MODEL AIRCRAFT

IN THIS ISSUE

JULY 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.

All Plans and Articles can be found here:

Hlsat Blog Free Plans and Articles.

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

Digital Edition Magazines.

AeroFred Gallery Free Plans.

http://aerofred.com/index.php

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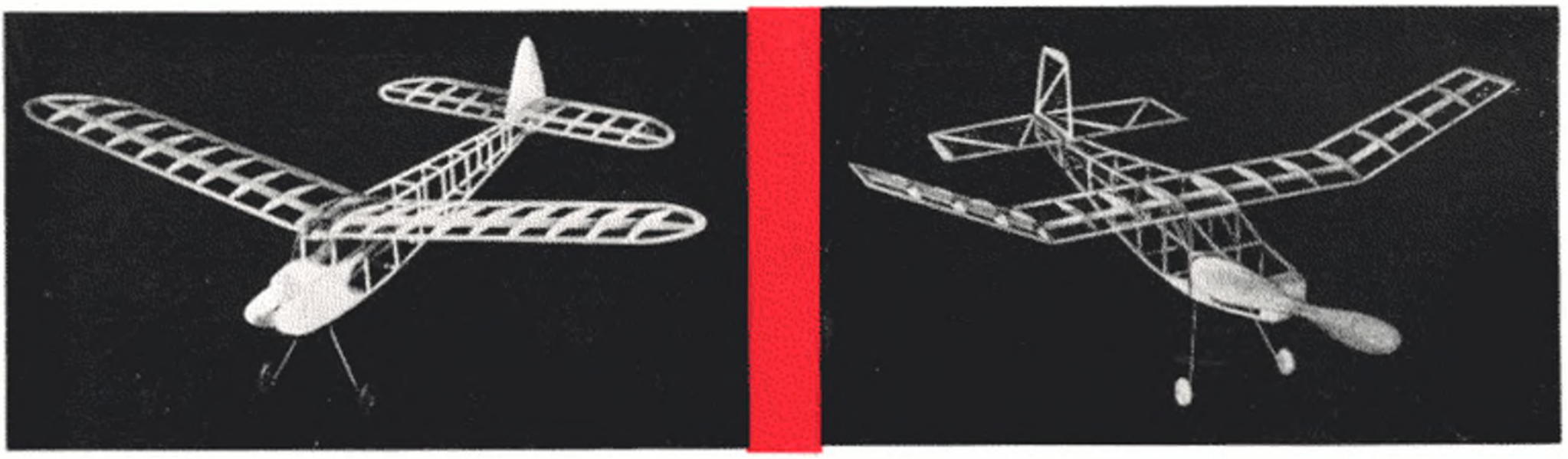
Diligence Work by Hlsat.

SKYLEADA

INTRODUCES



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The construction is very simple which makes this the ideal model for the beginner.

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PRICE 9s. 6d. INCLUDING P.T.

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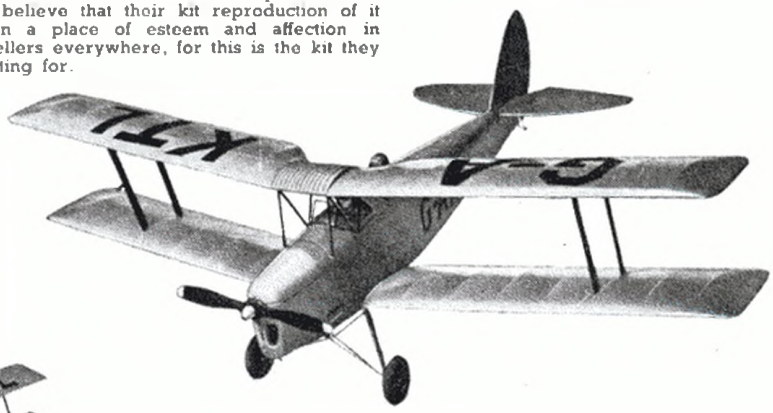
THERE is aviation history built into this world-famous plane. For many years the D.H. Tiger Moth was the standard trainer for R.A.F. pilots ; it has featured large in the Empire Training Scheme ; it has been adapted for Arctic flights with skis and has held its own in the tropics. More Tiger Moths have been built than any other machine of its type in the world : more pilots have learned to fly with it than with any other machine. Mercury are proud to present their meticulously scaled version of this triumphant British masterpiece, and believe that their kit reproduction of it will similarly earn a place of esteem and affection in the minds of modellers everywhere, for this is the kit they have all been waiting for.



The bi-plane has always had special appeal to modellers, and the Tiger Moth in particular has afforded Mercury a wonderful opportunity to produce a kit in which this plane's reputation for ruggedness and first class design could be maintained in the model. The Mercury "D.H. Tiger Moth" incorporates "knock-off" wing construction to make it virtually crash proof ; ease of trimming and stable flight ensure long flying life. The kit includes selected Solarbo balsa, ample Modelspan tissue, wire, full size plan, stage-by-stage building and flying instructions. It's a beauty to build and to fly.

34/7

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in all details, 1½" to 1 ft.

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E.D. or Mills, etc.

★ **RUGGED CONSTRUCTION**
with knock-off wing assembly.

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Go to your Mercury stockist for :—

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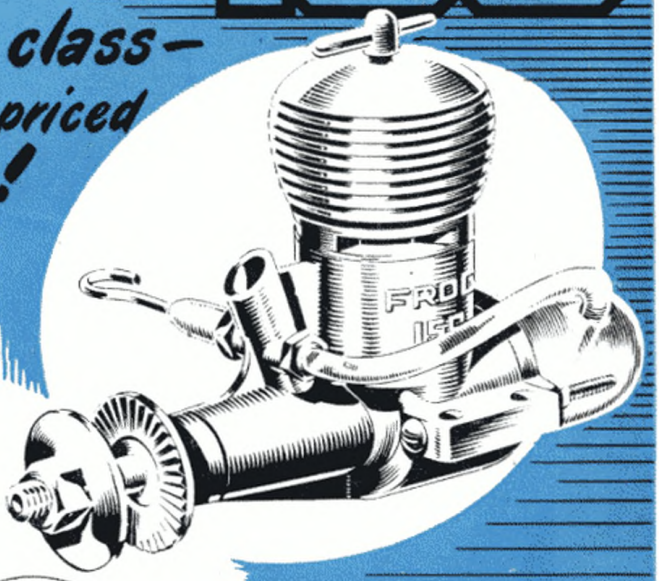
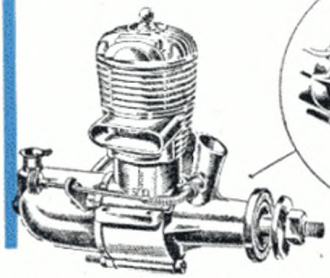
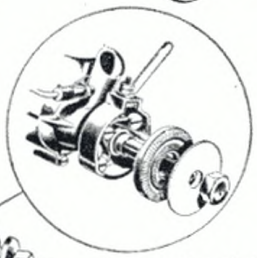


"The unbeatable '150'!"—is the name given to this FROG motor by contest fliers all over the world! And in price too, the "150" is best! For only **49/6** including Tax YOU can have a precision built, contest proved, CLASS A motor which will never let you down. Take a speed range of 2,000 to 15,000 r.p.m., add to it absolute ease of starting and tough construction and you have the FROG "150"—the best of all!! See the FROG "150" at your local model shop today—remember the price—it is still only

49/6



FROG "500"—automatic choice of experts and winner of more contests than we can list here—is still Britain's best 5 c.c. motor. For free-flight or C/L, for R/C or Ratio you can do no better than "fit a '500'." Speeds, 4,000 to 15,000 r.p.m., weight 7¾ oz. Price including Tax **75/-**



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Precision moulded in tough plastic—ideal for all FROG motors. These are the most accurately designed and finished airscrews made in Britain—AND SUPPLIED AT THE LOWEST PRICES! Full details and prices below:—

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This is one of our problems and in order to help this position we are shortly going to send out a questionnaire to aeromodellers and to shops to try and find out what is really wanted in Balsa wood sizes over the counter.

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I hope that when we do issue this questionnaire you will really give us your support in answering it, because in the long run what we want to do is to reduce prices. We can only do this when we can completely balance our production and use up all the pieces.

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UNRIVALLED POWER UNIT

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Complete outfit containing Jetmaster motor, mounting clip, fuel, wicks, spare parts and full instructions

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When fitted with the Augmenter Tube, the Jetmaster is the perfect power unit for scale models of jet fighters like the Hawker 1067, Sabre, Attacker, Mig 15, etc. In fact, it is the only motor in the world really suitable for free flight jet models.

The augmenter tube, which boosts the thrust from 1¾ oz. to 2¼ oz., was developed in co-operation with the Low Speed Aerodynamic Association

Price 5/- + 1/1 tax (including igniter wire and D/T fuse)

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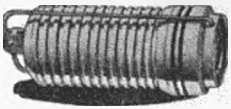

JETEX 50

OUTFIT

Containing Motor, Fuel, Wicks, Mounting Clip, Spare Parts, Accessories and full instructions.

SPECIFICATION—Thrust ¼ oz. Motor run approx. 15 sec. Weight 3¼ drams. Length 1⅛". Diameter ⅝". Weight of fuel charge 3½ drams. Price inc. tax **13/4**

Ask your dealer to show you the range of Jetex QUALITY kits!

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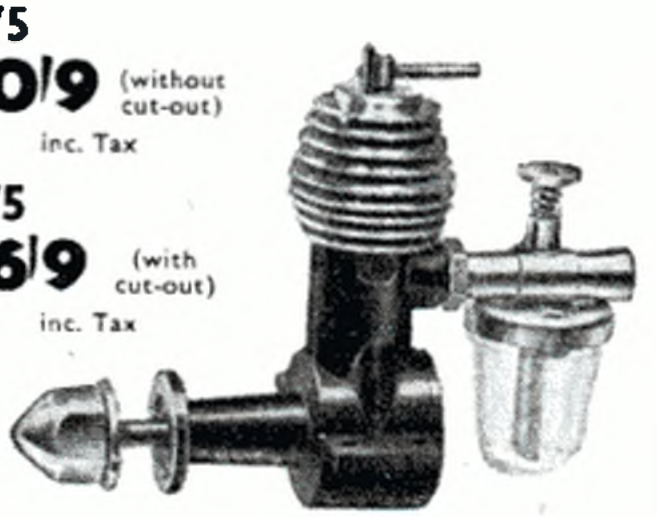

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91/1 (with cut-out)
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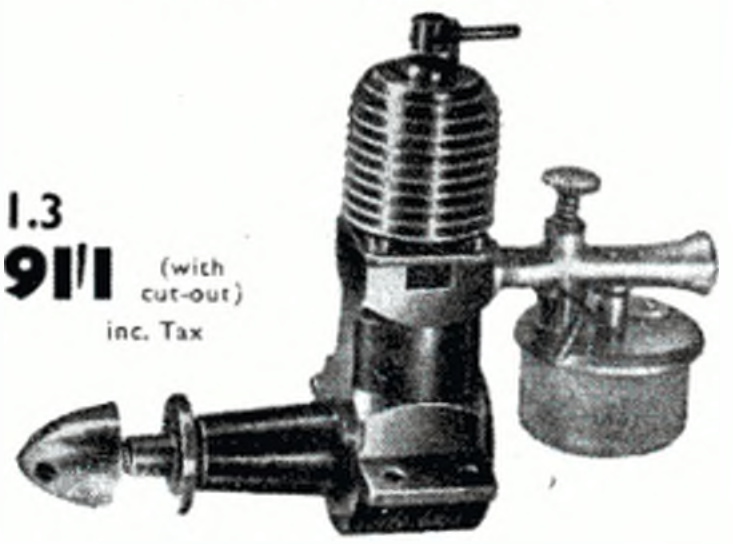

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MODEL AIRCRAFT

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JULY 1952 VOL. II No. 7

Contents

EDITORIAL

Although the present flying season has only just commenced, complaints are already being received from farmers regarding alleged damage to crops and property caused by model fliers when retrieving their models. We make no excuse for again referring editorially to this problem, because we feel certain that the average model flier does not yet realise that it constitutes a very serious threat to the model aircraft movement.

For example : after many months of difficult negotiations with the Ministry of Civil Aviation, an agreement was recently reached which enabled members of London Area Clubs to fly at Fairlop Aerodrome. Now the Ministry are receiving strong protests from the local farmers that whilst retrieving models, fliers have broken through hedges causing horses to escape through the gaps, and have also damaged crops themselves. We are well aware that anyone can enter the Aerodrome, whether an S.M.A.E. club member or not, but the fact remains that whoever is responsible must be stopped at once or we shall lose Fairlop.

Now we learn that after the last South Midland Area Meeting at R.A.F. Aerodrome Henlow, Beds, the Commanding Officer has decided to ban all further model flying there as a result of complaints from farmers. The S.M.A.E. had hoped to use this fine aerodrome for the Wakefield and A 2 Finals but have now had to arrange to hold these events at Digby—by no means a popular venue.

In the May issue of " Model Aircraft " we published a letter from Mr. K. F. P. Rutter, in which he suggested that contest rules should be revised in order to greatly reduce flight times. We feel that these suggestions should be given serious consideration by contest organisers at once, as they do seem to be the only constructive suggestions which have yet been made to deal with this very real threat to future contest flying. Unless something is done—and done soon—we may find model aircraft flying banned in a large number of areas. This is not a scare—it is a fact !

Cover Story

The first model to be seen on our cover in company with the new title panel, is an A 2 glider flown by J. Robinson, of the Thames Valley club in The K. & M.A.A. Cup contest at Fairlop Aerodrome. Seen launching the model in this picture is fellow club member P. T. Taylor

THE JOURNAL OF THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

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Here and There

THE EDITOR COMMENTS ON CURRENT TOPICS

AT LAST—PERHAPS!

At the recent F.A.I. Conference in Madrid some concern was expressed by those connected with the aircraft industry throughout the world, regarding the present serious shortage of technicians. Apparently far too few young men feel inclined today to make a career in one of the branches of the industry.

Now at last the full-size aircraft people have become aware of a fact which has been quite obvious for many years, viz., that in the model aircraft movement there are thousands of young enthusiasts who, given the right sort of encouragement, would be very keen to take up aeronautical engineering.

It was suggested at the conference that the aircraft industry might sponsor a World Championships Meeting in 1953, at which the Wakefield, Nordic A-2, Power and C.L. events would be held. This, of course, is basically the same idea as the model aircraft "Olympics" proposal which was turned down by the F.A.I. Model Commission last year. At that time we were not too keen on the "Olympics" idea, but this new scheme goes much farther and if funds are to be provided, as we understand is envisaged, to transport and accommodate the National teams and to organise this meeting, then we are in full agreement with the proposal. There is no doubt that it would ensure the largest possible International representation and what is more important in present world conditions, it would relieve the National bodies of the heavy burden of raising funds to send their teams abroad—a task which is rapidly becoming increasingly difficult and in many cases impossible.

We trust, however, that we shall be excused if we say that until we learn that the scheme is definitely going ahead, we shall keep our fingers firmly crossed! Frankly, during our twenty-odd years close connection with the model aircraft movement, we have heard of many schemes to sponsor model flying and really "put it on the map." They all came to naught. We hope that this World Championship Meeting scheme does not end the same way—it certainly deserves a better fate.

THE "M.E." EXHIBITION COMPETITIONS

As we have already announced, *The Model Engineer* Exhibition will be held this year from October 20th-29th. We feel sure that this date, clear of the contest season, will ensure that the number of entries in the model aircraft competition sections will be larger than ever.

There will be competitions for the following categories of aircraft models : rubber-driven ; free-flight power ; control-line ; gliders ; non-flying models ; free-flight or control-line scale ; radio control. In addition there are Junior sections for rubber, free-flight power, control-line and glider models.

There are a number of special contests worth the notice of model builders—contests that carry some valuable trophies. There is a special award of five guineas for the best model in the competition sections built from a "M.A." plan, and the Model Aircraft Trade Association has presented a cup to be won by the best model made from a commercial kit.

We should also like to draw attention to the Club Team Championship. It seems surprising that this event has not been more popular in the past, for there is a valuable silver cup to be awarded outright to the winning club entry of three models in any class, built by members of an S.M.A.E. affiliated club.

Entry forms are now available and full details can be obtained from the Exhibition Manager, *The Model Engineer* Exhibition, 23, Great Queen Street, London, W.C.2.

BRITISH NATIONALS PRIZE FUND

For some years past, it has been customary for the organisers of large-scale competition events such as the British Nationals to approach members of the trade for donations of prizes. These have usually taken the form of kits and engines, but for some time the S.M.A.E. has felt that although these donations were greatly appreciated, it was not an entirely satisfactory arrangement. Model fliers are staunch individualists and generally have their own fads and fancies where choice of commercial products is concerned.

The S.M.A.E. therefore recently approached the Federation of Model Aeronautical Manufacturers and Wholesalers and suggested that instead of donations in kind from individual concerns, the Federation might make a cash donation to the Nationals prize fund on behalf of all member firms.

We are very pleased to announce that the Federation has agreed to donate 50 guineas for this purpose, and we feel sure that model fliers everywhere will join with us in extending our thanks and appreciation to the Federation for this very generous gesture. It will ensure that at the British Nationals, to be held at Gosport, Hants, on August 3rd and 4th, the prize list will be even longer and more attractive than in previous years and will help to make this meeting an outstanding success.

It is to be understood that the donation will represent contributions from the wholesale and manufacturing branches of the trade, and that no applications should now be made to them by affiliated clubs for other prizes.

BACK TO THE OLD METHOD After a singularly unsuccessful effort last year to run the Wakefield Trials under "still air" conditions, the 1952 Trials will be held like any other contest—during the morning and afternoon hours. Main reason for this is that it has not been possible to find a suitable venue with accommodation available for an overnight stay.

This rather unexpected move has, we know, rather disconcerted several Wakefield enthusiasts who have been concentrating on "still air" models ever since the Finnish Wakefield. Some of these models are definitely not suitable for windy, "daytime" conditions and presumably their designers are crossing their fingers and hoping for calm weather on "the day."

There is, of course, another side to this question. A good "still air" model can also be a good "daytime" model and since "still air" is such a rare happening the wisdom of spending a lot of time and trouble in producing a model which is definitely only a "still air" machine is debatable.

IT HAPPENS EVERY WEEK We have scarcely attended a flying meeting where someone has not launched a model with the engine running backwards. The inevitable result, of course, is a marked reluctance on the part of the model to fly. Diesels and glow motors usually run equally well in either direction and in the excitement of getting the model airborne the fond owner ignores the fact that the "draught" is blowing forwards.

We had our doubts that the same thing could happen to a rubber model—but it did, and in a contest, too. The "victim" had boohed in carving a propeller the wrong way round. He realised this when he had finished and usually wound the model up the opposite way to usual. In the heat of the competition he forgot, however. Hand launching the model with a mighty heave it promptly shot back straight into his face.

THE HAT TRICK Model flying history was made in the Lady Shelley contest on May 4th, when A. R. Lucas of Pt. Talbot won the cup for the third year running. This is the first time that anyone has achieved the distinction of a triple successive win in any S.M.A.E. contest since the foundation of the Society.

However this was not the only repeat performance this season, for Graham Gates of the Southern Cross Club repeated his victory last year, by also winning this year's Pilcher Cup contest. This was perhaps an even greater triumph, for the number of entries in the Pilcher in both years was truly formidable.

We congratulate these two enthusiasts on a remarkable achievement.

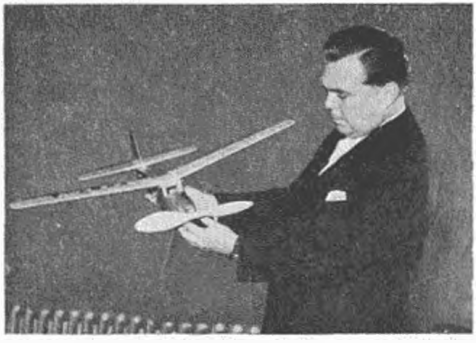
BILLY BUTLIN PRESENTS . . . We recently had the opportunity of meeting Mr. Billy Butlin and learning something of his plans to sponsor model aircraft contests at his holiday camps this year. He is obviously very air-minded and spends the greater part of his time during the summer months flying between the six Butlin camps in his private aeroplane. It is also of interest to note that he has crossed the Atlantic by air no less than 86 times and it was during one of his visits to the United States last year that he first saw model aircraft flying and became "bitten by the bug."

He was very impressed by the performance of the models and brought back with him a number of American kit models. Shortly after his return from this trip he attended the *Yorkshire Evening News* Model Flying Festival at Sherburn-in-Elmet in September last and the attendance of some 10,000 spectators and contestants at this meeting confirmed his opinion that model flying had great possibilities as an attraction. In typical fashion he decided at once to organise model aircraft demonstrations and contests at his holiday camps this summer.

The way in which a Butlin idea can "catch on" has been well demonstrated by the current popularity of square dancing. Mr. Butlin first saw this in the States and it was his enthusiastic presentation of it at his camps, that started the present craze.

Being the shrewd business man that he is, Billy Butlin has seen that among the tens of thousands of young people visiting the camps each summer, there is an enormous potential interest in model flying, and the result has been the organisation of model flying events at these camps, as we have already reported. Apart from the two big meetings, on June 22nd and September 21st, weekly contests are being arranged for the campers, using models provided by the management and flown under the guidance of an experienced modeller on the staff.

We feel that this venture might well provide the model aircraft movement with the stimulant which it needs at the present time. We give it our wholehearted support—as indeed we would to any well planned scheme, which is aimed at attracting new recruits to our hobby.



