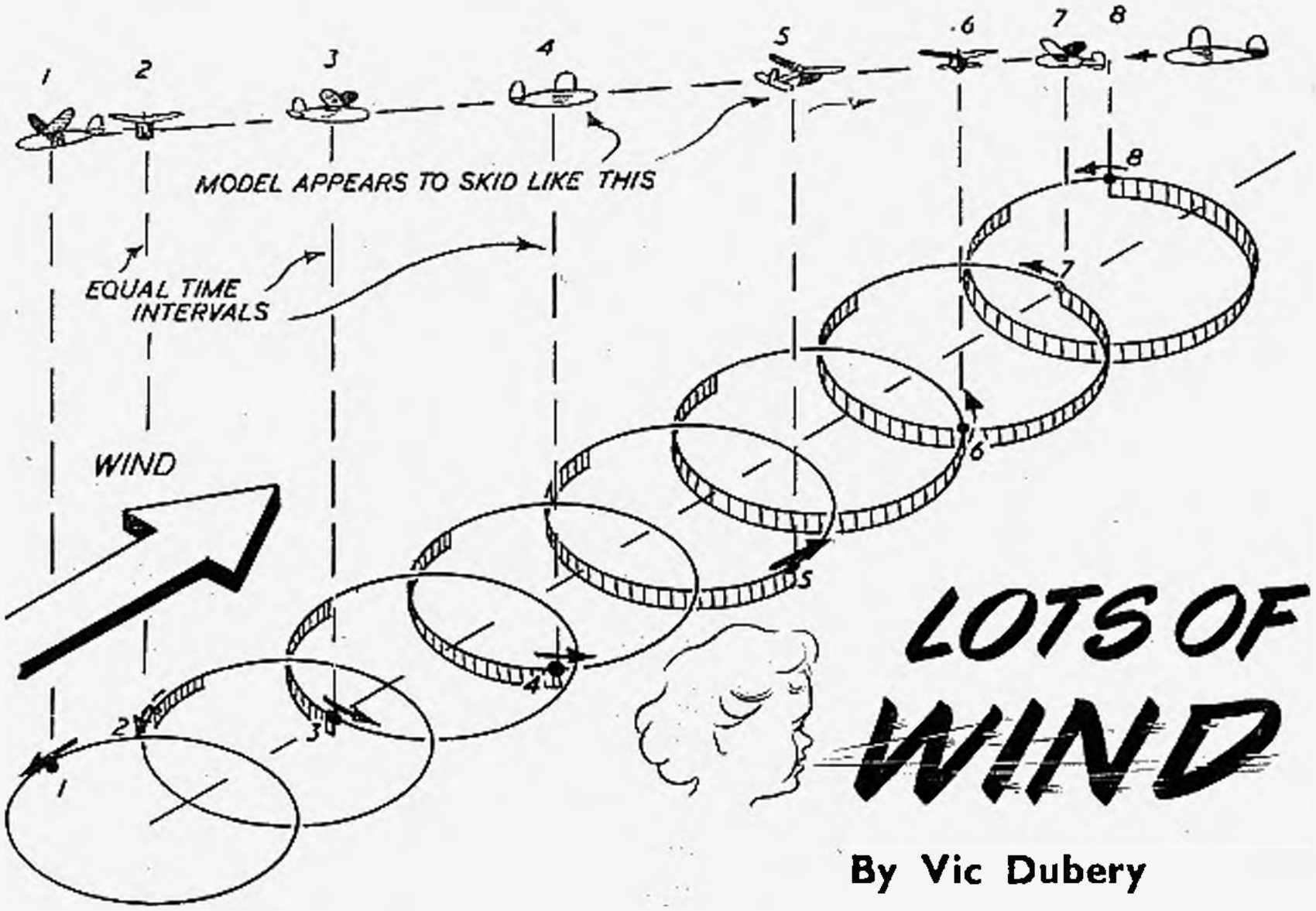
Because of the positive incidence angle, the tailplane comes well up before the model becomes airborne, so check that the airscrew is well clear of the ground in this attitude.

Undoubtedly there is plenty of scope for experiment in this field of modelling, and there are two British National records for indoor and outdoor rubber driven models that are just asking to be broken. In the field of power models the autogyro has a lot to recommend it, for powered helicopters introduce all sorts of complications in the way of gears and clutches. These are all eliminated in the rotorplane layout, and anyway once an autogyro is properly trimmed it will always make a perfect three-point landing. . . .

. . . Well, nearly always!



A good action shot by photographer Ed. Stoffel of one of the author's autogiros climbing away.



LOTS OF WIND

By Vic Dubery

ONE of my modelling friends told me he was going to make a special A-2 glider this year for windy weather. It would be well overweight so that it would have more "penetration" as it circled round into wind and therefore would not drift downwind so fast and carry out of sight so quickly.

This is typical of the non-scientific and muddled thinking that some successful modellers indulge in. Many modellers seem to think that their models have a different flight path in windy weather than in calm. But whatever my friend does to his model it will still make the same circles (round ones!) *in the air*; and the centre of those circles will drift downwind at the same speed—the wind speed. The only difference will be the speed at which the model completes each circle. It may make more headway upwind each time, but will also travel farther *downwind* on the opposite part of each circle.

If you flew a glider in still air it would make circles around the same spot, the point of release and the point of landing being on the perimeter of the circle. Now imagine yourself on a mobile platform travelling along at, say, 15 m.p.h. A wind appears to be coming from the front, so naturally you face the model that way and tow it up in that direction (by standing still on the moving platform).

Now watch the model as it slips off the towline. It will appear to be motionless for a moment, then it will turn on its axis and begin to fly sideways. Then it will suddenly whip down towards the rear of the platform, turn again and appear to hover, and so on. That is what the flight path looks like to you (on the moving platform), but what about your "oppo" to whom you refused a ride? It is just circling round him, as usual.

If the model flew faster (because it was heavier) it would not miraculously straighten out for a bit whilst facing the direction in which the platform is travelling; nor would it fly faster in that direction and slower in the other. In windy weather a model is still flying in "still air." You simply move your "still air" *en bloc* instead of your platform.

Of course, the story would be more complicated if we brought in the effect of gusts. But again no change of flying speed would be of any use as only side area would affect the flying. A gust is a temporary change of wind speed. An increase in speed will turn the model into wind; a decrease will turn it out of wind—*regardless of which way the model is facing.* The movement only occurs during the change in speed. You can change the *effect* of gusts by altering the centre of lateral area or weathercock stability of the model. If the c.l.a. centre of gravity and centre of pressure coincide, gusts will have no effect, but for other reasons no model is designed like that.

Gusts would not help my friend get the effect he desires. In fact, only R/C would do that for him by straightening the rudder when the model is flying upwind!

1952 BILL WHITE CUP

and WINTER GLIDER CONTEST

organised by the Blackheath M.F.C. and held at Fairlop

THE 1952 contest programme started well at Fairlop on Sunday, January, 6th when the Blackheath Club ran their Winter Glider Competition and the rubber duration contest for the Bill White Memorial Cup.

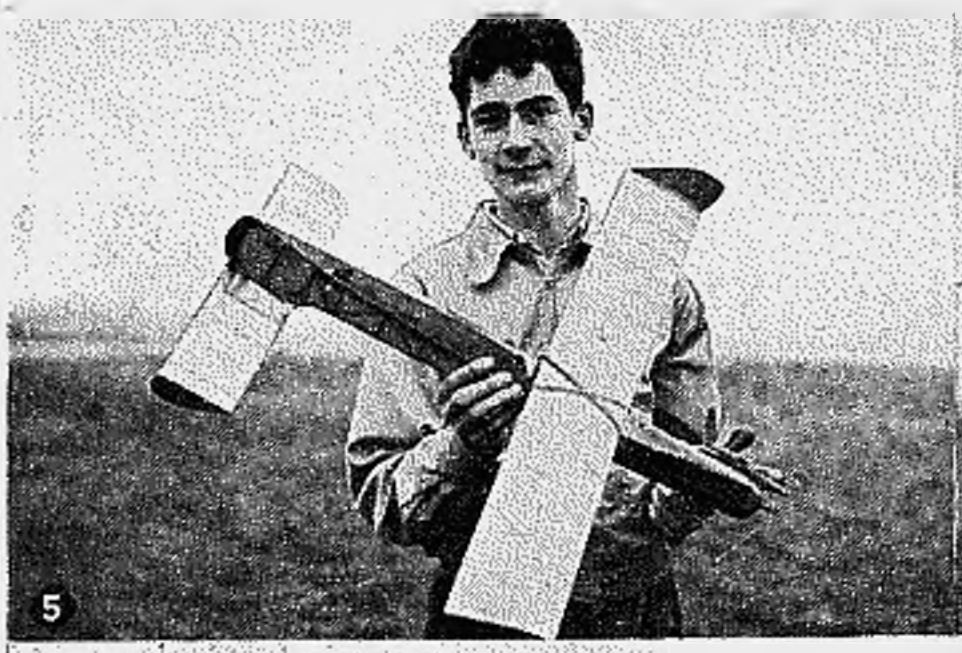
Although dull and cold, weather conditions were almost ideal for the first flights of new models—dry, and with little wind. Visibility was not so good, however, and models were going o.o.s. in 2½ to 3 min.

The meeting was well supported, with entries from 44 clubs as far apart as Brighton, Luton, Ipswich and Tunbridge Wells, and at times the murky Fairlop sky seemed full of soaring models. The finish of the Bill White contest was exciting, for John Gorham seemed a safe winner for most of the contest, but was eventually overtaken by Ron Warring. He in turn was topped in one of the last flights of the day by M. Green, one of the Men of Kent.

Prizes were presented by Mr. E. F. H. Cosh and apart from the fine Cup presented in memory of that well-known modeller, Bill White, they included clocks, cigarette lighters and fountain pens.

The meeting was run by thirteen Blackheath members and one lady friend, and the Club are to be complimented on again providing a bright spot in the slack winter season. For their part they wish to thank all those members of visiting clubs whose support helped to make an enjoyable day's flying.

1. John Palmer, of Croydon, launches his long-fuselage model, one of a number in the Bill White contest.
2. Ron Warring, who came second in the Bill White, winds up with the assistance of Harry Brooks.
3. C. Savage, of Croydon, preparing the same model that won him the glider contest in this event last year.
4. The Editor, E. F. H. Cosh, presents John Gorham, of Ipswich, with the Third Prize.
5. This very unusual rubber model, to F.A.I. specification, was designed and built by D. Maclachlan (West Middlesex).
6. The St. Albans launching crew, with line set, wait for the signal from D. J. S. Edwards to let go his glider.



7. E. Bennett, of Croydon, who put up a very good performance in the Bill White contest.

8. P. Makeef (Bromley) test-glides his pod-and-boom glider from a hand launch.

9. This year's worthy winner of the Bill White Cup—M. Green, of the Men of Kent Aeromodellers.

10. Eight-year old Peter Pearce, of the Sutton By-pass Club, the youngest entrant, towing up his glider.

11. Stuart Davis, of Croydon, with his winning glider entry.

Bill White Memorial Cup

1.	M. Green	Men of Kent	526
2.	R. H. Warring	Zombies	509
3.	J. A. Gorham	Ipswich	493
4.	I. Dowsett	W. Middlesex	488
5.	* A. Ricks	Willesden	420
5.	T. Berriman	Thames Valley	420
7.	J. Pitcher	Croydon	415
8.	E. Bennett	Croydon	411
9.	H. Pizzey	Ipswich	406
10	J. Snewin	Zombies	395
	M. MacLachlin (Junior) ...	W. Middlesex	294

125 entries

Blackheath Winter Glider Comp.

1.	L. Davis	Croydon	512
2.	D. Edwards	St. Albans	493
3.	P. Daddy	Thames Valley	481
4.	H. Cope	Barking	479
5.	D. Yeabsley	Croydon	468
6.	D. I. S. Edwards ...	St. Albans	460
7.	E. J. John	Grange	445
8.	D. Kemp	Chelmsford	451
9.	* C. Savage	Croydon	447
10.	M. Gilbere	Pharos	443
	D. Mitten (Junior) ...	By-Pass (Sutton)	414

170 entries.

* Winner last year.

The RETURN GEAR System

J. A. Gorham

IN the writer's opinion there is one basic fact which determines whether a Wakefield model should be geared or not. This is the airframe weight: and it is with the reduction of this that the desirability of using a return gear system increases. Three or four years ago airframes were considered light at 4 oz. giving a manageable amount of rubber in single skein which, allowing for lubricant and bobbins, was slightly under 4 oz. (motor weight).

As airframes have decreased in weight, with better wood and new methods of construction, the amount of rubber has increased up to 5 oz. or so and in single skein this tends to lead to trouble unless a longer fuselage is employed to give a greater distance between hooks. Here, of course, structural weight is bound to increase again, but it can be argued that the increase in power resulting towards the end of the power run and the decrease in the number of tensioning turns necessary will more than outweigh this. Similarly, if a set of gears can be built for no more weight than that added by increasing the fuselage length, the same amount of rubber can be accommodated *taut* between hooks, which might be even better.

Gears, both return and ratio types, were used before the war, but the advantages were not apparent then because of high structural weights. Light structural weight is now possible, and it is equally possible to make up a light gear set, weighing no more than one quarter of an ounce.

However, in the first place it will probably be advisable to weigh up the pro's and con's of single skein versus return gear systems Of course, the only opinions that can be given here are those of the writer, or those he has heard. The former are based on a series of experiments carried out last winter over a period of several months, and most of these on the flying field just after dawn with clubmate R. Atkinson. During the course of these experiments different types of geared and single skein Wakefields were built and flown and some one hundred odd flights made in relatively quiet air. It was conclusively proved, to the writer's satisfaction, at least, that a geared facsimile of the " Ghost " turned in a consistently better performance, although the relative averages were only about 8 per cent. better in favour of the geared job. In a wind, however, the superiority was not apparent.

Up to date, the solution appears to be—gears for quiet conditions and single skein motors for winds. There does not appear to be any logical reason for this—it just works out that way. But it is more than possible that with a little more time spent on a geared machine that it will be superior for *all* conditions.

The snags that were encountered with a geared model were :—

(i) One motor has to be fully wound and left to " cook " whilst the second has the turns piled on. The feeling of impending disaster has to be experienced to be believed!

(ii) The possible loss of hours of work on the gears themselves in the event of a lost model.

(iii) The increase in weight just where it is not wanted—at the tail.

(iv) A more complicated fuselage structure.

The advantages, as the writer sees them, are :—

(i) Motors need the minimum of preparation. Few or no tensioning turns are needed. Each motor is just a plain skein of rubber.

(ii) Increase in power is noticeable, especially towards the end of the run, making it possible to use a higher propeller pitch and obtain a longer motor run ; or use less strands than in a comparable single skein motor and still further increase the duration of the power run.

(iii) Short fuselages are possible, with resulting reduction in structural weight.

Now to the gear unit itself. The one described has proved itself in practice and has a weight of approximately 0.23 oz. It has been noticed that most builders over-estimate the strength requirements of this unit, and particularly that of the fixing holes in the fuselage. The methods described are quite strong enough.

The gears themselves may be of brass or dural and should be lightened as shown in the diagrams, not by drilling holes in the blank, or reducing centre thickness. The " crossing out " method, as shown, is definitely the lightest and strongest. Cutting out may be done with a fretsaw or piercing saw.

●Many Wakefield enthusiasts have experienced difficulty in obtaining gears of the required specification. We learn that the East Anglian Model Supplies will shortly be marketing these, to Gorham's design. Prices, etc., will be announced in due course. . . . The Editor.

starting from drilled holes, and plenty of time should be spent with a small file reducing metal carefully and avoiding the formations of sharp corners or thin spots. The weight of the finished gear blanks should be 0.1 oz. the pair.

The stern post is 7/32 in. overall diameter dural tube. If the tube used has a thick wall, drill out the centre until the 2 in. length weighs no more than 0.06 to 0.08 oz. The next step is to calculate and mark the gear centres for drilling.

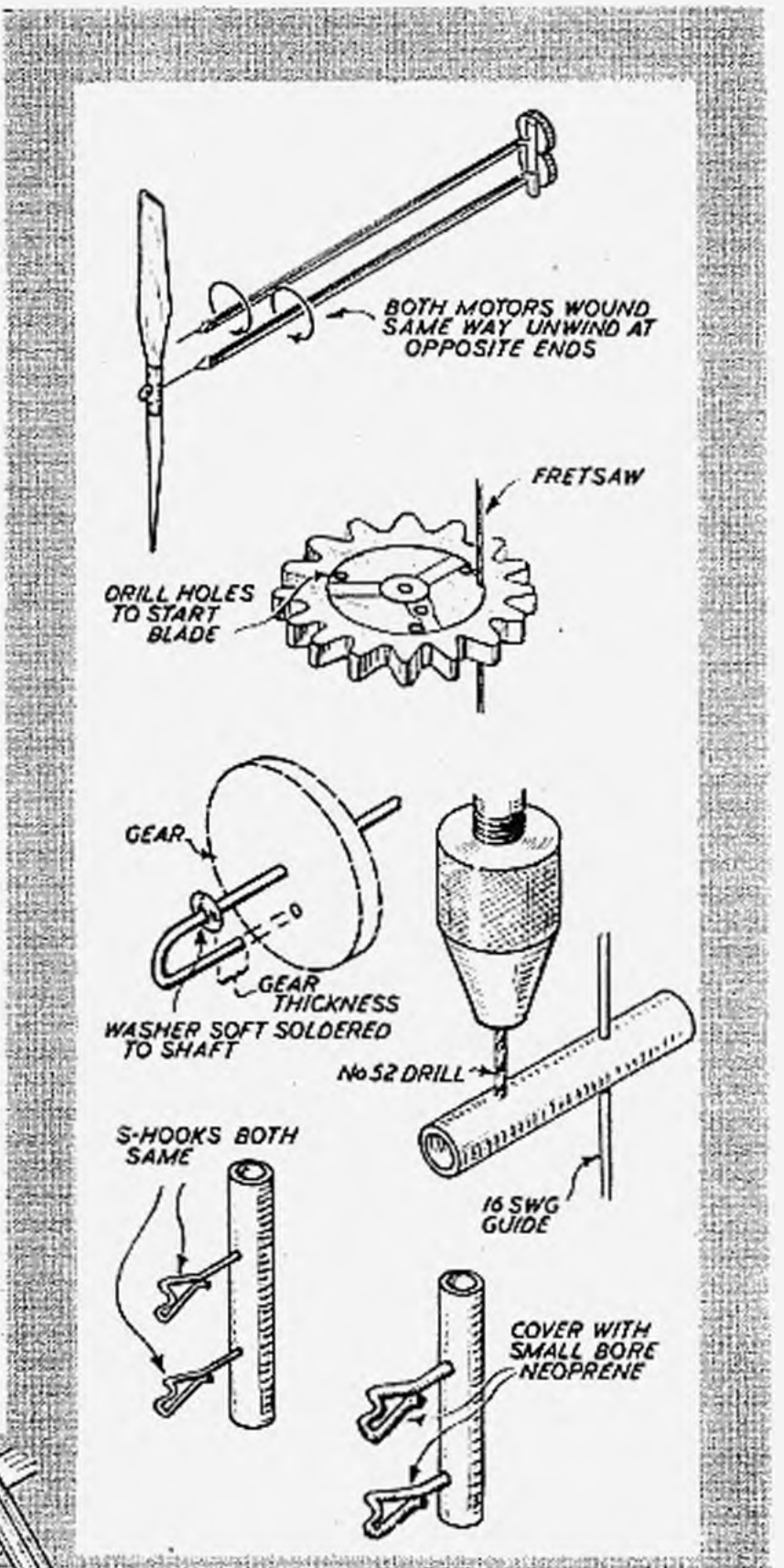
The distance between centres on identical gears is equal to the pitch circle diameter, which can be related to the diametrical pitch (d.p.) and number of teeth. Mathematically, the d.p. is equal to the number of teeth divided by the pitch circle diameter or, as an approximation :—

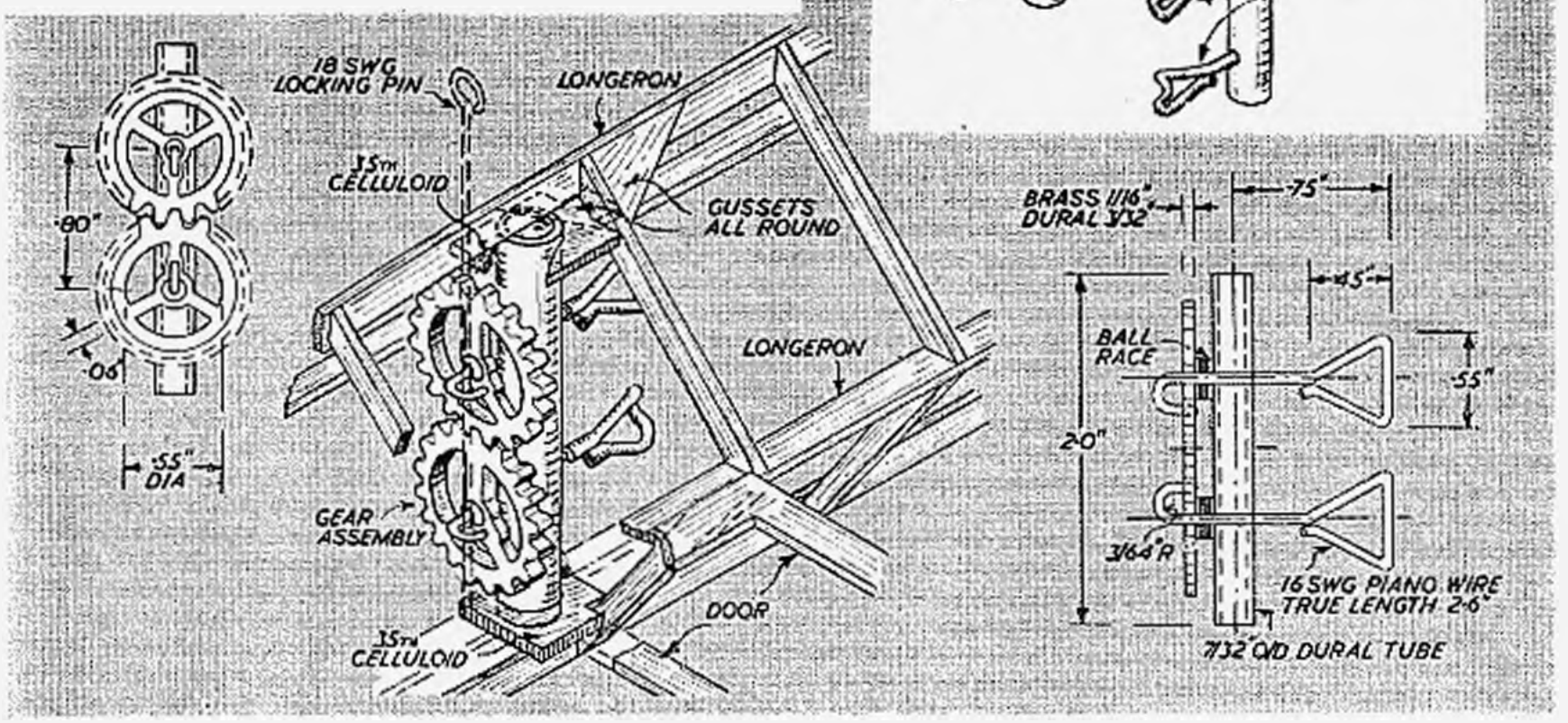
$$\text{d.p.} = \frac{\text{No. of teeth} + 2}{\text{Outside dia. of gear}}$$

Now assume your gears are 21-tooth and have an outside diameter of $\frac{7}{8}$ in. The d.p. will then be $\frac{21 + 2}{.875}$ Dividing the number of teeth by this figure for d.p. will then give the pitch circle diameter, or the distance of centres in our case. This distance will be $21/23 \times 0.875 = 0.80$ in.

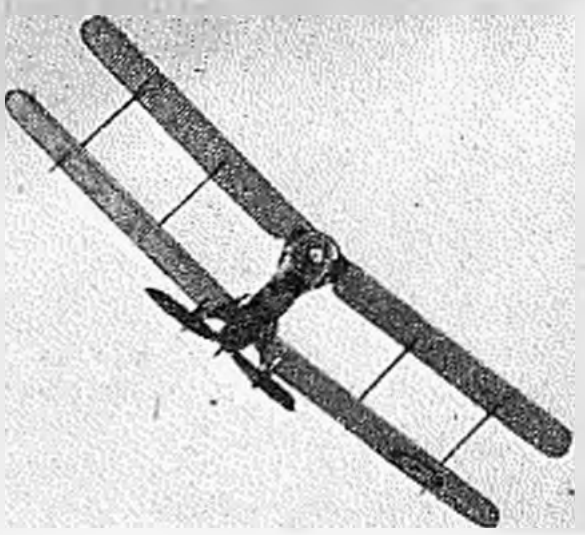
Mark this distance off approximately in the middle of the tube and drill one of the holes with a No. 52 drill (0.063 in. dia.), keeping as upright as possible. Push a short piece of 16 s.w.g. wire through this hole and drill the second hole parallel to this wire guide. The No. 52 drill will give a tight bearing and this must be well run in.

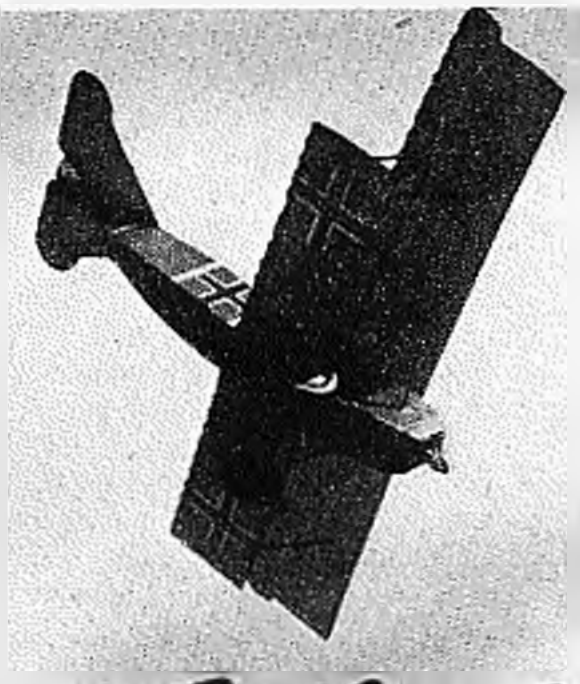
Next take two pieces of 16 s.w.g. wire, each 2.6 in. long, and bend one end of each into a radius, as shown. Soft solder a small cup washer in place and press into the gear. The locking piece should come flush with the inner face of the gear. Now slip a ball race on each shaft and fit to the dural tube. All that then remains to be done is to bend the S-hooks and cover them with small bore neoprene tubing.





1914-18 PROTOTYPES FOR FLYING SCALE





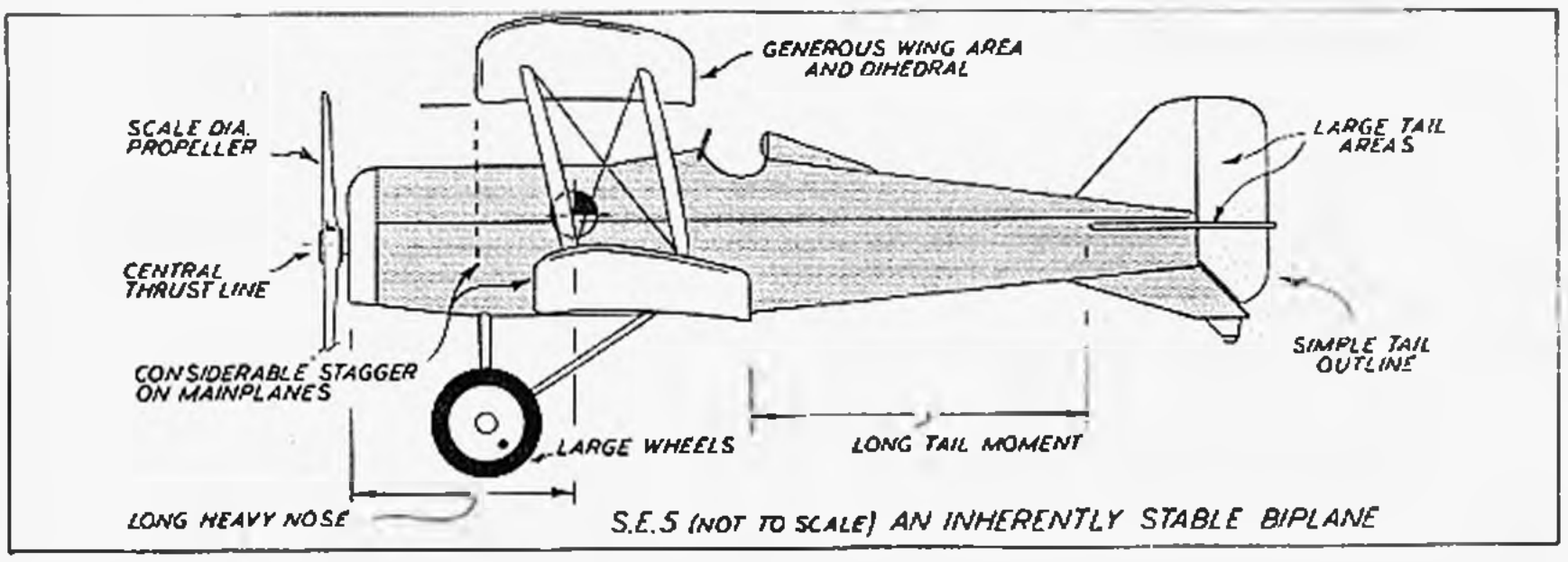
By A. W. Garry

THE writer, who first started modelling in 1917, has been building flying scale models for nearly twenty years, and has constructed and flown many models of the aircraft of World War I. All, of course, were rubber-driven, and very much handicapped by the limitations of this type of power-plant. Even so, some of the models were excellent fliers, and some—well, not so good. A large amount of practical experience was thus acquired and much valuable data obtained, which is now being put to good use in the construction of diesel-powered scale models.

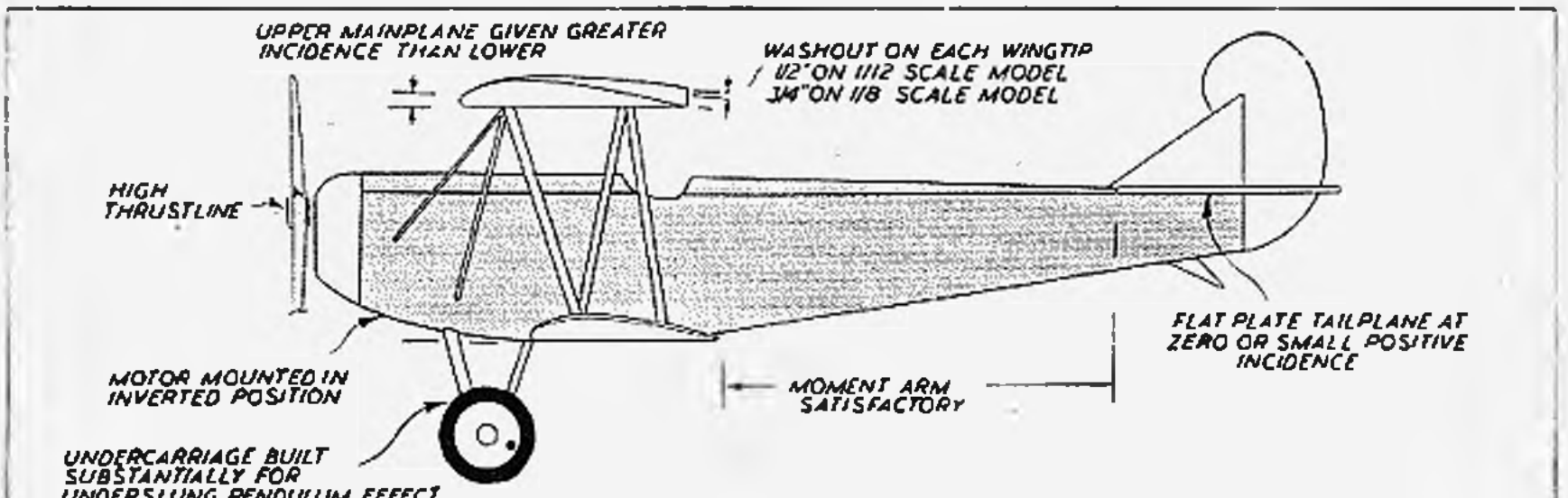
It goes without saying that a model which will fly stably and well with rubber drive, will prove to be an excellent flier when powered with the constant-thrust diesel motor. It is the purpose of this article to deal with many of the most famous—or notorious—aircraft of the Great War from the aeromodelling aspect, and to advise the potential builder whether or not the construction of the model which he has in mind is a practical proposition.