Mr. Billy Butlin with one of the ready-made models which are being provided for campers to fly under expert guidance

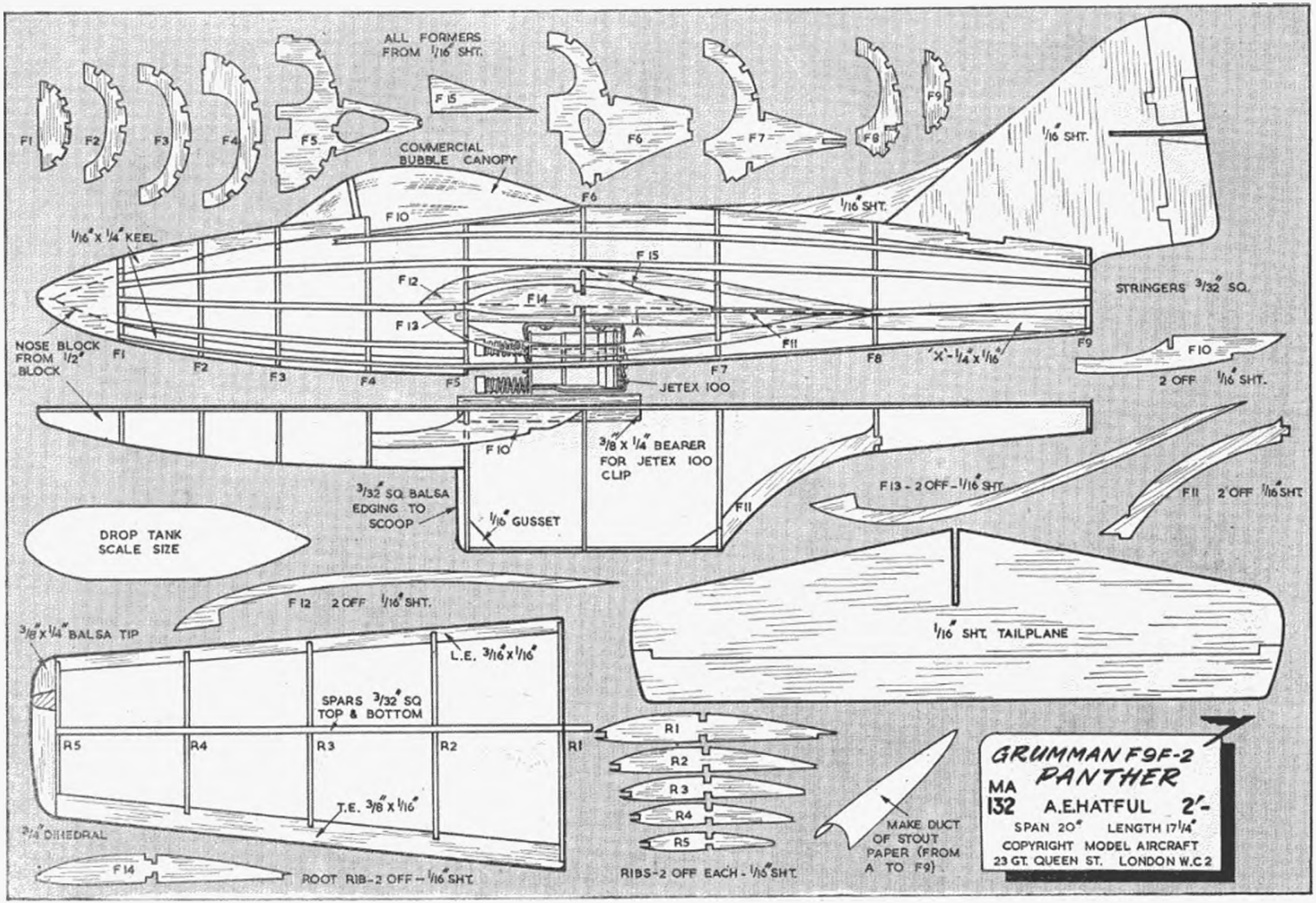
THE first model *Panther* was built soon after the Jetex " 100 " came on the market. The unit was mounted within the fuselage, completely enclosed except for a ducting arrangement made from cartridge paper and utilising the wing root intakes which were intended to carry air past the unit. Unfortunately, this first *Panther* proved too heavy to provide the sort of performance we expected and it was evident that the thrust from the " 100 " was not being used to advantage. By lowering the unit out into the wind into a position which brought the thrust line of the motor coincident with the lower contour line of the fuselage a marked improvement in thrust was obtained. After building a lighter version, with not quite so much dope used in finishing, the *Panther* flew very well and helped collect information which led to the construction of several smaller Jetex " 50 " models of jet fighters.

Fuselage

Cut the outline pieces from $\frac{1}{16}$ in. sheet balsa and pin in position on plan together with piece F15 and strip " X " of $\frac{1}{4} \times \frac{1}{16}$ in. Cement the formers in position using a piece of 3/32 × 3/32 in. to line up the notches. The notches in formers F2 to F8 may be cut slightly oversize in order to obtain a smoother stringer line. Add F11, F14, F12, and F13. Cement the 3/32 × 3/32 in. medium hard balsa stringers into the notches in the formers, then add F10, which forms a base for the cockpit cover. Lift this side from the plan and construct the other. Cement on the two halves of the nose block, instal the piece of $\frac{3}{8}$ in. × $\frac{1}{4}$ in. for the Jetex clip, then fine sandpaper the fuselage all over.

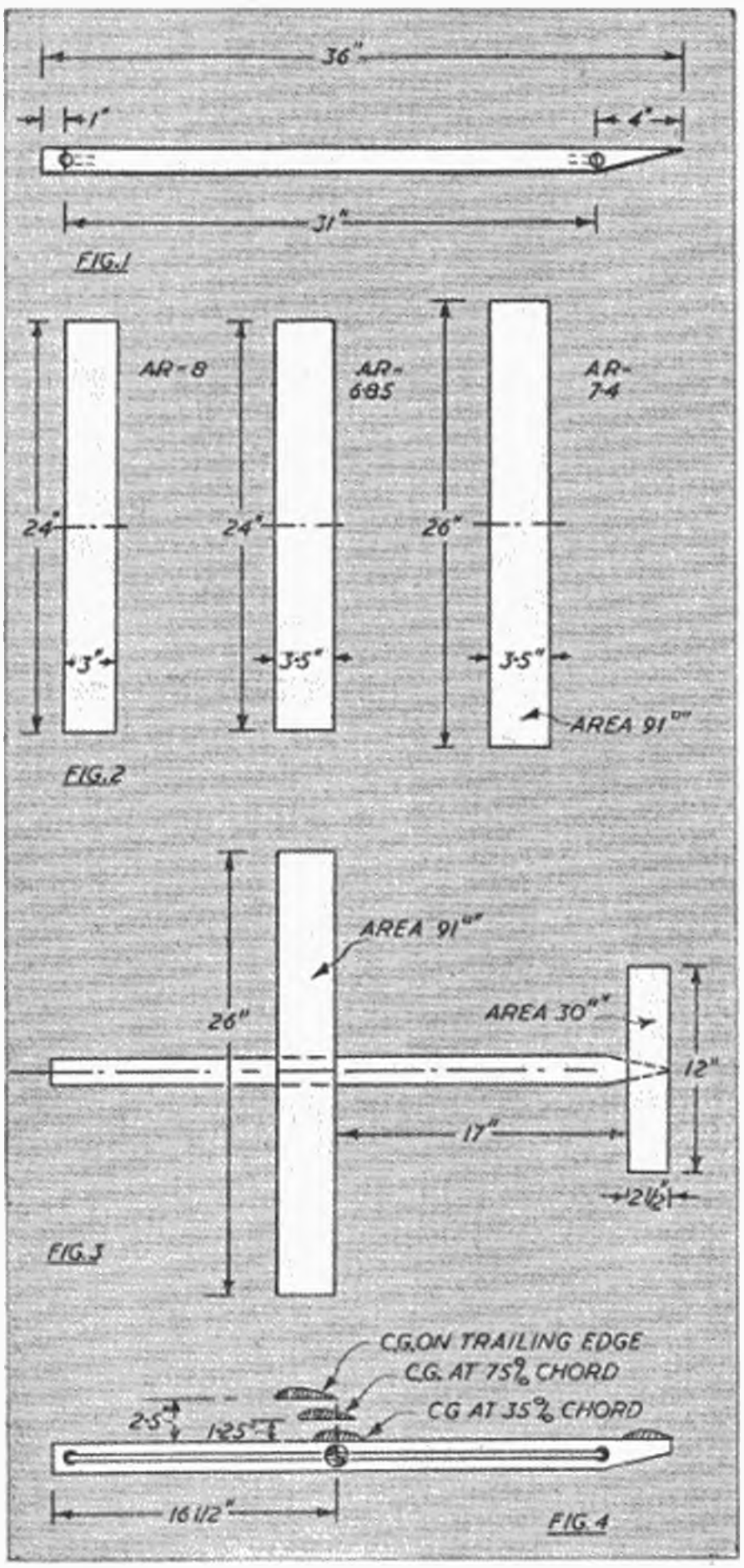
Wings

Pin the lower 3/32 × 3/32 in. spar to the plan, then the trailing edge (after notching for the ribs). Cement the ribs in place, remembering to lean rib R1 inwards to obtain approximately $\frac{1}{4}$ in. dihedral. Cement the leading edge in place and add the top spar Roughly shape the balsa blocks for the wing tips, then cement in position and finish off with fine sandpaper. Although it is a little more awkward for covering it was found to improve the wing-to-fuselage join if the wings were assembled to the fuselage before covering. Check for equal dihedral each side. The original was covered with Jap, but lightweight rag tissue has been used since and found to be just as effective. The wing-root fairings look very smooth if you are able to cover them with notepaper top and bottom. Water shrink the tissue and make up a rough jig using several books to hold the nose and tail of the fuselage and the extreme tips of the wings ; this should prevent any severe warping taking place. Continue sandpapering the fin, dorsal fairing and tailplane until all sawmarks have disappeared and they are glassy smooth, then cement them in place. Attach the cockpit cover by running a neat fillet of cement around its edge while held in correct position on the fuselage. Clear dope the whole model holding the fuselage and wing tips as before until dry to stop warps. Make a " channel " from notepaper to fit into the arched recesses in formers F7 and F8 and extending from the rear edge of the clip to former 9 as shown on the plan. Use colour dope thinly and finish either silver, silver grey or a very dark blue (almost black). Affix the American star insignia on either side of the nose between F2 and F4 and on the port upper and starboard lower mainplanes. Try not to exceed an all up weight of $1\frac{1}{2}$ oz. There is a variety of cigar container made from aluminium and shaped like a torpedo, which when cut and fitted with a balsa tail cone, provides a realistic lightweight drop tank. With the model finished and complete, balance it roughly at the wing spar position, then start test gliding. If there is a slight breeze don't be satisfied with a lilting, half-coming-back-towards-you glide ; add weight to the nose until with a good hard hand launch the glide is fast, flat and straight. Now load up your " 100 " and try a power flight. You may have to remove some of the weight from the nose but remember the *Panther* flies fast so try to launch it that way.



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, 2s. 0d., POST FREE.

Half-scale WAKEFIELDS



CRITICISM has come from several quarters that specialisation on Wakefield design has tended to eliminate the other types of rubber models. Not so many years ago the ultra-lightweight rubber job was prominent in all " open rubber " contests—and gave a very good account of itself. There were also a goodly sprinkling of F.A.I. models, which again were capable of high flight times. But overall the Wakefield was still the more consistent and, at the present time, is pretty definitely top in performance. In fact, many rubber contest experts agree that if the Wakefield rules were made purely " open " they would still stick to models which would conform to the existing rules. That, in fact, is an interesting topic for club discussion. If the Wakefield was made an " open " contest, would the best models still be of the same total area as now and about the same weight ?

There is something about a rubber driven duration model which has a lasting appeal to the serious model flier. Rubber duration is not the way to *quick* results. The relatively inexperienced modeller can get far better durations from a glider or a power model. After all, if you have a reasonably stable power model, a long motor run will more or less guarantee a long flight. With a glider, choose a nice sunny day and use a long towline and, provided the model tows straight, a " maximum " is more or less laid on.

With a rubber model, discounting thermal flights, height is something that has to be fought for. Your power is limited to a certain amount of rubber, for there is a limit to what the airframe will stand. It is a challenge to ingenuity and ability to use this limited amount of power to the best advantage.

Then there is something about the *way* a rubber model flies and every satisfaction in watching a model continue to gain height over a period of, perhaps, two minutes before settling down into a glide. In that time a top class rubber model gets higher than a glider on a 328 ft. towline and a power model on a limited motor run. And it seems more of an *achievement.*

Specialisation on Wakefields would not have been a bad thing but for the fact that rubber model flying once cheap, has now become relatively expensive. The modern Wakefield uses a 4 oz rubber motor—at a cost of something like five shillings or more a motor. And perhaps one motor is good for three

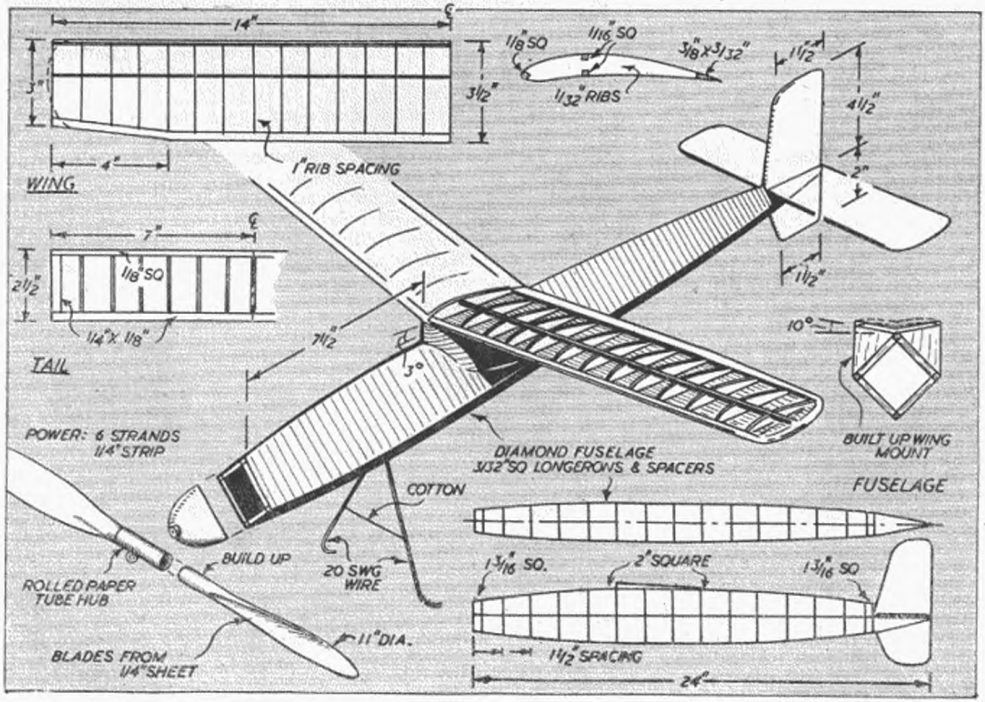
contest flights. That alone does not encourage the younger modellers with limited pocket money to take up Wakefields. Perhaps cost is one of the main reasons why glider contest entries are showing a marked increase? Gliders, at least, are relatively inexpensive to operate.

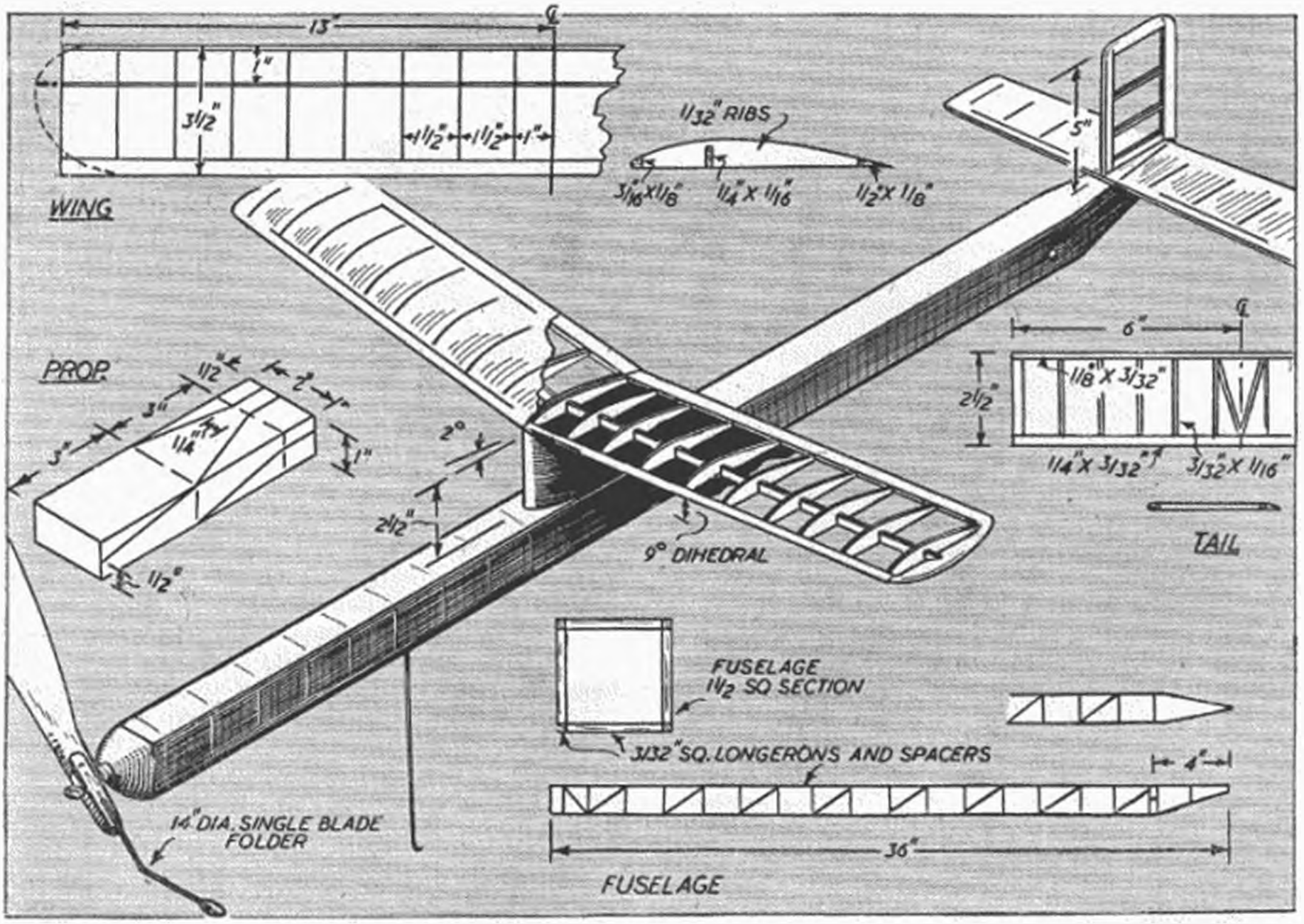
Yet practically all the advances in rubber model design have been concerned with Wakefields—new layouts, return gear systems, feathering propellers, and so on. Ultra-lightweight design, on the other hand, became more or less standardised some four or five years ago and offers very little chance of "trying something different." The F.A.I. model was rather unfortunate "in-between" class which used a high proportion of rubber (like the Wakefield) and had no markedly superior performance. Most modellers who interested themselves in F.A.I. rubber contests, in fact, soon found that a standard Wakefield was probably better than a special F.A.I. job—and one model (a Wakefield) to cover two types of contests was a far better proposition.

This is still no help to the younger enthusiast who genuinely cannot afford modern Wakefield flying—or for the rubber model enthusiast who would like to try out some of these "modern" ideas but have not the time to spend building different layouts for test. But there was a clue to the answer in a recent issue of MODEL AIRCRAFT. Ron Warring produced a *half scale* A-2 glider—quicker, easier and cheaper to build than a full size A-2—to test a certain layout (in this case a moment arm five times the wing chord and a very tiny tailplane area). Surely here is the answer to the would-be rubber model enthusiast—scaled down Wakefields, not necessarily half size, so that he can try out some of these ideas at a fraction of the cost in time and materials (including rubber) as compared with building "full size" Wakefields. In fact, we can forget the "Wakefield" tag entirely, if we wish, and think of these small rubber powered models as a type of their own. There is no reason at all why some should not make excellent contest machines for "open" or F.A.I. events. Certainly they will provide invaluable experience to any modeller wishing to take up rubber contest flying seriously at some later stage, or any type of flying model, for that matter. Despite the fact that many newcomers to the hobby since the war years started straight in with power model flying, rubber models still provide the best background knowledge, and experience, for the handling of *all* classes of free flight models. So perhaps if we start cutting costs we can get back to this happy state of affairs.

Certainly the best rubber model for a beginner is a simple kit job designed on duration lines. The bugs will have been ironed out of the design and, properly built, a consistent, if not high performance, is more or less guaranteed. This will teach the basic principles of handling any type of flying model and some of the peculiarities of rubber models in particular. Then is the time to try for something more ambitious.

How about a simple duration model on the lines





of the most favoured modern Wakefield layout? This is a diamond fuselage with a built-in pylon or "cabin" and simple wire skid undercarriage. Such a model, built with a normal freewheeling propeller, will cost very little in time and materials and lead the way to further experiments. Properly trimmed it should also be capable of consistent flight times in excess of two minutes—and that is quite long enough for most flying fields when there is any appreciable wind draft.

Plan 1 gives all the details you require to draw out and construct such a model. Lines have been simplified for ease of scaling up. The tips of the wing and tailplane can be more rounded, for example, if you wish and other detail modifications incorporated. Stick to the main layout and proportions as far as possible, however.

For a second project, how about trying a long fuselage model? In Wakefield sizes the length of the fuselage may be five or six feet, the purpose being to accommodate a long motor taut beetwen hooks. We can apply the same principles to a smaller model and get comparable results. Since such a model also provides an interesting example of simple design procedure the layout will be described in more detail.

The greatest "economic" length for the long fuselage is 3 ft., since this is the standard stock length of strip wood. Longer strip is, of course, available, or shorter lengths can be jointed, but 36 in. is a good upper limit for our projected design. Tentatively we will assume that 1 in. of this length will be lost by the front motor hook and the rear rubber fitting will be 4 in. from the extreme rear. That leaves us a 31 in. motor length for the motor to be taut between hooks. Fig. 1.

Here we must guess at the power required. We will assume that we are going to use an eight strand motor of ¼ in. strip rubber, and adjust the propeller diameter accordingly. Such a motor calls for 248 in. or just under 7 yards of rubber which, when lubricated, will weigh about 1½ oz. and cost something like one shilling and sixpence per motor, which is certainly not prohibitive. Had we built a "full size" long-fuselage Wakefield the motor cost would be nearer six shillings each!

Now let us find proportions for the rest of the model. In this type of layout rubber weight should about equal airframe weight. That means the total weight of the finished model will be approximately 3 oz. As we want this to be a model with "contest" performance we do not want to exceed the minimum F.A.I. loading, which is 3.93 oz. per sq. ft. total area. This means that for a 3 oz. total weight the *minimum* total area required is 110 sq. in. Actually, we can well afford to go a little above this, to allow for any excess total weight beyond our estimated 3 oz., say up to 120 to 125 sq. in. total.

To cross check, let us see how this fits in with the general proportions of a model of this layout. Span averages about two-thirds of the fuselage length, say 24 in. An aspect ratio of about 8 : 1 is desirable which, on such a wing would give a 3 in.

chord. This is bordering on the realms of inefficiency, so an increase in chord to 3½ in. would be beneficial, but the aspect ratio has dropped to 7 : 1. Boosting the span by 2 in. brings us back to an aspect ratio of 7.4 : 1 and a 91 sq. in. wing, which should be about right. (Fig. 2.)

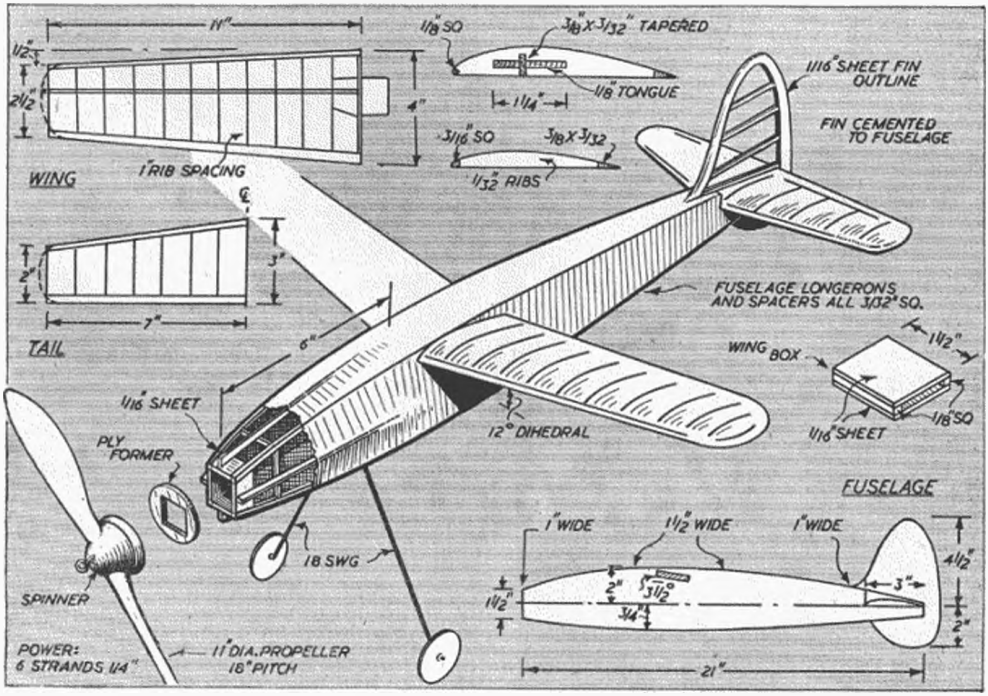
To go with this a tailplane 30 sq. in. in area will be about right, so total area arrived at by this method works out at 121 sq. in. or within the limits of our original specification. (Fig. 3).

If we position the wing with respect to the centre of gravity of the rubber motor we should not be far out, for the motor is the heaviest component of the completed machine. Of the other components both the wing and fuselage will approximately balance about the same point, whilst the propeller assembly at one end should balance out the tail unit weight at the other. (Fig. 4.) We can design the wing in a fixed position or make provision for fore and aft adjustment for trimming purposes.

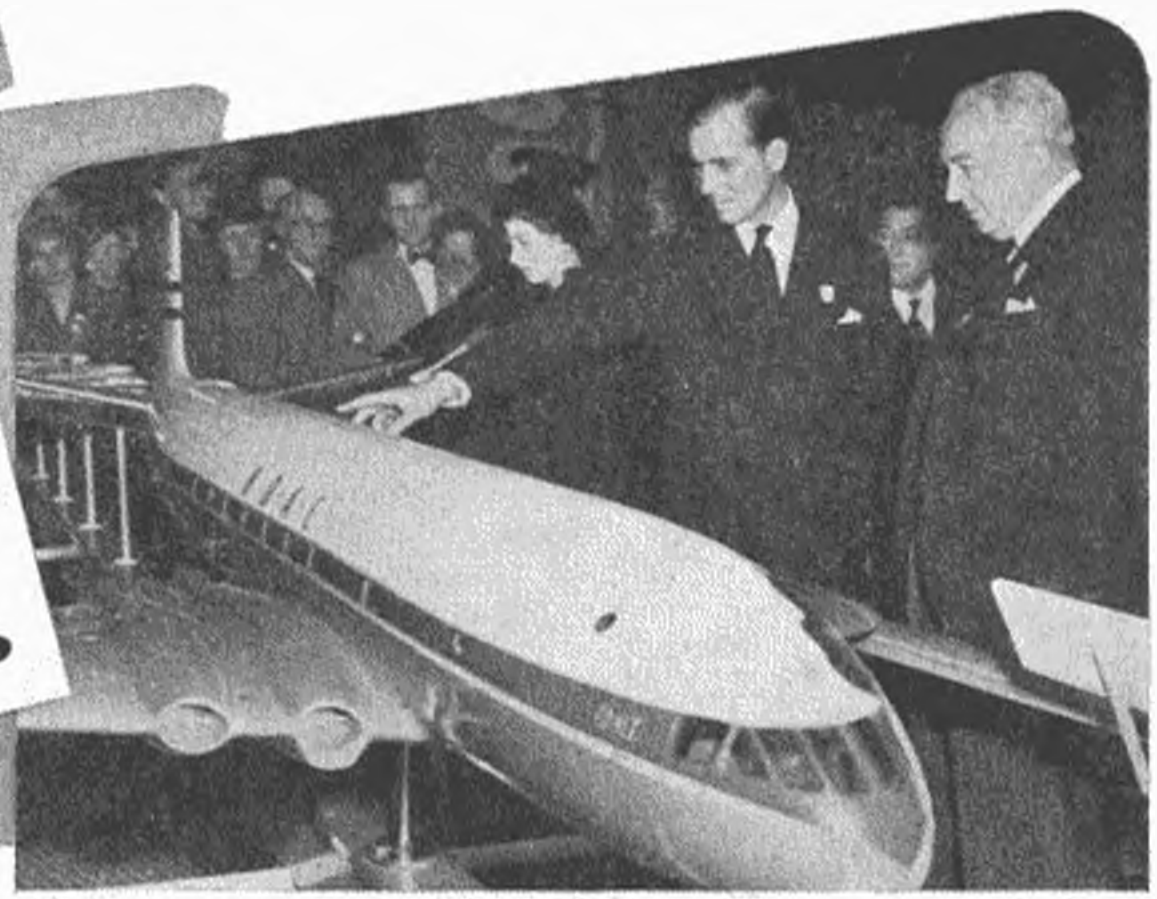
There is scope for interesting experiment with regard to the wing position on such a layout. Many successful models of this type have the point of balance either on the trailing edge, or still farther aft. To achieve stability under power the wing position must then be raised well above the fuselage. Three possible alternatives are shown in Fig. 4. With the wing seated on top of the fuselage, locate the mid point of the wing behind the centre of gravity. Raising the wing one third chord distance (1.25 in.) the wing can be located farther forward. With the wing at an extreme pylon height of 2.5 in., the trailing edge of the wing can be placed over the centre of gravity. These will be good initial positions for trimming and, of the three, the high pylon mounting will probably be best.

The remainder of the model then follows normal design and constructional practice. Again this is summarised in a simple plan—Plan 2—where outline shapes have been kept as straightforward as possible for ease in scaling. The fuselage need only be a simple square box of sufficient cross section to provide adequate clearance for the rubber motor when wound. No particular difficulty should be experienced in keeping within the 1½ oz. total airframe weight originally specified when, after testing with the propeller size recommended, it may be found possible to reduce the power of the motor to six strands only, increasing the motor run and the overall "still air" performance.

For the third model in the series a streamlined-slabsider is detailed in Plan 3. This is very similar to the "scale" of the other two models, all being based on typical Wakefield layouts and the three models should provide a very interesting comparison, if flown one against the other. The next step is then to try the same models out with feathering propellers, and so on. In fact, there is a considerable amount of scope with these "half-pint" size rubber models.



Model Comet at the B.I.F.

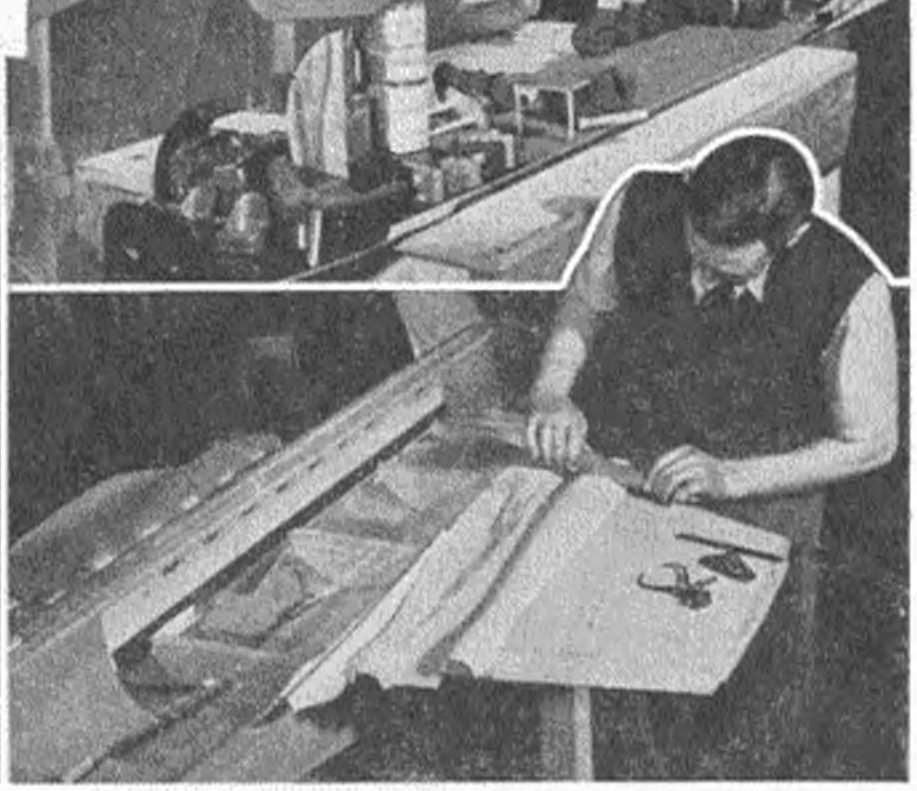


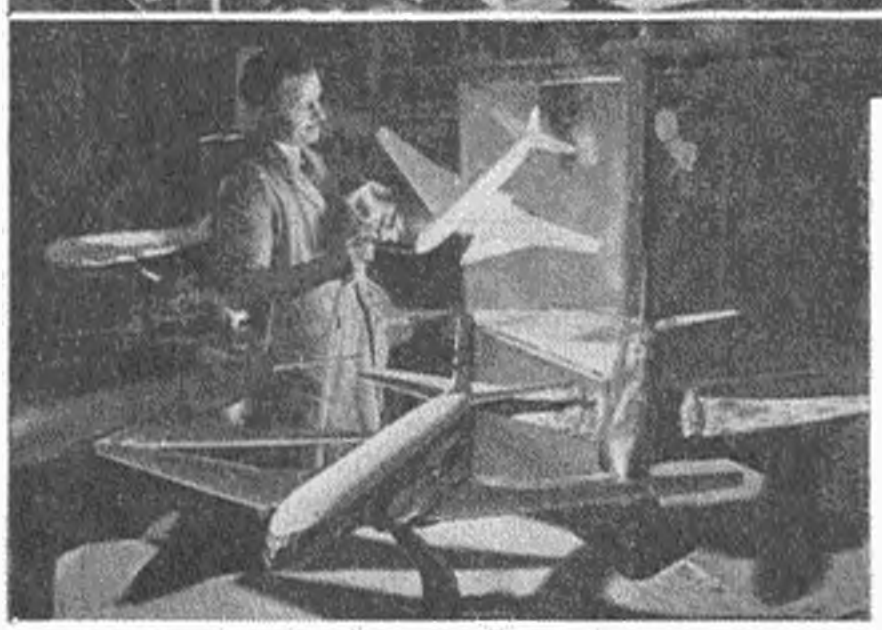
Considerable interest in the "Comet" has been shown by the Royal Family, and here Her Majesty the Queen and H.R.H. the Duke of Edinburgh are seen examining the scale model at the British Industries Fair.

THE recent introduction of the B.O.A.C. jetliner service between London and Johannesburg has resulted in world-wide public interest in the de Havilland *Comet*, and the appearance of a super-detailed 1/12 scale model of this record-breaking aircraft at the British Industries Fair drew the crowds to the B.O.A.C. stand, where it was on display.

The model was built by Westway Models Ltd., of Shepherds Bush, London, a firm who specialise in this type of display model, and our photographs show some of the constructional methods used in the production of large numbers of similar *Comets* in a variety of scales.

Fuselages are made from Perspex, moulded in two halves and cemented together. Portions are masked before spray-painting, so that the fully detailed interior can be seen when the masks are stripped off. The rest of the model is carved from solid wood, generally lime.





Top : The main deck is built up separately and when completely fitted with furniture and equipment, is slid into the fuselage before the nose section is attached.

Above : Hand-carving one of the engine nacelles. The Perspex fuselage reveals the semi-circular supports ready to receive the deck when completed.

Above left : An amazing degree of accurate detail is incorporated in the interior fitting, particularly on the complex instrument panels in the crew compartment.

Left : Large numbers of smaller "Comets" are also built, for display by airlines and travel agencies, and here a batch of 1/48-scale examples is being sprayed.

SPEED MODELS

By Harold de Bolt

(SECOND AND CONCLUDING PART)

THE fuel system is still one of the major problems in today's speed flying. More good models and engines are held back by a faulty fuel tank than by any other one trouble.

The solution of this problem is very complex and depends more than anything else upon the individual model, for models of the same design and power very often will not operate well on the same fuel tank. The one answer at the moment seems to be a tank narrow in width with enough height and length to hold sufficient fuel. In this way it is possible to control the flow of the fuel to the engine by moving the tank from side to side in the fuselage. Moving it inboard richens the engine, moving it outboard leans the engine. Trial and error is the only way to determine the best location.

One other way to assure good carburation is with the "pressure fuel" system. With this system the engine crankcase pressure is used to force the fuel from the tank to the engine. About three pounds of pressure is available here which is enough to overcome any other force that might be present. In practice this system has its good points inasmuch as the fuel consumption is reduced by about 50 per cent. due to almost perfect atomisation of the fuel as it leaves the carburettor. The engine runs with the needle almost closed. Its other advantage is that you can be sure that the engine will run just the way you set it on the ground for the entire flight, thus eliminating the waiting for the engine to "come in." Its disadvantages are that there must not be any leaks in the entire system or it will not work and that you must install a pressure jet in your engine.

When using this system a tank of the tall thin variety should be used. All joints must be lapped and soldered well. The tank pressure inlet should blast against the inboard side of the tank to prevent boiling of the fuel and the tank should be mounted solidly so it does not shift in flight. A vent tube should be arranged for filling so that it can be plugged and sealed for flight.

The crankcase pressure jet can be made in any way desired as long as it does not leak. The screw and nut idea is simple and works very well in practice. No matter what type engine is used, the jet should be open just as the venturi port is closed. This allows you to tap the peak pressure of the engine and yet it closes off sharply enough so that it will not distract from the engine performance.

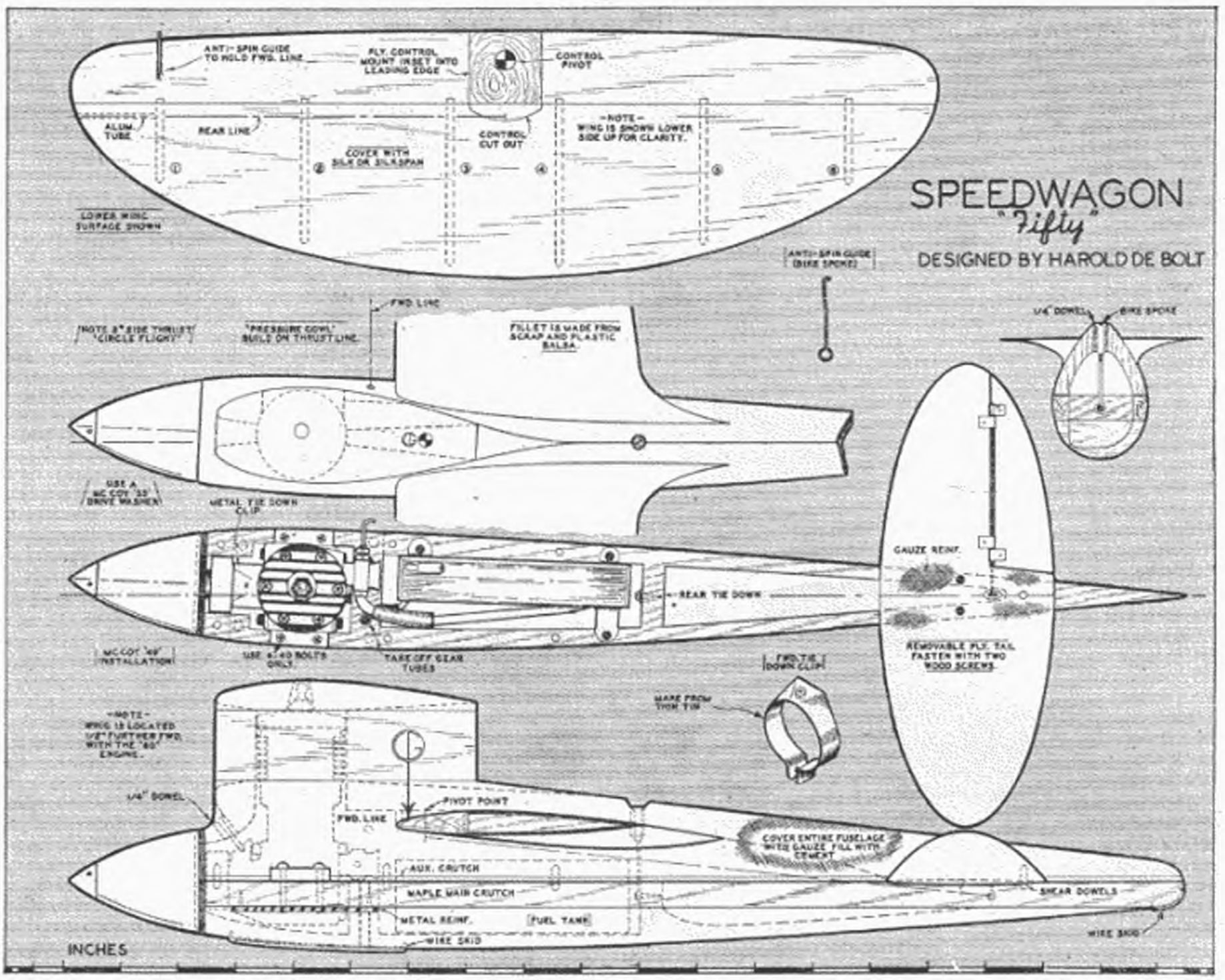
The operating procedure that works well with this set-up is to fill the tank to its brim and then put all hoses in place. They should be then clamped to the tubing with soft wire or by some other means. With the needle shut completely off, the engine can then be started with a starter by turning it up in the starter and *slowly* opening the needle until it starts. A good hot battery is a necessity here. Hand starting is by far the best with this system and the procedure here is to open the valve about one turn and prime the engine. Then crank it through until it cleans the prime out. If it fails to keep running, repeat the procedure until it does, opening the valve about ¼ turn at a time. Once the correct setting is found it should *never* vary, if it does it is a sign of a leak somewhere and the trouble should be found immediately.

Fuel is the one item that the modeller can be positive about, if he just takes the time to run a few simple bench tests and determines just how his engine runs on the various brands or his own concoctions.

As with everything else you must start someplace, so if you are going to buy the fuel ready made, a certain brand should be chosen and only this brand used. The idea is that no matter what fuel you use, your engine must be tailored to that particular type and peak performance can only be had with that fuel unless you alter the set-up of your engine to accommodate some other type.