It must be remembered that during the Great War, aviation was still more or less in the experimental stage, and inherent stability was, in those days, of paramount importance. It is not too much to say in fact, that most aircraft of World War I were flying machines first and foremost, and warplanes afterwards. Flying was, in itself, still sufficiently hazardous without the added perils of aerial warfare, and most aircraft (with the exception of certain types of " fighting scouts ") were designed to incorporate all the well-known principles of inherent stability. Many of them were capable of flying " hands-off " indefinitely. There are many well authenticated cases of aircraft continuing to fly on their own with perfect stability after the occupants had been killed in aerial combat, until the petrol supply ran out, when the machines would pick up their own gliding angle and, if the nature of the terrain permitted, make a reasonably good landing. Thus it will be readily understood why such machines are excellent subjects for scale modellers, and why flying scale models of these famous old-timers are capable of a first-class flight performance.

Let us, by way of illustrating this particular point of inherent stability, examine one of the most famous aeroplanes of the Great War—the 1917 *S.E.*5 single-seat fighter. Note the long, motor-weighted nose, the large area mainplanes with their generous dihedral angle and acute stagger, and the large tail-plane and rudder factors which at once indicate to the experienced aeromodeller that the machine



S.E.5 (NOT TO SCALE) AN INHERENTLY STABLE BIPLANE



ADDING IN-BUILT STABILITY TO FOKKER D 7 (NOT TO SCALE)

is a "natural" scale model prototype. Hitherto, there appears to have been a conviction that biplanes are necessarily flimsy and tricky, but generally speaking, the opposite is the case. A slow flying biplane can prove to be more stable and crash-proof than many conventional monoplanes.

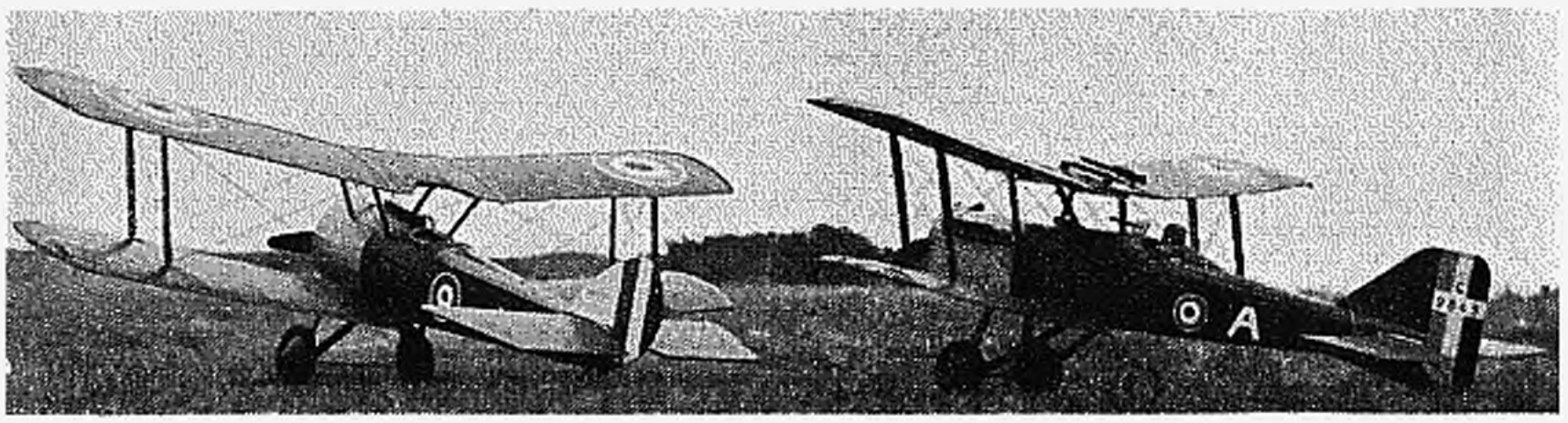
Aerodynamically, "pusher" machines, such as the *Vickers Gun-Bus*, the *F.E.2B* and the *D.H.2*, would make ideal flying scale models, but in actual practice considerable difficulties intervene. In the original aircraft, the weight of the motor at the rear of the wings, was counterbalanced by the occupants who sat in a nacelle in front. With the motor in the correct scale position, a model would be impossibly tail-heavy and would require much ballasting at the nose of the nacelle. We could, of course, instal the motor in the front cockpit, and drive the airscrew through an extension shaft, but unless the space between the tail booms permitted, "flick-starting" the motor would be impossible.

From the "pushers" we move on to the early wartime tractors—the *B.E.2c* and the *R.E.8*. These machines with their generous dihedral, long slim fuselages and large tail surfaces, were stable to the last degree. Constructed to a scale of 1/12th and powered with a 1 c.c. motor, such machines would prove excellent scale model fliers.

Perhaps the most famous wartime biplanes of any of the combatant nations were the Sopwith aeroplanes. The *Sopwith Pup* single seater and the *Sopwith One-and-a-half-Strutter* were the only two warplanes of this family to embody inherent stability (from the aeromodellers point of view) and should make good scale models. It is, however, possible that they might need a fair amount of ballasting behind the cowling, as they were both short-nosed, rotary engine types. Flying scale models of this type, should be designed to incorporate all the well-known aeromodelling aids to stability.

It is unfortunate that the most famous of all the Sopwith aircraft—the *Camel*—is not suitable for reproduction as a flying scale model. I do not imply that in the hands of an expert a well-designed model would not fly, but it would be hopelessly unstable, and certainly no machine for trouble-free "sports" flying. The original machine was designed to stunt and "dogfight" and inherent stability necessarily suffered in its design. It was so unstable that it killed more pupil pilots than any other Allied plane. Conversely, in the hands of a skilful pilot, it was a redoubtable opponent, and the Germans respected it highly.

The *Bristol Scout* (known to the wartime R.F.C. as the *Bullet*) was another short-nosed rotary engine fighting scout of 1916, and like the two Sopwith types mentioned above should make a good stable performer. Its younger brother, the famous *F.2B Bristol Fighter* of 1917 was the most redoubtable two-seater "fighter-reconnaisance" aeroplane produced by any of the combatant nations. It was a large biplane of 39½ feet span, and unusual in that the fuselage was slung between the mainplanes some eighteen inches above the lower wing. A rubber-driven scale model of this aircraft, built in 1936 by



(Left) Sopwith Pup. (Right) S.E.5A. Both these models are the work of the author

the writer, was a stable steady flier, and at the time of writing a 1/12th scale diesel powered model is awaiting calm weather for flight tests. Initial gliding tests have shown the machine to have a very flat and steady glide, and under power it should prove to be a good performer.

Some constructional difficulties were introduced by the mounting of the fuselage on the lower wing, and also by the fact that the front undercarriage legs butt up against the leading edge. It was necessary to design the undercarriage so that the front legs could pivot backwards to absorb landing shocks, without at the same time fracturing the leading edge of the lower mainplane. In the writer's present model these difficulties have been overcome.

Another famous designer in the Great War was Captain Geoffrey de Havilland. His first two warplanes were " pushers "—the *D.H.*1 two-seater and the *D.H.*2 single-seat fighter (the machine which, together with the *Sopwith Pup* defeated the " Fokker Scourge " of 1916). Two other machines from this family—the *D.H.*4 and the *D.H.*9*A* both tractor day-bombers—should make very good stable and sturdy flying scale models. They were both large-span biplanes and a 1/12th scale model would probably need a 1.3 c.c. motor to power it. If, however, the builder has a really good 1 c.c. motor, I would advise him to try this first. In cases like this, where the power plant required is rather a doubtful factor, the writer always mounts the larger motor on a duplicate bulkhead and takes it to the flying field. It is only the work of a few minutes to unscrew the original bulkhead and fit the more powerful motor, should the machine prove to be underpowered.

So much for the British aircraft of the period. It is not proposed to deal with French aeroplanes, most of which were highly manoeuvrable, and therefore very unstable aircraft. In the Great War, the Americans produced no warplanes of their own, and were entirely dependent upon British and French aircraft.

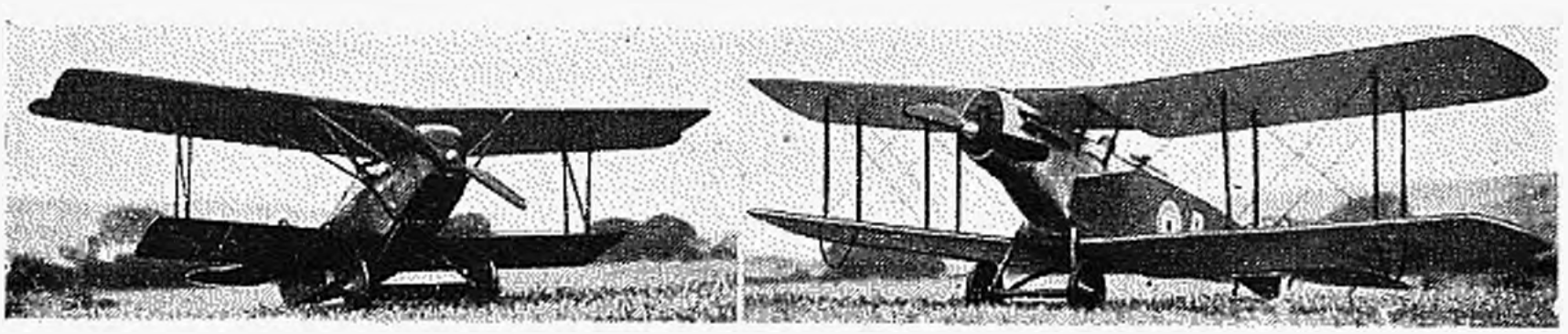
So we come to the aircraft of the German Imperial Air Corps and here I am afraid the aeromodeller's choice is rather limited. The *Fokker Eindecker* of 1916, a monoplane, and the first military machine in the world to be fitted with the synchronised machine gun firing between the propeller blades, is a good choice for the scale builder interested in historic aircraft, and would fly very well.

The *Albatross D.*5, the famous " Vee-Strutter " in which Richthofen scored all his early victories, is not a suitable prototype for a model, unless a considerable departure from scale is envisaged. It was a heavy, streamlined-fuselage biplane and the wings had no dihedral angle. If the builder is prepared to incorporate adequate dihedral and the usual aeromodelling aids to stability, the model would doubtless be capable of a reasonable flight performance, but the flying speed and landing speed would be high, both bad points in a flying scale model.

The *Fokker Triplane*, the machine with which the Richthofen Circus was equipped in the winter and spring of 1917-1918, is totally unsuited for reproduction as a free-flight scale model. Its successor, the notorious *Fokker D.*7, a cantilever wing, non-braced biplane was probably the best German fighter of the Great War, and is a machine which should fly quite well as a model provided a slight departure from scale is made. The top wing was considerably larger than the bottom one, and the only dihedral angle in its design was that afforded by the upward taper of the lower surfaces of the mainplanes, the top surfaces being quite flat. The writer is just completing a 32 in. span model of this aircraft, the power plant being a Mills .75 c.c. The top wing mainspar has been given a ¾ in. dihedral angle, so that the total dihedral is 1 in. on the lower surface of the top wing. A " washout " of ¼ in. has been given to each top wing-tip as an additional aid to lateral stability, and the undercarriage has been built comparatively heavy, to give a pendulum effect. Very little departure from scale is thus necessitated and it is hoped that the machine will be capable of a reasonable flight performance.

Finally, if we ignore the old two-seaters, the *L.V.G.*, the *Aviatik* and the *Rumpler*, none of which have any interest for the majority of scale model builders, we come to the last German fighter of the Great War—the *Fokker D.*8, a cantilever parasol monoplane with a very high performance. This machine is also a " natural " scale model flier, and the writer has had capital flying with several versions of this aircraft as rubber-driven models. They were stable machines with an astonishingly flat glide when the power ran out. A 1 c.c. diesel-powered model of this aircraft, of 44-48 in. span is contemplated.

So we come to the end of this survey of aircraft of the Great War. Here, if anywhere in the aeromodelling sphere, are the ideal machines for scale model builders—strong, stable, and historically interesting aircraft.



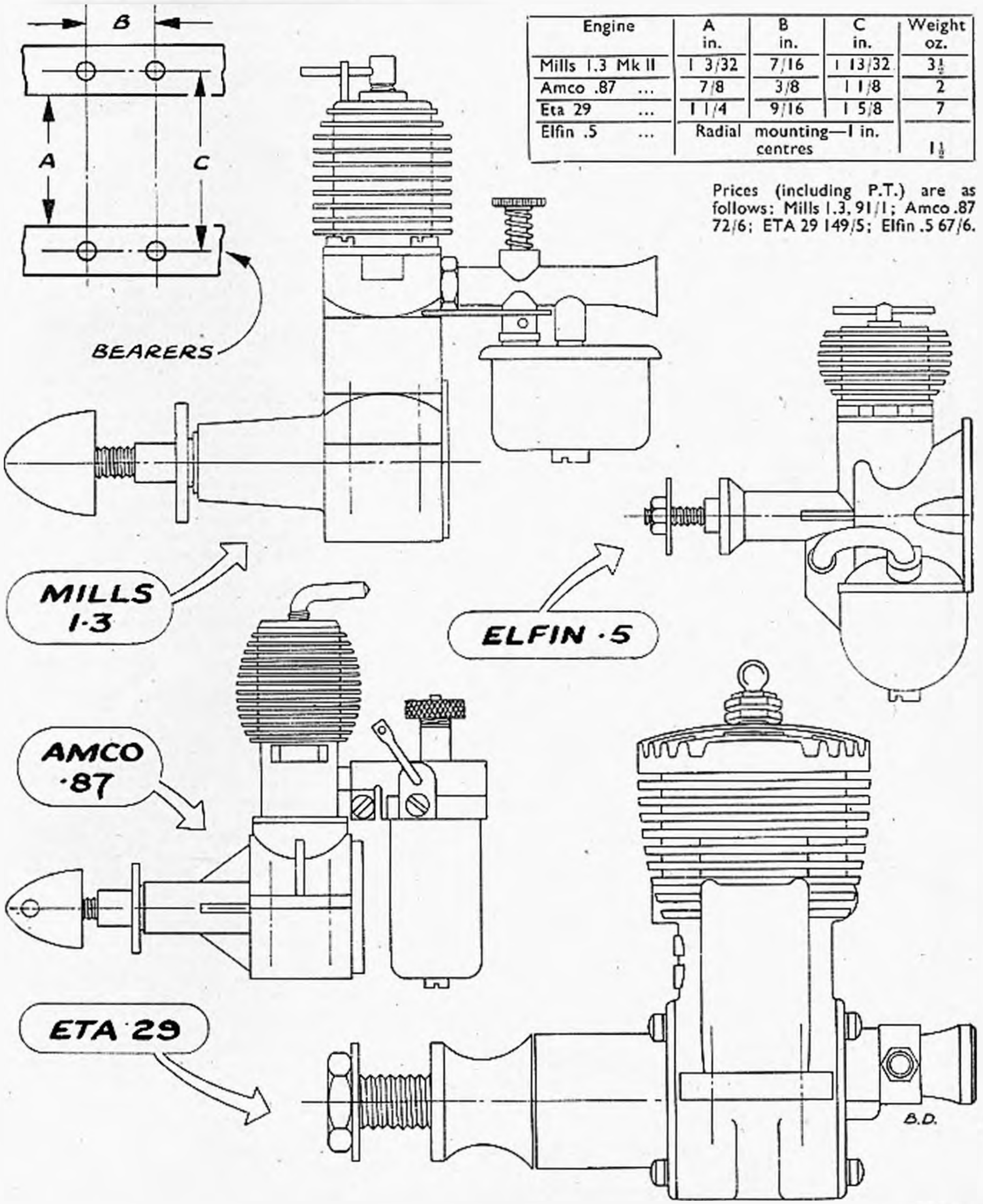
Two more of the author's models. (Left) Fokker D.7. (Right) Bristol F2B fighter.

WILL THESE FIT ?

FOUR MORE ENGINE SIDE-VIEW INSTALLATION DRAWINGS

Engine	A in.	B in.	C in.	Weight oz.
Mills 1.3 Mk II	1 3/32	7/16	1 13/32	3½
Amco .87 ...	7/8	3/8	1 1/8	2
Eta 29 ...	1 1/4	9/16	1 5/8	7
Elfin .5 ...	Radial mounting—1 in. centres			1½

Prices (including P.T.) are as follows: Mills 1.3, 91/1; Amco .87 72/6; ETA 29 149/5; Elfin .5 67/6.



HOW IT WORKS

Glow plug motors operate on a principle which has been known for some fifty years or more, yet it was less than ten years ago that the first successful model aircraft engine with " glow ignition " appeared on the market. The basic element of the " glow plug " which does the job of self-ignition, is a small coil of platinum wire which becomes heated under the action of the fuel vapours and remains hot enough to ignite the fuel mixture, when required, without the addition of an external electrical circuit, like a spark plug.

A simple laboratory experiment will show how the platinum element works. If a small piece of pure platinum wire is held over a beaker of alcohol the fumes rising from the alcohol will make the wire glow red hot, and even ignite the vapour. The action of a glow plug element within the cylinder of a model engine is similar. The small coil of wire glows red hot under the action of the alcohol fuel and so can ignite the fuel mixture at the appropriate time.

One of the very first model engines to operate on this principle did, in fact, contain the glow element in the form of a small platinum coil fixed in the head of the cylinder. However, there are objections to this. The wire is very thin and may burn out or break up. Hence this platinum coil is usually fixed in a special plug, like an ordinary spark plug in appearance, except that the platinum coil replaces the two points of an ordinary plug. The third diagram shows a section of a typical glow plug. The coil itself generally consists of between four and six turns of thin platinum wire, 0.006 to 0.01 in. in diameter, roughly one to one and a half inches in length, if pulled out straight.

The heat induced by the " glow " of such a plug is not sufficient for starting, however. Hence for the initial " glow " it is necessary to connect the plug up to a battery supply. The coiled element is tiny and has a low electrical resistance. It is comparatively easy, therefore, to burn it out if the starting battery power is excessive. Most glow plugs are, in fact, designed for 1.5 volts starting battery potential, with 2 volts as a maximum. In other words, one cell of a dry battery or one accumulator cell is the limit.

At the same time the coiled element takes a very high current—something of the order of two to three amps. This will quickly flatten an ordinary dry battery, so where dry batteries are used for glow plug starting, large cells are required or a number of single cells coupled up in *parallel*. A single accumulator is better.

Now for the actual working of the glow motor. The cycle of operations is the same as that of the two-stroke spark-ignition motor, described in the first article in this series. The glow plug simply replaces the spark plug and does away with the contact breaker and coil circuit. The firing of the mixture is really a combination of " spark " and " diesel " effect.

The thermometer diagram shows the self-ignition temperatures of typical fuels. This is the temperature at which these fuels will ignite on their own without any spark or flame being applied. Diesels work on the principle of producing the self-ignition temperature of the fuel within the cylinder purely by the heat generated by compressing the fuel in the head. Satisfactory diesel fuels have a low self-ignition temperature.

The mixture in the head of a glow motor is largely fired by the heat of the glow plug element, glowing continuously in the fuel vapour. At the same time firing is also assisted by the heat generated by compression and some glow motors will, in fact, run " diesel fashion " after they have got warmed up.

The standard glow motor fuel is methanol, to which must be added a lubricant. The best lubricant for alcohol fuels is castor oil. Proportions of fuel are far from critical. Twenty per cent. castor oil generally gives adequate lubrication, further increase in castor content having little effect. Plain methanol-castor mixtures, however, are generally best suited to engines with a fairly high compression ratio.

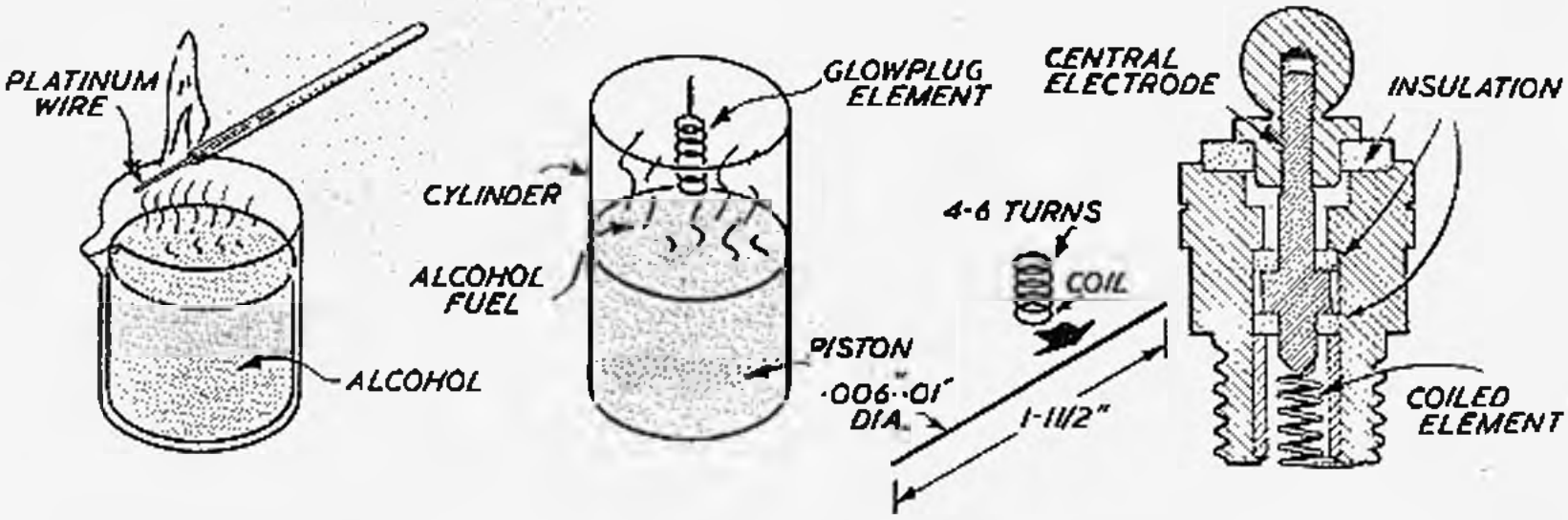
Certain additives—usually from the nitroparaffin group—have a beneficial effect and have been widely recommended. The two main additives are nitromethane and nitropropane. These nitroparaffins do not necessarily give more power, but invariably promote better starting and smoother running. Their beneficial effect is usually most marked with low compression ratios.

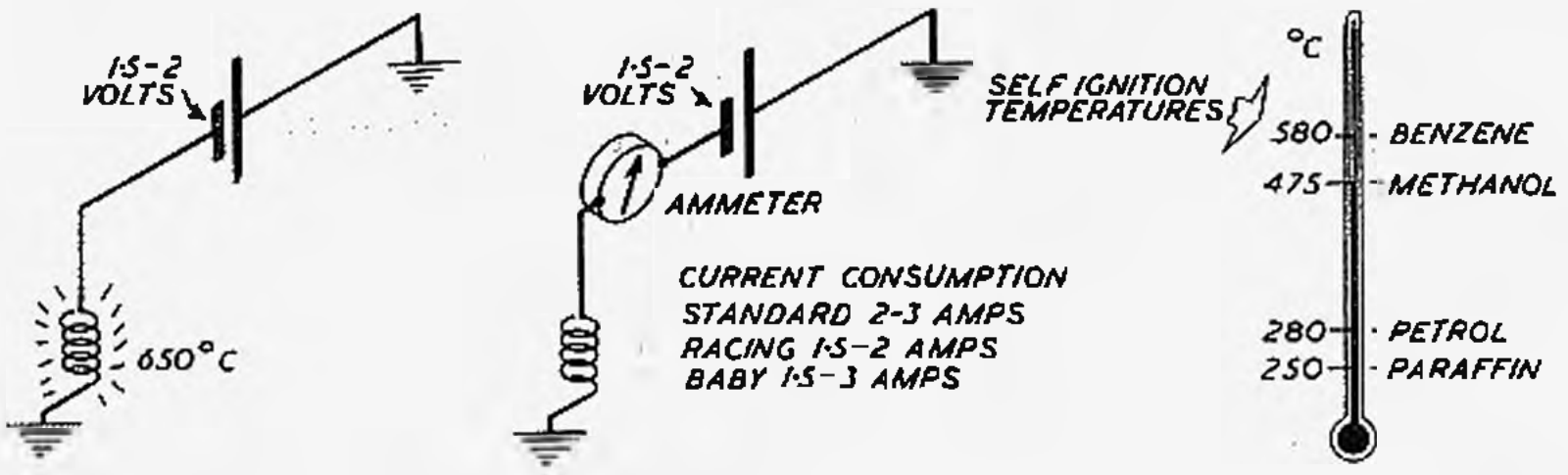
The main objection to their use is their high cost. On some engines they do give a marked improvement in power output or r.p.m. (irrespective of the compression ratio); on others any improvement is so small that it can be neglected. There are no hard and fast rules. So much depends on the design of the engine itself.

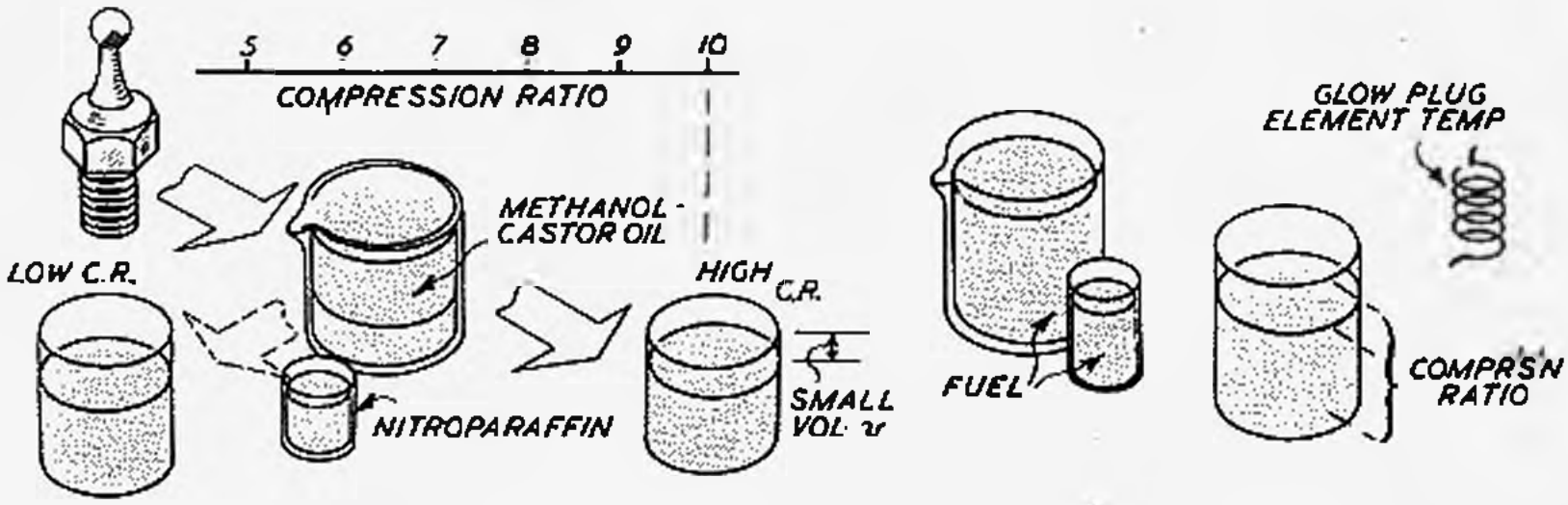
Generally the most non-sensitive glow motors are those of fairly large size, around 5 c.c., for example. These are usually non-critical on fuel and will even run on petrol-oil mixtures. In such cases rough running is likely without " dope "—in this case nitropropane being best.

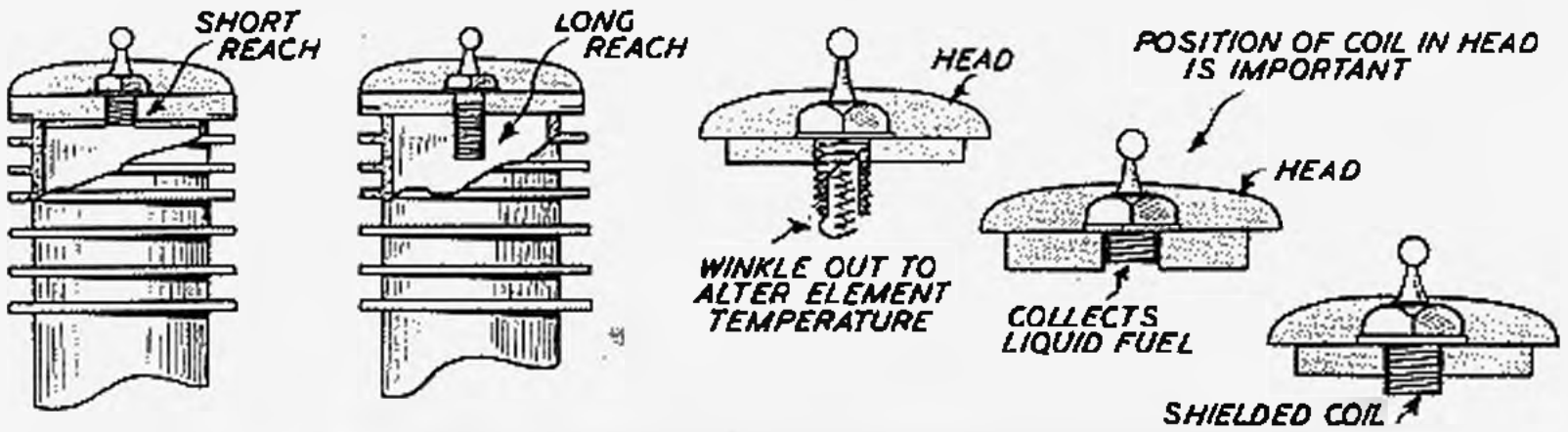
Fortunately for the average modeller, manufacturers have developed most glow motors to the point of being very non-sensitive as regards fuels, which was not so several years ago when owners of spark-ignition motors switched over the glow plug running. The three " controls " are the fuel mixture itself (a 2 : 1, methanol/castor oil mixture being an excellent general purpose formula); the compression ratio of the engine; and the operating temperature of the glow plug element. For best results this really means finding both the best fuel and the best glow plug for any particular motor.

Basically, glow plugs are of two types—long reach and short reach. In addition, however, various types of elements are used which have different operating temperatures. Some glow motors will only run satisfactorily on glow plugs specially designed for them, or on one specific type of glow plug. A method of " adjusting " glow plug operating temperature, and one which gives excellent results in practice, is to " winkle out " the element so that more of the coil is exposed and adjust the " exposed length " for best results. The best way, if running troubles are experienced, is to adopt a standard fuel and then find which particular kind of glow plug is best.









THE GLOW PLUG MOTOR

A.B.C ROBIN

F. SAUNDERS

A SCALE MODEL FOR RADIO CONTROL

THE A.B.C. *Robin* built by A.B.C. Motors around about 1929-30, was a midget single-seater cabin monoplane of just over 25 ft. span, and was powered by an A.B.C. 35 h.p. Scorpion horizontally opposed twin motor.

The construction is very simple and should not prove difficult. It has a simple slab-sided fuselage built up with $\frac{3}{16}$ in. sq. spruce or birch longerons with $\frac{3}{16}$ in. sq. hard balsa uprights and cross-members, etc. It was found necessary to steam the longerons to obtain the curve from the bottom of the cabin to the nose. First build the side-frames on the drawing, making sure that all gussets, etc. are fitted, then remove the two sides from the drawing and fit the cross-pieces, starting at the cabin, and working back to the tail and then forward to the nose. (Remember that the top cross-member at the rear of the cabin is 3-ply and extends downward to the centre longeron.) After building the basic framework, undercarriage and wing strut tubes should be added, followed by the hooks for the receiver, battery box and all wiring. The $\frac{1}{16}$ in. sheet on one side of the cabin should be added at this stage so that the switches, etc. can be fitted. Finally fit the motor bulkhead and the motor, followed by the nose formers, and last by $\frac{1}{16}$ in. sheet covering.

Wings

The wings are quite simple and there should not be any difficulty here. The spars are of $\frac{3}{16}$ in. sq. spruce and the ribs of $\frac{1}{8}$ in. balsa, with hard balsa leading and trailing edges. The tubes for the wing struts should be bound with wire to the spars and soldered, as are the wing retaining hooks; the leading edge is sheeted with $\frac{1}{16}$ in. sheet balsa back to the main spars.

The centre section of the wing is built direct into the fuselage and is *not* detachable, the wings being located with $\frac{3}{16}$ in. dowels. The wing retaining hooks pass through the centre section ribs where they are cut away, and are held with rubber bands, passing between the two so that the wing fitting is all internal.

The wing struts are of 16 gauge piano wire faired with $\frac{1}{8}$ in. balsa, and these plug into the tubes in the wings and then into the one in the fuselage, and are held in by rubber bands passing over the wing strut hooks and below the fuselage. The wing struts take all flying loads and leave the wings free to knock off in the event of a wing tip landing or on hitting an obstruction.

THE DESIGNER . . .
F. C. Saunders . . . 29 years of age . . . Married . . . is a founder member of Battersea & District Model Aircraft Club and only interested in free-flight and R.C scale models, having built at least a dozen in the last four years . . . was airframe fitter at Hawkers until returning to the R.A.F.

Tailplane and Rudder

The tailplane and rudder are quite straightforward with spruce main spars, and are of the flat plate type. The centre section of the tailplane is sheeted with $\frac{1}{16}$ in. sheet between the main spars, the forward part from the leading edge to the front spar sitting either side of the fuselage when fitted. The rudder is glued to the tailplane and the whole assembly held to the fuselage by rubber bands,

The Undercarriage

The undercarriage is built from 12 s.w.g. and is built-in solid with the fuselage with the exception of the 16-gauge spreader-bar which is left free where it passes below the fuselage.

Covering

The original model was covered with heavy Modelspan and given two coats of clear dope and one of coloured. The colour scheme used was as on the original machine, viz. silver nose, black fuselage, and orange wings, tailplane and rudder. Registration letters were orange on fuselage and black on wings with a black " G " on the rudder.

The engine was an E.D. 3.46 mounted on its side, with a dummy cylinder on the opposite side to give the appearance of the original motor.

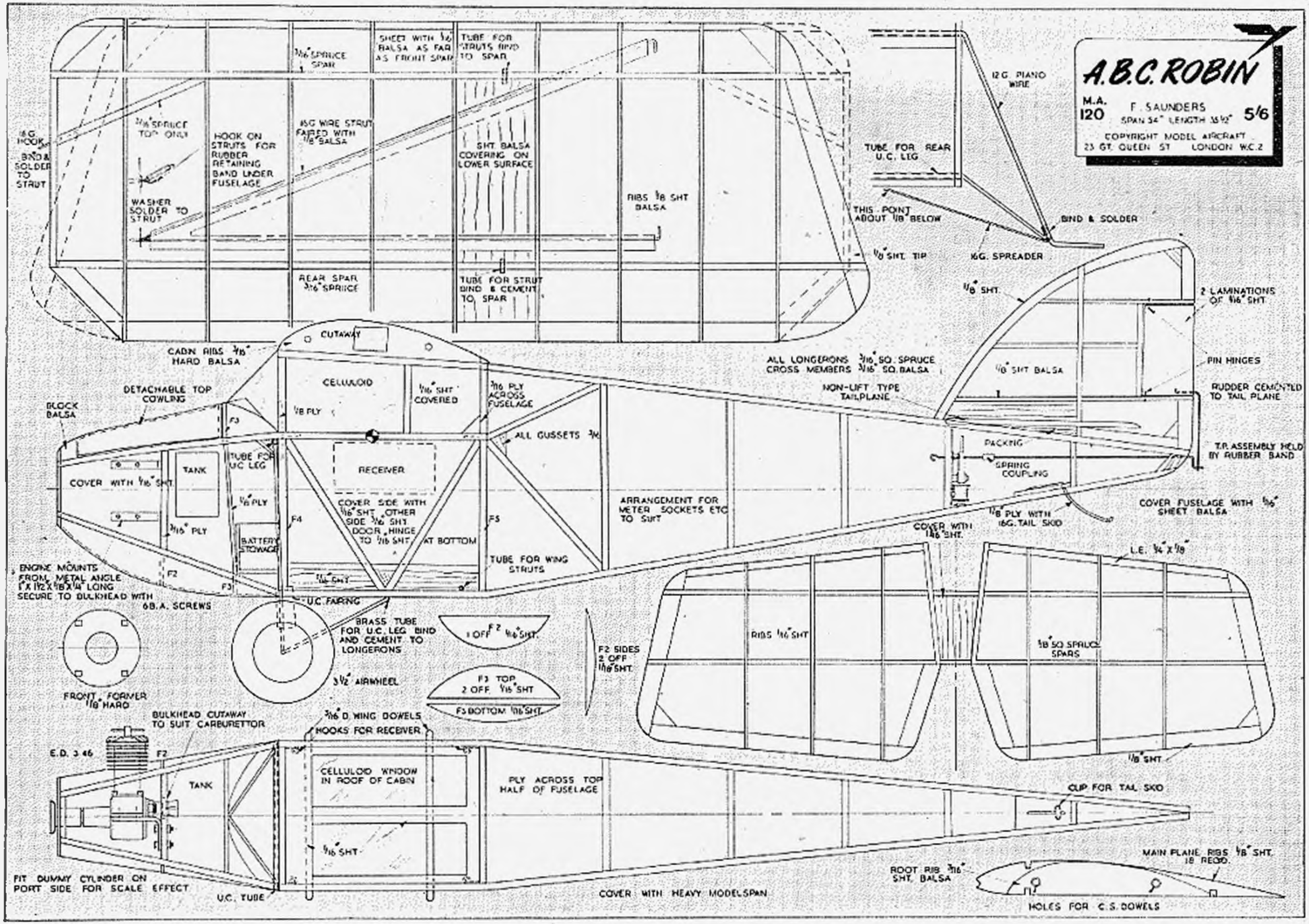
The radio fitted was the E.C.C. 950 receiver and the old type actuator, and complete with batteries and all equipment the model weighed 3 lb. 9 oz.

Flying

The original flew straight off the board with no additional trim necessary. The glide is quite flat, and under power the model is fast and very responsive to control. It has been found that very little rudder movement is necessary for normal flight.

A.B.C. ROBIN

M.A. 120 — F. SAUNDERS — SPAN 54" LENGTH 35½" — 5/6



MODEL Talk

BY BILL DEAN

Hans Pfeil and his latest C/L stunt model.

● DELTA WINGS seem to be all the fashion nowadays, so recently we decided to try a Jetex 50 powered model of this type. After a preliminary check with a schoolroom paper "dart," had indicated an approximate c.g. position of 45 per cent. (from point of triangle), we soon built up a simple all-sheer version on the lines of the current full size delta trends. We used a flat wing with the tips set at a negative angle of incidence to take care of longitudinal stability. Slight dihedral was also incorporated, but subsequent flight tests showed that none was really necessary.

Initial flights were carried out on a gusty day and this made glide trimming difficult, so, after ascertaining that no warps were present, we lit the fuse, let go and hoped for the best. It spiralled up well and in the calmer upper air settled down into a good glide after the charge was expended. The glide ratio was definitely not up to that of a conventional "wing and tailplane" model, but against this must be balanced the exceptional fore and aft stability, fast rate of climb and the sturdy airframe. We found that to make the model circle it was necessary to increase the negative tip incidence on the *inside* of the turn—just the opposite to what we had supposed. No trimming problems arose and the best duration turned in was 46 sec.

Main dimensions of the triangular wing are 12 in. span by 9 in. long. This is made from three pieces of $\frac{1}{16}$ in. sheet, joined edge-to-edge, and the total area of the inclined tips (15 deg.) works out at 6 sq. in. The fin is 5 in. long by 3 in. high and also cut from $\frac{1}{16}$ in. sheet. The fuselage is made from $\frac{3}{16}$ in. sheet and the nose projects 1 in. forwards of the wing. The rear edge of the Jetex unit lines up with the 45 deg. c.g. position and the weight (less motor) is a shade under $\frac{3}{4}$ oz.

This delta is just one of the many out-of-the-rut models that are possible if you have a few odd pieces of balsa, a "50" motor and a spare evening. So if you dream about canards, duo-monoplanes and saucers—what are you waiting for? All-sheet "silhouette" models of jet aircraft are also worth of consideration if you have a leaning towards scale. Use $\frac{1}{8}$ in. sheet for the fuselage and screw the Jetex mounting clip to the side, after finding the correct balance by test gliding. The offset motor is useful in achieving circling flight under power—and in the air these models look remarkably realistic. With larger models (of bombers), Jetex 50 motors may be fitted to both sides of the fuselage. Catapult launching is a good method of gaining additional height during the short warming up period while the thrust develops.

Use firm but light sheet for these models and always dope or banana oil the flying surfaces to prevent warping in damp weather. About 40-50 sec. is an average for one of these little jobs in winter conditions, but in summer get ready to start running as it is not unusual for even all-sheet models to hook on to grade A thermals. We usually attach the Jetex unit with cellulose tape for test gliding and then screw the clip in place when the balance has been determined. Final flight adjustments may be made by pushing a drawing pin into the nose, tail or even wing tips. Weighting the wing tip on the outside of a turn is the best way of eliminating undesirable tight circling characteristics.

With "50" powered "wing and tailplane" designs, we find that a wing area of 40 sq. in. is about right—with 1 deg. difference between the flying surface incidence settings. These little models provide a sound basis for experiments with more advanced built-up contest designs. For instance, our own experiences with Jetex canards have convinced us that this type is easier to trim and potentially a better layout for contest work than the conventional type. Even full size designers find Jetex models useful for trying out new ideas, witness the delta experiments described by Dr. Lippisch, the German authority on flying wings, in a recent American model magazine.

★ ★ ★

● DURING WORLD WAR II, millions of "solid" scales were built all over the world and with military

aircraft once again back in the news, interest in this type of model is re-awakening. Most modellers still have a few rather dusty solids decorating the workshop or gracing the piano—but how about replacing them with some sleek replicas of the latest jet fighters, which are very much easier to model than their old prop. driven counterparts. Right from the start we should like to make a plea for the omission of undercarriages as they ruin the general appearance, become easily damaged and in any case a jet looks much better when mounted on a simple streamlined mount. The base portion of a stand should be carved from hardwood hollowed out and then weighted with solder—while the actual mount looks best when made from perspex sheet.

A scale of 1/72 has come to be generally accepted as standard for solids, although a few enthusiasts prefer 1/48 as the larger size allows more scope for detail work. At 35 ft., a 1/72 scale model appears similar in size to an actual aircraft seen at a distance of half a mile—a fact which influenced the military authorities in this country and the U.S.A. when they adopted 1/72 as the official scale for all recognition models in the last war. Modern jet fighters—like the *Hawker P.*1067 and the *N.A. Sabre*—work out at about the 6 in. mark when built to 1/72 scale. In passing, it is worth mentioning that the usual scale for museum models is 1/24.

Although balsa is an easy material to carve, its use for solid model construction is not recommended on account of its fragile nature and the difficulty of obtaining good finish. V. J. G. Woodason—probably the best known professional "solid" builder—specifies American whitewood, satin walnut and basswood as the ideal materials for solids, as these woods are all close grained and easy to work, providing really sharp tools are used. Other suitable softwoods are ash, poplar, and obechi.

A fretsaw is essential for cutting the parts to outline shape and a good modelling knife will be needed for carving them to the correct sections—the latter being checked by frequent reference to templates. Wing panels should be joined together—and to the fuselage—by means of "spar templates" (or splines) to ensure both accurate assembly and a sturdy model. Fairings are best built up with plastic wood and small fillets formed with a mixture of thick dope and talcum powder. Control surfaces, undercarriage covers and similar parts should be indicated by scored lines (before paint)—using a straight edge as a guide for the modelling knife. Before painting, brush on several coats of filler (talcum powder mixed with dope again), sanding between each one.

In addition to these appearing in the model magazines, three view drawings are also featured in several of the "full size" journals—the most useful one to the scale fan being *Air Pictorial*, which caters primarily for spotters. When accurate data is scarce, it is worth while writing off to the actual manufacturers for a G.A.—as we did recently in the case of the *North American F. 86 D Sabre*. Unfortunately, our attempts to obtain manufacturers drawings of the *MIG*-15 have so far proved quite unsuccessful!

★ ★ ★

● OUR GERMAN correspondent, Hans Pfeil, reports that the hobby magazine *Mechanikus* now has a circulation of 17,000—the highest figure ever reached by a German publication of this type. Hans looks after the model aviation section for this magazine and he tells us that plans are afoot to launch a new all aeromodelling publication this year. We learn that imported engines are taxed heavily in Germany and a long felt want has at last been satisfied in the mass production of a very good home produced 2.47 diesel—name unspecified.

★ ★ ★

● OUR REFERENCE to Ray Malmstrom's epic performance at the last "Jetex Joust" (December MODEL AIRCRAFT)—did not pass unnoticed. Ray retaliated with the enclosed cartoon of "you'll never guess who." Lest the gentleman in question be accused of impersonating an officer, we hasten to point out that his chances of attaining the dizzy rank of F/Lt. vanished for ever on the day he mistook the Station Commander's garden for the local bombing range! Anyway, look out Malmstrom—we'll get you yet.

★ ★ ★

● IN THE January issue, we put forward a suggestion for altering the engine capacity limits (to 2.00-5.00 c.c.) for Class "B" team racers. This appears to have met with the approval of many readers—although others are definitely against *any*

kind of changes now that the rules have become well established. A letter from Peter Hoskison, of Cambridge, suggests one way round the problem. How about introducing an entirely new class (call it X) to accommodate the "big A" Elfin 2.49 and E.D. 2.46 motors? Specifications to be 2.01-3.00 c.c. engine capacity, wing area 90 sq. in., and line length 48 ft. Tank size, fuselage depth, pilot head diameter and wheel size to be as for Class A. It would certainly be interesting to see which of the two motors (E.D. or Elfin) came out on top after a season's flying.

★ ★ ★

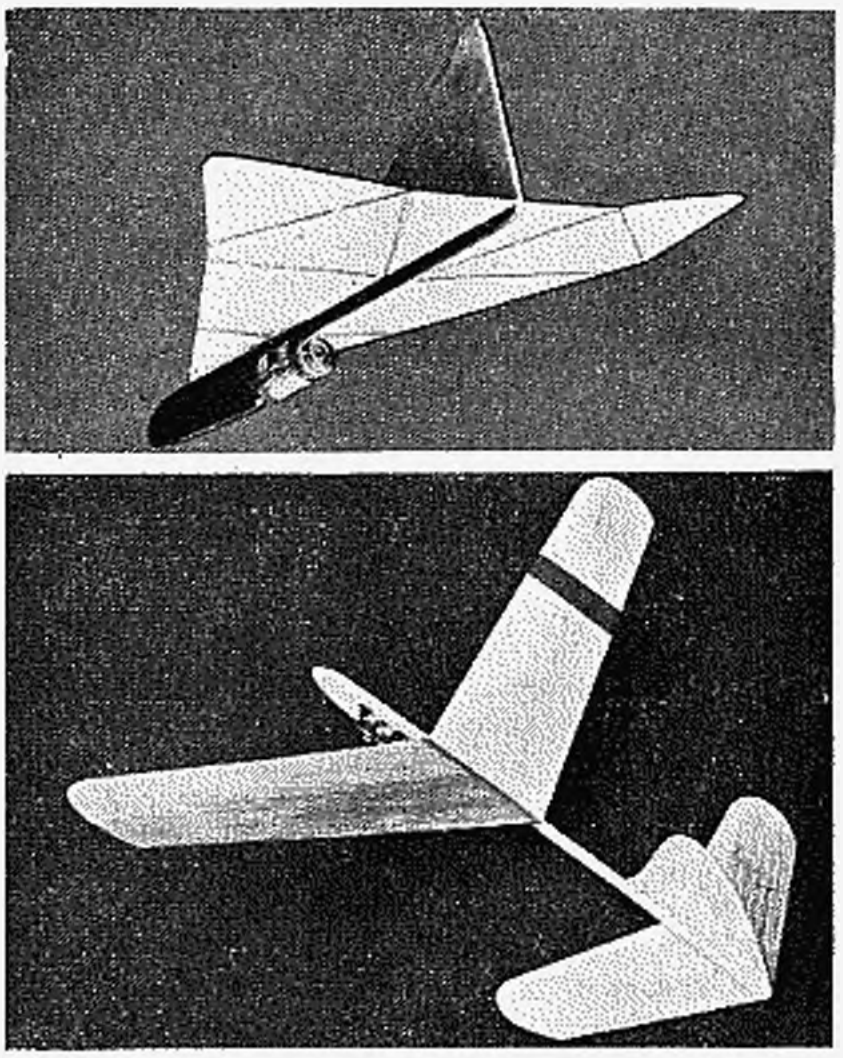
In Brief

S. Calhoun Smith, well-known American magazine artist, tells us that he has just put the finishing touches to a new model book (for Fawcett Publications), which covers everything from small free-flight models and controliners to scale R/C. A section has also been devoted to racing hydroplanes and a radio-controlled PT boat, but Cal notes with regret that E.D.'s scooped him on the latter with their channel-crossing *Miss Eedee*. . . . Just for a change, how about building something different (different for you that is) this year. For instance, if you suffer from a pylon fixation why not turn your hand to a Wakefield (or vice-versa)—or if R/C is turning your hair to silver, relax by occupying those shaking fingers with a few chuck gliders. . . . Just to keep the records straight—Berry Peach, who we reported as emigrating to the U.S.A. some time ago, decided to come back to the old country after all—(guy must be crazy, eh?). . . .

Weather-wise modellers in the London Area, ring up the Air Ministry (HOL 3434) when they need an up-to-the-minute Met. forecast for any part of the country. Similar Met. services are available to the public in many of Britain's major cities—for the price of a 'phone call . . . Anyone want a brand new (1952 series) *Super Tigre* 2.5 c.c. g.p. motor? Angelo Coccon, of C.B. Ayres, 49, Milano, 408, Italy, is willing to exchange one for a brand new *E.D.* 2.46 *Racer* . . . Mounting holes on the new E.D. .5 are similar to those of the Dart.

Ever used a C/L handle that suited you *perfectly*? If the answer is in the negative, try cutting one out of $\frac{3}{8}$ in. ply and whittling away the finger depressions until it fits your hand like a glove. Hard $\frac{1}{4}$ in. balsa sheet cemented on either side (and then sanded) completes the job . . . The gauze backing from Elastoplast and similar first aid dressings makes perfect elevator hinges for C/L models . . . We hear that Bob Copland's 1952 Wakefield is geared and NOT a streamliner!

We screw up our courage this month and fearlessly disclose the identity of those masked characters who write "Topical Twists" and "Northern Notes." Turn to page 937, lift up the corner of the advert for mauve dope and you'll find the awful truth underneath. . . . Finally, don't forget that "Model Talk" is always pleased to hear from YOU, so how about putting pen to paper and letting us hear about the model activities in your part of the world.



Four simple all-sheet Jetex 50 models, by the writer. Top to bottom: Delta Wing, Swept-forward wing design, Canard, and semi-scale fighter.

KEEP ON THE RIGHT SIDE OF THE RULES

COMPETITION flying is fine, except for all the rules. So say many model fliers. The trouble is that half the time quite a goodly proportion of fliers just do not know the rules. That makes the officials' job harder. They are there to run the competition properly, not explain in detail all the rules to each individual entrant as he comes up for "processing." Such is one of the reasons for those long queues outside the official tent.

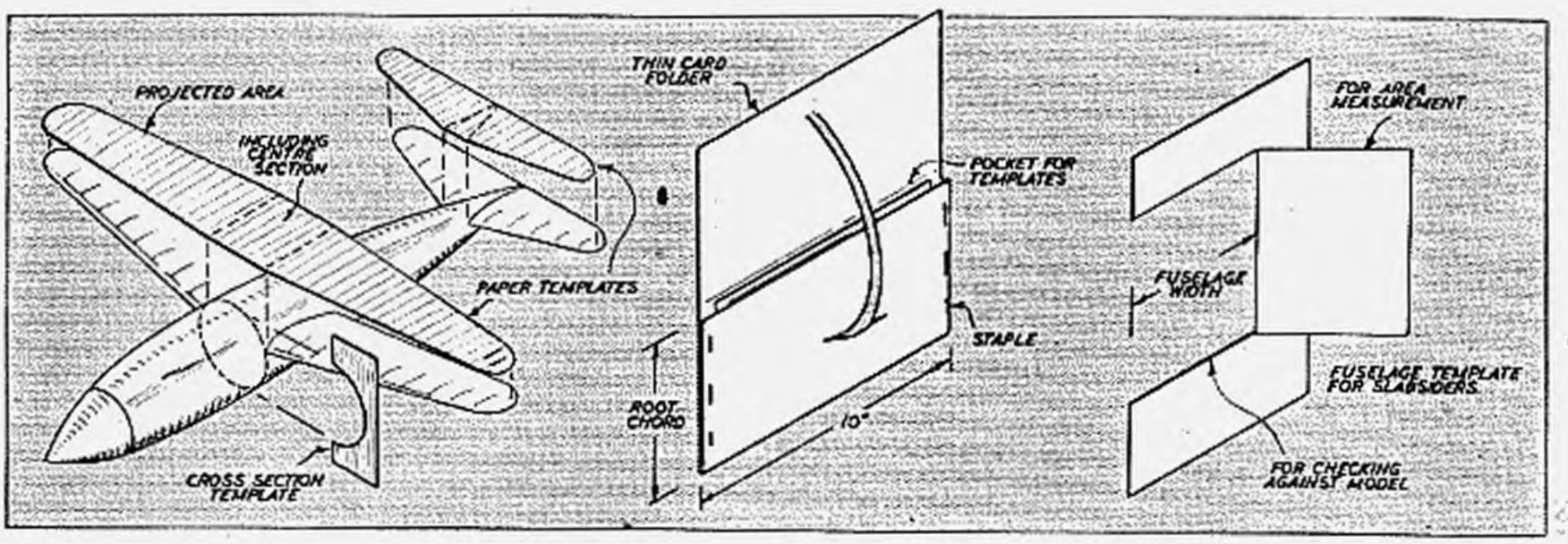
The truth of the matter is that competition flying leaves more to the individual than just getting his model ready, packing his box with spares, repair kit, D/T fuze, and so on. If it is a "specification" competition then he should make perfectly sure before he goes that his model does conform.

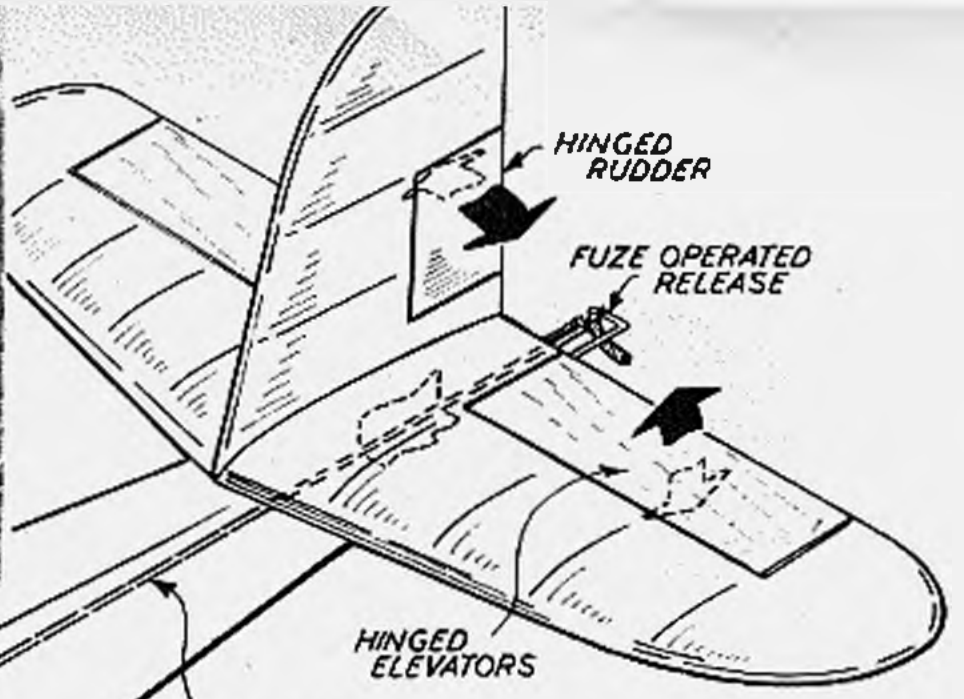
Some competitions call for templates to be produced of wings and tailplane and maximum fuselage cross-section. This is one of the new Wakefield rules introduced in 1951, and almost all F.A.I. International events insist on this practice.

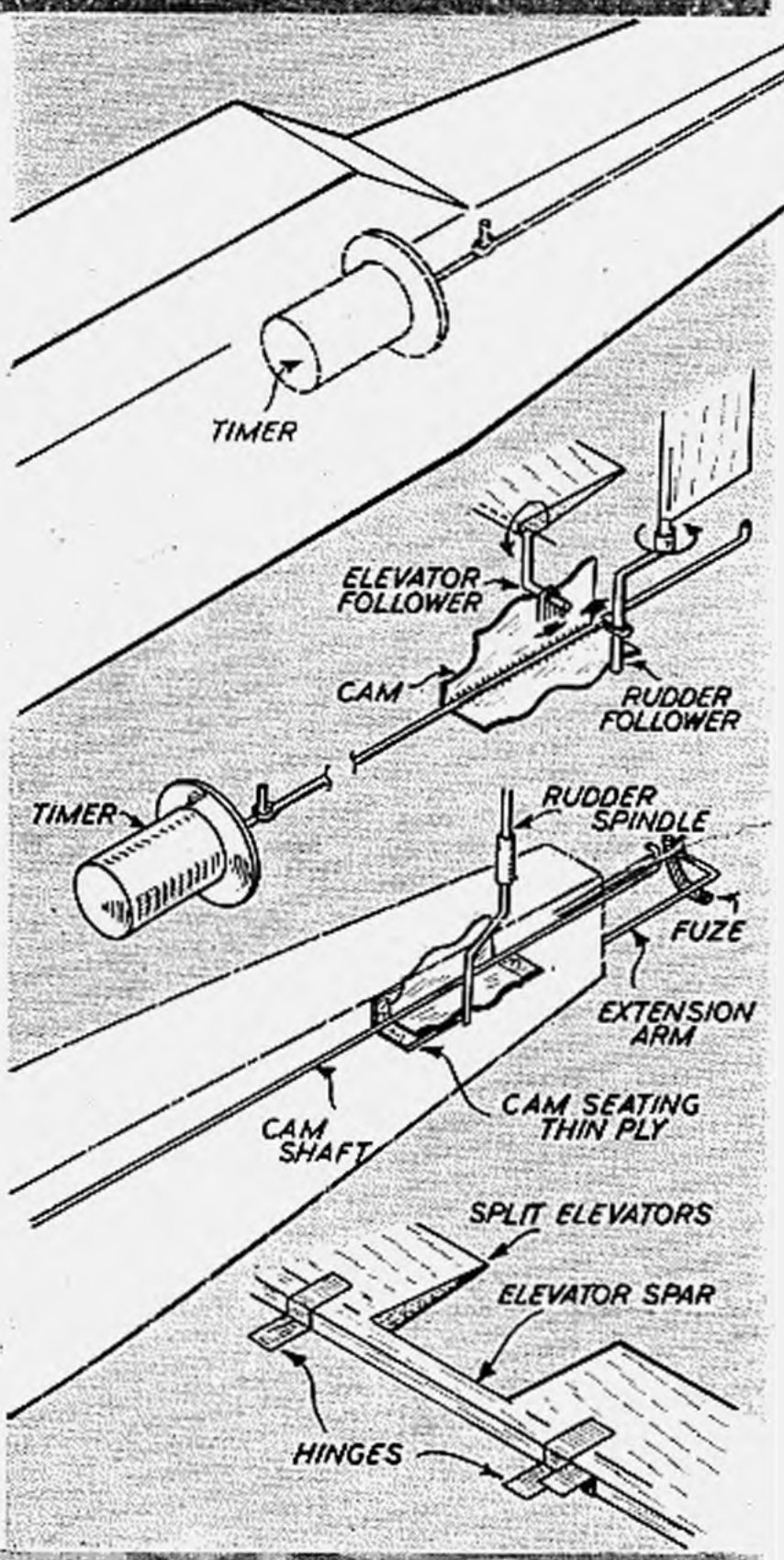
If your contest model is a "specification" type, then it is a good plan to prepare these templates in any case. Even if local rules do not call for them specifically, if you have them they are there for a check—and officials will be only too pleased to have help like this volunteered. It is far easier to measure areas off a template than off an actual model—and relatively simple to check the templates against the model. There is a moral there, too. When you do make wing and tail and fuselage templates, draw them out with reference to the finished *model*, not the plan. It is surprising how slight errors in building can modify areas. A "drawn" fuselage exactly to minimum cross-section, for example, may have been reduced to slightly under area by over-enthusiastic sanding!

Whilst the Wakefield and A-2 Trials rules do not state that templates are required we would strongly advise every entrant to bring them along with his model. After all, the fellow who comes along to a "specification" contest without having checked his model thoroughly beforehand is not really playing the game. He is not being fair to the officials or himself. If he is out on dimensions, then that error may well pass unnoticed until the post-contest check—and that could cost him a place in the team. And having convinced (we hope) every serious competition flier that he should check his model, then the preparation of templates is one of the simplest ways of doing this.