There are two things that govern the performance of your engine with any given fuel; the glow plug and your engine's compression ratio. The glow plug is easy to play with and the compression ratio will require machine work, so most modellers use the glow plug to tailor the engine. There are many brands of plugs now available and fortunately very few are alike. The difference lies in the heat range. So it is possible to find a very hot plug and also a very cold plug. For instance, the Ohlsson and McCoy plugs are very hot whereas the Arden and O.K. plugs are on the cold side, in between comes the Champions and many of the other types making the wide range.

As with glow plugs the fuels vary a lot too, some are very hot and others seem cool. As a rule the hot fuel contains more nitro methane than does the cool fuel, although there are other factors which can control this heat range. Nitro methane is the power element in the fuel so the more you can use without undue heating the more power you will obtain, the other power factor is compression ratio, here the higher the ratio the more power that can be expected. The only factors that control the use of these two items is the detonation of "pre-ignition" which creates excessive heat and robs



the power from the engine. Detonation in our model engines is the so-called " cackle " we hear when the engine is running, when you hear an engine " cackling " you can rest assured that it is not developing its full power; another sign of this trouble, although usually the trouble is not as pronounced, is excessive heat sometimes marked by smoke rolling off the engine after it has stopped. Whatever the sign, immediate steps should be taken because " detonation " not only robs you of power but it also can ruin your engine in extreme cases. You have three possible cures for it, one is to reduce the compression ratio and this should only be used in extreme cases, another is to use a fuel with less nitro methane in it and the last is to use a colder glow plug. Reducing the nitro in a prepared fuel can be done by adding castor oil to it or if it is an extreme case by adding a 2 : 1 mixture of castor oil and menthanol (wood alcohol).

A great many of the modellers have taken this fuel situation seriously enough so that they have obtained the help of a local chemist or perhaps a chemistry teacher. These people understand the properties of the various chemicals that you are using and can be of great help if you desire to mix your own fuel. The one thing to remember is to buy " chemically pure " ingredients and not the " commercial " grades, take care in mixing it by keeping away from fire, cigarettes, etc., and above all keep the fuel *clean*.

A good basic mixture to start with can be compiled with the following formula, this fuel will run cool and steady. You can play with it to see what you can gain by adding and detracting the various ingredients, however, try to maintain at least a 30 per cent. oil content.

Castor Oil (Baker AA)	...	30	per cent.
Nitro Methane	...	25	,,
Methanol	...	44	,,
Amyl Acetate	...	1	,,

Flight Technique

One place that we can pick up miles per hour without any real work is in our method of flying, of course, this involves practice but we can make every flight made, a practice flight to improve our technique. Above all, every flight should be made on a pylon even if it is of only temporary nature for only in this manner are you going to master the art of getting around the thing in the easiest manner.

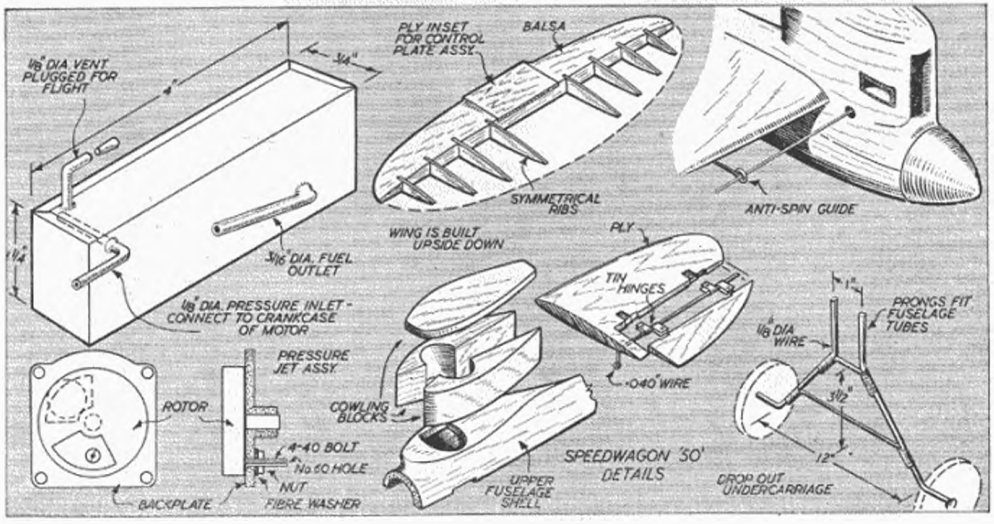
Take offs, whether hand launched or R.O.G., are very important for if you don't get successfully air-borne you cannot complete the flight. At all times the model should start with the wind blowing towards the tail of the model so that your run is down wind, every effort should be made to have the model air-borne with the model on the down wind side so that the wind will help hold it out until speed is built up. You should do your best to hold the model as low as possible for at least a lap or until it has built up flying speed, this reduces the "spinning" tendencies. The landing is equally important for a good "set down" can save your model from damage as well as that precious prop you just reworked! When you first notice that your engine is going to stop try to begin leading the model or whipping if possible, this helps maintain flying speed and allows you to have full control for the entire landing. The landing should be made directly into the wind and this is best done by whipping the model until it is on the "up wind" leg where you can gradually ease off allowing it to coast down wind, as it goes cross wind keep it as low as possible and ease the "up" to it setting it down only after it is completely stalled out.

Your method of flying during the actual speed run can give you or lose you miles with ease. Most of us have noticed that when you go on the pylon you lose speed, from 5 to 10 m.p.h. over what you can do off the pylon, this is due to your inability to get around the stick without detracting from the model's flight. There are several things that should be done to make your pylon flight a better one, above all, try to get used to flying on it so that you can be completely relaxed while flying, practice is the only possible way. If the pylon is a solid one you can help yourself a lot by placing most of your weight on your left arm, that is, grip the pylon with your left hand and place your weight on this arm instead of your right. In this way your flying hand will not have any strain upon it making it difficult to fly the model, resulting in a much more relaxed flight. Your foot work can be practised without actually flying so that they don't get all tangled up on you.

One additional way to improve your speed is to fly as close to the ground as possible. About 3 ft. altitude would be perfect, in this way you have some gauge by which you can maintain a perfectly level flight without any bouncing, this bouncing can really eat up the speed and it should not be tolerated. Flying low, so to speak, can be of help in windy weather as down close to the ground the air is much less turbulent allowing you to hold the model steadier, of course, all this will not be of any help if you fly the model into the ground so make sure that you have the technique down pat before attempting it in competition.

It is very obvious after going through the foregoing notes that the one item which will add to your speed more than anything else is *perfection*, perfection in every small detail! So many of us have the tendency to say "aw shucks, that is good enough," however if we are to fly at record breaking speeds "good enough" just will not do! It only takes a few minutes longer to do the job right and in the long run it will be the means by which you can win or lose. With a great many of us time is a big factor and we just do not have enough of it to do every job perfectly, however, in most cases, if we would just stick to one class or model we would have plenty of time to do the job right and thus become a "champion" in that class at least.

Above all else this model flying is a "sport" and if we are the winner in competition we should take it like a "champion" and if we are destined to be the loser we should take it like a "gentleman" and we all will get much more enjoyment out of it.



HOW IT WORKS

The flight forces acting on an aeroplane can be determined, quite accurately, by wind tunnel measurement, where by blowing a stream of air past a stationary model, true flight conditions are simulated. All sorts of corrections have to be made, however. The airstream must be " straightened " after leaving the fan producing it; the actual shape of the wind tunnel will modify the results; and, for true comparison, the test conditions must be to the same aerodynamic scale as that of the aircraft in normal flight through stationary air.

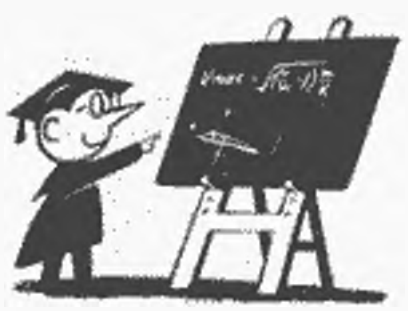
Many early wind tunnel tests made with models, including numerous aerofoil tests, at normal model speeds were not fully corrected and so are of doubtful value. In fact, as far as accurate data are concerned, the model builder is not particularly well off. A lot of data available at the right " aerodynamic scale " are unreliable. Data from tests at " full size " scale are not appropriate. Hence the model designer learns mainly by trial and error methods.

This, in itself, can be a good thing. It means really getting down to the fundamental principles of flight and, by purely practical means, making them " work " in the sense that a new model design flies satisfactorily. But it is a great help to know what these main forces are, otherwise the " error " part of trial and error may assume alarming proportions !

Basically there are four main flight forces, which pair off, as it were. Lift produced by the wings (and often a proportion contributed by the tailplane) balances the total weight of the model. Lift is only produced by forward motion in a conventional aeroplane and so a thrust force is necessary to drive the aircraft forwards. This is balanced out by the drag resulting from this motion.

Now these forces are not necessarily exactly equal and opposite to their respective " pair." The only one which remains the same relative to the *ground* is weight. That always acts vertically downwards. Lift and drag are really components of a *single* force generated by forward movement of the aircraft which can vary in strength and inclination with the flight attitude of the machine. Since they are " worked out " forces, however, they always have a fixed direction related to the *aeroplane* itself. Lift is perpendicular to the *flight path* and drag is parallel with the flight path. Thus the thrust is only parallel with its " paired " drag force when the thrust line is actually parallel with the flight path of the aeroplane. If not, then thrust is producing an upward or downward force as well—a fact which is made use of in adjusting the *trim* of the model.

In horizontal flight, lift exactly balances weight, both of these forces being in a vertical direction.



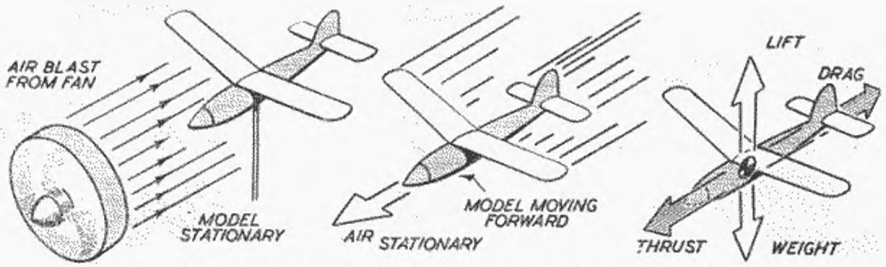
Drag is horizontal (backwards) and balanced out by the thrust. Any non - horizontal thrust force is absorbed in keeping the model in this flight attitude. On all conventional aircraft in a normal flight attitude the drag force is very much smaller than the lift force, by about six or eight times, on models. This means, in other words, that the wings give the power unit a " mechanical advantage," as it were, so that it is capable of lifting or supporting a weight six or eight times the actual pull it can develop. To remain in this equilibrium attitude the model must be " in trim " and be stable, which is where the tailplane plays its part, as described in a previous article. But, remember, once the model departs from its true horizontal *flight path* the direction of the lift, drag and thrust forces re-align themselves with this new flight attitude. The common error is to regard the flight forces acting on the aeroplane from the point of view of an observer standing on the *ground* and watching the flight. Only the weight force is bound to the ground attitude. The flight forces can only be analysed correctly by imagining the observer to be moving *with the aeroplane.*

For instance, few modellers are content to achieve straight and level (horizontal) flight with their models. Under power they want them to climb, and trim accordingly. As a general rule the faster or steeper the climb the lower the actual angle of attack of the wings. If a model flies at a 5 deg. angle of attack in level flight, for example, it would be difficult to hold this same flight attitude in a 30-deg. climb and perhaps impossible in a 60-deg. climb. Applying extra thrust to fly the model faster and give more lift (for climb) would result in excessive uncontrollable lift, producing a loop. Hence, usually, although the angle of climb may be much steeper, the difference in trim necessary to achieve this climb means that the wing is operating at a finer angle of attack. A steady wind does not modify this, for virtually the model is flying in an imaginary " cube " of *still* air, which itself is moving downwind with the speed of the wind. Once again you have to move *with the model* to appreciate the forces acting on it.

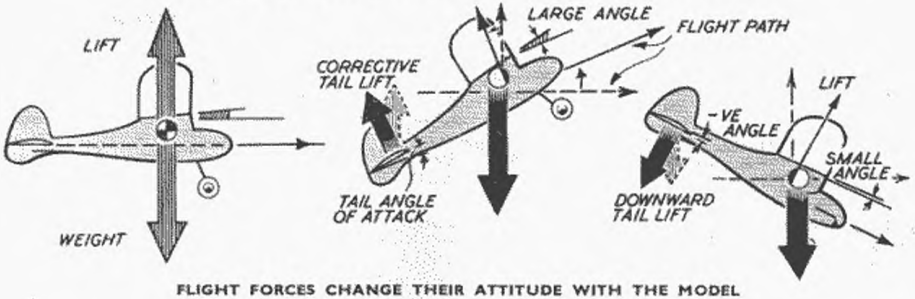
In a glide there is no forward thrust force, but forward motion is still necessary to produce lift. What happens here is that the resultant aerodynamic force exactly balances the weight. The lift component of this force is now acting upwards and forwards, the drag force backwards and also upwards. This drag force is parallel with the flight path assumed by the gliding model. The lift force is perpendicular to the flight path. The higher the ratio Lift : Drag, the smaller the actual *gliding angle* can be.

If you get confused on any particular point, then go back to first principles. If you now consider the model *stationary* and an air blast directed past it *along the direction of the flight path*, then the position of the flight forces will logically follow. Your " ground " reference is only necessary to determine the direction of the weight force.

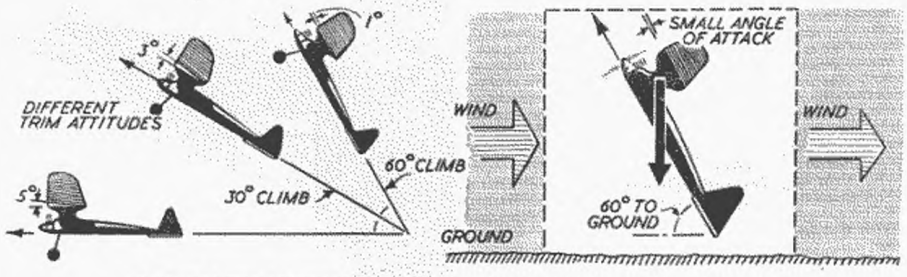
Some of these basic facts you should master as an aid to trimming. Then, when you have got home, work out exactly how the model you have trimmed *is* flying. What packing have you added and how has this affected the original line-up ? The secret of good performance is to arrange the balance of flight forces in the most efficient manner.



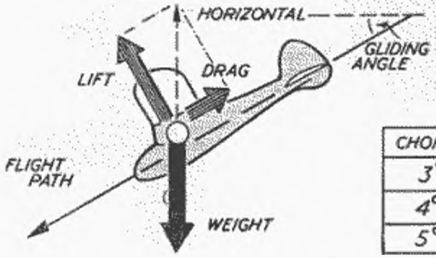
LIFT, DRAG, WEIGHT AND THRUST—THE FOUR BASIC FLIGHT FORCES

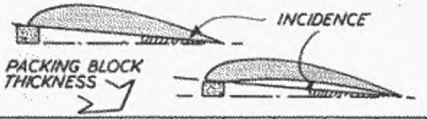


FLIGHT FORCES CHANGE THEIR ATTITUDE WITH THE MODEL



THE MODEL'S ATTITUDE IN FLIGHT IS INDEPENDENT OF THE GROUND





CHORD	10"	9"	8"	7"	6"	5"	4"	3"
3°	1/2	15/32	7/16	3/8	5/16	1/4	7/32	5/32
4°	11/16	5/8	9/16	1/2	7/16	11/32	9/32	7/32
5°	7/8	3/4	11/16	5/8	1/2	7/16	11/32	9/32

John Vaughan of Gresham's School, Holt, Norfolk, and his Prestwick Pioneer scale model powered by an Allban Javelin engine.

Accent on POWER

P. G. F. Chinn

WE were just wondering how to start off this month's "Accent on Power," when the May MODEL AIRCRAFT arrived, and, with it, two interesting and timely letters in the correspondence columns. I refer to those from the well-known Northern contest fliers, Vic Dubery and K. F. P. Rutter.

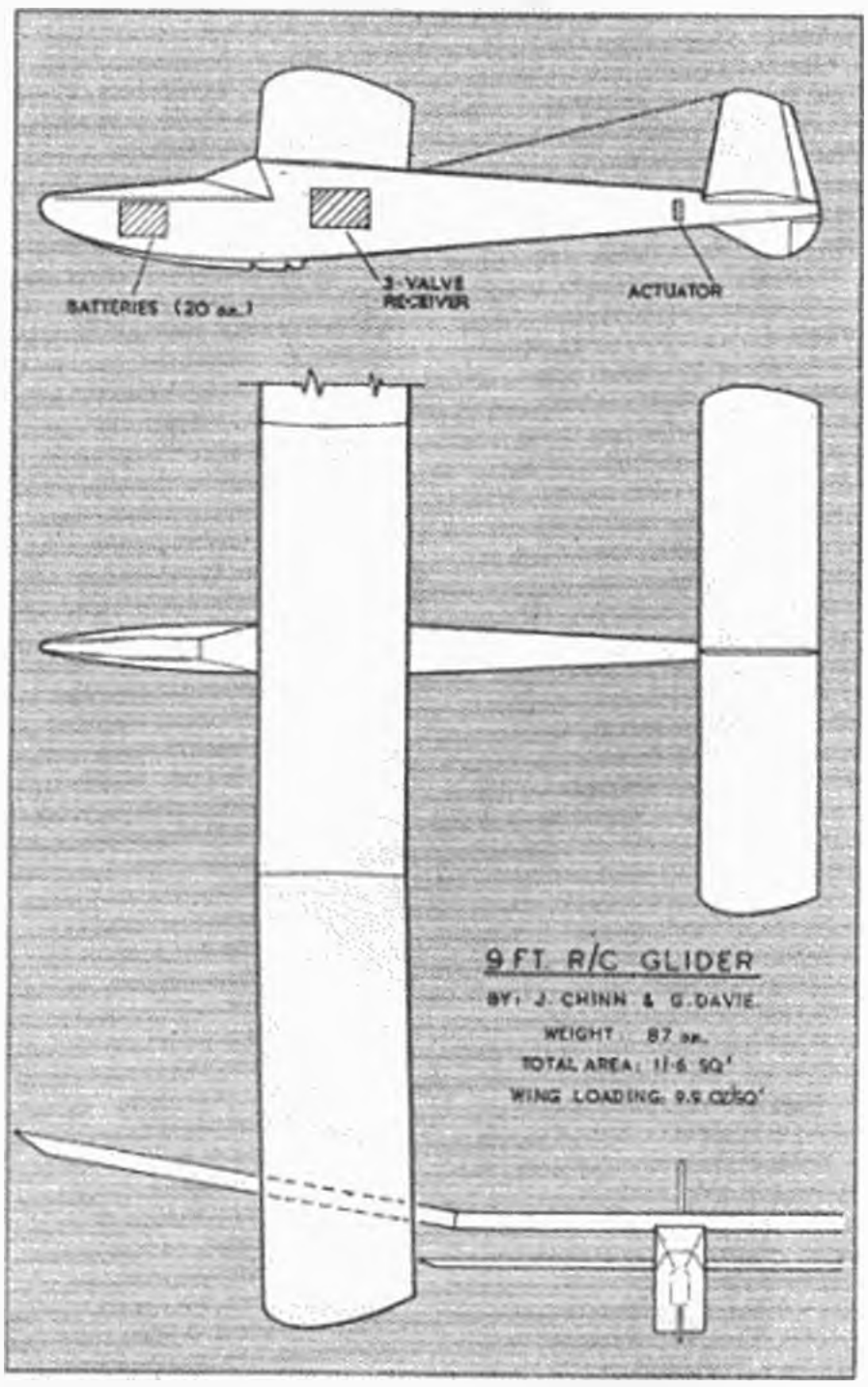
Vic Dubery's suggestion and method of setting an average o.o.s. time in all duration contests seems to be the best idea for dealing with the vexed problem of "timekeeper's eyesight" yet put forward.

One can see but two main disadvantages at the present time: (1) Under windy conditions, there is likely to be a large number of "average maximums" which will complicate and lengthen the procedure for finding the final top placings. (2) Under less windy conditions, a premium would appear to be set on getting the model o.o.s. irrespective of the time recorded in order to be credited with an official average maximum. Thus, by taking off all turn, flying straight down wind and using a model coloured for poor visibility, the less expert (and less scrupulous) might well secure for himself a much higher placing than that to which he was entitled, thus defeating the purpose of the scheme.

A method of getting over this latter problem has been suggested elsewhere; the idea here being that all o.o.s. flights falling below the official average would only be credited at the actual times recorded. This does, however, slightly reduce the value of the original scheme in that the timekeeper's eyesight factor is not entirely eliminated; likewise, that deteriorating conditions of visibility and/or rising wind, would also impose unfair penalties—or vice-versa with improving conditions.

There is, however, one other factor which we must not ignore and this is that, while a modeller may, as suggested, succeed in getting his poorly performing model unfairly credited with an average maximum, a high-performance model, properly trimmed, can, under good conditions, stay in sight for a 5 min. maximum, which, of course, will usually exceed the average maximum—always assuming that the 5-min. rule still stands. Alternatively, and under conditions where visibility for 5-min. is not possible, a skilful contest flier may elect to dethermalise his model *while still being timed* so that it is awarded a high "non-o.o.s." time, which will not be reduced by subsequent averaging of results.

Obviously, the implications of the Dubery scheme



are not quite so simple as they might at first appear. It may be necessary to stop up various loopholes. Nevertheless, the scheme deserves the attention of all leading free-flight men. The least we can hope for is that it will set in motion discussion by which a satisfactory solution can be worked out.