Perhaps it will not be so long in the future when we find that all specification contests call for templates of each model to be presented with the model for checking. Another step in progress, and it is not impossible to hope that such templates may have been verified beforehand by area officials and passed and stamped as correct. Then at the contest itself all the officials have to do is to check that the templates do conform to that particular model and check weights only. That would make for much easier contest organisation.







Try FREE

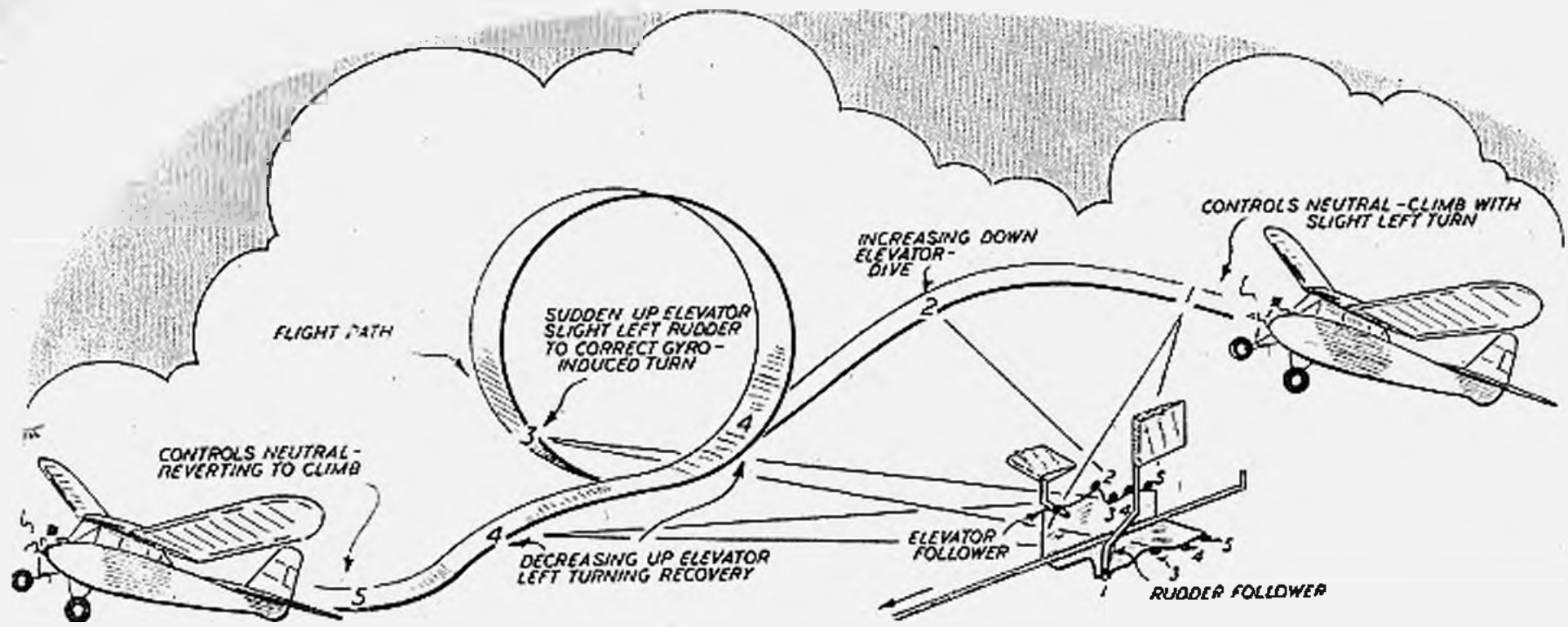
Progressive movement of the control surfaces of a model utilising some form of "cam control" is by no means new. Devices of this nature intended to give aerobatic flight were demonstrated before the war and on rocket-powered target models during the war. A fast, straight take-off was achieved by holding the elevators slightly down and, after a predetermined period, the elevators moved back to their normal position to give a steep, climbing flight. Older readers, too, may remember mechanical control devices developed by Col. H. Taplin, who, indeed, presented a cup to the S.M.A.E. for annual competition between models of this type. The Taplin Trophy is now, of course, awarded for R/C.

However, if the "cam control" method developed by Messrs. Page and Gates, is not new, it is certainly novel—and practical. It could provide a lot of fun and, as the article describes, various shapes of cams can be devised for a whole range of manoeuvres. Modellers who "fly for fun" should find much of interest in the system.

IN 1949 we began to work along the lines described below with the object of developing a simple and orthodox model, then under construction into what is still quite a rarity—a model that would perform stunts in free-flight. Elevators and rudders were installed, and an airdraulic timer to operate these controls.

It was desired to produce a wide variety of stunts, if possible several in one flight. Since in achieving this the motions of the controls are by no means simple, a cam arrangement with interchangeable cams appeared to be the only solution.

The timer was bolted to a ply bulkhead near the c.o.g. and in a position where the removable wing made it easily accessible for adjustment. The cam, which was a piece of tin cut to shape and bent to a right angle, was soldered to a length of 16-s.w.g. piano wire attached to the timer-arm and extending out of the rear of the fuselage. This wire member, though not rotary in motion, may conveniently be described as the "cam-shaft." Any tendency of the shaft to flex and slip off the timer-arm was



FLIGHT STUNT FLYING

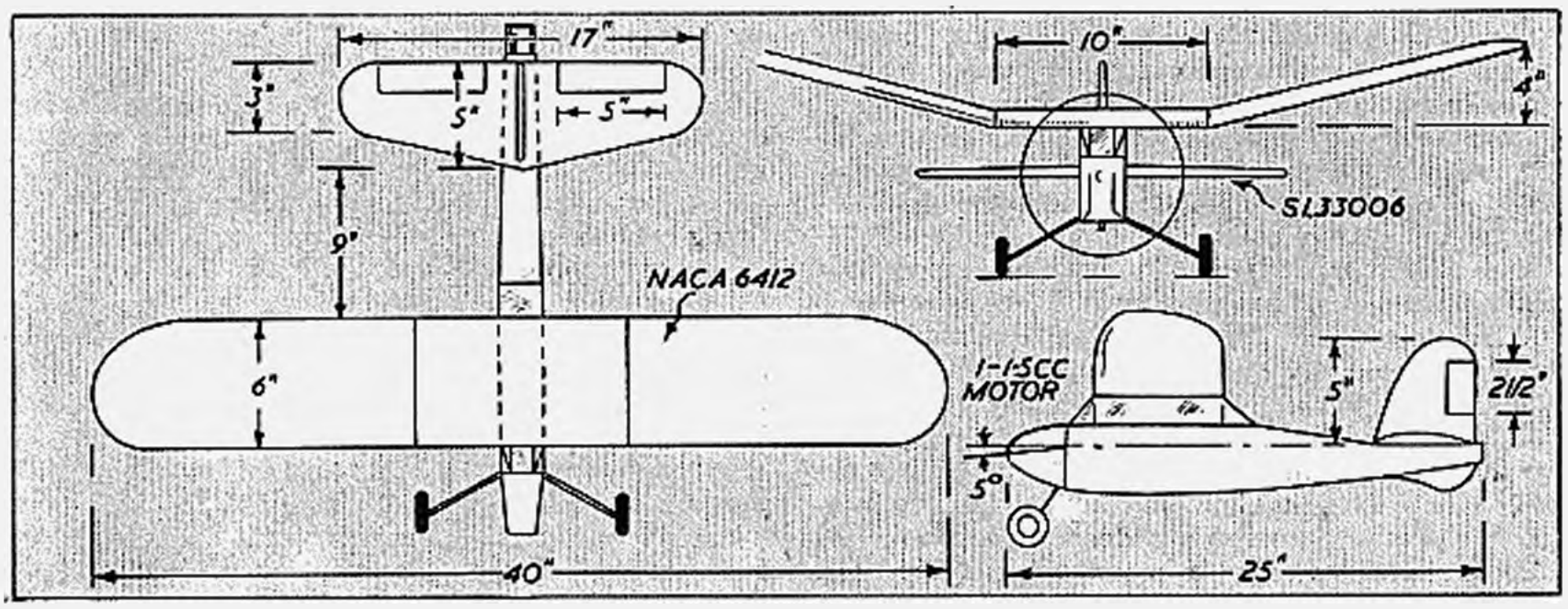
By B. J. PAGE and M. M. GATES

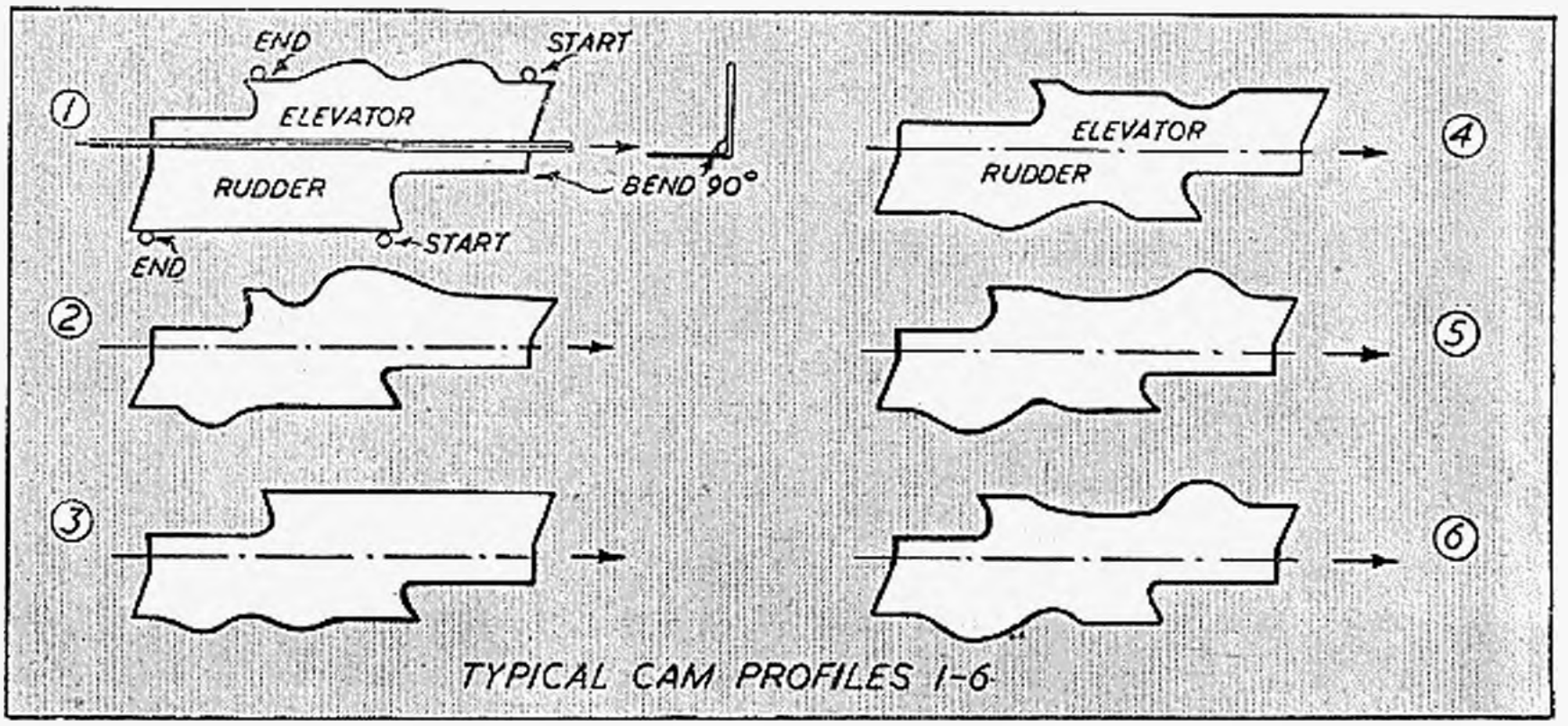
checked by two balsa members cemented just above it across the fuselage, and care was also taken to see that there was no fore-and-aft play between it and the timer-arm.

The cam itself, by being bent at right angles, had two tracks, the vertical one for the elevators and the horizontal one for the rudder. The two outer sides of the cam slid on two thin ply supports, also set at right angles, against which it was held by the tension at the forward end of a small rubber band slipped over the shaft and attached to the fuselage side, and, at the rear end, by the pressure on the shaft of the specially shaped tail-block. Wire control-arms were attached to rudder and elevators and held against the cam by further small-section rubber bands of high elasticity.

To set the mechanism, the projecting cam-shaft was pulled out from the tail, while at the same time both rudder and elevators were pushed right over by hand to keep their respective control-arms clear of the cam. The shaft was now held extended by a small piece of plywood until take-off; it was then released, whereupon, as the model took the air, the timer began to operate pulling the cam past the control arms, at first rather quickly but for the last half of its travel quite slowly. It will be clear that this type of motion is by no means perfect, and that a timer specially designed for operating the cams would give better results. A nearly constant speed of action and a long travel are the two characteristics which would need to be incorporated into the timer. However, we had to make the best use we could of the existing designs, choosing the one with the longest stroke.

The aircraft which carried the device was a fairly typical "sport" model of 40 in. span and powered by an E.D. Bee. As will be seen from the photograph, the rudder occupied only a small part of the fin area, while the elevators were large, taking up almost half the gross tailplane area and the full tailplane span. The first flights were made with the controls fixed in their neutral position, until the model was trimmed. The first "controlled" flight was made with a "loop" cam installed. The model





1. *Double Dive—neutral (slight L turn)—down elevator—neutral (slight L turn)—down elevator—neutral (slight L turn).*
2. *Loop—neutral (climb, slight L turn)—down elevator—up elevator (slight L rudder)—neutral.*
3. *Double Left Turn—neutral (climb, slight L turn)—increasing L rudder—decreasing L rudder—increasing L rudder—neutral.*
4. *Right Turn, Left Turn—neutral (climb, slight L turn)—right rudder, up elevator—left rudder, up elevator—neutral.*
5. *Contest Climb—slight down elevator—elevator level, slight left rudder.*
6. *Roll—neutral (slight L turn)—slight down—sudden up, right rudder—left rudder—decreasing up elevator, left rudder—neutral.*

looped ! Subsequently this cam was found to cause a sort of " flick " roll to the right more often than a loop, this being due of course to the gyroscopic effect of the engine and airscrew. As a counter-measure, a certain amount of a " left rudder " was applied as the elevators were raised for the loop. An early tendency for stunts to begin while the model was still very near the ground was later prevented by tying the cam-shaft out in the extended position and releasing it by means of a ten-second fuse which would allow sufficient height to be gained.

Any readers who were at the Surbiton Club Glider Gala on Epsom Downs in 1950 may have seen our most spectacular manoeuvre yet. The model climbed, dived to a height of about eight feet, half-looped and half-rolled off the top into another climb !

A certain amount of trouble was caused at one stage by fuel oil which had entered the timer, causing it to stick. As a result the mechanism remained at " down elevators " too long and the model descended in a rather steep glide. A new timer was procured, for it is essential to successful operation that this unit be in good condition.

As our old E.D. Bee seemed to be giving inadequate power for the more advanced stunts, it was replaced by a 1.49 c.c. Elfin. A genuine vertical climb now became quite easily obtainable under the increased power, and it was necessary to effect a reduction, for stunt work, by fitting an inefficient propeller. It was at this stage that we prepared a new stunt for the Northern Heights Gala Day meeting last summer. The model was to tow up a glider, release it and roll before descending. However, on a trimming flight we lost our aircraft o.o.s. vertically overhead in good visibility. It was not returned, and we are still looking forward to the day when we shall have the time to build its successor. From our tests we have concluded that the proportion of elevator area to total tailplane area should be slighly reduced (to about 30 per cent.), while the proportion of rudder area requires to be increased to about 15 per cent. of total fin area.

It is hoped that devices of this sort will create the demand for a new type of contest—" Free-Flight Stunt "—especially since good results will always be the product of skill and less dependent upon luck. There is as yet no visible limit to the aerobatics which can be performed. No doubt engine control could be added. Being very light in weight (about an ounce) the device could be applied to those classes of model where a high degree of control is desirable, for example precision and high-powered duration models. It would appear to be suitable for models of between 30 and 60 in. span, and in particular it seems ideal for flying scale models, the flying of which can otherwise become rather monotonous. Emphasis should, however, be laid upon the need for a reasonably stable design.

The most desirable feature of the device is plainly the variety it offers. One tends to lose interest in the usual type of power model once it is trimmed, for its possibilities have then been fully exploited. With the adoption of this stunt mechanism there appears a wide variety of possibilities, from mere " circuits and bumps " to any of a wide range of manoeuvres.

Topical Twists

One writer to this journal appeals for the standardisation of lug-holes. While I agree that this would probably be of great benefit to the competition mike-wielder, I should say that more urgent consideration should be given to the washing out of same.

• • •

Moddlecoddle Modeller

At last my eyes are open. I can see now just what kind of a spoilt little darling the average aeromodeller has become. For all that parental care and devotion which is lavished upon him so freely he shows not the least sign of gratitude, and to those who serve his interest so faithfully, with such prodigious feats of organising and administrative skill, his only reward is the usual outburst of petulant criticism.

Recent exposure of his ignorance of the " Code Sportif " is but one example of his sellish disregard of the heroic labours being carried out by others for his greater pleasure and enjoyment. While he might be romping lightheartedly over the flying field, earnest and self-sacrificing minds were being diligently applied to the compiling of this epic document. That it didn't make sense is beside the point. The appalling thing is that our mean-hearted little ingrate quite unashamedly declared that he wasn't even aware of its existence.

Perhaps the most shocking revelation of his nursery antics is to be seen in his peevish attitude towards the recently introduced Official Secrets (Models) Act, 1951 ; legislation of which was first applied at the 1951 Wakefield Trials, and was later extended to embrace the much heralded British Championships.

The purpose of the Act was reasonable enough ; to allow the model hierarchy to enjoy in comfort and privacy an occasional command performance of the star turns of the model world. Surely a meagre enough reward for its unremitting labours in organising all the multifarious contests, rallies, and other entertainments for the especial benefit of our spoilt little darling. Yet that over-pampered little monster begrudged his benevolent patrons even this small indulgence, complaining that such shows should be staged only for his particular interest and amusement.

" God ! I thought that it was making a dashed funny noise for a duck ! "

And, instead of regarding the opportunity of performing at one of these select functions as a supreme honour and privilege, set up a whining little moan about carrying a few blankets some paltry fifty miles or so from the railway station to the flying field. Then, as if to add insult to injury, objected to a night's rude, healthy sleep on a concrete floor !

The most spoiled and precocious of his kind are, as always, to be found in the London Area, where further legislation of the Official Secrets Act has surrounded his favourite flying field with barbed wire and Security Police. Naturally, like all the other whining inmates of concentration camps he hasn't the breadth of mind to appreciate that the barbed wire and guards are there solely for his protection.

• • •

Old World Charm

Though appropriately named for accent on the fair sex, it does seem rather ungallant of the members of the Evesham and District M.F.C., to allow the twin burdens of Secretaryship and Treasurer to bow the delicate shoulders of one poor damsel. Surely there is at least one member chivalrous enough to relieve this overworked young lady of one of these exacting offices. Or must I ask :

When Adam delved in Evesham,
Where was then the Gentleman ?

• • •

It was a case of true aeromodelling phlegm. When at almost full turns the winder hook slipped, he displayed no emotion, only the inside of his fuselage.

• • •

Second Sight

The Maestro himself was about to fly, and a small and excited crowd hastily gathered about him. Three main types predominated as usual : the Junior Club type, mute and pop-eyed in awe and admiration, the Lesser Club type, exchanging the timid, knowledgeable whisper, and the Greater Club type, seeking reflected glory in gusts of chummy badinage.

Six stopwatches (one official, five auxiliary) clicked into simultaneous action as the Maestro's model corkscrewed its way heavenwards. But visibility that day was poor, and we, the Lesser Club types, were soon blinking hopelessly into the obscuring mists, while the cheerful and confident ticking of the six stop watches mockingly proclaimed our visual inferiority.

This rather annoyed me at first, then I remembered something I had recently read on the vagaries of timekeeping : that the ability to keep a model in sight varied from individual to individual. Which I now take to mean the importance or otherwise of the individual being timed.

• • •

When I innocently asked members of the Croydon Club if *they* could tell " Which Twin has the Towline ? " so loud were their groans that I almost curled up.

Pylonius

OVER THE COUNTER

The Keilkraft 3/8 flying scale range now comprises 21 different models. Last one to be added is the Kirby Prefect glider, one of the very few flying scale glider kits on the market. There are not likely to be any new additions to this range—for the next few months, at least, as most of the popular prototypes are now covered. The jet models (for the Jetex 50 unit) include the *Sabre*, *Mig-15*, *Attacker*, *Panther*, *Venom* and *Hawker P 1067*. The comparable range by Veron includes the *Sea Hawk*, *Thunderjet*, *Sabre* and *Attacker*, whilst Wilmot Mansour themselves kit the *Vampire*, *Meteor* and Avro 707*B*. Quite a range for a flying scale jet enthusiast. We wonder if any modeller has a complete set?

* * *

New additions to the team race field are the Skyleada *Hornet* (20 in. span, Class A) by the British Model Aircraft Manufacturing Company and the Keilkraft *Pacer* (Class B), companion model to the *Ranger*. Team race fans are now very well catered for by commercial kits.

* * *

Further experiments are being made with the moulded balsa construction used by Wilmot Mansour in their *Zyra* space ship kit and we should not be surprised to see a number of Jetex flying scale kits appearing in this semi-prefabricated form. Modern full-size aircraft fuselages are almost invariably rounded in form and of stressed skin construction, and conventional methods of model building do not always give the right results. Sheet covered construction, for example, is generally on the heavy side. Moulded sheet construction halves the weight.

* * *

The 1952 Keilkraft handbook will be bigger and better than ever. It will contain over 100 pages and the price will be 1s. The first copies should be leaving the presses within the next month or so. Incidentally, this will be the sixth in the series of Keilkraft handbooks.

Mercury Model Aircraft Supplies are producing a new "sports" glider kit, the *Gnome*, which should appear at about the same time as the *Marauder*, reviewed in this issue. Thirty in. span, this model has a pod and boom fuselage, the pod being constructed of ¼ in. sq. balsa, sheet covered on each side. Building has been simplified to a degree, rating this a good "first" model for the younger enthusiast.

* * *

Another pointer of the trend towards more complete pre-fabrication of kits. All the Dmeco kits (by de Bolt, U.S.A.) containing printed sheet are to be revised and reissued with die-cut sheet parts.

* * *

The price of most engines, and a number of accessories, can be expected to rise during 1952. Prices of E-D engines, and some other makes, have gone up as from January 1st. Average increases are likely to be between 10 and 25 per cent.

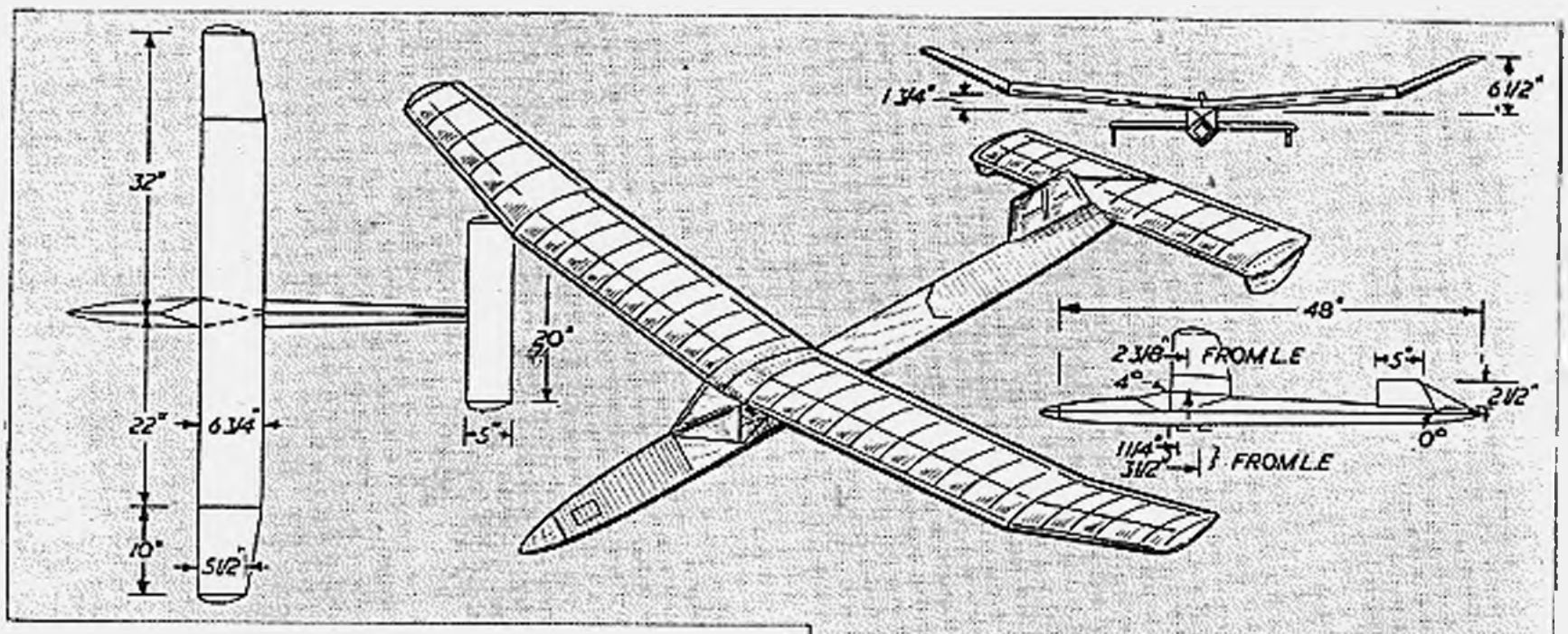
Manufacturers have been reluctant to take this move but it has become virtually inevitable due to rising raw material costs and increased labour charges.

The price of the new E.D. 0.5 c.c. diesel, to be known as the E.D. "Point Four Six," will be £2 15s., including Purchase Tax.

* * *

Designer of the popular Amco engines, Ted Martin, has recently emigrated to Canada and intends to start a model engine business there. His first production will be a new .049 cu. in. diesel with which he hopes to break into the American "Half-A" market.

Ted's many friends will, we feel sure, join us in wishing him success in his new venture.



KIT REVIEW

MERCURY *MARAUDER*

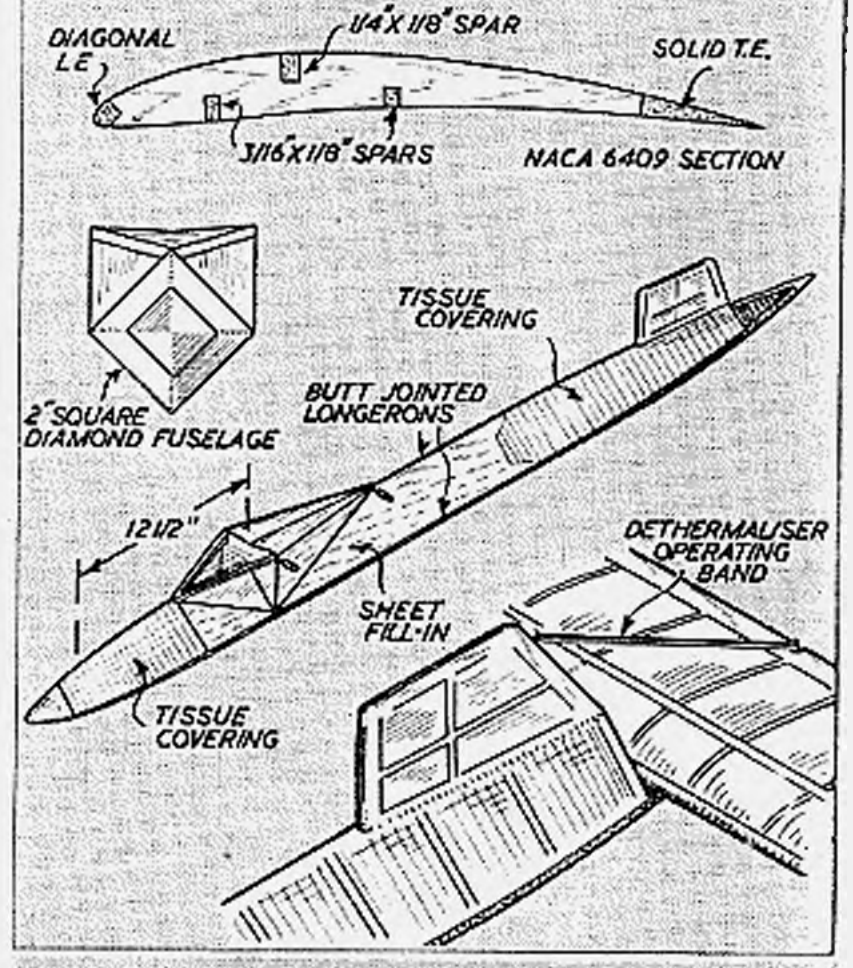
THIS is the first of a new series of *Mercury* kit models designated by the letter "C," which means simply that these kits will be designs for contest work with performance taking precedence over beauty of line and "eye appeal." With straightforward structural design these "C" models will make it possible for the average enthusiast to produce a model which will genuinely give him a good chance in competition flying.

The *Marauder* is designed to A-2 glider specification, but as the total weight works out at approximately 11½ oz. (the remaining 3 oz. weight required is carried in the form of ballast under the wing), it can equally well be used for both F.A.I. and "open" glider events. The design itself appears a particularly competent one and emphasises the modern trend towards the use of long fuselages, even on gliders. With moderately high aspect ratio wings, tail moment arm (wing trailing edge to tailplane leading edge) is three chords, enabling the wing area to be increased to 423 sq. in., with a 101 sq. in. tail being adequate for satisfactory longitudinal stability.

The overall length of the fuselage is just under 50 in. and with a 4 ft. longeron length, these members are butt-joined amidships. The whole mid-section of the fuselage is strongly reinforced with sheeting.

Positioning of the tow hooks is also interesting, again reflecting a modern trend to move the point of attachment of the line farther aft. The rear hook is, in fact, aft of the centre of gravity of the model. A directly "overhead launch" has obviously been aimed for here. The small, squat fin, together with the tailplane tip fins would appear to be quite adequate for towing stability.

Designed by Henry J. Nicholls, the *Marauder* bids fair to carrying on the *Mercury* tradition of having one of their kit models in the British Nordic team each year. Both the 1950 and 1951 teams included *Norsemen*. The *Marauder*, we think, will make an even better contest model.



The designer of the Marauder, Henry J. Nicholls, launching the prototype model on a test flight.

Accent on POWER

By P. G. F. Chinn

IT is generally held that to do well in any type of contest demands some degree of specialisation. It is almost impossible to keep on top if attention is divided between two or more types of model. However, it does seem that a really good man is capable of getting to the top quite quickly and 1951 saw several names among the top scorers who, hitherto, were virtually unheard of, or, alternatively, were new to the particular sphere in which their seasons' successes were achieved.

The outstanding figure was undoubtedly Johnny Gorham who, in only one season, jumped to the top of what is acknowledged as the most exacting category—Wakefield flying. In 1950, Gorham had been notably successful in power-duration and radio-control, placing in the top ten of four important power-duration contests and in the top three of three R/C events. He also obtained a fifth and a tenth place in two S.M.A.E. decentralised glider contests but made no great efforts in rubber. From October of that year, until the start of the following season, however, Johnny concentrated hard on breaking into Wakefield flying and in little over half a year enjoyed his first success by winning the Weston Cup on May 6th.

It is probably true to say, however, that in those six months, Gorham put as much effort into his designing, building, flying, experiment and development work, as an average good contest flier would expend in the course of a whole year or, more probably expend in the course of a whole year or, more probably, two years, since he did not entirely neglect other interests and found time to design and build an A/2 and, in mid-season, a new, and subsequently very successful, power duration model (*Little And*) as well! Most of the testing of the Wakefields (both geared and single-skein models were produced) was carried out during early mornings, mainly to obtain, as nearly as possible, the still air conditions desirable for ascertaining true performance, but how few of us would find out enthusiasm such that we would repeatedly get up to go and fly model aeroplanes at 6 a.m.!

Undoubtedly, Johnny Gorham's ability is such that the top of the ladder is the natural place for him, but the fact that he got there last year so quickly was entirely due to real hard work. Whether this is, in fact, "hard work" to Johnny, or whether his immense keenness makes any and every aspect of aeromodelling a pleasure, I do not know. Certainly, he seems to get a great kick out of flying field activities, usually taking six flights and recoveries in his stride and, aided by a Corgi motor-scooter, sometimes doing other people's recovery as well.

International and British 5 c.c. record holder Peter Wright, of St. Albans and his Dooling 29 powered model which has done over 127 m.p.h. The smaller E.D. 2.46 version in the foreground has recorded 93 m.p.h.

As Johnny Gorham's name popped up consistently all last season in rubber events, so, in C/L, the name of the well-known St. Albans' member, Peter Wright, began appearing with increasing regularity in speed events. Just as one jumped into the limelight in Wakefield flying with repeatedly high performances, so the other suddenly raised the standard of Class IV speed flying when we had begun to dispair of ever seeing a Briton's name on the F.A.I. speed record list.

1951 was not Peter Wright's first year of speed—he made one or two successful appearances in 1950 with an Eta 29 powered model—but it was last year that he got down to business seriously, with the result that, for the most part, his speeds in Class IV, were far and away higher than those of his rivals, despite the usual tendency for C/L speeds to improve only by an odd m.p.h. or two, or even fractions thereof.

Pete Wright now says that he will drop speed in favour of team racing, the reasons being that there are so few events and so little support for pure speed flying in this country. The usual arguments that speed is much too complicated, or that one needs elaborate equipment for extensive engine modifications, Pete dismisses and modestly points to his own efforts, all done with the aid of a perfectly standard Dooling 29, having no more than the rought spots smoothed off, plus a systematic recording of the effects of different props., fuels and climatic conditions. Speed flying is just the same as any other branch of model flying, success comes with experience, but only when experience is turned to good account.

Hit or miss methods may sometimes work out in trimming a free-flight model but will never bring consistent success in speed work.

Pete's present model, *Bazooka IV*, had its first outing at the S.M.A.E. Speed Eliminators, at Radlett, last Whitsun. Using standard 4 to 1 methanol/castor fuel and a Stant 7 × 11 prop., the model returned 111.9 m.p.h. to make fastest time in the F.A.I. Class II group, although the mixture setting proved to be somewhat too weak for best performance. The next success was at Wembley for the Festival of Britain C/L Championships. Here, using the recommended Dooling Brothers mixture of 40 per cent. methanol, 40 per cent. nitromethane and 20 per cent. castor-base oil, and now equipped with an American Tornado 7½ × 9 prop., *Bazooka* turned in the exceptional speed of 124.54 m.p.h. to set a new British Class IV record. On this occasion, the needle setting, with the new fuel, was a little too rich and the atmosphere was hot and dry and not, therefore, conducive to the best possible performance.

A fortnight after Wembley came the F.A.I. World Championship C/L events, at Knokke, in Belgium, where, far from being outclassed by Continental speed experts as in previous years, the British team, represented by Wright and Hewitt, won clear victories over their opponents in Classes II and I respectively and both the existing F.A.I. world's records were broken in the process. The overwhelming success enjoyed by the British team at this meeting is, of course, past history, but it may be recalled that, while Alan Hewitt also won the stunt championship and concours d'elegance in this class, Pete Wright also took the speed class concours with the E.D. 2.46 powered model with which he placed second to Alan in the Class I speed class.

On this occasion, *Bazooka's* best time was 125.6 m.p.h., put up under fairly favourable conditions and with a perfect engine run throughout.

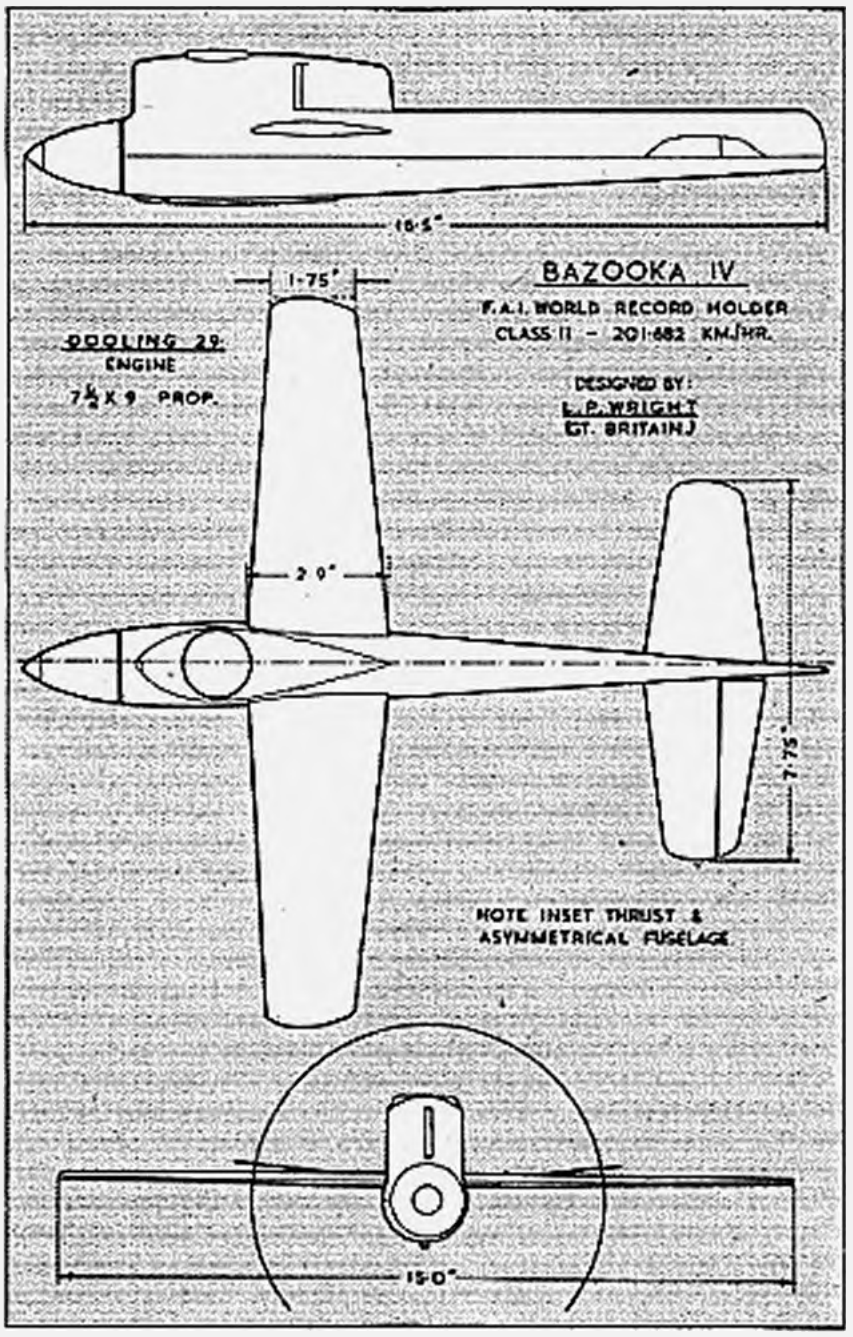
At the All-Herts Rally, *Bazooka* first made a run with a Tornado prop. of 1 in. greater pitch and returned 124.9 m.p.h., fractionally better than its British record time but insufficient to allow application for a new record. The second flight was made with a 7½ × 9 prop. again. This resulted in the best flight to date with a speed recorded at 127.1 m.p.h. Unfortunately, a timekeeping error occurred and again this does not constitute an official record. Pete's final 1951 success came a week before Christmas at the London Area v. U.S. Air Forces in Europe meeting at Fairlop. Here, *Bazooka* did 120 m.p.h. on the American A.M.A. 60 ft. line length to gain first place in Class B, while Pete's E.D. 2.46 version, flying on much longer lines than usual, the 52 ft. 6 in. A.M.A. Class A length, won this class with 89.5 m.p.h.

As will be seen from the accompanying scale three-view drawing, *Bazooka* has very clean and attractive lines. In contrast to some recent American designs, it is not exceptionally small or light and, in this respect, makes an interesting comparison with Don Newberger's tiny *Whirlaway* described a short time ago in this series. Especially with its long, low cowling, which leaves the cylinder head exposed, *Bazooka* undoubtedly gains much in appearance from this fact.

The model is of composite wood and metal construction, as is now becoming popular in speed model practice. The wing surfaces are formed from 26 s.w.g. aluminium sheet, riveted along the trailing edge with $\frac{1}{10}$ in. countersunk rivets. The single $\frac{1}{2}$ in. × $\frac{1}{4}$ in. centre spar is of beech, as are the wing tips. The self-centring pattern bell-crank, housed in the port wing, is of 22 s.w.g. mild steel to minimise wear from lead-outs and push-rod. The wing is mounted in a high mid-wing position and thus allows access to the needle-valve, the carburettor intake being fixed on the Dooling 29 engine.

The tailplane, dihedralled for ground clearance, is also of metal but is single surfaced. The elevator is on the inside only and is attached by means of small steel hinges riveted on. Rivets also attach the elevator-horn which is of 20 s.w.g. mild steel.

The fuselage is of conventional design structurally and consists of upper and lower shells divided along the centre-line from nose to tail. The upper section is of white mahogany and carries the flying surfaces, cowling and control system, while the lower shell, of French beech, houses engine and tank installation. The fuselage, it will be noted, is assymetrical in plan-form and this results in a 2 deg. inward thrust



on the engine and about 1 deg. inset aft of the c.g. The object here, of course, is to reduce line tension, and thus the power wasted in overcoming centrifugal force, by making the model's natural "free" flight path a left hand circle, rather than a straight line, though needless to say, of greater diameter than that allowed by the lines, so as to maintain control. This feature, is now increasingly used on speed models and first became known with Harold deBolt's *Speedwagon* series. Another system sometimes used is the complete offsetting of the mainplane and/or lead-outs, at an angle to the longitudinal axis, so that the centre-line of the model is not held at a tangent to the circle but is pointed inward slightly. Both systems are, of course, dependent for their effectiveness on close relationship of the c.g. to pivot point.

The American Dooling 29 engine, as used in *Bazooka*, is generally recognised as being unexcelled in the 5 c.c. class. As with all production engines, however, attention to certain small details can produce slightly improved performance. But it should be emphasised that, in the case of *Bazooka's* engine, these have been confined to interior polishing, smoothing off port openings, etc., and that no alterations to port or rotary valve timing or areas, have been made. Nor has any attempt been made to re-balance the engine: rather, attention has been given to accurately balancing props. and centralising of the spinner.

The engine is mounted on a 12 s.w.g. duralumin plate approximately 3⅜ in. long, which is tapped 6 B.A. for the engine mounting bolts and is screwed to the fuselage bottom. The skid is also 12 s.w.g. duralumin. The cowling top and rear section are of balsa, while the sides are of plywood, air exit ducts being arranged either side, rather than at the rear as is more common practice. The take-off gear consists of a conventional two-wheel drop-out undercarriage with 2½ in. wheels.

Detailed specifications of *Bazooka* are contained in the accompanying data panel. In general, these do not indicate any marked departures from conventional speed model design. The tailplane, at 44 per cent., however, is slightly bigger in area than usual practice and the wing, it will be noted, is set at a 1 deg. rigging angle. Analysing those features which have the most profound effect on performance, we can, perhaps, summarise as follows :

Pete Wright's Dooling 29 powered team-racer "Wrangler." A later version, "Wrangler III" using the Dooling inverted has done 46 laps at 95 m.p.h.

(1) *Engine.* A stock unit, although, possibly, a slightly above-average rather than below-average example which, with the careful attention given by the owner, is probably delivering a better output than the average racing .29 engine used in this country. Engine output is the prime factor in C/L speed work and is worth infinitely more than any amount of model "streamlining." All the high speeds set up in the U.S.A. have been mainly due to very high engine performance.

(2) *Rigging.* The combination of a c.g. on the pivot point, with engine, cowling and fuselage inset is undoubtedly another factor contributing largely to *Bazooka's* speed.

(3) *Props. and Fuels.* Pete Wright considers that too much emphasis is apt to be placed on the importance of prop. design. Biggest boost to *Bazooka's* speed came from the intelligent use of nitro-paraffin content fuels, not from experiment with props.

(4) *Lines.* Some advantage is enjoyed by the fact that *Bazooka* flies on slightly smaller diameter lines than the American regulation size, also that the official F.A.I. and S.M.A.E. lengths are only 52 ft. 3 in. and 52 ft. 6 in. instead of the 60 ft. A.M.A. regulation length.

The importance of (1) and (4) have already been admirably explained in Fred. Deudney's excellent articles on Science and the Speed Model which were published in the September and October, 1950 issues of MODEL AIRCRAFT.

"BAZOOKA IV"—General Data

Mainplane		
Area (gross)	... ...	35 sq. in.
Span	... ...	15 in.
Planform	... ...	Tapered L.E. & T.E.
Chord, root	... ...	2.90 in.
tip	... ...	1.75 in.
Aspect Ratio	... ...	6.41
Section	... ...	Assymetrical bi-convex. 8%.
Construction	... ...	26 s.w.g. aluminium with beech spar and tips.
Tailplane		
Area (gross)	... ...	15.4 sq. in.
= % wing area	... ...	44%.
Elevator area	... ...	2.5 sq. in
= % tail area	... ...	16.2%.
Moment arm (c.g. to elevator hinge)		8.6 in.
% x mean chord	... ...	3.69.
Dihedral	... ...	6 deg.
Construction	... ...	22 s.w.g. Alclad plate.
Fuselage		Assymetrical planform.
Overall length (inc. spinner)	...	16.5 in.
Max. width	... ...	1.80 in.
Construction, bottom shell	...	French Beech.
upper shell	...	White Mahogany.
Take-off Gear	... ...	Drop-out 2-wheel.
Engine		Dooling "29" 4.88 c.c.
Installation	... ...	Upright on 12 s.w.g. dural plate.
Fuel tank	... ...	Deep pattern rectangular. 3.4 in. long x 0.5 in. wide x 1.4 in. tapering to 1.3 in.
Airscrew	... ...	7½ x 9 "Tornado" stock.
Glow-plug	... ...	K.L.G. Miniglow L.R.
Fuel	... ...	40% nitromethane 40% methanol, 20% Castrol "R."
Rigging Data		
Mainplane incidence	... ...	1 deg.
Tailplane Incidence	... ...	9 deg.
C.G. (relative mean chord)	...	40%.
Pivot point (rel. mean ch.)	...	40%
Line rake	... ...	Nil.
Engine offset	... ...	2 deg. inward.
Dorsal fin offset	... ...	1 deg. inward.
Total weight	... ...	16 oz. (less fuel & u.c).
Lines used	... ...	Keil-Kraft plated steel 0.010 in.

As already mentioned. Pete Wright is now switching his attention to team racing and the photograph shows his first Class B model using the same Dooling engine. This model would do 93 m.p.h., but, apparently due to the "outside" position of the carburettor, was unduly critical to fuel head and only "came in" for about 14 laps, while the total laps per tank were only around 33. His latest model *Wrangler III* therefore has the Dooling engine inverted so that the intake is on the "inside" and, on its second flight, this model recently turned in the rather startling performance of 46 laps at an average speed of 95 m.p.h.

It looks as though Pete's persistence will be leading him to the fore in T/R before very long and we will wish him the same success which rewarded his efforts in the field of speed.

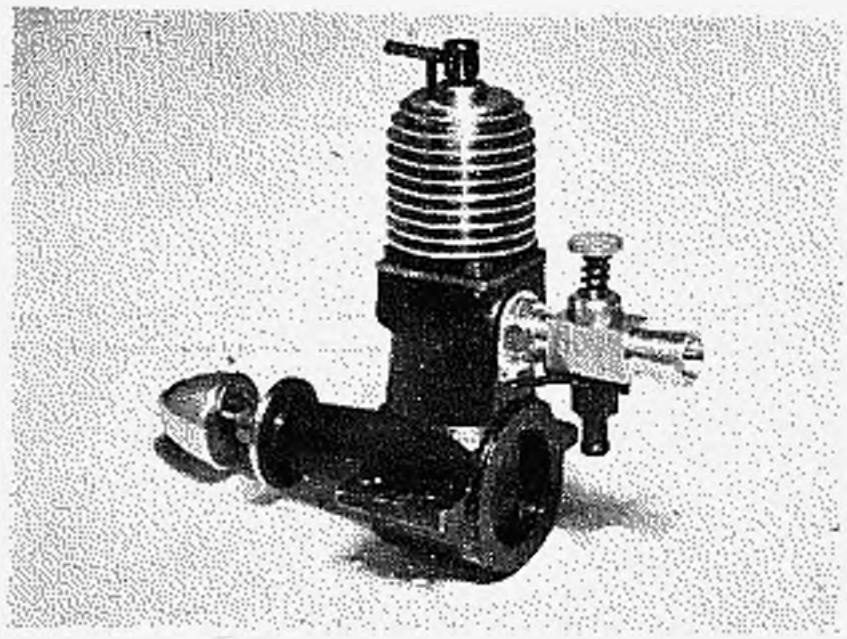
The Mills Throttle

Because no commercially made model two-stroke produced since the war has been equipped with a throttle, an idea seems to have grown up that such refinements are for full-size engines only and that such things do not work efficiently when applied to models.

That such notions are very far from fact is now adequately demonstrated by the appearance on the market of the Mills Throttle, an inexpensive fitment which is available for Mills 1.3 c.c. Mk. I and II engines.

The unit consists of a complete carburettor which screws into the cylinder intake port in place of the standard Mills assembly with its cut-out and fuel tank. It is then fed from a separate fuel tank and, of course, the normal cut-out is dispensed with.

The new carburettor has a vertical barrel-type throttle, the needle and jet being fitted in the barrel which is bored out to register with the venturi and to act as the choke tube. Rotating this assembly by means of the spring loaded arm fitted, then cuts off the normal air supply, opening a small pilot tube bored at right angles to the main choke tube. The undercharging of the cylinder which results from the thuswise reduced mixture supply, gives a characteristic two-stroke mis-fire and revs are reduced by about half. Releasing the throttle arm allows the revs to pick up again to the normal "full throttle" load.



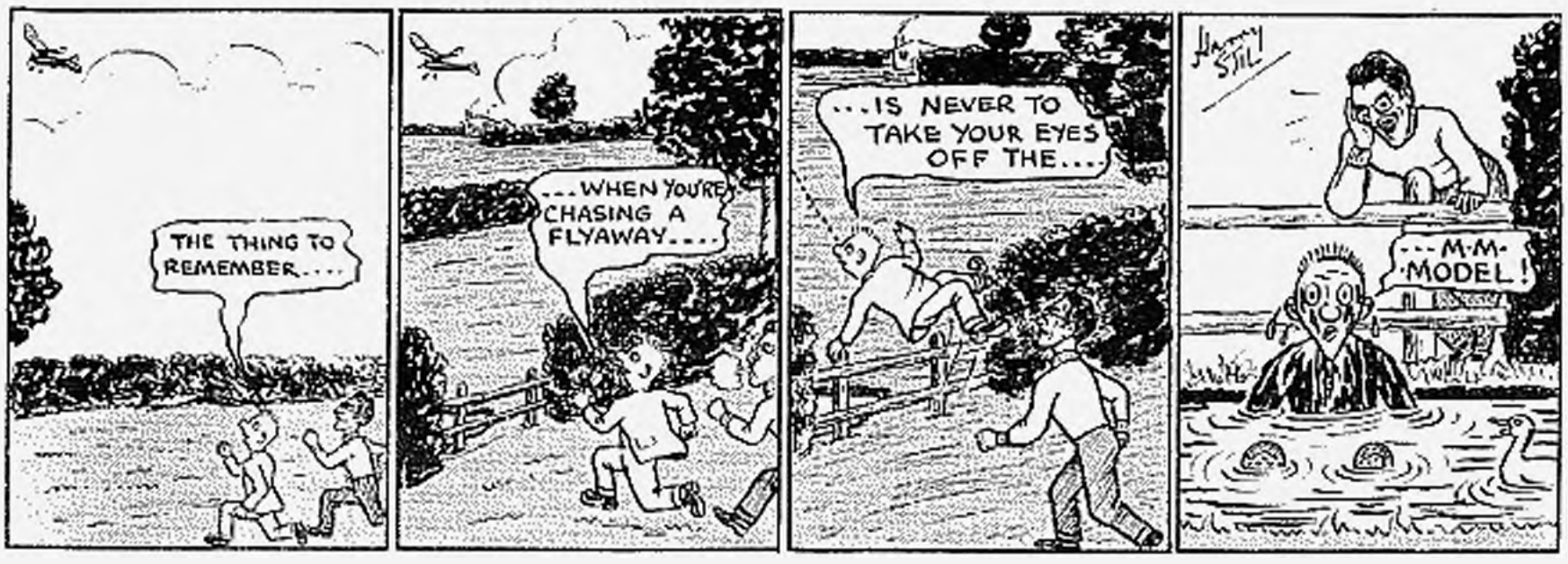
A Mills Mk. 2 diesel engine fitted with the new Mills throttle type carburettor unit, which gives positive speed control for R/C or C/L models.

We have tried out this device, fitted to a 1950 model Mk.II and found it most effective. There is, of course, a tendency to run slightly rich in the closed position, due to the fact that the fuel jet opening remains the same, while air is drastically reduced, but one can keep the throttle closed, or it can be "blipped" quite effectively, without risk of flooding and stopping the engine. It is necessary, incidentally, to use a soft, flexible fuel tube to the jet, as this is attached to the movable assembly and must not restrict movement or the action of the return spring.

Using one of these throttles in a small R/C model should be interesting since, by linking the throttle to the actuator, take-offs and landings and taxying could be done from the transmitter and without stopping the engine.

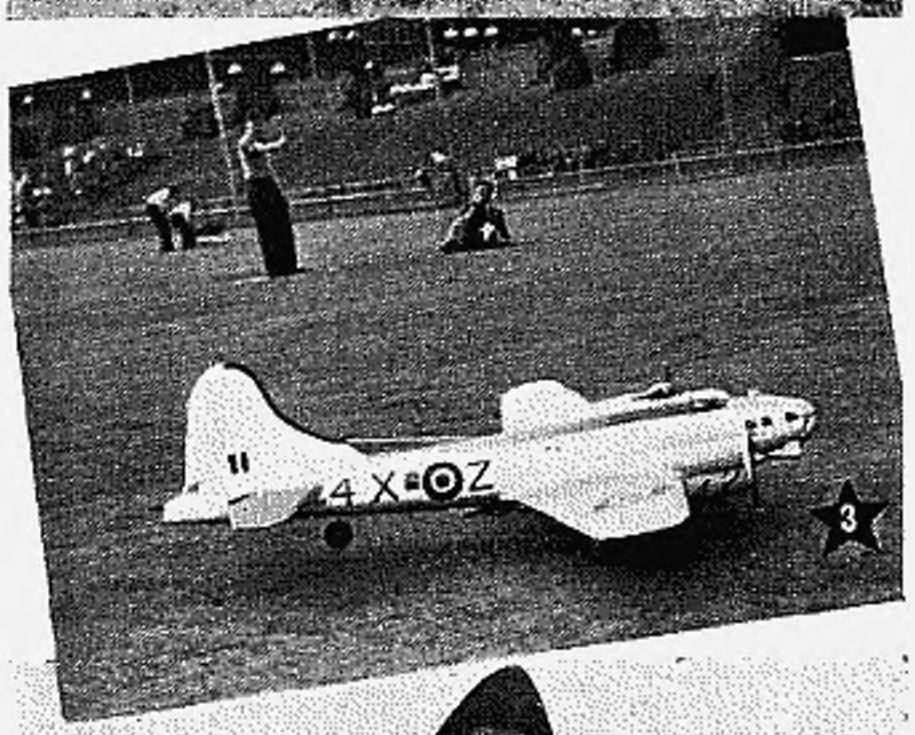
The Mills throttle is made in three types : No. 1 type for Mk. I engines ; No. 2 type for early Mk. II engines and No. 3 type for Mk. II engines from Serial No. 26461 and upwards.

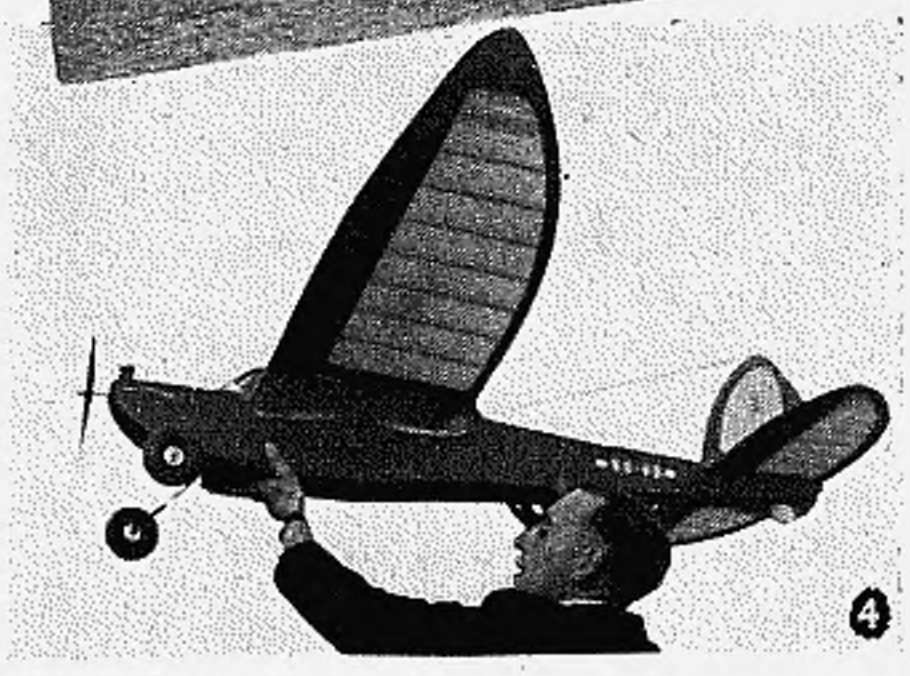
EYES FRONT ! **By Harry Stil**



MODEL *Aircraft*

photonews





Before dealing with this month's pictures, we have to apologise for a grave error in the last PHOTONEWS ! We have been well and truly shot down for calling Donald Deely's *Grumman Tigercat* a *Panther*. How *do* these things happen ?

However, on to business, and our first photo for this month. It was sent in by K. Pickles, P.R.O. of the West Yorkshire club, and shows D. Headley, a junior member, launching D. Johnson's glider at the club's flying ground at Howley Batling. The model is a *Hyperion*, a popular design in the M.A. Plans List.

We received Picture 2 from G. Calverley of Huddersfield, and the cheery group of fliers are members of the Lockwood M.A.C. The photo was taken before the commencement of a contest for one of the club trophies, visible in the foreground. The competition was eventually won by the club's jovial Competition Sec., Herbert Wheeler, with one of his Wakefields.

Those who have been present at the various Rallies and Gala Days around the London Area must surely have seen and been impressed by Albert Briggs' control-line *Fortress*. This magnificent model takes our Star place this month in a fine shot by Ed. Stoflel, who has caught the moment when the pilot lifts the tail for the take-off. The photo was taken during the C/L meeting at Wembley last year.

W. Turley sent us No. 4. of a Bowden *White Wings* built for radio control by Geoff. Cockerill of the Malton (Yorks) club. A Flight Control receiver is being used and the model is powered by an E.D. 3.46.

K. R. Waddingham has received another photo from his friend in the States, Chuck Borneman of the Peru (Indiana) Flying Tigers, and has passed it on to us. The smart club jerseys are worn proudly by two young members, seen with Carl McCain's McCoy 29-powered *Club Racer*, claimed to lap at 80-85 m.p.h. On the left is Johnny Wold, the club's junior F/F Champ. at the moment, and with him is Phil Miller.

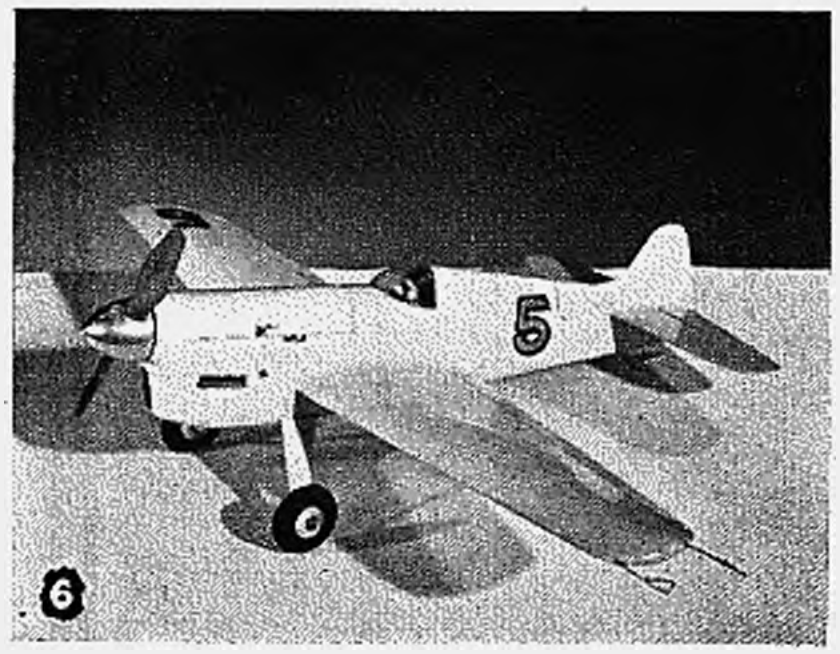
In number 6 we have a very smooth-looking team racer, the work of Phil Landray of the Wimbledon Power Club. Motive power here is another McCoy 29, and the model travels at a steady 75. Already it has a number of successes to its credit.

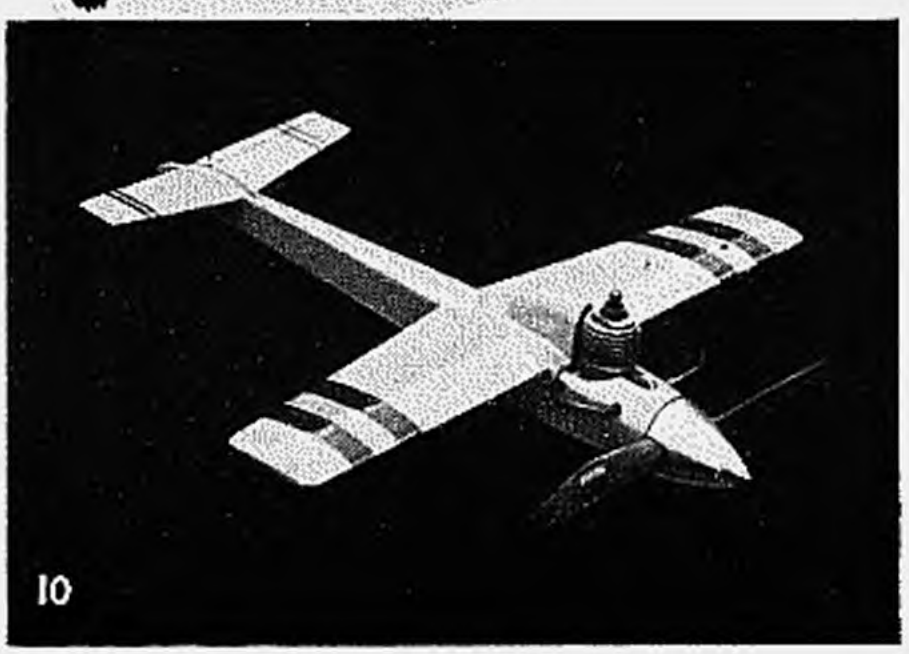
The model in Photo 7 will be recognised as the popular *Veron Skyskooter*, and this example, built by Alan Aitken of the Glasgow M.A.C. has the distinction among radio-control models of being reliable, for it has made over fifty flights without damage. Alan has fitted it with his own receiver, and the model is powered by an Elfin 1.49.