In the second letter, K. F. P. Rutter, also deals with duration flying, but from a more general aspect. He suggests that the performance of the modern contest model has become too high and that we have to find means of reducing it. He produces some very sound arguments in favour of reducing flight times—notably the risks the movement now entails by encroachment on to land surrounding airfields and the indiscriminate dropping of smouldering dethermaliser fuses. In all, the suggestions are bound to strike the hardened contest goer as drastic and their author is ready for them to be decried, which is all the more reason why they should be examined closely.

Our interest was mainly aroused by the comments on power models. Ken Rutter is, I believe, mainly a Wakefield man. Perhaps, therefore, he will forgive some disagreement with his premise regarding power-duration and his subsequent remarks on curtailing its flight times.

We readily concur that Wakefields are the most highly developed of modern contest types. Furthermore, it is generally agreed that it is more difficult to reach the top in Wakefield than in any other type of competitive model flying. The reason, we feel, for the Wakefield being regarded as more highly developed, is that rubber model design is relatively stagnant. It is inherently so by reason of the type of motive power employed. Even the most ambitious experimentation and development work produces but small returns.

The same can be said for A2. The absolute maximum that can be expected of a Nordic, under the present specification and contest rules, is, we would say, four minutes. This figure, in that elusive medium, "still air," has been claimed, but does not appear likely to be easily exceeded. Three minutes would be much nearer the mark for the average high-placing A2 seen in National contests.

The same reasoning cannot be applied to power-duration. The average performance put up in P/D contests can at least be doubled. Possibly the reason that some power models "fall to pieces or spiral dive after launching" is that all too few people of Wakefield calibre take up power-duration. Were more to do so, perhaps it would be shown how clearly can skilful designing be repaid in this branch of the hobby. If unencumbered by rules limiting performance, a class of P/D model and flier could be developed which might give rise eventually, to an international power contest of status equivalent to the Wakefield.

This brings us to the proposal that power loadings should be increased from the F.A.I. figure of 7 oz./c.c. to 10⅛ oz./c.c. This, of course, would definitely have the effect of reducing overall performance, which is Mr. Rutter's admitted intention. We do feel, however, that a much better method of cutting flight times down to more manageable levels would be to reduce engine runs and ignore power-loadings altogether. Neither the present 7.06 oz./c.c. F.A.I. power loading, nor the 2½ c.c. maximum capacity International limit, encourage power model development to the maximum.

The 20-sec. engine run is much too long for a really good "unrestricted" type P/D model—even when built to F.A.I. surface loadings—since such a model should be capable of doing a 5-min. maximum every time. Cut the engine run to 10 sec. and one has the reduced flight times automatically and without penalising clever design or reducing the spectacle of the real high-performance P/D model with its impressive rate of climb.

It is, the writer feels, the power-duration model's high rate of climb which makes it so interesting. To reduce rates of climb will only admit lower standards to competition power work. Our object should be to maintain high contest standards rather than reduce them—even if this means that is is harder to reach the top. The only argument that can be advanced in favour of higher power loadings is that they would reduce the P/D mortality rate, particularly in the smaller sizes, which may be good for public opinion if not for progress.

The suggested surface area of 300 sq. in., combined with only a 50-metre line, in A2, would, it is thought, knock A2 performance down to a mere 100 sec. or so. The proposed 3½-min. maximum rule would thus be of little comfort to the less fortunate who were unable to contact thermals, especially as the chances of contacting thermals at 150 feet altitude are less numerous than at 300 feet. A substantial increase in wing-loading, *or* a reduction in line length to, say, 200 ft., should be enough, at the present time, to contain A2 flight times within the bounds of the 3½-min. maximum suggested.

The effect of the proposed Wakefield rule (200 sq. in. instead of 294½ sq. in.) is a little more difficult to foresee but it would not seem likely that climb would suffer especially as substantially reduced structure weight would probably result in about 70 per cent. rubber being carried. The logical development under such a rule would appear to be an ultra fast-climbing model designed to reach

George Davie and John Chinn assemble their 9-ft. R/C glider. The model is finished in silver and metallic blue.

Steve Fairbrass, designer of E.C.C. equipment, acknowledges radio reception with a thumbs-up sign to the author's brother at the transmitter.

as high an altitude as possible. Once in a rising air current the higher sinking speed resulting from reduced areas would be almost nullified although under conditions of no lift, the effect should be to reduce flight times to the desired level.

Although we do not find it easy to agree with all Mr. Rutter's proposals regarding the actual methods of reducing optimum flight times, there is no doubt whatsoever that the problem which motivated his suggestions and which faces the movement today is one which demands attention.

Efforts to make modellers fully cognisant of their responsibilities in regard to the flying over, and recovery from, private ground, or land under cultivation are now being made. With regard to recovery of models we can only hope for the good sense and good manners of modellers concerned. Where these qualities cannot be counted upon, the S.M.A.E. should not hesitate to exercise such disciplinary powers as it possesses in the interests of the competition movement in general.

As for the fire hazard associated with the fuse type d/t, this does not seem to be a problem which the exercise of inventive faculties cannot dispose of. It should not be difficult to devise a small gauze cage or tube which would contain the fuse and prevent any smouldering remnants from causing damage.

Such measures should at least minimise the dangers to the hobby to which Mr. Rutter has rightly drawn attention, pending such revisions to rules as may be deemed necessary to keep contest flights within reasonable limits.

R/C Glider Duration an Alternative?

Having recently sampled what can be done with a radio-controlled glider, we are not at all certain that, at some time in the future, R/C glider contests may not become popular.

We have in mind a strictly duration contest which would be conducted within the confines of the airfield. A towline length of at least the regulation 100 metres should be permitted, the idea being that the glider should get enough altitude to be reasonably certain of connecting with some lift. Keeping the model airborne and within the specified boundaries would then depend on the sheer ability of the pilot to make use of lift for soaring—knowing just how long to let the model drift with a thermal without making it impossible to beat back against the wind. The art of this kind of model flying can, in fact, be closely compared with full-sized sailplanes.

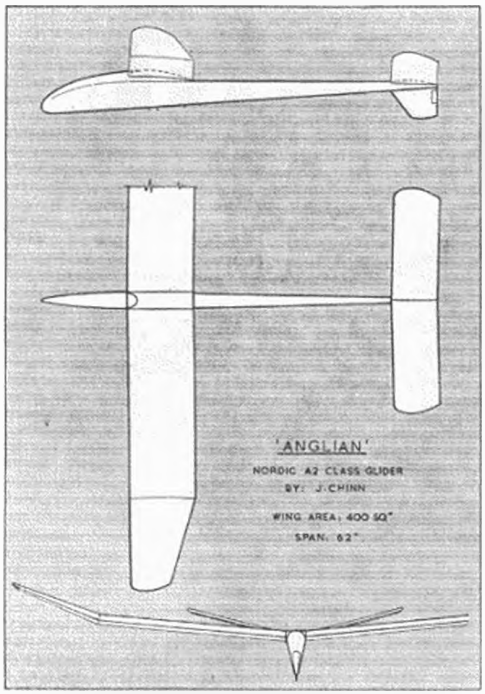
In order to keep flight times within reasonable limits—a 10-min. maximum is suggested for a start—a surface loading rule somewhat above the present F.A.I. figure would be desirable. A fairly heavy wing-loading, combined with the use of a long tow-line would, it is felt, be preferable, from the competition standpoint, than a light loading and a short tow. Not only would the tow height increase the chances of getting into the lift regions, but the higher gliding speed would, of course, render the model better suited to beating against the wind.

The model which gave us these ideas is the one illustrated in the photographs, and three-view drawing. Originally designed as an F.A.I. contest model in 1949/50 when large gliders were popular, it was only used in one competition (the glider event at last year's King's Lynn Rally which it won) before being turned over to George Davie for conversion to R/C.

Apart from the fitting of the radio, the fuselage was strengthened up with extra cross-members and was sheeted-in where the various R/C components were fitted and suitable hatches and doors made for access to these components. The 12-oz. lead ballast box was scrapped and a battery compartment built into the next bay. The entire model, previously covered with Silkspan and finished in yellow "Aerolac," was re-covered in Jap silk and sprayed metallic blue and silver. The auto-rudder system was scrapped but the rudder itself, fitted to the underfin, was retained as a means of adjusting directional trim. A full-length rudder was then fitted to the fin, operated through the usual crank type linkage from a standard rubber-driven escapement.

The various alterations, plus the radio gear (E.D. Mk. I 3-valve receiver) added nearly 2½ lb., but with part of this (a Vidor combined H.T. and L.T. radio battery and a 4½ V actuator battery) substituting for the lead nose ballast, all-up weight was increased by only 27 oz. over the 60 oz. in original contest trim. This has brought the wing-loading up to just under 10 oz. per sq. ft.

Naturally, with the wing-loading increased by some 45 per cent., the sinking speed has gone up quite a bit, the glide being much faster, but this is no disadvantage, and, in fact, allows the model to be flown in winds which ground most powered models. To compensate the greater sinking speed, nearly three times the normal F.A.I. towline length is used. For this, a German-made nylon fishing line was chosen which, although expensive (19s. 6d. per 150 ft. roll), is amazingly light and strong. The model has not the slightest difficulty in lifting the 900 feet used and the length could probably be increased to 1,500 feet if necessary. A fairly vigorous tow is necessary to get the model into its climb in calm weather, but tow-line stability is quite good



and it is now planned to tow up the model from the back of a shooting-brake when weather conditions impose too much strain on the energies of the "tow-man." This system has, in fact, already been tried out with complete success.

Once off the line, the model has the steady, graceful flight typical of large gliders and, with the addition of R/C, it has a fascination all of its own. Naturally, the smoothest type of flying is obtained in calm weather and, under these conditions, 180 deg. turns can be made with a continuous signal with complete safety and without stalling when straightening out. Continuous figure-eights, in fact, can be made simply by alternate applications of left and right rudder.

For thermal soaring, we tried the effect of gliding up wind until lift was encountered. The model was then put into a turn and drifted back with the thermal to gain altitude, then taken out and headed up wind again in search of more lift.

During an early attempt at learning this technique, the rudder stuck over after about five minutes' flying and we had to watch the model spiral down from five or six hundred feet. Unlike a normal powered R/C model, however, the turn did not degenerate into a spin. The model bounced noisily on striking terra firma but was quite unharmed.

For sheer simplicity of control and least risk of damage in the event of errors or loss of control, this type of model would be hard to beat. Such a model cannot be aerobatic, of course, but can, nevertheless, provide endless fun—and, of course, one does not so much mind everybody "having a bash at the button." Glider enthusiasts, on seeing the model in action are apt to remark, sagely, "That's got all your power beaten . . ." and it must be admitted that the silent and effortless manoeuvring of a good R/C glider certainly has considerable appeal.

"Anglian"—Successful A2 Design

Having managed to work a glider into these essentially "power" notes under the guise of R/C, we might as well go the whole hog and include an A2. The second three-view and photograph shows *Anglian*, a Nordic designed last year, which has proved to be quite a reliable layout.

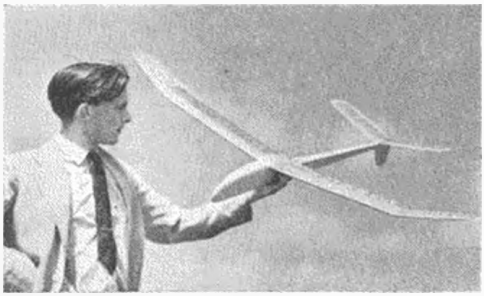
The model was actually built in the three weeks between the second and third of three Area Meetings attended last year and subsequently placed second to P. S. Jacobs's championship *Comet* A2. It was not flown in any other competitions (apart from winning the annual club glider contest) with the exception of the British Championships, when it succeeded in losing itself after two minutes in poor mid-afternoon visibility, the yellow fuselage showing up badly.

Originally, a straight dihedral of only 6 degrees was tried but this proved inadequate and the tip panels were therefore raised.

This completely cured the towing trouble and the model showed good line stability with a perfectly straight tow right up overhead.

The set-up includes both wing and tailplane at relatively coarse rigging-angles, the idea being that a minimum fuselage frontal area is presented at all times. The fuselage itself is of a fine triangular cross-section. The auto-rudder is actuated via an internal 0.010 in. steel wire and a simple pin-release behind the tow-hook.

Watching this, and other models, come over the recovery area at Digby during the British Championships, seemed to indicate that the design is at least up to average A2 standards. For 1952, slightly revised distribution of wing and tail areas was planned but the opportunity to build a new model has not arisen and no comparative information can therefore be offered.



The slim lines of the "Anglian" A-2 glider are well shown in this photograph of the model and its designer.

MODEL AIRCRAFT

ENGINE TESTS

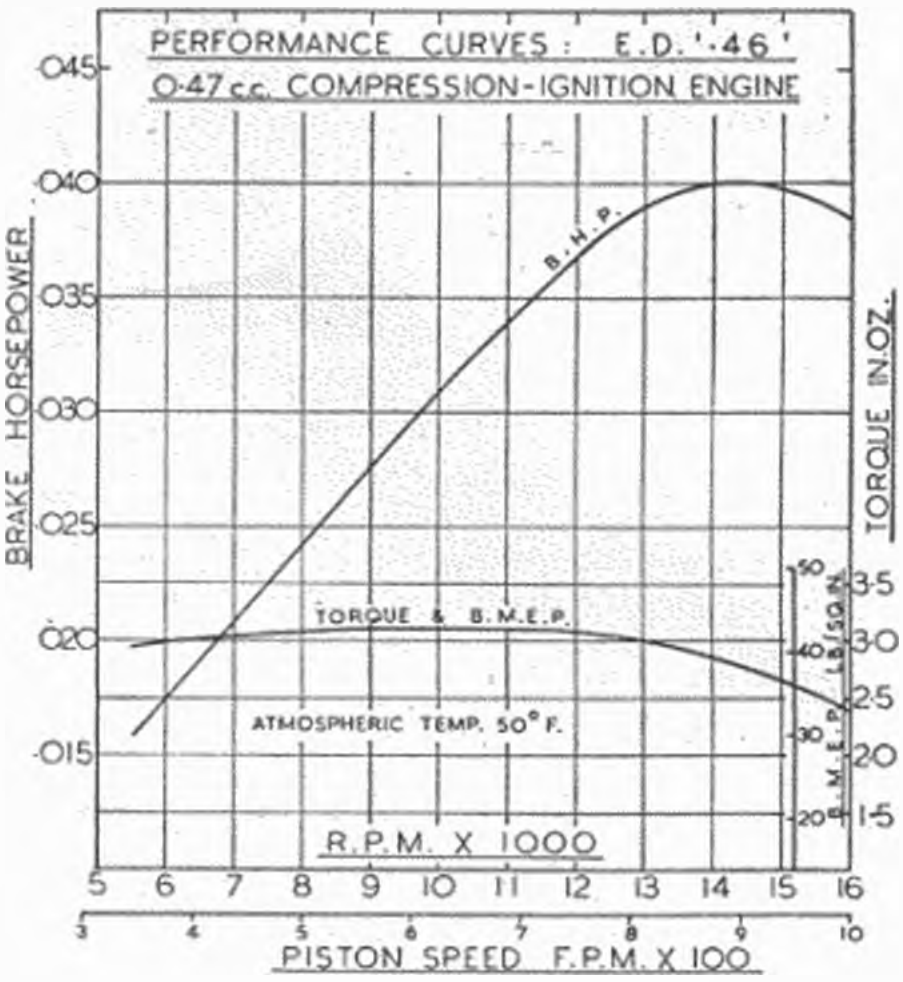
No. 37. The E.D. ·46 " Baby "

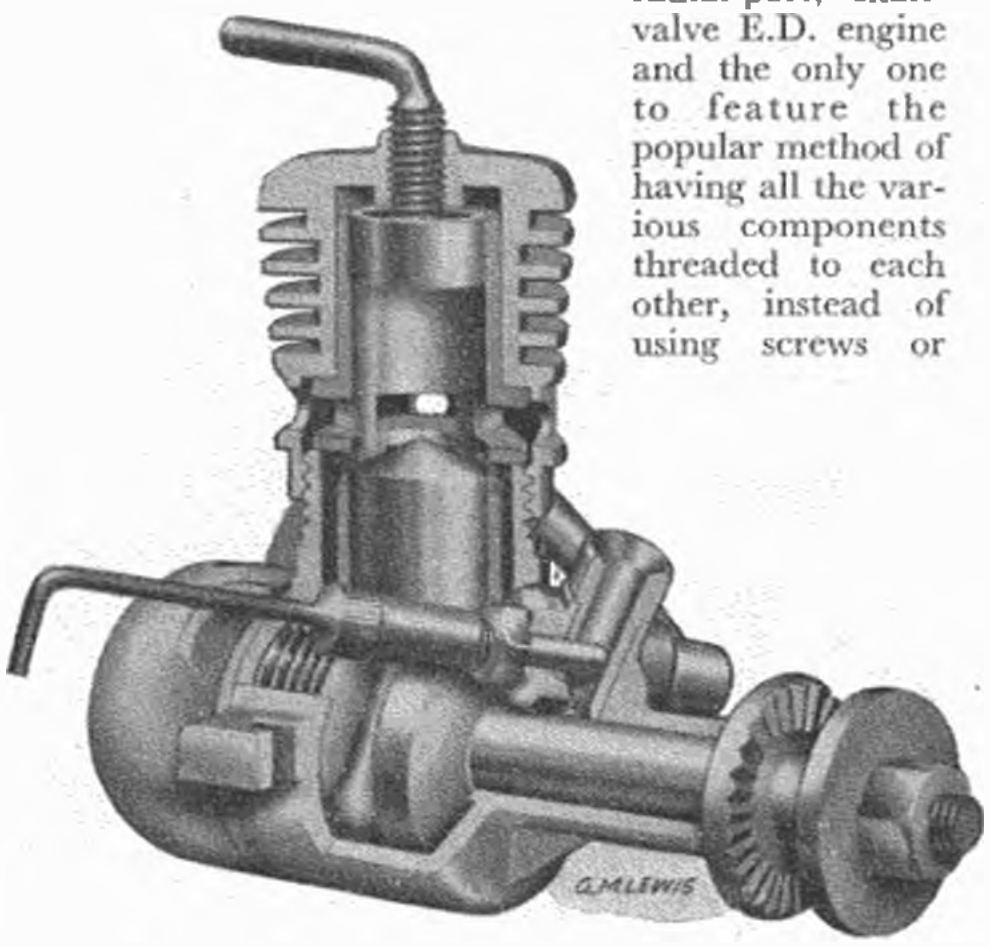
WITH the announcement of the E.D. .46, Electronic Developments (Surrey) Ltd., became the fourth manufacturer to enter the new ½ c.c. field, following Allbon, Elfin and Frog.

The .46 is actually the smallest capacity of the four—and, for that matter, of any British engine now in production.

Unlike the majority of modern marques, E.D. engines reveal but few family likenesses between the various models of their range. Apart from the earlier Mk. II, Competition-Special and Mk. III models (among which a close resemblance could be detected) each successive E.D. engine has shown quite marked departures, not only in design, but in construction also, from its immediate predecessor. Thus, the E.D. " Bee," introduced four years ago, was a completely new design, differing in every respect from the three previous E.D.s. The 3.46 model which followed it, although another disc-valve engine, was of entirely different structural design, while the 2.46 again showed marked departures in structural design and also in adopting the 360-degree exhaust and transfer system.

The new .46, once again, shows little resemblance externally to previous E.D. designs. It is the first radial-port, shaft-valve E.D. engine and the only one to feature the popular method of having all the various components threaded to each other, instead of using screws or bolts. It also features an unusual method of securing the cylinder to the crankcase, in which the one-piece outer cylinder-barrel and head holds down a flanged liner by screwing direct over the crankcase. Eight ports are drilled around the circumference of the barrel to allow exhaust gases to escape. Only the liner is identifiable as being an E.D. feature. This is of the pattern employed in the 2.46, which was originally used in E.D. designer Basil Miles's 5 c.c. model described in " Accent on Power," in MODEL AIRCRAFT, May, 1951. Briefly, it allows the use of an annular exhaust and transfer port and a completely uninterrupted 360-degree transfer passage in the manner first seen on the Yulon engines of 1949/50.



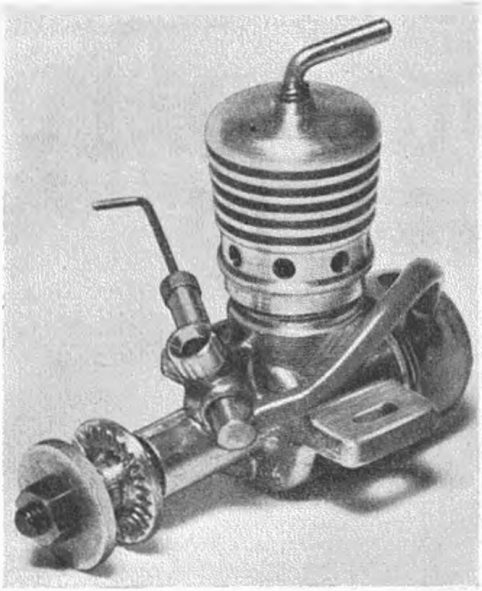


A practical feature of the new .46 is the inclined needle-valve assembly. This is fitted at an angle so that the needle stem is swept backwards and upwards, away from the airscrew.

The engine includes a fuel tank of green translucent plastic and may be regarded as offering good value at its current price of 55s., inclusive of purchase tax.

Specification

Type : Single cylinder, air-cooled, two-cycle,



compression-ignition, Annular exhaust and transfer porting. Shaft-type rotary-valve induction through hollow crankshaft. Conical piston crown.

Swept volume : 0.471 c.c. (0.0287 cu. in.).
Bore : 0.3125 in. Stroke : 0.3750 in.
Stroke/bore ratio : 1.20 : 1.
Compression-ratio : Variable.
Weight : 1.4 oz. (including tank).

General structural data : Die-cast aluminium alloy crankcase with integral main bearing and intake. Detachable rear cover threaded into crankcase. Machined aluminium alloy finned barrel-head. Steel cylinder-liner. Conical crown piston with fully floating gudgeon-pin. Steel connecting-rod. Plain bearings throughout. Prop. driver fitted on taper. Spray-bar type needle-valve. Beam mounting lugs.

Test Engine Data

Total time logged : 1 hour.
Fuel used : Mercury No. 8 (castor base).

Performance

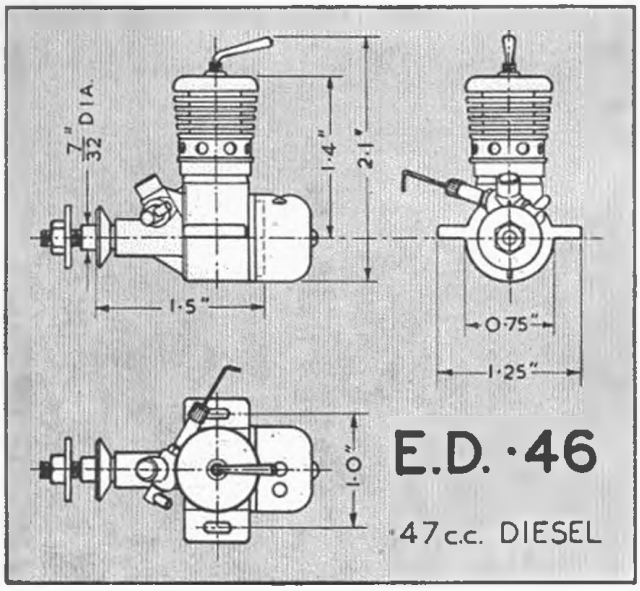
As a preliminary to the test procedure proper, the .46 was carefully run-in for one hour, as noted above, in a series of short runs. The modern small diesel is not a type which requires to be run-in at very low revs and speeds were, therefore, kept at between 6,000 and 8,000 r.p.m. during this time.

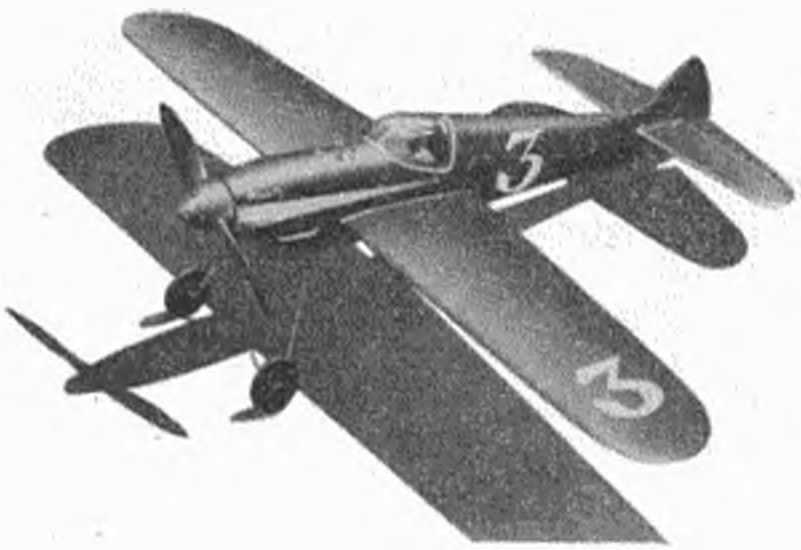
To start the .46, the usual choking is necessary and priming the combustion-chamber is also recommended. This latter operation is somewhat hampered by the design of the exhaust outlets and, in order to avoid a possible excess of raw fuel being introduced, the normal procedure of priming direct through the exhaust ports was not adopted. Instead, the engine was inverted after choking for four or five flicks, then, holding a finger over the tank filler hole, the prop was rotated two or three times to introduce fuel from the crankcase into the cylinder. On turning the engine upright again, a start was usually obtained within a few flicks.

It has to be admitted that the .46 was not among the easiest starting engines we have tested, although, as we only had the opportunity of trying out one example, this characteristic may not be common to all production model .46's. We do not imply, by this, that the .46 was *difficult* to start ; rather that it would not admit of the degree of "clueless-ness" which one might reasonably expect a raw beginner to bestow upon it. Therefore, if only on the strength of our test findings, we would hesitate to recommend it as a first engine for a newcomer to the hobby.

The performance claimed by the makers of the .46, is .04 b.h.p. at 12,000 r.p.m. We were able to confirm the output figure, although this was not realised until the engine had reached 14,000 r.p.m. The peak r.p.m. of the .46 was, in fact, among the highest recorded for a diesel. Maximum torque was obtained between 8,000 and 12,000 r.p.m.,

(*Continued on page* 326)





Greenfly

BY C.S.WEST

A WINNING CLASS 'B' TEAM RACER

THIS model is the outcome of a desire to build more " eye-appeal " in a team racer, and in doing so to boost the spectator interest demanded by this sphere of model flying.

That this has been achieved without loss of performance has been borne out by the fact that *Greenfly* placed third in the Davies Trophy finals last year.

The construction is unusual in that the fuselage is built up on the sandwich principle from four layers of $\frac{1}{8}$ in. sheet balsa. This enables us to save wood by fretsawing out each lamination separately to a minimum size, while the glue seams will give a stronger result than by carving from the solid. The writer strongly recommends that a glue of the " Certofix " type be used throughout, as cement is less able to stand up to vibration over long periods.

Fuselage

This is built in three main parts : 1—Lower main section with engine bearers and lower cowling. 2—Upper rear section and fin. 3—Front upper section including cockpit cover, completely removable for access. Trace the fuselage parts on to $\frac{1}{8}$ in. medium balsa, remembering when sawing out to cut away the inside of the cowling as shown. At this stage the wing slots and exhaust vents may also be cut out. Glue the engine bearers in position on the outer sections, after fitting the engine bolts, the heads of which should be soldered to tin plates to prevent twisting. Now glue the laminations together, merely spot-gluing the centre seam, so that after shaping the outside, the fuselage can be separated and the inside finally shaped. The other fuselage parts are made similarly, but not assembled until control gear, crossbraces and undercarriage are fitted.

The undercarriage wire should be partly formed as shown into a U-shape, and bolted to its ply bulkhead with tin straps. The bulkhead is then glued into place, threading the U/C legs through holes in the fuselage. Final bending to shape should be done when the glue has thoroughly hardened.

Wings

Glue together two $\frac{3}{8}$ in. medium balsa sheets edge-to-edge, and weight down on a flat surface until dry, then cut to outline shape. After carving to the section shown, cut out the control-plate recess and glue in the ply pivot-bolt mount.

On the underside of the port wing, carefully cut the leadout channels, then assemble the control-plate unit and attach the " Laystrate " leadout wires. After laying these in the channels and threading them through the celluloid tubes in the tip, cover in the channels with strip balsa and sand smooth. Use cement in this one instance to prevent the wires binding. Finally recess a suitable lead counterbalance weight into the starboard tip, cover in with sheet and sand flush. The wing is now ready to be glued into position in the fuselage.

Tailplane

Here again the construction is unusual. Cut out *two* tailplanes and elevators and glue together, sandwiching a layer of silk or nylon in between. This forms an efficient hinge without external tapes and also greatly increases the strength of this often abused component. Fit the control horn, connect the push-rod to the control-plate and glue the tailplane in position with everything at neutral.

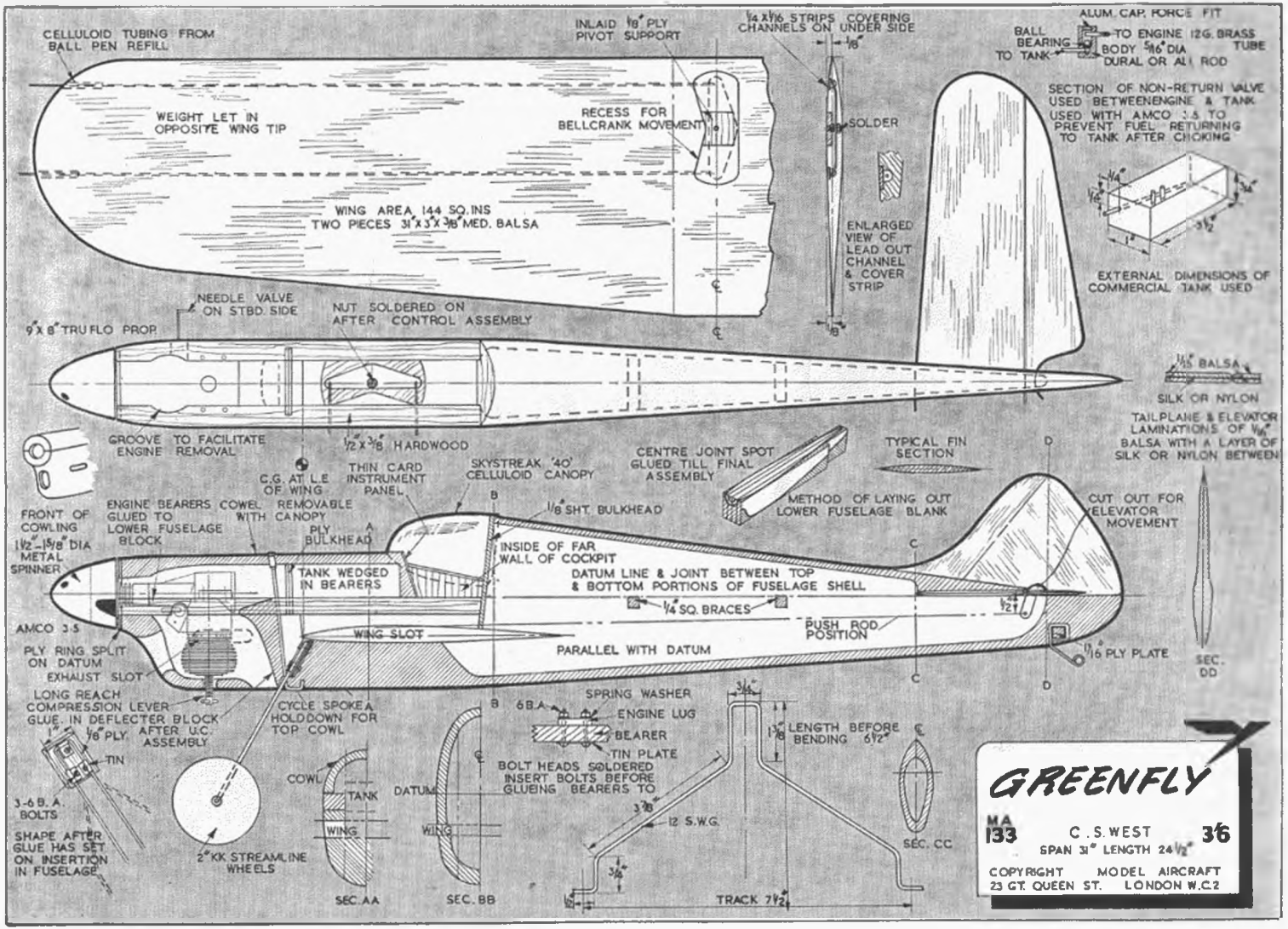
Fit in position the $\frac{1}{4}$ in. square fuselage crossbracers and the cockpit rear bulkhead. The upper rear half of the fuselage with the fin can now be fitted over the tailplane and glued firmly down on to the lower half. After making sure that the removable front cowling clears the internal gear, fit a cycle spoke and nipple as shown to hold it in place. The ply bulkhead in front of the tank will key it in position.

A suitable commercial bubble canopy may be adapted to fit and cemented on, leaving the junction with the rear fairing unstuck.

Liberally dope as much of the interior of the model as possible and sand well before covering the entire airframe with rag tissue, doped on. Apply three coats of coloured dope, preferably sprayed, rubbing down between coats. Finally apply a coat of fuel proofer.

A non-return valve in the fuel pipe was fitted to the original model and made for easy starting with motors where the fuel tended to run back to the tank after choking.

Best flying results were obtained with a 9 × 8 Truflo prop, and 45-60 laps per tank were achieved at 75-80 m.p.h. with the Amco 3.5.



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.

MODEL Talk

BY BILL DEAN

Adrian Bryant flew this Elfin 2.49 powered Mallard in the Astral de-centralised F/F contest at Fairlop.

● CONTROL LINE flying is now such an accepted part of the general aeromodelling scene, that it seems hard to believe that "wing on a string" designs were still very much of a novelty some five or six years ago. Although Jim Walker introduced U-Control to modellers on the other side of the Atlantic as far back as 1939, we in Britain were slow to take an interest in this fascinating branch of power flying. A good share of the credit for rolling out the lines in the London area must be given to Ron Moulton, who gave many demonstrations at model meetings during the 1947 season. After seeing his Ohlsson 60 (ignition, of course!) powered *Voetsaak* in action, we soon built up a simple all-sheet trainer for the Mills 1.3—which Ron showed us how to get off the ground and back again in one piece. Quite a number of now well-known fliers had their first taste of C/L flying with this same model, which was later produced in kit form as the *Phantom*.

Tracing the development of "tethered flying," we find that two Frenchmen—the Godfroy brothers—were experimenting with round-the-pole petrol engined models even before the first world war. From Jim Walker we learn that he started building rubber powered r.t.p. models in the late 'twenties—for demonstration purposes in large American department stores. These models were tethered to a small ring which encircled an eight foot high metal rod so that realistic take off and climbing circles could be made. When the ring reached the top of the rod, the models cruised at this height until the power ran out. It was found that the rate of climb could be controlled by varying the wing attachment point. As a change from normal r.t.p. flying, this method is worthy of consideration for present-day club exhibitions.

The Deputy Mayor of Cambridge—Ald. A. C. Taylor—admiring Peter Firman's winning A-2 glider entry at the recent exhibition at the Central Cinema, Cambridge.

When the famous Brown Junior engine reached the American hobby shops in 1933, Walker became convinced that there was a great future for tethered models which could be made to climb and dive by means of controllable elevators. Over a period of several years, he developed and tested many control systems—using from one to as many as five lines. Even when the final *U-Control* system had been perfected, it took many months of flying demonstrations to sell the idea to the aeromodelling public.

At the same time as Jim Walker was developing U-Control, Victor Stanzel—another American manufacturer—was experimenting with *G-Line* controlled models. In this case, control was achieved by means of a single line, which was attached to the end of a long rod. Although movable elevators were not featured, shallow climbs and dives could be carried out by pointing the rod up or down. In practice, G-Line proved to be rather sluggish and interest in this system rapidly took a back seat when Walker brought out his famous *Fireball* in late 1939—a model which even by present day standards is still a very sound design, both structurally and aerodynamically. Current *Fireball* kits include details for mounting glow-plug power plants together with information on converting the model for stunt flying.

The bulk of American C/L kit designs so far produced have featured the *U-Control* system—under licence from inventor Jim Walker. An alternative method of elevator control was developed by Victor Stanzel—which consisted of an ingenious arrangement of "rollers" and "pulleys"—being marketed under the name of *Roller Control*. Although quite efficient in operation, this system was more complicated to install than the simple *U-Control* bellcrank and consequently never caught on to any

Alan Setchfield (Willesden) and Elfin 2.49 design (Astral).

great extent. A more recent development by this same manufacturer is *Mono-Line*, a one-line system which has the advantage that the line can go quite slack without any loss of control. Elevator movement is obtained by twisting the single line by means of a special actuator handle. Some American speed fans are showing interest in *Mono-line* as its use enables a substantial reduction in drag to be made.

Probably the simplest method of elevator control ever devised, is that designed for Eagle kits some years ago, by Walt Schroder. In this case the flight lines were connected directly to upper and lower elevator horns—via two 90 deg. curved tubes set in the wing. Spring steel elevator hinges were fitted so that the control surfaces automatically returned to neutral in the event of line slackness. This system (*Flight Controller*) had two main disadvantages—over-sensitive control and the tendency of the lines to bind in the tubes with fast or heavy models.

The late Louis Garami branched off with an entirely different system, which featured wing flaps instead of elevators. A bellcrank was attached to the wing (near the tip) and linked up to the flaps, which were depressed to make the model climb, and raised for diving. Known as *Flap Control*, this method was used on only two kit designs which have long since been discontinued. Like *Flight Controller*, it never became very popular and it is significant that in Britain—where no patent rights for U-Control are held—every C/L kit so far produced has featured Jim Walker's well proved system. At present, something like forty different kits of this type are available here—which shows that C/L still commands a strong following in spite of substantial desertions back to the free-flight ranks.

★ ★ ★

● ADRIAN BRYANT, that globe trotting modeller from "down under" should be off to Iceland by the time these words appear in print. Remember last year we mentioned that Adrian was determined to get to Finland for the Wakefield Trials by hook or by crook? Well, as you may have heard, he made it all right and stayed out there for five months. While getting in a little full-size gliding he became friendly with some sailplane enthusiasts from Reykjavik, who asked him to pay them a visit in '52 with a view to giving aeromodelling instruction and generally running a modelling centre there.

On returning from Finland, Adrian worked for several months at Mercury's, but when we spoke to him at Fairlop one Sunday in April, he said that the wanderlust bug was biting again—hence his decision to take up that Iceland invitation and set out for Reykjavik. Some pioneering spirit, eh? Not even Frank Zaic ever got as far afield as Iceland in all his pre-war travels in search of Year Book material. How does one manage to get around the world like this and still manage to eat? It's not so difficult, according to Adrian—who has given lectures, sold pints of his blood and frequently washed dishes in order to get together the necessary travelling expenses.

★ ★ ★

● MORE AND MORE clubs are discovering that one of the best ways of increasing membership and generally "selling model aviation" to the public, is to put on an exhibition in the foyer of one of the local cinemas. Peter Hoskison, P.R.O. of the Cambridge M.A.C., sends in details of a very successful show of this type that his club arranged with the co-operation of the management of the Central

Pete Brown (St. Albans) and his 46 in. Wakefield (Weston).

Keith Stanley and his Hassard 60-powered 80 in. F/F (Astral).

Cinema, Cambridge (April 16th-26th)—on the occasion of the showing of the film "Landfall."

The opening ceremony was performed by the deputy Mayor of Cambridge, Alderman A. C. Taylor, who is also the vice-president of the club. Mr. J. A. Moseby, manager of the cinema, had generously donated a trophy for the best model on show and the entries were judged by Wing Commander Barthropp, D.F.C. (R.A.F., Waterbeach), F/Lt. Buddin and Mr. Plunknett, manager of one of the local model shops. The public were invited to participate in a "spot the aircraft" contest and the two prize winners qualified for free air trips.

The trophy for the best model went to Peter Firman, who entered a beautifully built original design A-2 sailplane of 62 in. span. In all, something like 70 models were on display and we are told that the judges were very impressed by the high standard of model building in the club.

★ ★ ★

● WHEN IT comes to new power trends, America usually leads the way and other countries follow—witness "pylons," C/L, payload and R/C to name just a few. So our morale went up appreciably the other day, when we noted that the winners in two recent *Air Trails* design contests, both used basic layouts that originated in this country. The first was a boxlike version of the *Powavan*—that unusual pylon model with the high-set powerplant, by J. R. Vanderbeek and the other was a helicopter of the *Waltzing Matilda* type—the design by A. Hodgson that appeared in the November, 1951, MODEL AIRCRAFT.

★ ★ ★

● PLENTY OF "new look" Wakefields were entered in the first eliminations (Weston) at Fairlop, on April 20th, but Bob Copland was once again flying his usual streamliner—in spite of rumours earlier this year that he would be using a slabsider this time. Nice model this (same one as last year)—has a V.P. prop, weighs 8¼ oz. and climbs up in a fast spiral—like nobody's business. Watching Bob's

P. T. Capon preparing his Wakefield for flight (Weston).

smooth, unhurried getaway and spot-on trim adjustment, made us realise afresh that he will always be one of the first names you think of when the talk turns to Wakefield flying.

★ ★ ★

In Brief

The February issue of *M.A.N.* contained accurate three views of the famous old 1928 *Curtis Robin*—a perfect subject for a 0.5 c.c. flying scale if ever there was one. Fuselage is slabsided, wings constant chord and the only tricky items are the struts. A one inch to the foot model would work out perfectly at 41 in. and gives a wing area of 265 sq. in.

We glued back the missing chunks in our "manhole size" flying saucer (Jetex 350) and once again created alarm and despondency at Fairlop amongst the avid readers of the Sunday papers. Appropriately, this model has now been dubbed "La Ronde." One of these days we hope to find out why it flies so well—there must be a reason somewhere! . . . We sincerely hope that Dean Inge wasn't wagging an accusing finger at aeromodellers who "design their own" when he said that "Originality is undetected plagiarism!"

THE LITTLE BLACK BOX By Harry Stil

Topical Twists

A Painful Twist

Challenged to find a twist to the subject of a new electronic gadget for counting the turns being applied to a rubber motor I can only feebly reply by pointing out that mechanical aids for this purpose are now wholly superfluous. Rubber motors have now assumed such gargantuan proportions that it is no longer necessary to record the turns numerically ; the system now in vogue is that of "progressive paralysis." This originates in the right wrist to indicate quarter turns, benumbs the shoulder blade at half turns, and arrests any further motion of the body at three-quarter turns. Any superman venturing beyond this point will immediately be aware when he has reached full turns by the only purely scientific means of determining this critical stage ; the snapping of the rubber motor.