The more sharp-eyed types among our readers may suspect that the *Mallard* in No. 8 has a larger wing than standard—and they would be right! The bod with the mod is Geoff. Pentland of Dandenong, Victoria, Australia, and the model was modified to meet the special power-loading rules for the Victoria State Jubilee Championships for 1A power. Using an Elfin 2.49 Geoff won the comp. and the impressive pot that went with it. This latter was donated by the recent Australian Minister for Air. Incidentally Geoff. is only just sixteen, and this was his first major contest success.

No. 9 is a photograph of a very fine 1/72 scale *Swordfish*, constructed by P. L. Gray of Luton from C. B. Maycock's "Prototypes" article on this historic aircraft. This model was one of a group awarded a "Highly Commended" Diploma at last year's "M.E" Exhibition. A high degree of detail has been incorporated, including seats and instrument panels. The picture is a good example of model photography, too.

Finally, to tie up our bundle with control wire we have a Mercury *Midge* with a really slick finish. It is the work of A. Butler of Barnsbury, London, and is finished in yellow with red trim. Power unit is an Allbon Arrow.



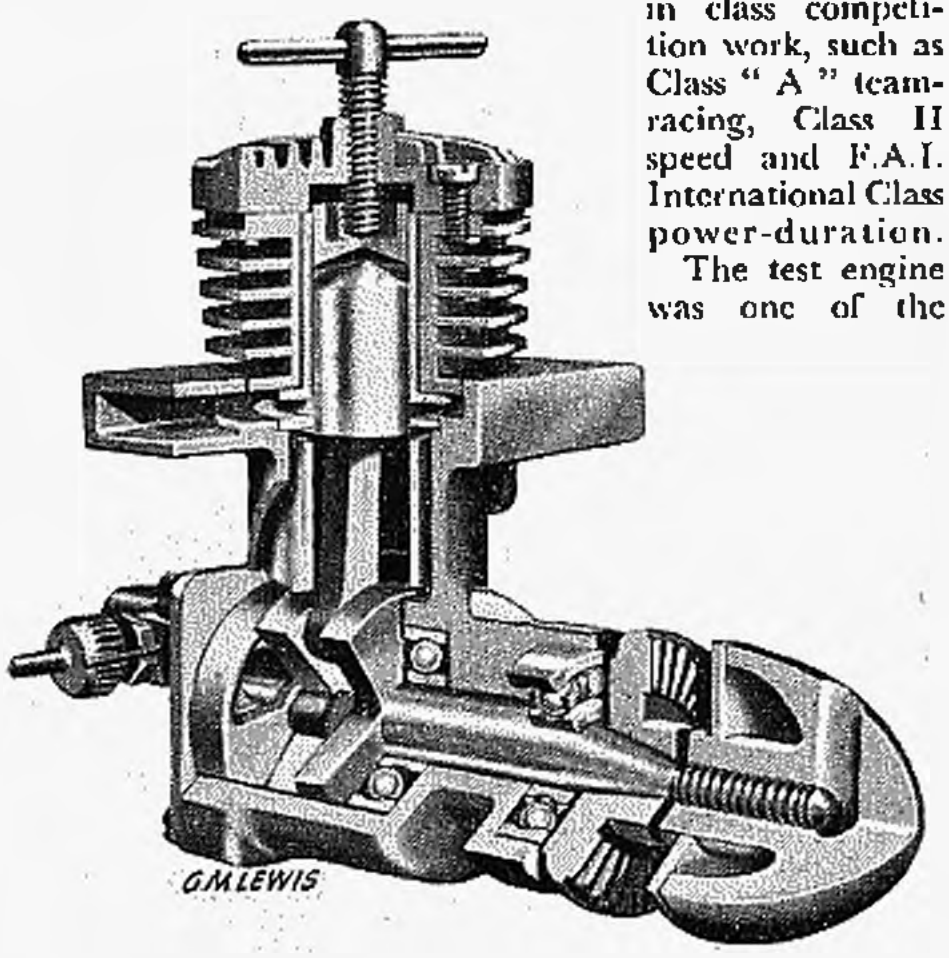


MODEL Aircraft ENGINE TESTS

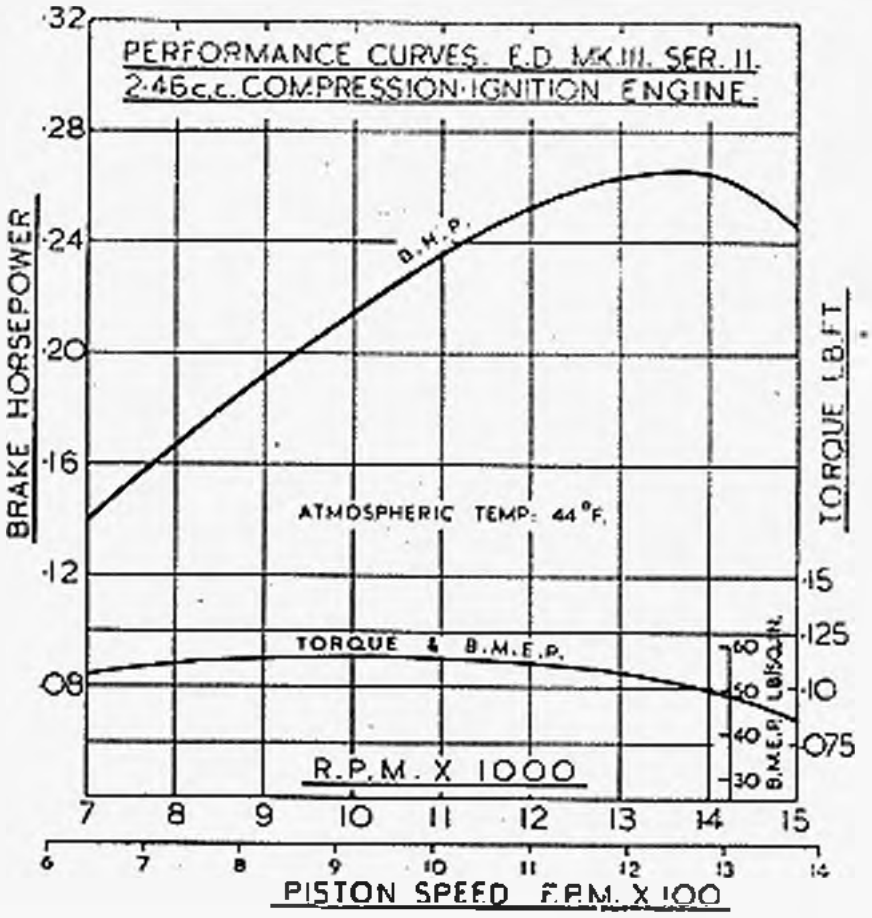
No. 33. THE E.D. 2.46 Ser. II

FEW model engines produced in Britain during recent years have aroused more interest than the 2.46 c.c. E.D., the first prototypes of which were seen rather less than a year ago, and which has been appearing on flying fields in steadily increasing numbers since coming on the market in the summer of last year. Undoubtedly, this is the most outstanding engine yet turned out by Electronic Developments (Surrey) Ltd., and is a far cry from the Mk. II model with which this company began manufacture five years ago.

Of particular merit is the high b.h.p. of this unit. The specific power output, i.e., actual power available relative to cylinder swept volume, registered on test, was, in fact, the highest so far recorded for a model compression-ignition engine. The 2.46 is not exceptionally small or light in weight : it is heavier and less compact than some 2.5 c.c. engines, while there are one or two 3.5 c.c. class units of similar weight and size which, of course, can offer equal or better performance. But there is no doubt that the 2.46 is entitled to the claim of the most powerful Class " A " engine at the present time and it must necessarily demand the attention of those primarily interested in class competition work, such as Class " A " team-racing, Class II speed and F.A.I. International Class power-duration.

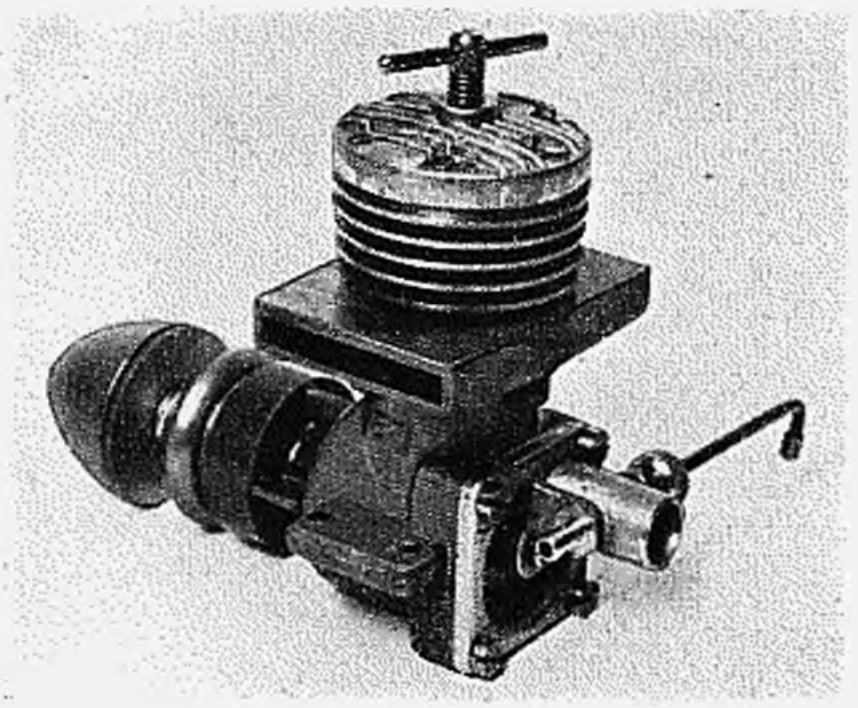


The test engine was one of the current production engines and showed some minor modifications as compared with an early example tried out at the beginning of last season. Externally, the latest types differ in having a new crankcase casting in which the front section is webbed between the ball-bearing housings. Also, the cylinder head is now slightly different and the rear cover and intake casting are now of aluminium instead of magnesium alloy. Internally, the cylinder liner now has its annular exhaust and transfer ports divided into three segments of four. A spray-bar type needle-valve assembly is now used in place of an open jet.



The 2.46 is the first production E.D. engine to use a 360-deg. porting system, although the groove type transfer passages commonly employed with such systems are not used : a full circumferential transfer passage existing between cylinder-liner and main casting. It is also unique among British " A " Class engines in having a ball-bearing crankshaft.

E.D. progress is graphically illustrated when the E.D. Mk. III Series II (to give the 2.46 its official title) is compared with the original 2.49 c.c., shaft-valve, E.D. Mk. III model designed three years earlier. The new engine is in every way superior to its predecessor. It is about twice as powerful, yet is much easier to handle, is lighter and more



compact. It is also considerably cheaper, even at E.D.'s revised and increased 1952 prices, despite design refinement and a greater number of component parts.

Specification

Type : Single-cylinder, air-cooled, two-cycle, compression-ignition. Disc type rotary-valve induction. Annular exhaust and transfer porting with conical piston crown.

Swept volume : 2.46 c.c. (.150 cu. in.)

Bore : 0.590 in. Stroke : 0.550 in.

Compression ratio : variable.

Stroke/bore ratio : 0.932 : 1.

Timing : not disclosed.

Weight : 5.5 oz.

General structural data : Crankcase with integral front bearing housing and exhaust tract cast in magnesium alloy. Detachable rear cover die cast in aluminium alloy with integral carburettor intake. Counter-balanced crankshaft running in two ball journal bearings. Forged duralumin connecting-rod with plain bearings. Separate finned cylinder barrel and die-cast cylinder-head in aluminium alloy. Spray-bar type needle-valve assembly. Beam type mounting lugs.

Test Engine Data

Total time logged : 1 hour.

Fuel used : Mercury No. 8 (castor base).

Performance

Despite its high standard of performance, the 2.46 is quite easy to handle—considerably more so, in fact, than many lesser performers. To obtain a start from cold, preliminaries can be limited to a couple of choked flicks—it is not essential to prime through the ports—and restarting the engine warm, with controls suitably adjusted, can be literally "first flick."

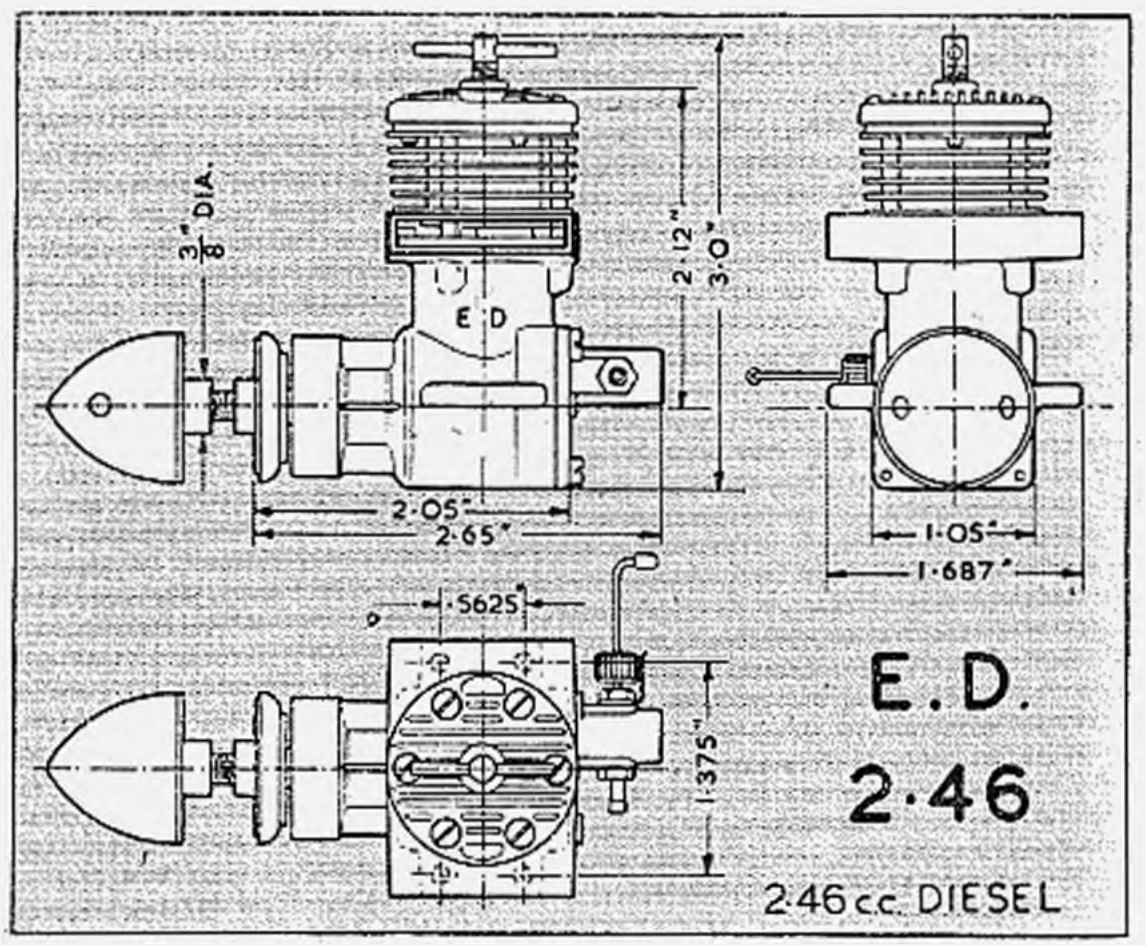
Essentially a high-speed type, the high power which the 2.46 is capable of delivering does not make itself felt until revolutions are allowed to approach or exceed the five figure mark. This is due to the shape of the torque curve which shows the best torque as being available between 9,000 and 12,000 r.p.m., with only a gradual drop beyond this latter figure. The actual maximum torque figure is well up to the best averages for leading compression-ignition types. Below 9,000 r.p.m. there is a decline in torque and there would not seem to be much object in habitually running the engine at less than the minimum speed shown on the performance graph—7,000 r.p.m.

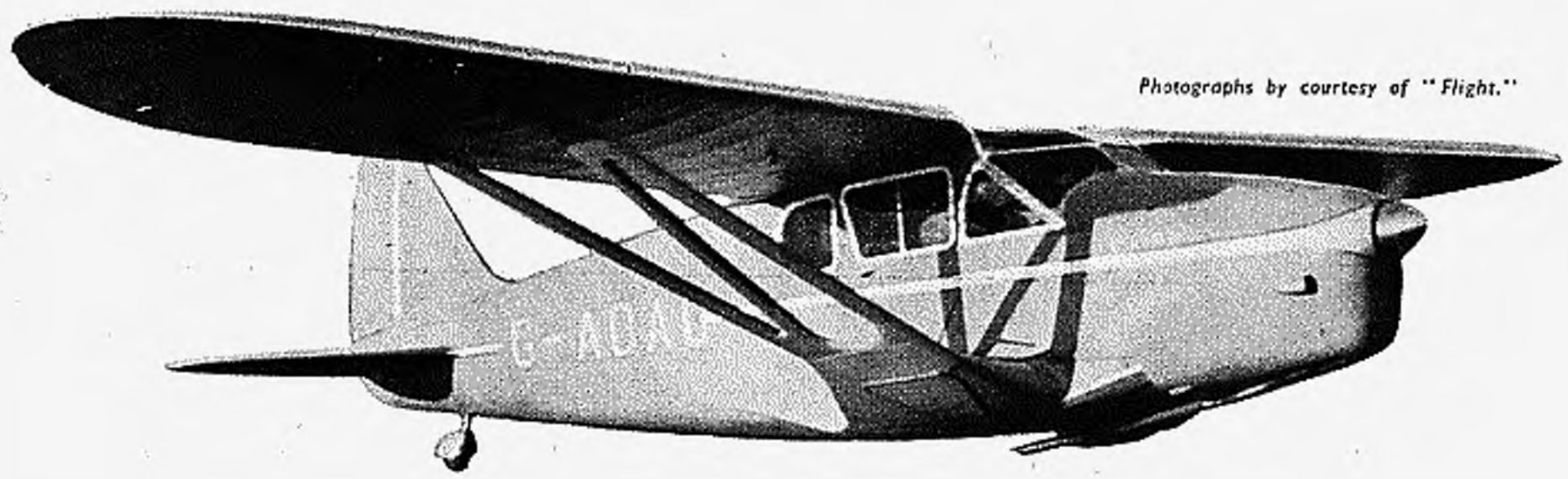
Due to the manner in which a high torque is maintained well up the r.p.m. scale, the 2.46 gains its maximum power at nearly 14,000 r.p.m. and the actual peak power recorded with the test engine was no less than .265 b.h.p. at 13,800 r.p.m.

A loss of power with warming up, which is characteristic of most compression-ignition engines was noted and, while not severe, this was in contrast to the E.D. 3.46 Mk. IV model featured earlier in this series, in which power loss was almost negligible. As previously explained, these tendencies appear less marked with certain types of cylinder construction (of which the 3.46 is an example) but it is reasonable that an improvement might be expected following some extra hours' running, over and above the purely nominal run-in period which preceded the test.

Power/weight ratio (as tested) .77 b.h.p./lb.

Power/displacement ratio (as tested) 107.7 b.h.p. litre.





Photographs by courtesy of "Flight."

This airborne view shows the port wheel only partially retracted.

Prototypes Worth Modelling

No. 19 THE HESTON PHOENIX

By C. B. Maycock

THE choice of a prototype this month falls on a machine which should be ideal for a radio controlled, flying scale model. The fuselage is of generous proportions to house the radio receiver and the nose is just right for an inverted diesel to be tucked away neatly in the cowling yet be readily accessible. The retractable undercarriage would be a poser, but if permanently fixed in the down position it could be made very strong by virtue of the substantial stub-wings.

The Heston *Phoenix* was the first British high wing aircraft to be fitted with a retractable undercarriage. It was the product of the design team responsible for the famous Comper series. In August, 1934, the Heston Aircraft Co. Ltd., Heston, Middlesex, was formed to take over the interests of the Comper Company. The chief designer of the *Phoenix* was Mr. G. Cornwall and the first model flew in October, 1935. The wings were of wooden construction with two box spars with a plywood leading edge and the rest fabric covered. The airfoil section was N.A.C.A. 2212 washed out at the elliptical wing tips. Dihedral was 2 deg. and incidence 3 deg. Frise ailerons incorporating aerodynamic and mass balances gave it good lateral control. Bracing was by "N" struts secured to two taper box spars in the plywood covered stub-wing which also housed the undercarriage.

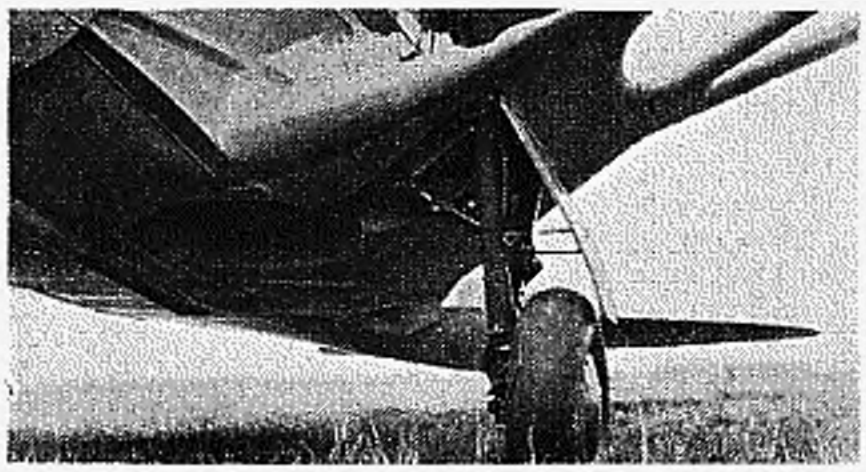
The roomy fuselage, of wooden construction with stressed skin plywood covering, housed five seats, those for the pilot and co-pilot in front, and the three passenger seats behind. The tailplane was a full cantilever type, and with the vertical fin plywood covered. Elevators and rudder, fabric covered, were aerodynamically and mass balanced.

A 200 h.p. De Havilland "Gipsy VI" six-cylinder inverted air-cooled motor driving a fixed pitch airscrew (Series I) or a variable pitch (Series II), gave the *Phoenix* a remarkable performance, although for a machine of its size it was in no sense overpowered.

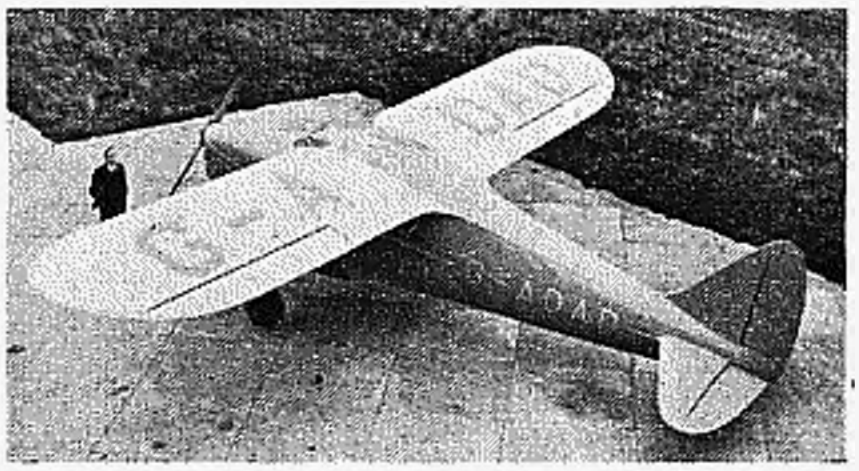
Machines registered in Great Britain bore the letters G-ADAD, G-AEHJ, G-AEMT and G-AEYX. When G-AESV belonged to Standard Telephones and Cables Ltd. in 1937, the colour scheme was deep yellow with silver doped wings and black lettering.

The main dimensions were: Span, 40 ft. 4 in., Length, 30 ft. 2 in., Height 8 ft. 7 in., Wing area, 260 sq. ft.

Maximum speed was 148 m.p.h. Cruising speed 125 m.p.h. Landing speed 55 m.p.h. Initial rate of climb 700 ft./min. Service ceiling 15,500 ft. Cruising range, full load, 500 miles.

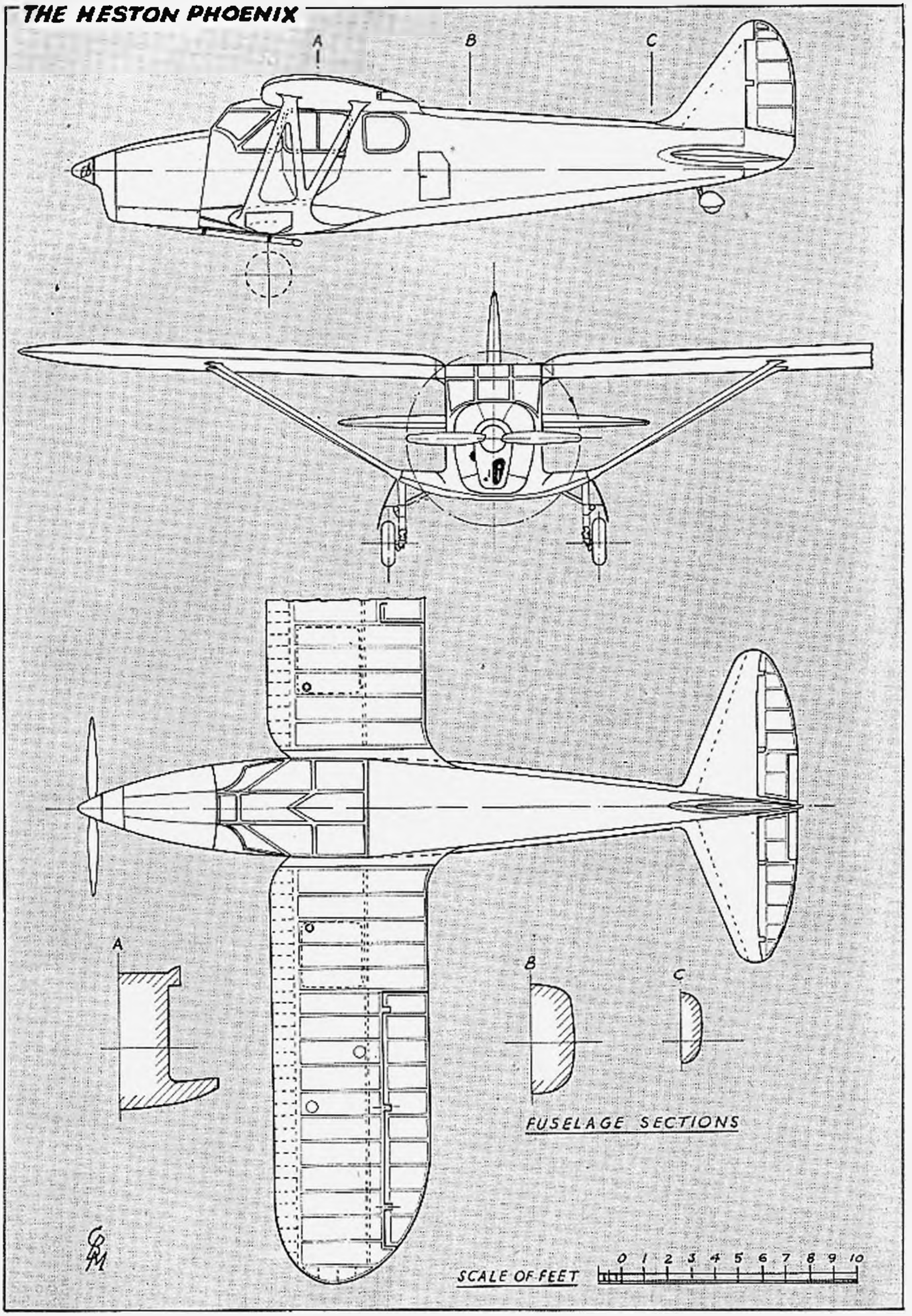


The Dowty hydraulic retractable undercarriage.



View showing wing and centre-section details.

THE HESTON PHOENIX



NORTHERN NOTES

★ THIS is the time of the year when all sane people stay by the fireside as long as ever possible, but nevertheless there still seem to be plenty of aerobods willing to brave the elements on bleak airfields, no matter what the weather or time of year : which may or may not indicate the mentality of aeromods in general.

★ ORGANISED ACTIVITIES in the North seem to be confined to the regular monthly round of discussion at the various area committees, with news of actual fliers very few and far between. Nothing has been heard of the hardy inhabitants of the North-East for some months, in fact, there is talk afoot of sending a relief party over the frozen trails to see if they are still alive up there. Can you hear me Gyp? A survey of activities in the North and North-West seems to indicate that most of the sensible people are quietly spending their time indoors and preparing flocks of Wakefields. A/2s, team-racers, international power jobs and what-have-you. Strangely enough, in spite of the three successive wins in the Wakefield by a geared job, gears are not very popular in the North. I hear of one prominent member of the Northern Area who has caught a cold by laying out all his spare beer money on dural gears, hoping to corner the market, with not very successful results. The general trend seems to be lighter and lighter frames, and more and more rubber, and the long slow climbers seem to be on a par with the "Git up there Gertie" type. Not many extra long fuselages have been seen, most of the long motor bods seem to be squashing it in and ignoring the knots. One very prominent N.W. Wakefielder thinks this weight reduction can go too far, and thinks that if there should be weather for the Finals anything approaching that of 1948 not one of them will withstand getting up off the deck. Ah well, from what I recollect Skegness is noted for its bracing breezes.

★ SOUND-THINKING folks in the North are beginning to view with concern the constant chopping and changing of decisions from the higher-ups in the movement, one case in particular being the recent levy on clubs. To the fair-minded this seems to be an equitable way of bridging the present gap between expenditure and income, and the idea once proposed and accepted should not be questioned any further. However, it seems that there is a movement afoot to rule out the idea until a detailed statement of accounts is published. Seems to me a lot of people cannot see wood for trees, for the statement given at the annual general meeting showed quite clearly a £400-odd deficit on the last year's workings. Another group seem to have quite a bee in their bonnet about officials' expenses—they seem to belong to the chorus-girls'-slippers-and-champagne school of thought mentioned before in this column, me thinks they would do much better keeping an eye upon expenses incurred by Areas, and politely handed over to the Council for payment. It has also been suggested that the Council give a wider publicity and reasoning to their various decisions, although this presents quite a difficulty because the majority of bods today hastily skip over anything printed apertaining to the administrative side. One idea mentioned was to amplify the brief report of Council proceedings given in the official journal, and incorporate with it a little editorial homily, presumably in words of one syllable. I have also heard it said that the members of the Council whilst a genuine hardworking body, are a little too anxious to please, instead of saying "so and so shall be done" and leaving it at that.