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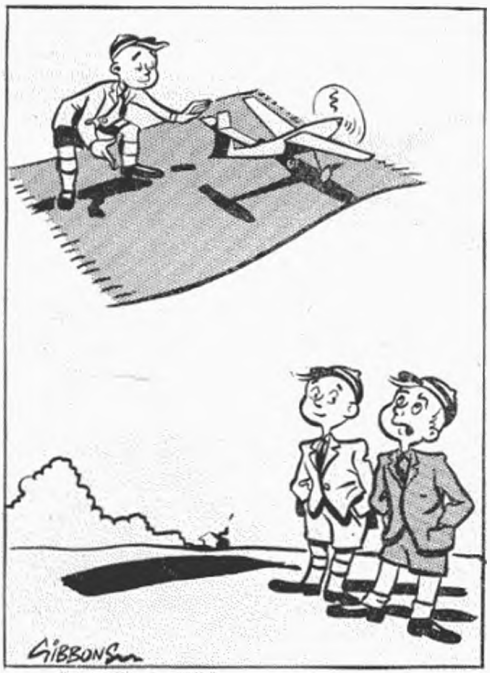
Invisible Assets

In describing a new system of timekeeping a writer to this journal states that "every person is credited with the average eyesight and the average visibility."

Well, I can't say that I too much object to being credited with the average eyesight. We, in our timekeeping capacities, never do quite come up to that eagle-eyed standard which the competitor invariably expects. And, be we longsighted or nearsighted, we must all at times suffer his sarcastic comments on our feeble visions. This we accept, although they do come it a bit much now and again, especially when, upon meeting you in the street a few days after the contest, they solicitously offer to escort you across the road.

But as far as the average visibility is concerned, that's quite another matter. In all conscience I cannot feel that I am entitled to anything less than full visual solidity. There are certain gifts and secrets which are too rare and precious to share, and one of these is the ability of rendering oneself completely invisible when there's a job of timing to be done. By what strange alchemy certain types are able to effect a sudden and complete disembodiment at such critical times I am at a loss to know, but I think it would be grossly unfair not to allow them the full value of their magical powers.



"Stinker's never been the same since his old man came back from Persia !"

● ● ●

Official-ease

In the bad, old days of ease and simplicity, before we became overwhelmed by the complexities of modern life, the whole of the model club's responsibilities would be borne with a cheerful nonchalance by the club's one and only official : the club secretary. In these bureaucratic days, however, he is flanked on every side by an impressive array of dignified officials who, in the very nature of modern officialdom, in no wise relieve the secretary of his many responsibilities. Rather are they the very reason why he can no longer bear them with that same cheerful nonchalance.

The said officials, briefly described, are :

The Club Treasurer.—The bloke who grudgingly collects the subscriptions when the secretary's away, and who knows enough of the club's finances to be amazed at the secretary's skill in handling them.

The Competition Secretary.—The bloke who botches up the comp. entry form, and who is always thankful to learn that the secretary has filled in and sent off the spare copy.

P.R.O.—The bloke who forgets to send in the club report when the secretary is too busy to do it himself.

The Committee.—Ideally this should be broad-based ; representing the club at all levels of age and interest. Most often it is broad-based through sitting about and watching the secretary do the work.

In the average club this formidable collection of officials invariably leaves one rather disgruntled member without any title to hang his hat upon. Fortunately, club secretaries are not without imagination. If the member is of the young and skittish variety he can be given the role of Assistant Comp. Secretary or, perhaps, Joint P.R.O. If, on the other hand, he is of a more aged and dignified genre there is always the quite honorary capacity of chairman to fall back upon.

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Corny Corner

At this time of the year there always crops up the usual crop of warnings about crops, and the farmers are busily engaged in chasing this year's crop bashers off their crops with hunting crops.

Why the average aeromod should have such scant regard for the produce of his native soil I don't know, but his particular aversion to corn does, perhaps, explain all those unpleasant remarks I get about this column.

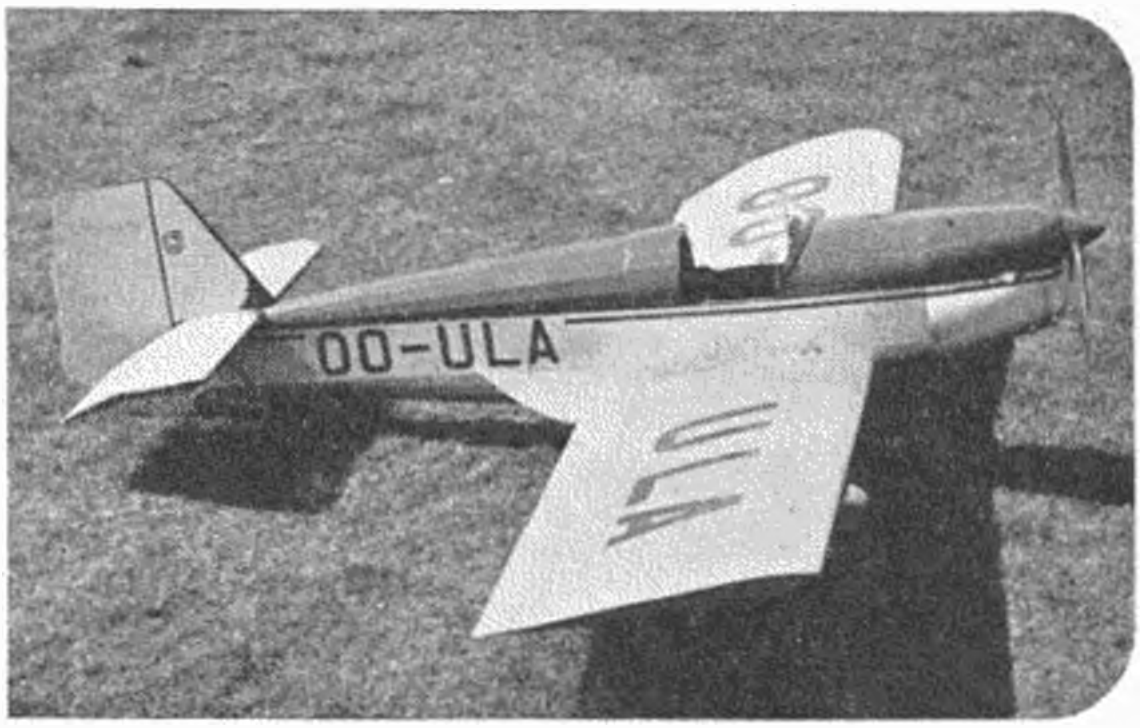
Pyronius

Prototypes Worth Modelling

Number 23

THE FAIREY TIPSY JUNIOR

By C. B. Maycock



The pictures clearly show the simple lines of this attractive little aircraft.

THE *Tipsy Junior* should be an excellent choice for a flying scale model. Practically no modification of the original would be necessary to ensure a good flying performance. It is simple to construct, rugged in design and all main essentials are accessible ; moreover, the lines are pleasing. The *Junior* is of all wood construction, built by Avions Fairey, Gosselies, Belgium, to the designs of Mr. O. E. Tips, whose name needs no introduction as a successful light aeroplane designer.

The basic fuselage structure follows precisely the same pattern as the average slab-sided model with longerons and spacers. Semi-circular formers set across the basic structure, carry stringers which in turn support the fabric covering.

In plan the mainplanes have a slight forward taper on the trailing edge, and are built around a substantial front spar, with which the plywood leading edge to the wing forms a rigid torsion box. There is also a subsidiary rear spar. All ribs are of constant section. The tailplane and vertical surfaces follow closely the mainplane in construction but with a single spar. The tailplane has two small struts.

The landing chassis is fixed and has a generous track (nearly six feet) with the legs fixed direct to the front spar. The upper portions are of circular section steel tubes housing a coil spring, while the lower portions carrying the wheels are of square section tube contrived to slide inside the circular tubes. The spaces between the two sections are packed with Ferodo segments, thus on landing the coil springs take the shock and the Ferodo segments damp the recoil. A very ingenious wheel brake is fitted consisting of a disc with a vee rim. The operating cable is threaded through a series of Ferodo cubes which lie in the vee edge-on. When the cable is contracted the cubes bite into the vee. Each wheel can be braked independently from a central operating lever in the cockpit.

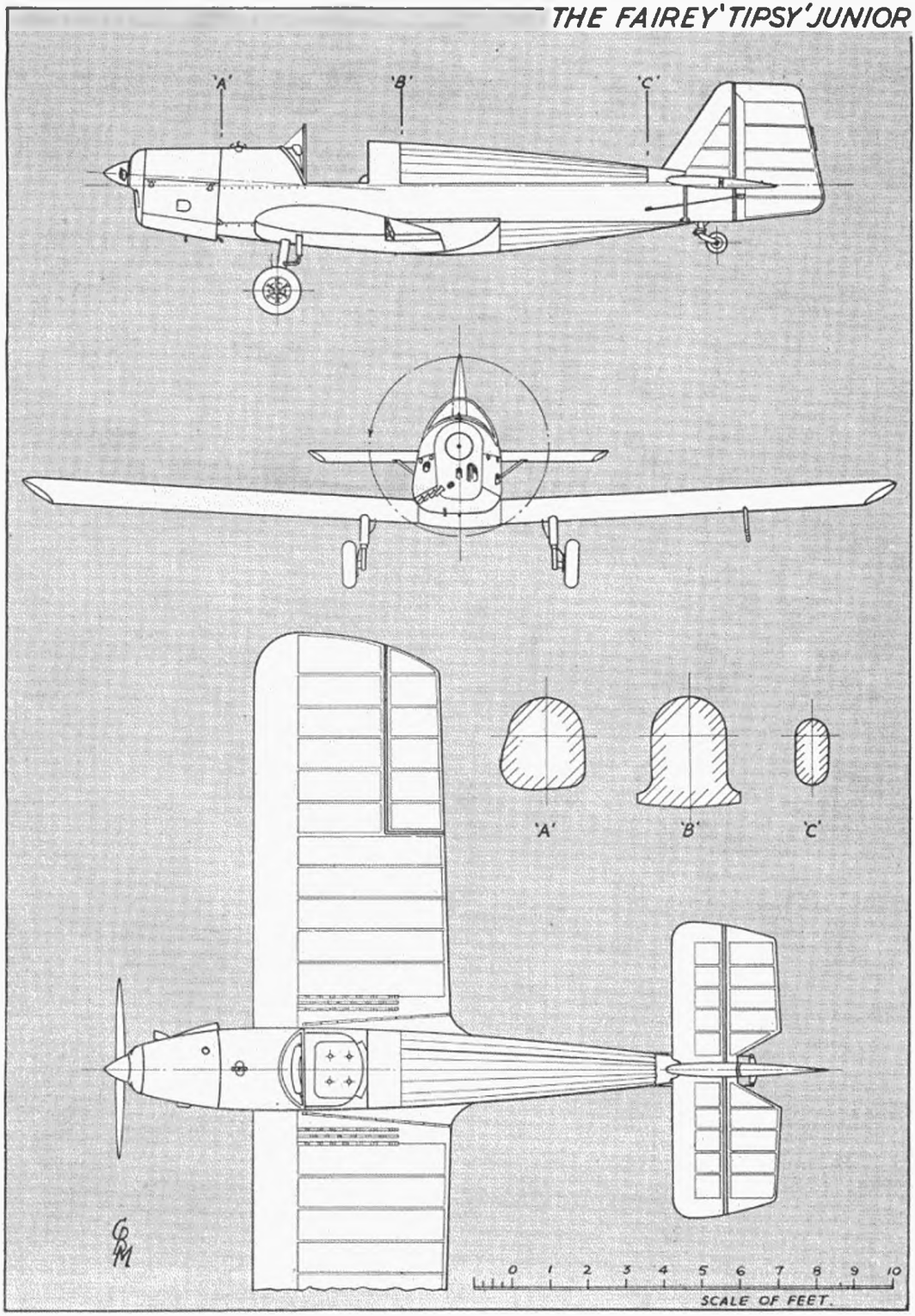
Besides the usual control column there is a petrol tap and choke of motor cycle type, throttle lever and ignition switches. The instruments comprise a P.4 compass on the floor between the wing spars, with A.S.I., altimeter, r.p.m. indicator, oil and fuel gauges on the dash. The engine is a Walter (W.M. 11-62 h.p.) driving a wooden or metal two-blade airscrew.

The colour scheme of OO-TIT was primrose yellow with aluminium doped rudder, elevators and the portions of the mainplanes (excluding the fairings) aft of the main spar. Letters and speed streak were deep blue.

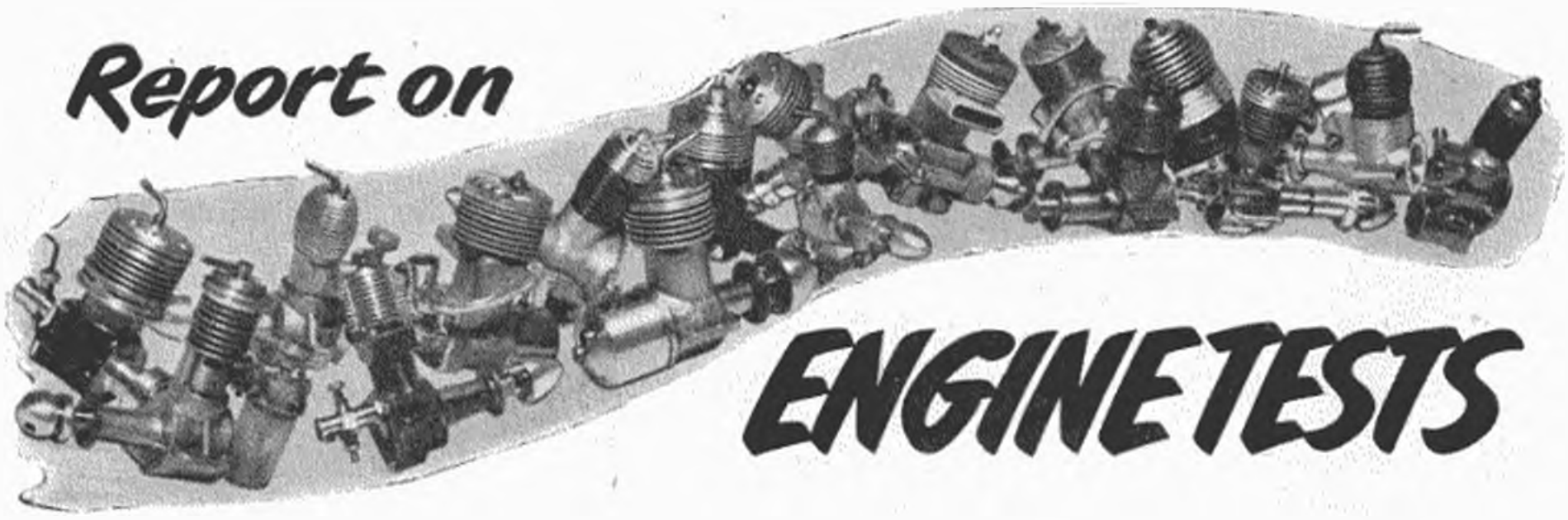
Main dimensions. Span 23 ft. 1 in., length 18 ft. 9 in., tailplane span 7 ft. 9¾ in., track 5 ft. 10 in., wheel size 400 × 100, tailwheel 6 in.

Performance with 60 h.p. engine : Max. speed 108 m.p.h., cruising 88 m.p.h., range 300 miles. take-off run 80 yd., landing run 100 yd.

THE FAIREY 'TIPSY' JUNIOR



Report on ENGINE TESTS



Part I. Performance Variation

THE C/L model, primarily responsible for the interest shown in model aircraft engine performance during the past few years, has lately conceded some of its popularity to free-flight types, which it had previously threatened, and to R/C. The C/L decline has brought with it a general levelling off in the rate of engine development. Nevertheless, that the average power enthusiast is still keenly interested in engines, is evidenced by undiminished support for the MODEL AIRCRAFT "Engine Tests" now well into their fourth year of publication.

It is interesting to note that, during the whole of this time, on no occasion has any of the results been disputed. Neither manufacturer, nor user, have, apparently, found cause for complaint or disagreement with any of the performance figures given, or with the comment on the engines concerned.

We mention this, not merely to give ourselves a pat on the back. (When dealing with aeromodellers such complacency is decidedly unwise!) Rather, we use it to introduce the question: "How accurate are the 'Engine Tests'"?

Every serious model enthusiast has probably asked himself this question. if only when he has noticed that performance figures recorded for a certain engine have varied somewhat from those quoted by another source.

The answer might be summed up in the words "As accurate as the engine allows."

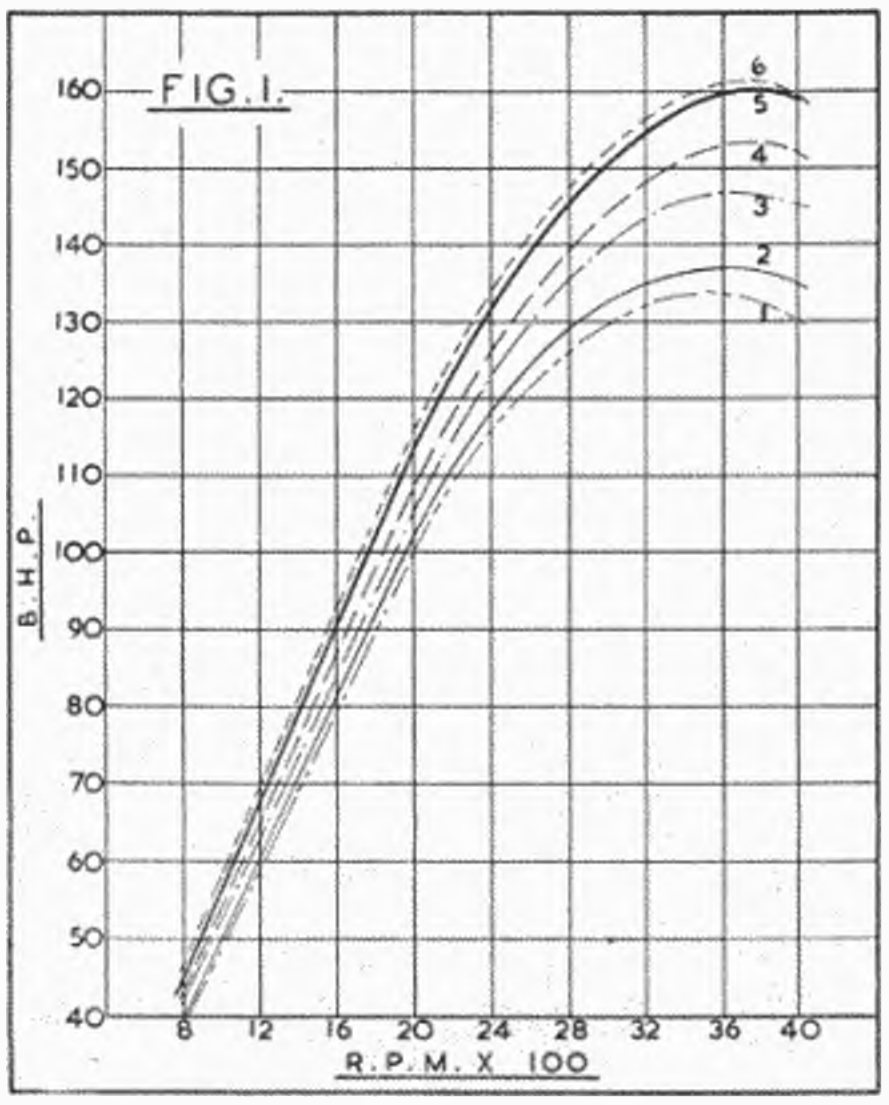
It is an unfortunate but undeniable fact that performance varies, sometimes seriously, from one production example to another. This is especially noticeable in the really small capacities, but is true of all types of i.c. engines.

As an example of this, Fig. 1 shows typical power curves for six production car engines of a powerful type. It will be noted that the power varies from less than 135 b.h.p. at 3,500 r.p.m. to over 160 b.h.p. at 3,800 r.p.m. Variation contained within the structure of the engines themselves, could be accounted for in slight differences in machining and other manufacturing tolerances, affecting valve and ignition timing, gas flow and cooling and mechanical losses, and to normal running adjustments.

With model engines of the normal two-stroke cycle type, we do not have to concern ourselves with the many parts which, in full scale four-cycle engines, contribute to the total number of possible sources of performance variation, but, for the most part, the remaining factors, which we have to consider, assume much greater importance due to the infinitely smaller margins of error which can be tolerated in such small sizes.

Thus we find that model engines, in general, vary in performance, between otherwise identical production units, to a much greater extent than their full-scale counterparts. Hence the 68 per cent. greater power shown by the best example over the poorest for a small batch of diesels tested, as compared with less than 20 per cent. for a full size design, as shown in Fig. 1.

Add to this the effects of varying atmospheric conditions, of different fuels and of the cumulative slight differences which are inseparable from the process of testing and the final graphical expression,



and it is hardly surprising that the chances of two independently conducted tests showing identical performance graphs, are about as remote as the possibility of two models, launched from the same spot, recording identical times and landing one on top of the other.

With regard to the actual process by which a performance graph is eventually arrived at, it is important to get this in the right perspective. Heenan-Froude operators might accuse us of splitting hairs, but it is none the less true to say that virtually no performance curve is precisely accurate.

Consider the method of determining a b.h.p. curve. The engine is coupled to a dynamometer. Torque and speed readings are taken at various loads and, as nearly as possible, simultaneously. The torque and speed figures, themselves precise as far as the calibration of the instruments will allow, are multiplied together with a constant to provide the b.h.p. figures at various r.p.m. These b.h.p. values are then plotted on a graph against speed. A curve drawn exactly through these points will, in all probability, assume a slightly erratic course and we are therefore obliged to "smooth" the curve to a shape more likely to fit in with the known characteristics of the engine.