★ ONE OF THE highlights of the very dull after-Christmas period, was the receipt of the Barnsley club's Christmas number news letter. A ten-page foolscap sized effort, full of interesting (and funny too!) articles. An expose of present day team racing methods by a prominent Northern official was both witty and illuminative, and gives rise to the thought that many of the capers carried out were never thought of when the rules were drawn up. Another bright idea of the Barnsley bods is a stag party to one of the Area meetings. Whilst primarily a party of fliers, it seems that quite a bit of quiet guzzling and not so quiet ballad singing goes on, and there is even mention of pontoon playing for terrific stakes. No doubt if you are interested, the Barnsley secretary will let you have a copy.

★ VIC DUBERY came out with a bright idea at the last Area committee meeting. He suggested that instead of crowding in all the eliminators at the beginning of the season, use could be made of the slacker time available in September and October. In other words, one eliminator at the end of one year, followed by the second eliminator and finals at the beginning of the year in which the comp. proper is held. Seems the lad's got something : after all three sets of eliminators in six weeks is going some. Ken Rutter has a quiet move up his sleeve to counteract and uncover the efforts of those competitors who are always willing to do plenty of flying, but never have time to do a bit of timing. The idea is that each competitor will be made responsible for timing flights in direct ratio to the number of timekeepers' services he utilises, or finding a stooge to do the job for him. Fallers by the wayside will have their names publicised and eventually it may come to the point where the all-flying non-working type may have extreme difficulty in finding anyone willing to time him when he goes out to do his stuff.

★ THOSE OF YOU who can get away from home without too much trouble will have plenty to look forward to this year, what with Filey, Skegness, Scarborough, the Nats. Team Championships, Woodford, Sherburn, Area meets and all the rest of 'em. Those of you who are married will probably be hard at work listing up your alibis, in preparation thereof, all of you will doubtless have much fun, and all of you will tick just as much as always.

Report has it

That the C.O. has provisionally approved the holding of the five Area meets at Rufforth.

That there is the faintest possibility that Clifton may be available again.

That in spite of rumours, the Huddersfield club is still plodding along.

That R.F.L. is completely sold on the *Toothpick* type of A/2.

That the York club don't seem to be doing too badly out of their whistdrives.

That the Goole club, (one of the oldest in the Area is dropping out through lack of support.

That if you don't get entered into the Northern Knock-Out comp. by March 31st, you will have had it.

Likewise with payment of Area subs.

Letters to the Editor

● *The Editor does not hold himself responsible for the views expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters*

SPIT AND POLISH

DEAR SIR,—One great difficulty is, and always has been, the acquisition of "flying space" from local authorities and private owners of suitable sites.

I notice with much regret that at Wembley and at many other "national" functions, some participants appear stripped to the waist and looking disgustingly untidy.

Such conduct surely leads the public at large to look upon aeromodellers as a scruffy and indisciplined mob—many folks have expressed this opinion in my hearing. This does not help our case—it adds enormously to our fight for "*lebensraum.*"

It is just as easy to keep cool with a shirt on, and it looks much tidier, too!

The cry of "snobbishness" will almost certainly be raised. I ask all who would deride my views to think again. When we have something to sell, the spit and polish is laid on to increase its attractiveness and saleability—it's not snobbishness to tidy up ourselves in an endeavour to "sell" our sport to a reluctant public: it is just plain common sense.

Yours faithfully,

Glevum Model Club, L. C. JENKINS,
Gloucester. Major (Retd.).

MR. A. S. BAILEY REPLIES

DEAR SIR,—I am surprised that Mr. Haisman, in his responsible position should take the oldest sanctuary of a debater faced with an awkward question—i.e., to sling mud at the critic.

He seeks to show my support for the people who caused the "Sealand Incident," who habitually break rules and generally misbehave. In fifteen years of modelling I have always obeyed rules irrespective of whether I liked them or not. One rule at Woodford banned power flying without permission (I don't criticise that) and Mr. Haisman should remember that I was one who sought permission.

I must insist that the two rules I quoted *were* broken, particularly that relating to the competitors' enclosure. Surely "Competitors bringing friends into the enclosure assume responsibility for their behaviour, etc." would have sufficed. Regarding helpers—three pairs of timekeepers at take-off point means three competitors and three helpers—twelve persons. Incidentally, a queue of competitors right on take-off point is bad, as nothing tends to draw over odd members of the public more than a crowd of chaps sitting around waiting to fly.

As to discipline, areas should have the power to ban (for any length of time) from Area controlled flying grounds and contests anyone guilty of serious misbehaviour.

Mr. Haisman's sixth paragraph reveals the very state of mind that disturbs me—unpopular rulings on the majority to discipline the minority. I can visualise a club taking a less serious view of an offence than the Area. (A club should be free to choose its members without interference from outside and to retain a "suspended" member if the members so decide) and then we would have the unpleasant situation of the Area blackmailing the club.

As to the Sherburn Rally—I was not there—I heard that crowd control was poor—but the three main contests drew 574 entries against 384 in similar events at Woodford.

Finally, as to my motives. I cannot get to my Area meetings as I am working at weekends, and left with the alternative of writing, thought that I might as well air the matter nationally.

Yours faithfully,

Cheadle, Cheshire. A. S. BAILEY.

QUEEN'S CUP RULES CRITICISED

DEAR SIR,—I should like to support the writer of the letter which appeared in the January issue of MODEL AIRCRAFT regarding the standardisation of engine mounts. I own eight engines and in our club we had a total of over twenty, but no interchange was possible with any of these unless they happened to be of the same make.

In addition, a few words on the new rules for the Queen's Cup. The original rules were never popular because they necessitated the construction of a large rubber-driven model. Now they are worse. A power job of the size required is a real giant and, if radio controlled, is beyond the reach financially of the average modeller. By all means make the contest a hard one, but let's not have it so that only the man with a deep pocket stands a chance.

If the published rules are adhered to I predict that the contest will be a flop—the only entrants being the select few who sponsored it. That is what happens when a club runs a major competition and frames the rules. It takes the balanced opinion of an organisation, not the opinion of a small minority, to produce a reasonable set of rules.

Yours sincerely,

R.A.F., Linton-on-Ouse, C. W. BEASLEY (Flt. Lt.)
Yorks.

PRICES AND PROFITS

DEAR SIR,—May I first clarify the point on purchase tax in my original letter which Mr. Paterson seems to have misunderstood. It was only that with the addition of purchase tax to, say, a kit, it is now possible for those who do not already know, to work out at least the retailers' gross profit as the tax is one-third of the wholesale price.

I am aware of the difficulties that Mr. Paterson mentioned, but my point, which I feel is supported by Mr. Read's letter in your January issue, is that any further increase in prices can only result in a reduction in the number of aeromodellers, or a curtailment of their activities. The advent of purchase tax has already started this, and I feel that if the aeromodelling movement is to survive and expand, manufacturers, wholesalers, and retailers will have to consider ways of preventing increases from being passed on to the consumers. Surely it would

be better for the retailer to sell the same number of items at a slightly reduced profit rather than half the number with the full profit, but please, Mr. Retailer, don't think I am picking just on you, all the links in the chain will have to play their part.

I note that another model journal has entered the discussion, and while it stresses the importance of the subject, it also tends to show a pro-trade leaning, trying to dismiss any criticism with such expressions as "misinformed opinions" and "budding financiers." As a qualified accountant I am aware of some of the facts and the figures, otherwise I should not have written my original letter.

I would like to thank Mr. Paterson for his very kind invitation which I shall be pleased to accept whenever I am next near his factory, for, alas, like a lot of aeromodellers, I cannot afford to make a special trip.

Yours faithfully,
G. J. Nethercliff,
Hon. Treasurer, Ilford & Dist. M.A.C.

"GIVE UNTIL IT HURTS"

Dear Sir,—As one who is particularly interested in the welfare of the parent body, seeing in its continued existence in a flourishing condition an indication of the health of the aeromodelling movement as a whole, I find it odd that whereas the average modeller is usually replete with up-to-date models, engines in quantity and all the latest gadgets, the executive of the movement should have to be always appealing for funds. Could it be that the average modeller, beyond his own personal interests is inclined to be parsimonious?

It is a well tried axiom that one cannot get out of a movement, hobby, or what have you, more than one puts in, and I think it is time a little searching of consciences was undertaken, by clubs in general and individuals in particular. Let us put the S.M.A.E. on a sound footing, once and for all.

Remember the wartime slogan "Give until it hurts." What about it, aeromodellers?

Barnsley, Yorks. A. Polding,
Secretary Barnsley & Dist. M.A.C.

This is purely a personal opinion and should in no way be taken as reflecting the attitude of my club.

A MILLION CHUCK GLIDERS

Dear Sir,—Mr. Paterson's comments in the latest issue of Model Aircraft on the possibility of introducing aeromodelling into school curricula fill me with hope that something may be done along these lines, but at the same time fill me with fears as for the success of the scheme. I have taught in primary schools for nearly 20 years, and my experience points to the fact that 7-8 is far too early to expect a child to make its entry into the aeromodelling world. Having acquired certain basic skills in the infant school, a child goes to the primary school to put those basic skills into use in as wide a field as possible, and at the same time to develop manual skills which will be of use by the time it reaches the secondary modern or grammar school stage, where it will be able to use them in handicraft lessons. At the age of 8, therefore, while the ambition to produce a model will be there, the actual model will disappoint the child itself, because it makes the lack of manual skill so apparent. It would be far better to provide some form of visual training, in the way of large brightly coloured pictures, and perhaps flying demonstrations, at this early age, and then begin a course of training at the age of 11-12, i.e., in the final year of the primary school. Of the various school clubs I have helped in their struggles for existence, the best results have come from the 12-14 age groups, with an occasional very bright 11 year old making the grade.

More important than the problem of age is the problem of £ s. d. Who will pay for the materials for these courses? If they are to be held out of school hours, the children taking part can be expected to pay (and please pay the teacher for his "overtime") but I can hardly see any local education authority forking out additional grants for aeromodelling. Money is too tight for the absolute essentials—I wonder, does the public realise that practically everything we use in school carries purchase tax? In my class of 33 children, the allocation of pencils for the current *year* is 24—not much chance of buying kits, etc. with conditions like that, is there?

I think the solution is not to start with the children, but to make the teachers airminded. Run clubs at the training colleges, run residential summer schools (I'd love to spend a couple of weeks at an aeromodelling class), and then let this knowledge and enthusiasm filter to the classes, instead of adding another lesson to an already overcrowded timetable.

Yours faithfully,
Cambridge. Alan A. C. Jordan.

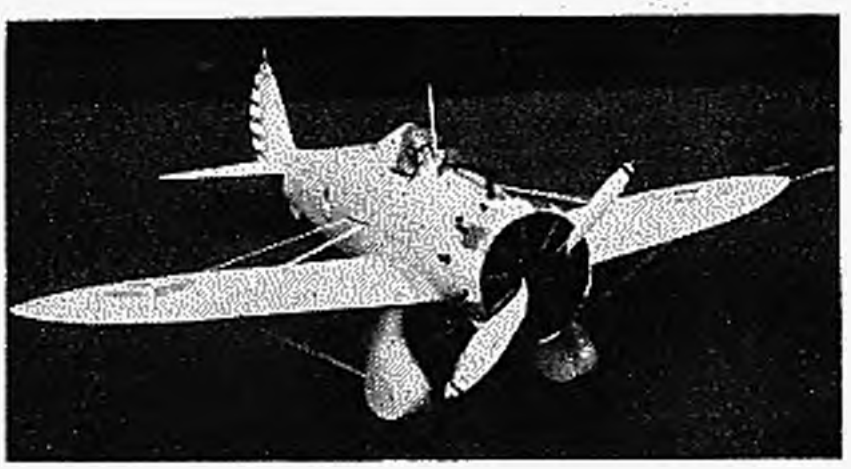
P.S.—I am an Aeromodeller too! Chairman of the local club, but this letter does not represent any club opinion.

Boeing P26a

(*Continued from page* 101)

tissue and given three coats of clear dope. Cowling panels are represented by panels of card. Colour scheme is as follows :—

Fuselage, spats and wing roots—Mid blue.
Wing, tailplane, elevators, fin—Yellow.
Cowling—Eighteen alternate red, white and blue stripes (six of each colour), interior black.
Rudder—Red, white and blue as shown.



Assembly

After finishing, the wing halves should be pre-cemented, and when dry the leading and trailing edges are plugged and cemented into holes cut in the fuselage planking, taking care to set them at the correct dihedral angle. It will be necessary to cut slots in the lower wing surface to take the U/C legs during assembly. These can be filled in afterwards with scrap. After fitting the wheels to the axles, split the spats in half down the centre-line and cement them over the legs and to the lower wing sheeting.

From the S.M.A.E. and the CLUBS

REPORT OF THE S.M.A.E. COUNCIL MEETING HELD AT THE HORSE SHOE HOTEL, LONDON, W.1, ON JANUARY 20th, AT 11.0 a.m.

The following were present :—Messrs. A. F. Houlberg (Chairman), R. F. L. Gosling, D. A. Gordon, H. W. Barker, S. D. Taylor, C. S. Rushbrooke, M. A. L. Coote, K. J. A. Brookes, E. F. H. Cash (London), D. Salloway (N. Western), R. Yates (Southern), R. Landymore (E. Anglian), N. F. Couling (S. Eastern), R. W. Bennett (Midland), B. A. Messom (Northern), J. Taylor (W. Scotland), H. G. Hundleby (S. Midland).

Matters Arising Out of the Minutes

Mr. D. Salloway informed the Council that the North Western Area were not prepared to agree to the holding by the International Radio Control Models Society of their proposed R/C event at the 1952 *Daily Dispatch* Rally.

It was decided that instead of the first three prizes for the Wakefield Draw being free trips to International events as previously announced, prizes to the following value will be awarded instead : 1st £25, 2nd £15, 3rd £10. There will also be forty-seven other prizes.

Some delegates expressed doubt as to the suitability of the flying ground at Butlin's Holiday Camp at Skegness for holding the Wakefield and A/2 Trials and the Council decided to hold these events at either Digby Aerodrome or some other suitable venue on June 7th-8th, 1952.

A suggestion that the number of competitors in the Wakefield and A/2 final trials be limited to fifty in each contest, was not agreed to.

Correspondence

The attention of the Council was drawn to references in the South Eastern Area News Sheet to the Society's financial position. After some discussion, Mr. Gordon was instructed to inform the S.E. Area that the Council viewed with grave concern the remarks attributed to Mr. H. Rewell, which they felt demonstrated a lack of responsibility on the part of this official. The Council also expressed surprise that despite this, Mr. Rewell has been re-elected as Secretary of the Area Committee.

Affiliated Clubs' Levy

Mr. Gordon expressed the view that the decision taken at the A.G.M. on this matter was out of order. The Chairman and other members of the Council disagreed with this view and the Council confirmed the action taken.

It was also agreed that the affiliated clubs be requested to pay the 1 gn. levy by March 31st, 1952.

Area Resolutions

Midland Area Committee. (*a*) " That the proposed levy of £1 1s. to be imposed on all affiliated Clubs be suspended pending receipt of financial statement."

This resolution was withdrawn.

(*b*) " That the S.M.A.E. Annual General Meeting should circulate the Areas on a three-year rota system being held successively in London, Midland and Northern Areas."

It was agreed to adopt this proposal as an experiment in 1953. During the discussion on this matter some delegates stated that the present arrangement of holding the Prize-giving Dinner on the evening before the A.G.M. should be adhered to and felt that this might be more difficult to organise successfully if this function was held outside London.

(*c*) " That the Halfax and Astral trophies, eliminators for the International Power contest, should be restricted to machines which comply with the F.A.I. International Specifications."

This proposition was not carried.

Finance

The Treasurer Mr. H. W. Barker presented the Statement of Accounts which showed a balance in hand of £730 5s. 7d. He pointed out, however, that outstanding accounts due for payment amounted to £790 17s. 0d.

Arising out of a discussion concerning Secretarial expenses, the Council agreed that the Secretary, Treasurer and Competition Secretary be permitted to charge £12 10s. 0d. per quarter for lighting, heating and supplementary office accommodation.

The Treasurer's Report was adopted.

Wakefield Fund

Mr. D. Salloway informed the Council that the North Western Area had recently donated £40 to the Wakefield Fund bringing their total donation up to £50.

Allocation of Trophies

The Council decided to allocate the following trophies to those competitions for which none have been up to the present available.

Super Scale Trophy (Scale Power), June 2nd, 1952.
Short Cup (P.A.A. Load), June 2nd, 1952.
C.M.A. Cup (Unrestricted Glider), June 22nd, 1952.
Frog Senior Trophy (1.5 c.c. Power), July 6th, 1952.
Kookie Trophy (C/L Champion).

Free Copies of MODEL AIRCRAFT

It was decided to allocate these as follows : one for each first prize-winner in S.M.A.E. Contests and the balance of approximately 210 copies to be allocated to Areas, in proportion to their club strength, to be awarded as prizes.

Records

The following record application was accepted : 1/Wt. Rubber-Driven Monoplane—E. A. Barnacle (Leamington) 17 : 55, 14/10/1951.

Merit Certificates

Merit Certificates were awarded to the following :—

Class C (International)—No. 450 Chinn, J. I. (Norwich), 509 North, E. (Halifax).

Class B.—No. 172 Dubery, V. R. (Leeds), 283 Childs, H. J. (Winchester), 295 Inkester, J. R. (Wallasey), 427 Williams, B. (North Wirral), 508 Nield, W. S. (Cheadle) 528 Plant, C. R. (Stockton), 570 Sprason, E. L. (Solihull), 599 Stott, G. (Luton), 622 Teece, E. J. (Salford), 671 Jarvis, D. B. (Hull Pegasus) 682 Willis, N. (Central Essex), 702 Chambers, T. B. (Stockton), 705 Polding, A. (Barnsley).

Class A.—No. 667 Boydon, J. A. (Barnsley), 668 Pengilley, P. S. (Henley), 669 Ginns, A. V. (Folkestone), 670 Barkworth, G. E. (Hull Pegasus), 671 Jarvis, D. B. (Hull Pegasus), 672 Holland, P. D. (Hull Pegasus), 673 Smith, F. C. (S'thern Cross), 674 Greenwood, C. (Bridlington), 675 Stickland, R. L. (Stafford), 676 Law, I. E. (Stafford) 677 Green, K. J. R. (Littleover), 678 Martin, R. D. (West Bromwich), 679 Goddard, R. L. (Grimsby), 680 Bower, B. R. (Salford), 681 McConachie, W. J. (Glasgow), 682 Willis, N. (Central Essex), 683 French, N. (Central Essex), 684 George, R. (Sth. Birmingham), 685 Grice, C. (West Bromwich), 686 Greenwood, M. A. (Swindon), 687 Rutter, H. (Clacton), 688 Rutter, R. C. (Clacton), 689 Goggin, W.E. (Hull Pegasus), 690 Wroe, V. (Oldham), 691 Moore, H. E. (West Coventry), 692 Wharam, H. (Barnsley), 693 Yale, A. A. (Bournemouth), 694 Scarrott, H. J. (Erdington), 695 Bradford, N. B. (Cheadle), 696 Kirby, D. L. (Hull Pegasus), 697 Mellor, A. J. (Oldham) 698 Keiley, W. A. (Regents Park), 699 Horry, K. (Hogsthorpe), 700 Grasmeder, R. A. (West Essex), 701 Morgan, K. J. W. (Streatham), 702 Chambers, T. B. (Stockton), 703 Keane, D. M. (Oldham), 704 Blair, G. (Edinburgh), 705 Polding, A. (Barnsley), 706 Ginns, G. H. (Coventry), 707 Yates, J. D. (Wigan), 708 Wheatley, H. (By-Pass).

Applications for Affiliation

The following applications for affiliation were accepted : Paddington M.C., S.4, J.5, £1 5s. 6d. Lowestoft & D.M.A.C., S.13, J.13, £2 16s. 0d. Leeds Grammar School M.F.C., S.5, J.22, £2 5s. 0d.

An application from the Sheffield and D. S.M. & E.E. (S.10, J.8) was referred to the Northern Area Committee for further information before acceptance.

Applications for Re-Affiliation	Seniors	Juniors	Fee £	s.	d.
Glasgow M.A.C. (W. of Scotland)	41	14	5	16	6
Southend Senior M.C. (E. Anglian)	10	—	1	5	0
Clacton M.A.C. (E. Anglian)	2	—	1	1	0
Petersfield & D.M.A.C. (Southern)	5	5	1	1	0
Wigan M.A.C. (N. Western)	9	5	1	7	6
Arbroath M.A.C. (N.E. Scotland)	6	15	1	10	0
Oundle & D.M.A.C. (Midland)	8	5	1	5	0
Scarborough M.C. (Northern)	10	2	1	7	0
Gravesend M.C. (London)	26	16	4	1	0
Zombies (London)	9	—	1	2	6
S.A.S. Auchenharvie M.A.C. (W. of Scotland)	17	5	2	7	6
Glasgow Barnstormers (W. of Scotland)	20	2	3	13	0
Rhyl & Prestatyn (N. Wales)	8	2	1	2	0
South London (Scale) M.F.C. (London) additional re-aff.				7	0
Blackheath & Halesowen M.A.C. (Midland)	8	1	1	1	0
Ampleforth College M.A.C. (Northern)	5	9	1	1	0
Streatham & D.A. (London)	12	1	1	11	6
Belfairs M.A.C. (E. Anglian)	16	11	2	11	0
Ebbw Vale M.F.C. (S. Wales)	2	16	1	1	0
Henley M.C. (S. Midland)	8	—	1	0	0
Chorley & D.M.A.C. (N. Western)	10	1	1	6	0
Prestwick M.A.C. (W. of Scotland)	9	14	1	16	6
Thirsk & D.M.A.C. (Northern)	8	2	1	2	0

Mr. E. F. H. Cosh drew attention to the fact that the Clacton M.A.C. appeared to consist of only two members and it was decided to make further enquiries concerning this.

International Travel Bookings

It was agreed to reserve the bookings for seven members for the Wakefield Contest in Sweden and five for the Swedish Cup A/2 Contest in Austria.

S.M.A.E. Handbook

Mr. H. G. Hundleby stated that it would be necessary to charge 2s. 0d. per copy for the Handbook in order to cover the cost of printing which had been considerably increased. It was hoped that the Handbook would be ready by mid February. Orders for same with cash should be sent to Londonderry House.

Competition Results

Captain Taylor expressed the view that the non-publication of full competition results would have an adverse effect on the number of entries in contests this year. He suggested that in order to save cost the results of the 1952 Contests should only be circulated to those clubs whose members have taken part in the Contests. Copies of complete results will also be sent to Area Secretaries.

1951 *Nationals Prizes*

Mr. B. A. Messom stated that a number of complaints have been received regarding the non-receipt of prizes won at last year's Nationals. He had written to Mr. Conley of the S. Wales Area on this matter and felt that the reply which he had received was unsatisfactory. He was instructed to request further information.

The meeting terminated with a vote of thanks to the Chair at 6. p.m.

LONDON AREA

The A.G.M. of the London Area Committee was held on January 14th at our customary meeting place, the Horseshue Hotel, Tottenham Court Road, at 8.20 p.m. The commencement of our meeting was unfortunately delayed by a late-finishing meeting of the Society of Brewers, but our members were not, however, loathe to spend the waiting period consuming commodities from which the above gentlemen derive their prosperity. The Agenda of the A.G.M. was then attacked, and the items were dealt with at a rapid pace. The retiring officers, Messrs. Brett, Cosh, Johnson and Muller, gave reports which were suitably brief and to the point. Each of these gentlemen was accorded a hearty vote of thanks for his work during 1951, and the meeting at once set about the business of electing officers.

1952 *Officers.* Mr. Brett was very speedily returned to the office in which he has served us so well during the past three years, and he began his fourth period of office as chairman by inviting nominations for the post of secretary. At this point, the tempo of the proceedings became suddenly and greatly reduced: members remained tactfully silent for a while, and the few suggestions that were eventualy made only met with the most forthright negative replies from the individuals whose names were put forward. However, just as the disbandment of the Area seemed imminent, Mr. Malcolm Young, of Northern Heights, agreed to fulfil the apparently repulsive office of Secretary, and thereby incurred the deepest gratitude of the meeting. Further difficulties were encountered in finding a Competition Secretary until Mr. D. Hewett, of Blackheath, was kind enough to offer his services.

The post of Treasurer remains vacant, but Mr. Johnson has agreed to carry on until the March meeting, by which time a successor must have been found.

Mr. Cosh has kindly agreed to represent us again this year on the S.M.A.E. Council, Mr. Hills, of Croydon, is the new Vice-Chairman, and Mr. J. B. Knight continues as Press Secretary.

Officers' Addresses :—

Secretary: M. Young, 19, Kingswear Road, Brookfield Park, N.W.5.

Competition Secretary: D. Hewett, 5, Redriff Road S.E.16.

MIDLAND AREA

The headline in a Midland paper "Model Planes go up in spite of appalling weather conditions" well sums up the event for gliders held by the Solihull M.F.C. on January 4th at Honiley aerodrome. This midwinter event attracted 60 entries, and as throughout the contest the wind rarely fell below 40 m.p.h. the boys from Rugby, Knowle, Leamington, Loughborough, Evesham, South Birmingham and Birmingham had to make long journeys to retrieve.

Mr. W. F. Eales, of Rugby, made the best flight of the day with 4 min. 40 sec.—excellent under the conditions. It was flying of this nature that won him first place—congratulations Bill! Maurice Hanson, of Solihull, ringleader of this do, took second place and our old friend Pete Littley, of West Bromwich, came third. It certainly seems from the support given to this comp. that events staged in the winter prove popular.

Bill Eales' win at the Solihull club's rally has given the glider contingent of the Rugby club something to worry about. Bill also won the club's Reading trophy which is put up for the best flights with different models.

Last year's dinner of the Birmingham clubs went down very well, although few clubs took advantage of it to distribute their trophies. The entertainment provided afterwards also proved to be of a high standard.

EAST ANGLIAN AREA

On December 30th in a high wind and drizzle seven clubs competed for the Area Challenge Trophy (team) and the Joan Hooper Trophy (individual). The majority of aircraft were gliders, surprisingly including six or seven 11-ft. The individual winner was R. Gould flying his own design A/2 *Adastra* for two flights of 2 min. 32 sec. and 4 min. 4 sec. He is a member of the Southend Seniors.

Ipswich won the team event the aggregate times being Ipswich, 680.5 sec.; Southend Seniors, 572.0 sec.; Belfairs, 485.6 sec.

Everyone is very glad to see George Foden out, about, and flying after his long spell of indisposition.

WEST OF SCOTLAND AREA

At the Area meeting we once again had a good turn out of members, though we would like someone to come from the Airdrie side to give us their views on the matters under discussion.

It was proposed that the Scottish Areas should get together and arrange an inter-area contest along with the details and selection of the Scottish team for the United Kingdom match.

Owing to the fact that Abbotsinch Aerodrome is having new runways laid and Heathfield has now been returned to the farmers the area is going to be short of flying fields, so would all clubs see what they can do to help out in this matter.

The result of the Glasgow, Glasgow Barnstormers and Lanark team race resulted in a win for the weather. The boys held out until the hanger roof started to collapse before packing up.

The Glasgow club have one or two ideas to keep the members together during the winter months. One of these is a r.t.p. session with the club divided into sections. Each section is allowed quarter of an hour during which they have to get their model in the air as often and as long as possible, as only actual flying time is counted. 7 min. is the highest time so far. Then they have some photographs of well-known models which are projected on to a screen for a few seconds and the two teams take turns at giving the model's name. There are quiz nights with the club once again divided into teams. These ideas are seemingly very popular in the Glasgow club and could be used to advantage by those whose members hibernate for the winter months.

The next meeting will be held at Auchenharvie on Sunday, February 10, at 2.30 p.m.

NORTH WESTERN AREA

With regard to the announcement in the press of a proposed International Radio Control Contest at the 1952 *Daily Dispatch* Rally at Woodford, the N.W. Area Committee wish to make it quite clear that this contest will *not* be held at Rally which it is hoped will take place on August 17th.

OLDHAM & DISTRICT M.A.C.

Various events have been organised for the winter months, and several have already taken place. The first of these, a Jetex r.t.p. comp provided a very interesting, and at times hilarious, evening. Flying on 6 ft. lines, speeds varied from 25-35 m.p.h. The majority used Jetex 50s. Practically every model misbehaved itself, some burning off their own tail booms, and then performing advanced aerobatics. Two at least parted company with the line and exploded against the wall. Altogether a very interesting evening. Try it sometime!

The second event was a lecture on radio control by W. Harrington. This was the first of several to be given, and covered basic radio principles. It is intended to fully cover the subject of radio control as applied to model aircraft in this and several other lectures. The next lecture to be given will be by R. Musgrove on prop carving.

CROYDON AND DISTRICT M.A.C.

The annual Croydon Gala will be held at Fairlop on April 13th, this year, and there will be, as usual, contests for rubber, power and gliders. Full details can be obtained from the Secretary: H. E. Setterfield, 61, Brighton Road, Croydon.

SUNDERLAND & D.M.A.C.

In the winter our members don't see much of each other's activities, so the Boxing Day Rally at R.A.F. Usworth was all the more welcome. We are very grateful to the Commanding Officer for his co-operation and permission to visit this fine flying-ground. There was little pretence of contests—we were out to fly as much as possible in the short winter day, and the only competitive event was a " sealed duration " contest. Cheerful " Jock " Young of the R.A.F. selected the time, sealed it in an envelope and let the lads hash away. The time came out at 2 min. 32s sec., nearest man being J. Tait with his Elfin 2.49 *Mallard* putting up 2 min. 58 sec. The prize was worth seeing—a blue silk tie with the initials " S.D.M.A.C." in red embroidery ! We saw Tait at the club meeting afterwards but he didn't take his scarf off—wonder why ?

Just at the moment a sub-committee is looking into the possibilities of an " aero " cinema show-cum-supper. Any clubs within reasonable range will be invited via the Area News Letter.

The " Nordic " fans are looking worried now that Messrs. Short and Spark have appeared with " big-stuff " gliders of 7 ft. 6 in. and 11 ft. 4 in.—I know they aren't Nordics but were very fond of " open " contests round here, and those big fellows certainly hang around in the air. On the other hand, the Kalper Kids go from strength to strength —soon we hope to see a semi-scale twin Kalper job and a Kalper powered *Seabird Kitten*. Don't forget the Jetex jokers—the latest example being a 40 in. Republic *Seabee* with a " 350 " unit replacing the engine. Fly ? Sure does !

HOGSTHORPE, SKEGNESS AND D.M.A.C.

The above club has entered its most active period of the year, as most of the senior members are unable to do much during the summer owing to seasonal work. The younger members keep things going during the summer, and two places were gained in the trials and one in the championships. The season finished off well when K. Horry and M. Stow finished second and third to J. Gorham in the rubber event at the Cranwell Gala. At a recent club competition much enthusiasm was shown, a power event was won by the chairman, R. H. Dunkley, flying a modified *Hell's Belle*, and N. H. Poole was second flying a *Jamex*. K. Horry totalled 8 min. 10 sec. with his long fuselage Wakefield, in the process of making his " A " certificate flights. The juniors in the club are particularly promising and abounding in new ideas, which promises much for the coming season.

YORK M.A.S.

By the time this has appeared in " Club News," York M.A.S. will already have flown off the first of the winter training comps. Last year's programme of winter and spring flying amply paid off. Now, of course, the boys will have a little further to go having obtained Rufforth R.A.F. Station by arrangement with its Commanding Officer. Not only did its " knock out " teams get the club through to the final, but provided a final that will be remembered by the Northern Area for many a year. The club improved its Plugge position very considerably though it is to be regretted that results in full never appear in print. R. Firth was in the Wakefield team (N.A.) at Digby and F. Miskin flew in the A/2 trials. Over the past 12 months this club has certainly been transformed. At the club's annual prizegiving, the President, Mr. D. W. Pickering, presented trophies and prizes to the following : Y.M.A.S. Trophy (summer points) Mr. A. Wharrie. The Pickering Trophy (U/R Glider), Mr. F. Miskin. The Clifton Nordic Cup, Mr. R. Firth. The Thorpe Trophy, Mr. L. B. Cross. Senior Cup, Mr. R. Firth. Dodd Trophy, Mr. R. Firth. Chuck Glider Contest, Mr. M. Steel. Y.M.A.S. Festival Trophy, Jnr. G. Ogilvie.

May 1952 bring you all the success you deserve. Happy Landings, York !

HENLEY MODEL CLUB

Four members made the 120 mile round trip to Fairlop for the Bill White rubber and Blackheath glider contests. It is the first time the club has attended this comp. and although they didn't top the list they put up very good performances. J. G. Waldron and A. W. M. Cooke entered the glider comp. and returned times of 383 sec. and 326 sec. respectively for the three-flight total. Both flew their own design A/2 models and reached top line height with fast, straight tows, but in common with many others, all their flights were o.o.s. Cooke also flew his own-design Wakefield in the Bill White and recorded an aggregate of 331 sec. for the three flights.

BRADFORD AERO CLUB

At the last annual general meeting the officers elected were as follows : President, Silvio Lanfranci. Chairman, Ron Calvert, Hon. Secretary and Treasurer, Trevor London, 220, Savile Park Road, Halifax. Comp. Secretary, Adrian Millar, Northern Area Delegate, A. Solomons, Press Secretary, J. M. Eastwood.

Bradford are hoping once more to regain their previous prestige on the contest field. Our friends Messrs. Silvio and Collinson have at last built a model which has a consistent performance. No details are given, but, after watching its superb flights at Baildon during the last two or three months, it has been decided to adopt it as a club model for open contests. Encouraged by such successful results, keener interest has been fostered among other members. A similar model has been conceived by these two members to comply with F.A.I. specification.

The Lees family have also been working hard on a new Wakefield. It is hoped to adopt this as a further club model.

BRITISH NATIONAL RECORDS

as at December 31st, 1951

OUTDOOR

(Minimum F.A.I. Loading)

Rubber Driven			
Monoplane	Boxall, F. H.	(Brighton)	35 : 00
Biplane	Young, J. O.	(Harrow)	31 : 05
Wakefield	Boxall, F. H.	(Brighton)	35 : 00
Canard	Harrison, G. H.	(Hull Pegasus)	3 : 21
Scale	Marcus, N. G.	(Croydon)	5 : 21.75
Tailless	Boys, H.	(Rugby)	1 : 24.5
Helicopter	Tangney, J. F.	(U.S.A. & Croydon)	2 : 43.75
Rotorplane	Crow, S. R.	(Blackheath)	: 39.5
Floatplane	Parham, R. T.	(Worcester)	8 : 55.4
Flying Boat	Rainer, M.	(North Kent)	1 : 09
Sailplane			
Tow Launch	Bost, F.	(Leeds)	63 : 46
Hand Launch	Campbell-Kelly, G.	(Sut. Coldfield)	24 : 30
Tailless (T.L.)	Lucas, A. R.	(Port Talbot)	22 : 33.5
Tailless (H.L.)	Wilde, H. F.	(Chester)	3 : 17
Nordic (T.L.)	Whittall, L.	(Birmingham)	29 : 51.7
Nordic (H.L.)	Campbell-Kelly, G.	(Sut. Coldfield)	24 : 30
Power Driven			
A (0-2.5 c.c.)	Springham, H. E.	(Saffron Walden)	25 : 01
B (2.5-5 cc)	Dallaway, W. E.	(Birmingham)	20 : 28
C (5.01-15 cc)	Gaster, M.	(C Member)	10 : 44
Tailless	Poile, W.	(C Member)	2 : 09.6
Scale	Tinker, W. T.	(Ewell)	1 : 36.5
Floatplane	Scanner, J. R.	(Canterbury)	2 : 59.4
Flying Boat	Gregory, N.	(Harrow)	2 : 08.5
Control Line Speed			
Class I	Scott, R.	(St. Helens)	80.00 mph
Class II	Coles, A. V.	(Bristol & West)	99.41 "
Class III	Billinton, M.	(Brixton)	95.00 "
Class IV	Wright, P.	(St. Albans)	124.54 "
Class V	Shaw, C. A.	(Zombies)	118.42 "
Class VI	Guest, F.	(C Member)	133.10 "
Class VII (Jet)	Stevold, R. V.	(Guildford)	133.33 "

INDOOR

Free Flight			
Stick (H.L.)	Copland, R.	(Northern Hts.)	18 : 52
Stick (ROG)	Mackenzie, R.	(Blackheath)	8 : 42
Fuselage (H.L.)	Parham, R. T.	(Worcester)	7 : 15
Fuselage (ROG)	Parham, R. T.	(Worcester)	7 : 30
Tailless (HL)	Parham, R. T.	(Worcester)	2 : 59
Tailless (ROG)	Parham, R. T.	(Worcester)	2 : 28
Helicopter	Parham, R. T.	(Worcester)	2 : 09
Rotorplane	Mawby, L.	(Ealing)	: 32.2
Round the Pole			
Class A	Maxlow, E. C.	(Sheffield)	6 : 05
Class B	Parham, R. T.	(Worcester)	4 : 04
Speed	Jolley, T. A.	(Warrington)	42.83mph

OUTDOOR (LIGHTWEIGHT)

Rubber Driven			
Monoplane	Barnacle, E. A.	(Leamington)	17 : 55
Biplane	O'Donnell, J.	(Whitefield)	4 : 14.5
Scale	Dubery, V. R.	(Leeds)	1 : 11
Floatplane	O'Donnell, J.	(Whitefield)	1 : 43.5
Sailplane			
Tow Launch	Mace, J. A.	(Upton)	28 : 17.2
Hand Launch	Gates, G. K.	(Southern Cross)	5 : 18
Tailless(T.L.)	Couling, N. F.	(Sevenoaks)	22 : 22
Tailless (H.L.)	Faulkner, R. A.	(Whitefield)	1 : 19
Power Driven			
Class A	Archer, W.	(Cheadle)	31 : 05
Class C	Ward, R. A.	(Croydon)	5 : 33
Tailless	Gates, M. M.	(Non member)	2 : 47

FARNBOROUGH SOCIETY OF MODEL ENGINEERS

The above Society has recently been formed and already has a membership of 32.

The members, including a small but active aeromodelling section, are working hard for the Society's first exhibition to be held in the old British Restaurant at the Clock House, Farnborough, on February 23rd and 24th.

A small workshop complete with lathe is at 69, Farnborough Road, where new members will be welcomed. Meetings are held every Thursday at 7.0 p.m. Separate nights for different types of modelling will shortly be introduced, and there is plenty of room for storage of models.

FORESTERS (NOTTINGHAM) M.F.C.

The Foresters (Nottingham) M.F.C.'s winter C/L comps. are almost completed. Duggie Bolton winning speed and both team-races. Mike Crawforth had bad luck in the class " A " race, breaking the tailplane of his model on the way to the comp., and in spite of (or because of) hasty repairs, it gave up the ghost when he was winning. *Ambassadors* are very popular, Dick Noble winning the stunt event with his version. The scale-stunt has twice been " blown out " but we are still trying, and Eric Smith is favourite with his *Boomerang*.

The club has at last obtained the use of a Nissen-hut on Tollerton drome to utilise as building and storage space for models. This should prove a blessing, especially to our contest members. We are moving in immediately

Some of our members hope to stray to more ambitious fields when three full-size gliders appear at Tollerton. Thermal hunting should come easily to aeromodellers !

TYNEMOUTH M.A.C.

The annual general meeting of the above club was held on December 19th, 1951. The election of officials resulted in the following : Chairman : R. Nichols. Secretary : N. G. Peacock, 5, Eastlands, High Heaton, Newcastle-on-Tyne. Treasurer : A. Tweedy. Comp. Secretary : G. Nicholson. Junior member : R. Emmerson.

Reviewing the activities of the 1951 season the chairman deprecated the lack of enterprise of some members and the reduction in club membership. However, on the credit side the club had had a very successful contest season in the north east. This culminated in club members winning the team race and stunt championships of the area and reaching the final of the area knockout competition. Some members got farther abroad visiting the Scarborough meeting and Darlington Rally. Members are at present busy building for the coming season and from indications every type of model is under construction.

THAMES VALLEY M.A.C.

The club has been active during the last few months and plenty of flying has been done in Bushey Park—our home ground. Several new models have made successful test flights and many more are promised. The club membership is approaching the 30 mark and is divided pretty evenly between competition and sport fliers.

Twelve members turned out to support the club at the Blackheath Gala Day. We managed to make a showing in the Winter Glider Cup by gaining the third place, and, subject to confirmation due to an admitted timekeeper error, the first Junior. Congratulations to Blackheath for a very good day's flying and for presenting some very good prizes.

Biggest laugh of the day was on the chap who sat up until after 11 p.m. the night before to finish a new Nordic to fly in the competition —turned up with three models—and then decided it was *too cold to fly* !

MERSEYSIDE REGIONAL COUNCIL

From January 7th to 12th, the Merseyside Regional Council of Model Aero Clubs held their fourth exhibition of model aircraft in the hall of Messrs. Rushworth and Dreaper Ltd., Liverpool.

The exhibition was opened by Mr. Stanley B. Reece, president of the Liverpool Flying Club, who, having been associated with full-sized aircraft since the early days, was able to start the proceedings with a tale about one of the bamboo-and-string type of aircraft, built by a local enthusiast with the aid of contributions of the younger fraternity. They must surely have been aeromodellers to have had faith in such a weird contraption—as a copy of the Wright Brothers aircraft must have appeared in those days.

Mr. Reece was also accompanied by Squadron Leader Wright, who expressed the opinion that the " sky " in the hall was in his opinion nothing less than a flying control officer's nightmare. However, the models exhibited did, for the most part, show a great deal of improvement on those seen on the flying grounds during the past year, and were fully deserving of the prizes which were contributed by the local model shops.

All the member clubs of the council had models in the exhibition, and provided a fair number of the stewards who were in attendance daily.

The main credit for the success must, as usual focus on one man, in this case it was the hard working Dave Hughes, of Merseyside and Wallasey, who put in a great deal of his own time, and used much ingenuity to make up for the inexperience of most of the remainder.

The judging was left in the able hands of Bob Gosling and Gordon Pearson, neither of whom need any further introduction to modellers in this area (or anywhere as far as Bob Gosling is concerned). The

S. Rymill of the Wavertree club, and the D.H. " Comet " with which he won first place in the scale section at the Merseyside exhibition reported on this page.

result of their efforts is given below, and may we of the Wavertree, Wallasey, North Wirral, Crosby, St. Helens and Aintree clubs who form the Regional Council, take this opportunity of wishing all modellers and their clubs as successful an opening to their New Year as the exhibition has proved for Merseyside.

Sailplanes		Club
1st.	R. A. Alexander	Wallasey
2nd.	R. Burton	Wavertree
3rd.	C. Calkin	Wallasey
Powered Models		Club
1st.	H. Hughes	Wavertree
2nd.	J. Inkester	Wallasey
3rd.	N. D. Peacock	Wallasey
Scale Models		Club
1st.	S. Rymill	Wavertree
2nd.	D. Marsh	Crosby
3rd.	E. Schofield	Crosby
Rubber-Driven		Club
1st.	D. R. Hughes	Wallasey
2nd.	P. G. Jubb	Crosby
3rd.	A. Scott	St. Helens
Control-Line		Club
1st.	J. Eastwood	Wavertree
2nd.	Miss P. Platt	N. Wirral
3rd.	D. O'Keefe	Crosby

HEADLEY & DISTRICT M.F.C.

1951 has been a difficult year for the club but it seems that we can now look forward to better things in 1952. To start with we moved into our own club room on February 1st, after all the members had set to and " furnished " it suitably.

Our thanks go to the Chairman and Mrs. Yates for loaning us the " HUT."

We have had several Winter Meetings with local clubs and we especially wish to thank the Alton Club for entertaining us so well at a film show and later again at their Engine Starting Comp, where one of our members, Tony Upfold, carried off first prize. Fainham Club were there and we hope to see more of them as well as Whitehill and Grange.

The Winter Social is an excellent way of getting to know local clubs and we recommend it to others. Try it next winter.

Last year our two challenge cups were won by :—

(*a*) J. Bennett. Scale C/L.

(*b*) Tony Mells. Scale Free Flight.

Many thanks to H.J.N. for taking time off to judge the Free Flight event.

BLACKPOOL & FYLDE M.A.S.

At the annual general meeting the following officers were elected : Chairman, A. B. Munden ; Secretary, C. J. Davey ; Treasurer K. Nicoll. ; Comp. Secretary, M. J. Davidson ; Club Mag. Editor, P. Utley ; P.R.O., J. B. Maxwell.

The club will be starting the 1952 season without three well-known members. Jack Owen, ex-chairman, and well-known for his *Yorkshire Pudding* design. J. Marsden, ex-treasurer, who is going out to Rhodesia, both these members were made honorary members of the society. We are also losing Mike Thomas, member of the 1951 A/2 team, who is going to live at Bolton.

We wish them all the best with their new clubs.

MODEL AIRCRAFT CONTEST CALENDAR

At the request of the S.M.A.E., we have postponed publication of our usual Contest Calendar, which would have contained the full S.M.A.E. Contest Programme, until the S.M.A.E. Handbook is published. However, clubs intending to hold rallies are strongly advised to inform us as soon as possible of the dates of these, in order to avoid clashing with other fixtures.

PLYMOUTH M.F.C.

The club took part in the fourth annual Schoolboys' Exhibition, organised by the Plymouth Council of Social Service and held at the Public Secondary Schools, Cobourg Street, Plymouth, from Thursday, December 27th, 1951, to Thursday, January 3rd, 1952.

In the room allocated to the club various types of models were exhibited—rubber, glider, power, both free-flight and control-line, and Jetex models. The models included an indoor r.t.p. model designed and built by a junior member, a 1931 vintage tractor monoplane, made of spruce and silk, found by the secretary in his cupboard, an uncovered and nearly complete flying scale model of the *Sopwith Pup*, a P.39 Lockheed *Lightning* control-line scale model, powered by two Amco 3.5 c.c. diesels, an Avro 707*D* Delta model powered by a Jetex 50 and a Mermaid flying boat.

The whole of one wall was devoted to a series of photographs kindly loaned by MODEL AIRCRAFT for the exhibition, these showed every aspect of the hobby and were greatly admired by visitors to the room.

Over 11,500 people visited the Exhibition, which was opened by the Commander-in-Chief, Plymouth, Vice-Admiral Munsergh, and several new members were enrolled.

In a model-making competition of ships, model aircraft or engines, organised by the P.C.S.S., two junior members gained second and third prizes in the 14-18 years class.

EXETER M.A.C.

Exeter M.A.C. held their annual general meeting recently, when the committee for 1952 were elected as follows: Chairman, John Hart; Vice Chairman and Social Secretary, Cliff Taylor; Secretary, Harry Stillings; Treasurer, Sam Hecker; and Competition Secretary, Ian Macey. It was decided to propose at the Area a.g.m. that Winkleigh Airfield should be adopted for Area rallies, this being a full-size flying field within comparatively easy distance of most clubs in the Area, and having ample space and plenty of runways. The club intends to press on with plans for model flying shows on Woodbury Common this season, and enthusiasm is at a high level in all classes. A film show has been arranged in co-operation with the Royal Observer Corps at which parents, wives and friends will be welcome. Other similar shows are planned in the near future. The secretary and treasurer have just completed a series of talks on aeromodelling for the local wing of the Air Rangers, and these lectures have been much appreciated, several first models now being well on the way to completion.

REGENTS PARK M.F.C.

All members and friends of the club had a most enjoyable evening at the annual dinner and social held on Saturday, January 5th. Three club members caused much laughter in one part of the programme by doing a short skit on aeromodelling based on the old melodrama style. Cups and prizes were presented by the Presidents, Councillor and Mrs. Gore. Miss Young, the only lady member of the club was presented with a Ronson lighter by the members as a token of appreciation for work done.

A letter has been received by a club member, popularly known as Streaky, now in Singapore with His Majesty's Forces, who tells us that he is getting quite a bit of flying in, and his latest own design is free-flight power, 50 in. wing span, medium pylon model powered at present with an E.D. 3.46, but Streaky tells us he intends to instal a Frog 500. We hope he can control the model with this new power unit.

Also in the post was a letter from Nyasaland from Ian Donald who is engaged on Government survey. His modelling activities are reduced to nil as he is stationed in the middle of a 200 sq. mile swamp. His latest activities are big game hunting and a narrow squeak in a crocodile infested river.

LEEDS MODEL FLYING CLUB

The chuck glider competition for the Anderton Trophy was held at Scholes on Sunday, December 16th. Although the weather man wasn't particularly kind a good afternoon's "chucking" was enjoyed by all the contestants, and the final results, based on the best three of six flights, were:—G. Joyce, 50 sec.; J. Joyce, 43 sec.; T. Mann, 34 sec. Seems to have been a good day for the Joyce family!

The annual general meeting of the club took place on Thursday, December 27th, at the Church Institute.

In his speech, the retiring chairman, Mr. J. Joyce, commented on the high standard of flying attained by the club, and expressed his pleasure of having been in the "chair" for the past two years. Mr. Joyce also expressed his sincere thanks to club officials and committee members, in particular the retiring secretary Les Mann, George Cameron, Vic Duberry and Henry Tubbs, for their work and valuable assistance.

A proposition by Mr. Dubery that two guineas be presented to the retiring secretary in recognition of his work, was accepted unanimously. The secretary in his annual report agreed with the chairman generally with regard to the flying aspect. He pointed out that continuous efforts were being made to obtain a flying field in the vicinity of Leeds, and although club officials had met with some success no definite arrangement had been agreed upon.

The treasurer, Mr. Cameron, reported an increase in membership and subsequent increase in club funds. The total membership at present consists of 42 seniors and 10 juniors. Mr. Cameron also pointed out that the club now has eight trophies, and that with regard to club membership, the financial situation is very satisfactory.

SOLIHULL M.F.C.

On December 31st, 1951, the club held its second annual sailplane contest open to any club and any type of glider. We had managed to obtain the use of Honiley Aerodrome near Knowle, Warwickshire, and as the weather for the previous week had been perfect, thought that we should be lucky. The day of the contest brought winds of gale force and rain. In the morning turned many would-be competitors from coming. By 11 a.m., however, the sun was through and remained shining the rest of the day. The high wind caused much damage, however, and of those that were present only a handful managed to compete. Clubs represented were Loughborough, Rugby, Birmingham, West Bromwich, Knowle and Cannock. Many well-known persons were there. Ray Monks who unfortunately sustained damage did not place, nor Alan Hewitt. W. Eales, of Rugby, put up a flight of 4 min. 40 sec. o.o.s. and later came back after having chased as far as Kenilworth, to find that his one and only flight had won him the cup and £3. Second was Maurice Hansan, third Pete Litteley, of West Bromwich.

BRISTOL & WEST M.A.C.

Although the non co-operative weather has done nothing to encourage much outdoor flying recently, a healthy interest in indoor flying is in evidence.

Small outdoor rubber machines sweeping their circle around the pole and Jetex 50 de Havilands cavorting like flying fish, added both interest—and smell—to the general entertainment. A twin rotor helicopter driven through bevel gears by a rubber motor shows signs of becoming airborne.

Experiments by a couple of members using Bengal matches in paper tubes to form a jet have resulted in only limited success so far, and a set up using radially mounted Jetex units driving a normal airscrew by means of a reduction drive causes much speculation.

Lest it be thought that we all live in the realms of phantasy, some of us *do* fly models as well.

May the club publically wish the very best of luck to the Pavey family in their new homeland—Australia. Terry will have plenty of space for his R/C models "down under."

STOCKTON & DISTRICT M.F.C.

The past month has seen great activity in the club as in addition to holding an A/2 glider and an indoor competition we have held our first annual dinner.

Only three members had models ready for the A/2 competition, held on December 26th, despite the number under construction. Chas. Plant made three reasonable flights to aggregate 7 min. 7 sec. and take first place. Ernie Harrison had the bad luck to have his model drop into a stream whilst being recovered from an overhanging tree after his second flight. His two-flight aggregate of 4 min. 2 sec. gave him second place above new member Hall who had a very unlucky day.

The indoor competition held the following week attracted a fair number of entries. The placings were decided on an aggregate of three r.t.p. and three free-flight attempts. The final placings were as follows:

Place	*Name*	*R.T.P. Agg. min. sec.*	*F.F. Agg. min. sec.*	*Total min. sec.*
1st	T. B. Chambers ..	9 27	3 31	12 58
2nd	A. W. Spurr	3 18	4 51	8 9
3rd	A. M. Robson	2 53	2 21	5 14

Tom Chambers has gained both his "A" and "B" merit certificates with his r.t.p. model and is currently trying to beat the 4 min. mark. His best flight of 3 min. 54 sec. brings him very near to it. The club dinner was voted a great success by everyone, and Mr. G. Reeve presented the prizes at the end.

CARDIFF M.A.C.

An all in "scramble" for all types of model was held at St. Athan on January 6th. A 3 min. "max." and 20 sec. minimum were imposed.

Winner was new junior member Brian Holeman, who aggregated 5 min. 56 sec. for 3 flights in the half an hour allowed. Second was Pete North who totalled 5 min. 46 sec. for three flights. Holeman flew a tailless glider, the *Manx Cat* and as it was his first contest it was a very stout effort indeed. Peter North flew the "Zebra striped" power job which has been winning for the last four years and is still going strong, probably due to its crash-proof wing fixing.

S/Ldr. Verney has been putting in some nice R/C flying lately, using a *Junior* 60 and H.B. Amco.

A chuck glider contest held on December 30th produced some ten entries, most of whom used the same chuck glider! Eventual winner was Mr. Cox, of Penarth, who used a model built by Alan Coles. Coles used the same model to place second.

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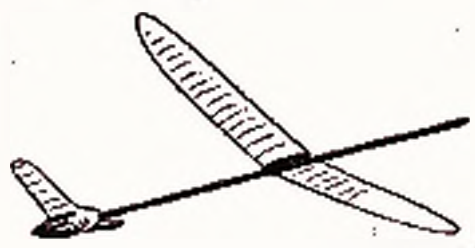
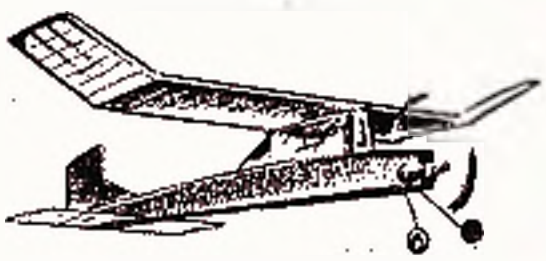


M.A. 118 TOOTHPICK ... 5/6

This unconventional A-2 glider by Austrian Oscar Czepa, won the 1951 Swedish Cup contest in Yugoslavia.

M.A. 109 WHIPLASH ... 6/-

Bill Taylor's very successful radio controlled model which was the winner of the 1951 S.M.A.E. International R/C Contest.



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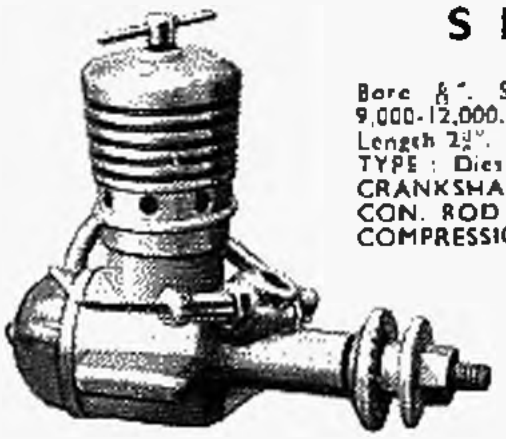

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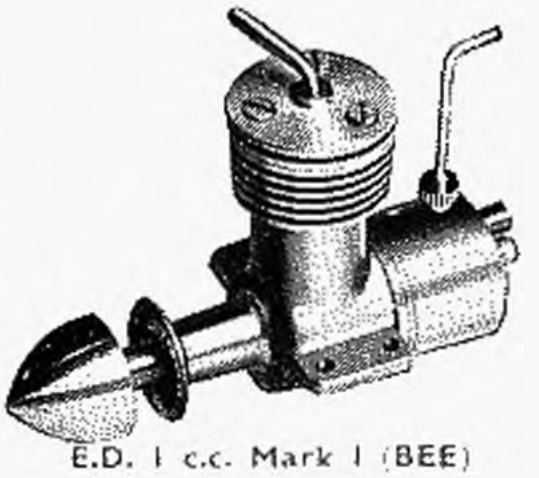

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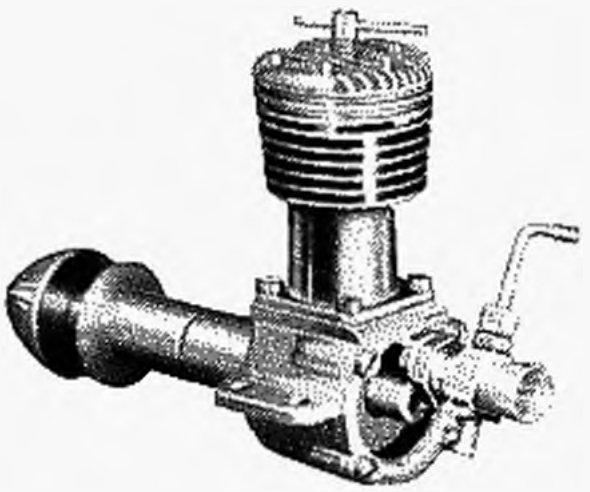

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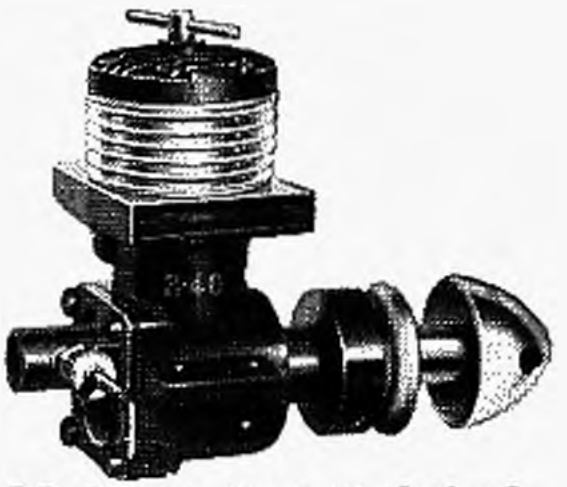

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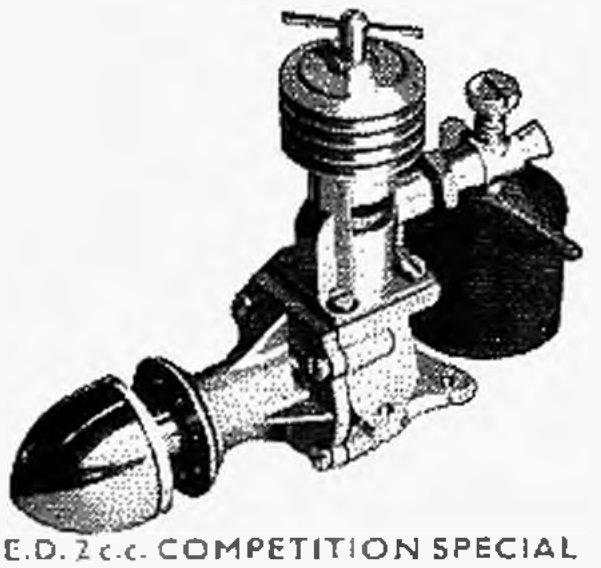

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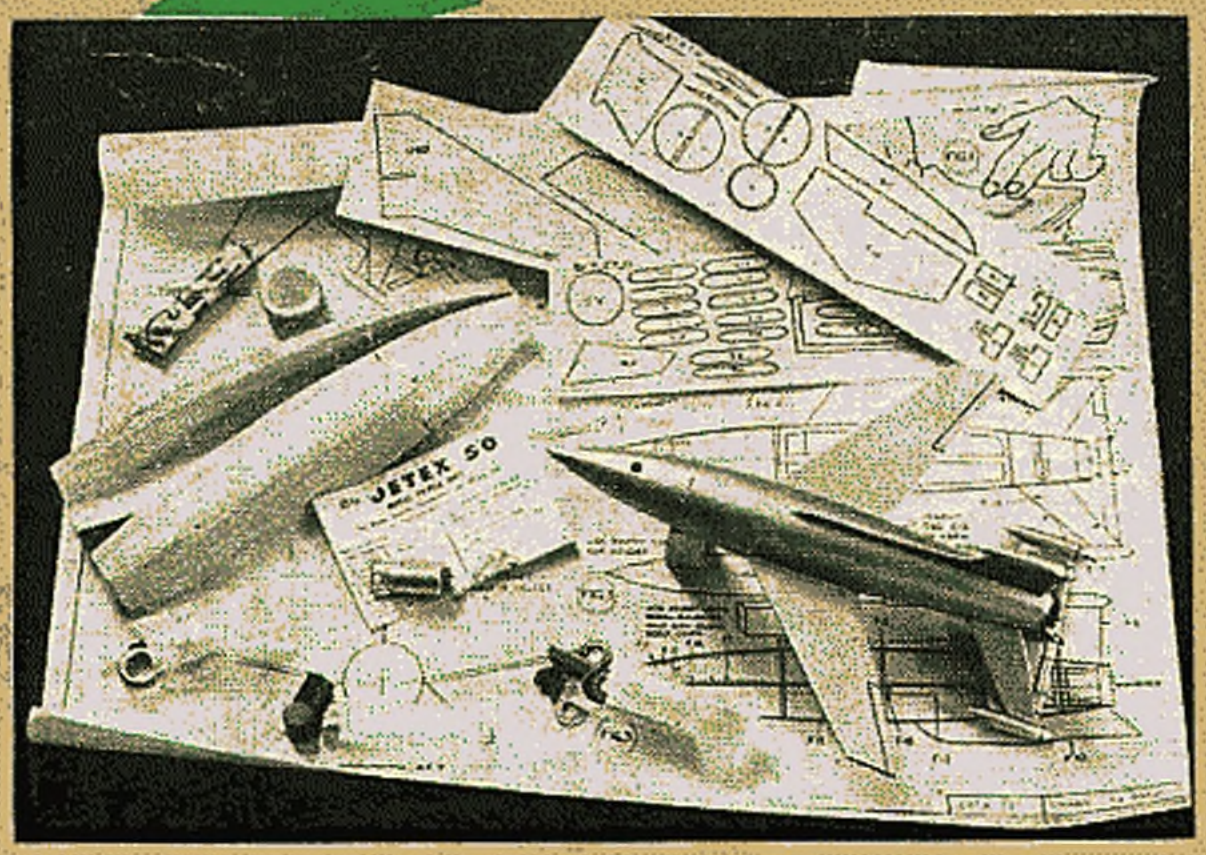

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