This is precisely what happens with full size engines and, provided that a sufficient number of readings are taken, such slight inaccuracies as might be entailed in the process are unimportant.

The significant fact to be appreciated from all this is that, from the standpoint of model engine tests, no useful purpose is served by giving a b.h.p. figure running to an impressive number of digits of impossible accuracy, such as "0.1809 b.h.p. at 10.065 r.p.m." B.h.p. figures to two decimal places are, for the most part, adequate for the medium and larger capacity engines, while three decimals will cover smaller engines down to the ½ c.c. sizes. Similarly, in dealing with peak r.p.m., which now, almost exclusively, run to five figures, correction to the nearest 100 r.p.m. is obviously indicated.

The type of equipment used for the "M.A." tests has been described in earlier articles, but, for the benefit of readers who may have missed these, it may be briefly restated that the dynamometer employed is of the simple torque-reaction cradle type, which has proved the most suitable for use with small engines of the type and size commonly employed for model aircraft. It is, however, suitably adapted to give direct torque readings without recourse to the more usual beam and weights method of balancing torque, and, at the same time, to damp out cyclic fluctuations. However, three separate scales are used, to suit small, medium and large engines, so that, by changing the counter-weights, readings are, in effect, geared up and scales remain sufficiently open to facilitate reasonably accurate readings even with the smallest engines. The wide capacity range of model engines makes this essential and, in fact, the present limits of approximately ½ c.c. to 10 c.c. may be regarded as the maximum range over which, in the interests of accuracy, a single piece of apparatus may be used.

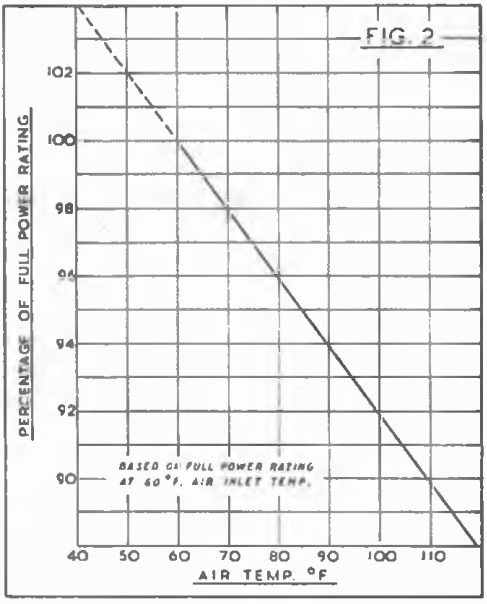
Returning now to the question of performance and of the variables affecting this. Broadly, we can divide these into four groups: atmospheric, fuel, ignition and mechanical.

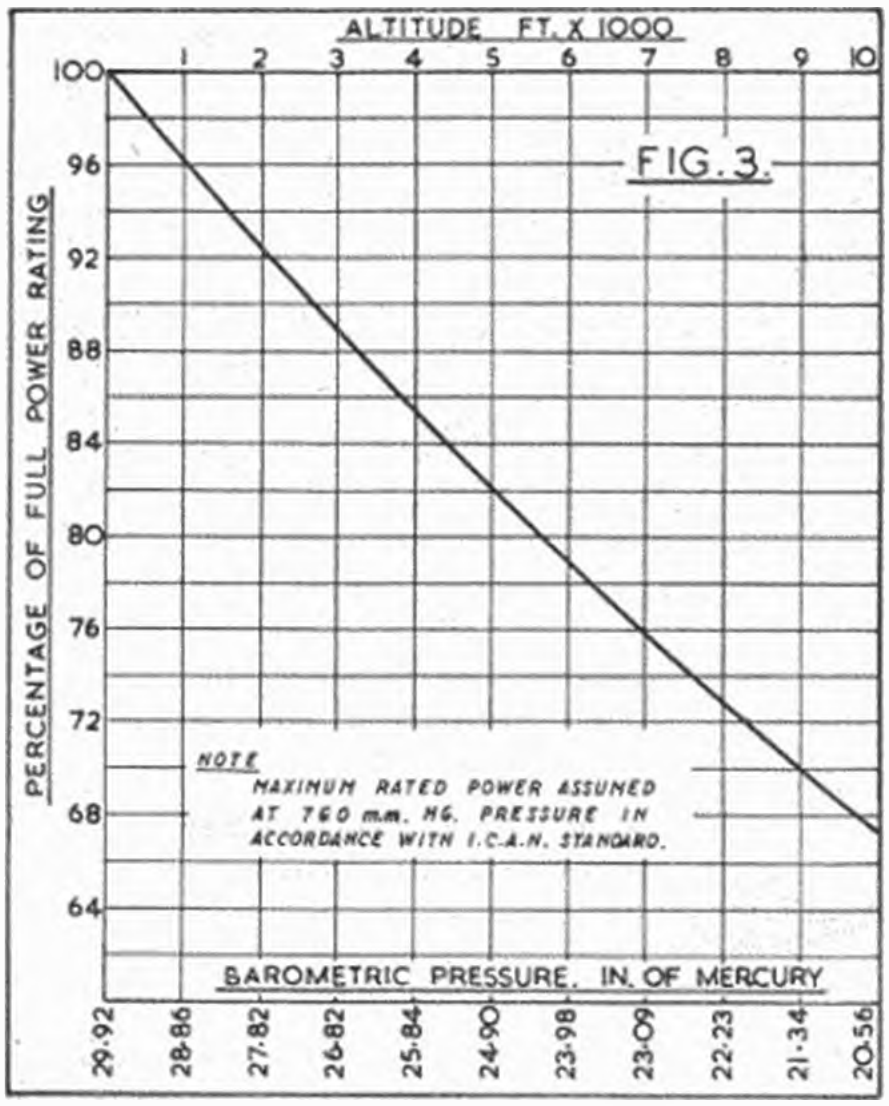
As befits an essentially air-burning engine, the power of an i.c. engine is dependent on the amount (weight) of air (oxygen) consumed in a given time. Since atmospheric conditions vary seasonably and between different locations and altitudes, it follows, also, that i.c. engine power outputs will vary correspondingly.

Firstly, the weight of air inducted will depend on air temperature and barometric pressure. Charles' Law states that, in a dry gas, whatever the pressure may be, and such pressure remaining constant, the volume is increased at a constant rate per degree increment of temperature (coefficient of expansion 0.003665 per deg. C.). Thus, conversely, air density, or weight per unit of volume, is decreased at a similar rate with rising temperature.

The result of this is seen in Fig. 2 in which power output, written as a percentage factor, has been plotted against temperature. The power output, it will be noted, drops approximately 2 per cent. for every 10 degrees F. increase in air temperature. The graph is based on rated power being delivered at an air intake temperature of 60 degrees F.

In Fig. 3 is shown a power altitude curve for normally aspirated engines, with a corresponding barometric pressure scale added. A mean barometric pressure of 760 mm. or 29.92 in. Hg. at sea-level is assumed in this case, which is in accordance with the table of the International Commission for for Aerial Navigation (I.C.A.N.) and is used to standardise the b.h.p. rating.





While the climate and terrain of the British Isles are not such as to give rise to the extreme variations of power output covered by these two graphs, it can be readily appreciated that, where such conditions exist, atmospheric pressure and temperature may combine to substantially reduce performance. As an example, it may be shown that an engine required to work at 4,000 ft. above sea-level and in an air temperature of 90 degrees F., may develop only 80 per cent. of its rated output.

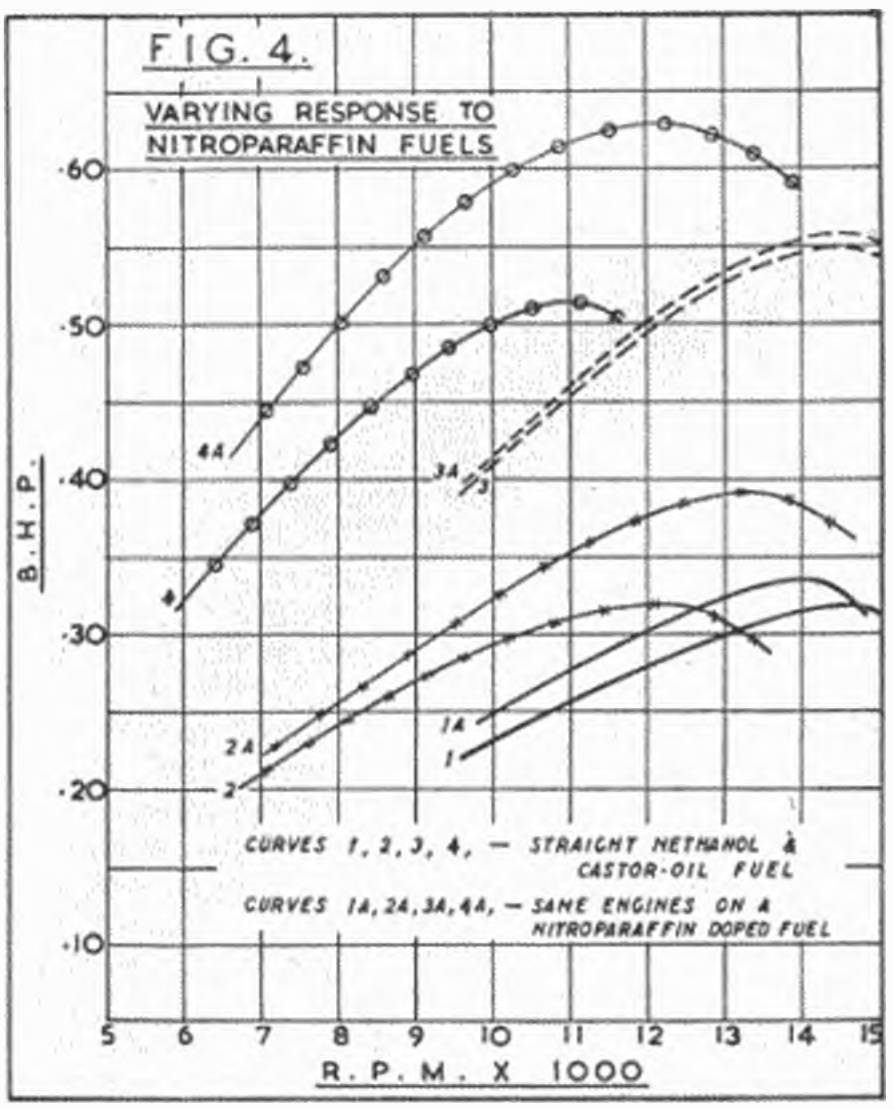
The third climatic condition to be considered is humidity. It has been shown that indicated horsepower is reduced in proportion to humidity, the loss being proportional to the volumetric loss of oxygen content in the atmosphere. In practice, however, this appears to be more than offset by other factors ; specifically, an increase in volumetric efficiency and a lowering of the combustion temperature due to the lower temperature of the ingoing charge and the heat absorbed in vaporising the water content of the mixture.

In full size practice, the introduction of water, either in the form of a finely atomised spray, or by means of a suitable solvent additive, actually with the fuel, has been claimed to have beneficial effects with certain high-performance engines, and the " water-injection boost " as used on some aircraft engines, is a practical example of such an application. In full scale work it has been proved that an adequate moisture content in the fuel/air charge is particularly valuable with high-compression engines in suppressing detonation and in reducing carbon deposits, as well as increasing volumetric efficiency, with a consequent increase in output.

With model engines, the experiences of speed fliers would seem to confirm that improved performance is to be expected under humid conditions and while cylinder sizes are such that " detonation " (as understood in the full scale sense—i.e., " knocking " or " pinking "—and distinct from the model diesel combustion process) is not a factor with which we have to bother, it would appear that there can be a definite gain from improved volumetric efficiency.

With regard to fuels, it is only intended to touch briefly on this subject in so far as it affects variation in test results. In this respect, diesels and glow-plug engines differ from each other in the factors which influence performance variation. In general, glow-plug motors usually respond only to the properties which go to make the " power " of this fuel—always assuming lubricant content to be adequate and balanced—although the extent to which one fuel produces more power than another may vary widely between different types of engine. See Fig. 4.

The power outputs of diesels, on the other hand, are not greatly influenced by different fuel formations—*except how such fuels affect critical running temperatures.* This is a factor which has only developed with modern high-speed competition diesels and means that a fuel which gives a maximum of 5 or 10 per cent. greater output in some engines, may well deliver less power than normal in another type due to overheating. Sometimes overheating and loss of power on a certain fuel are confined to individual examples of a certain type ; sometimes the loss will be minimised or eliminated with running-in, but the cause is frequently due to the design and construction of the engines themselves, the materials used and the design of the components being such



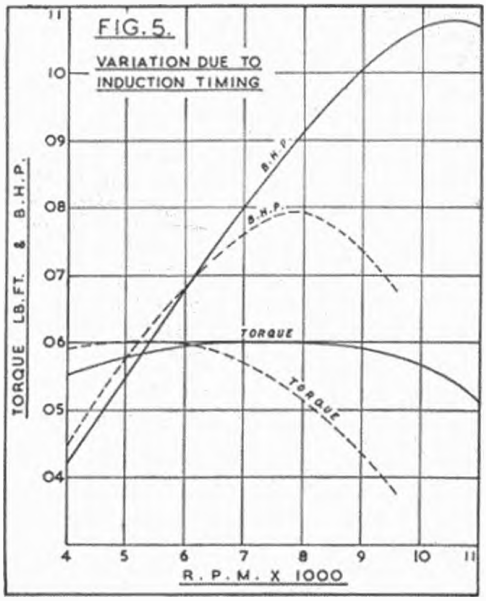
that heat dissipation is inadequate when using modern fuels in which chemical additives are employed.

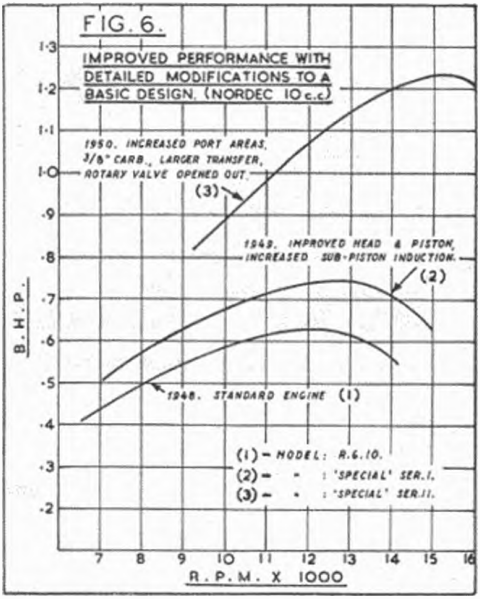
Design also influences power-loss with warming-up, a phenomenon common to most diesels and a few other types, which often seriously affects results and complicates testing. This question was dealt with at length in an earlier article ("Facts and Findings on Engine Tests," MODEL AIRCRAFT, Oct./Nov., 1950) and will not be repeated here. Such data as has been collected since that date would appear to confirm most of the earlier observations.

With glow-plug engines, the type and conditions of the glow-plug itself can have a marked effect on performance. Engines are invariably tested with a plug of the type and reach specified by the manufacturers, but slight differences in the precise position of the glow-plug element often account for an appreciable variation in performance curves.

Mechanical variables affecting performance consist mainly of frictional losses and slight dimensional differences to port areas, timing, etc., affecting volumetric efficiency and, in some types of engines, are much more marked than in others due to greater manufacturing tolerances. The widest variation naturally tends to be among the very small diesels.

Just how marked can be the effect of quite a minor modification is shown in Fig. 5. Curves are reproduced for the Mills Mk. II model, as introduced in 1948 (when it superseded the earlier Mk. I) and as modified the following year. The modification mainly responsible for the outstanding improvement shown was a lowering of the intake port to give a longer induction period. At less than 6,000 r.p.m. the power was slightly reduced due to charge loss from blow-back, but it will be seen that, above this





speed, the gain in volumetric efficiency is such that torque is maintained to a speed of approximately 3,000 r.p.m. higher, with the result that b.h.p. is stepped up more than 35 per cent.

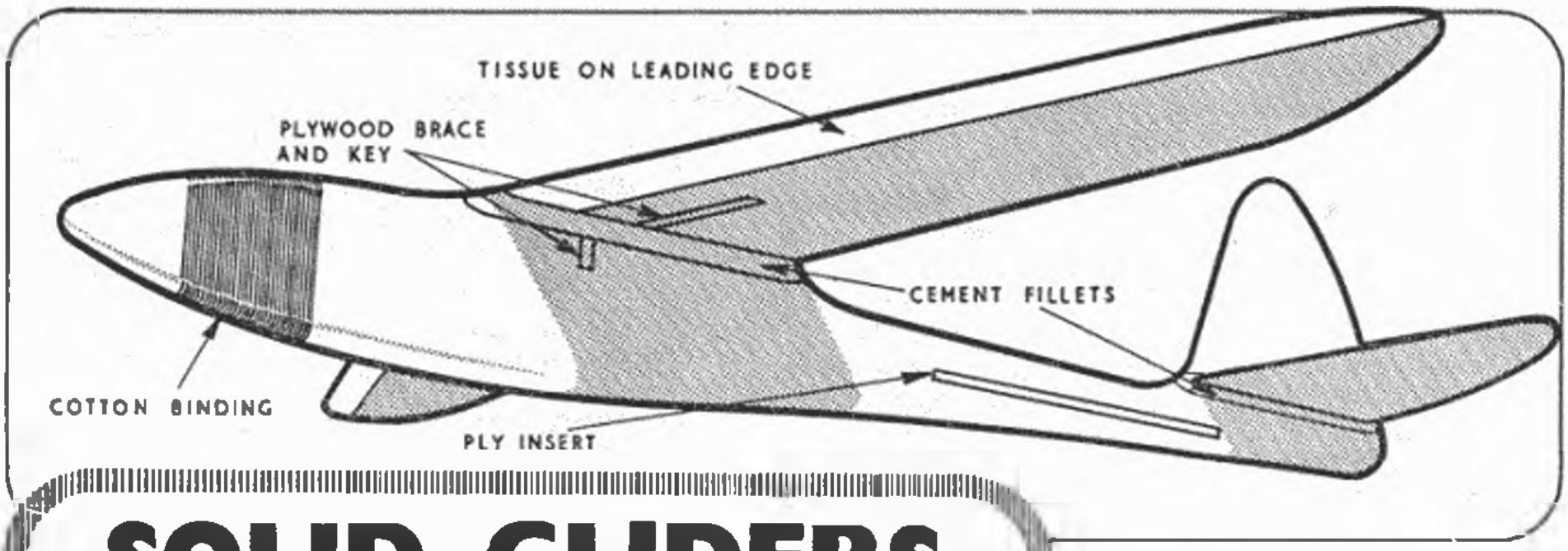
Another example of how power output was raised with progressive modifications to a standard design is shown in Fig. 6, which illustrates the development of the Nordec 10 c.c. glow-plug engine between 1948 and 1950. In this case, not only did the modifications result in greatly improved power. Smoothness and starting were also better with the final model than with the two earlier types.

From the foregoing, it might appear that comprehensive tests involving torque and b.h.p. figures are not of any great value since other examples of any particular engine may vary somewhat from the figures recorded for the test engine.

This is by no means the case, however, Admittedly these inherent differences reduce the value of the performance graphs, but the curves remain as the best and most accurate method of getting a true picture of the performance characteristics of any particular type of engine.

A hidden blessing is the fact that differences tend to be exaggerated by the curves, since speed under load varies as the cube of the power. Thus 20 per cent. more power actually means only a little over 6 per cent. improvement in propeller speed would probably pass unnoticed were tests merely to consist of speed checks on various propellers.

Part of the tester's job should be to know whether an engine on test is somewhere near a representative example or not and this, alone, would be sufficient to justify dynamometer testing since no other method can give such positive results.



SOLID GLIDERS

By D. Stollery

THE currently revived interest in chuck gliders prompts the recording of a few thoughts on the subject made some time ago.

First and foremost, let all thoughts of " kid's stuff " be cast aside, and let us consider the peculiarities of the type. The great difference between the humble chuck-glider and its lordly brothers is, of course, the method of launching. Our model is not to be towed gently aloft with the skill and patience of the angler, but on the contrary is to be hurled upwards, with the maximum amount of brute force the launcher can muster, and we must tackle the design accordingly.

The method of launching is not suitable for large models ; therefore we adopt a maximum wing span of approximately 24 in. and 3 in. chord, anything larger than this requiring herculean efforts on the part of the launcher. So much for the size of the model ; let us now consider proportions.

Our model must, of course, possess an adequate reserve of stability yet must retain good manoeuvrability, so we use a fairly large tailplane (about 35 or 40 per cent. of the wing) and a moment arm equal to one-third span. Due to the solid and consequently weighty construction of the tail unit, and the desirability of keeping total weight down, the fuselage ahead of the c.g. should be about equal to the moment arm. No hard and fast ruling can be given for the fin area, and it is a simple matter to cut down to size, so it is a matter for experiment. There is much to be said for dihedralled tailplanes, especially when set on top of a small fin, as normal fins have a distressing habit of falling off if looked at hard.

Concerning rigging angles, the launch depends so much on this point that we shall leave the matter and discuss it fully when we come to the trimming stage.

There is a great stress on the wing to fuselage joint during the launch, so we pay great attention to the fit of the three components, and the adhesion between them. The wing will have a tendency to increase its dihedral angle to a right angle (look, Mum—I'm a butterfly) so a ply brace let in spanwise is advisable. The adjacent faces of the two wing halves must mate accurately (a method which ensures this will be described later) and a shallow vee cut in the top of the fuselage will seat the wing properly. Fillets of cement at the fuselage-to-wing joint add the finishing touches, pre-cementing being employed at all points of course.

Should the launch misfire (defeatist talk) and the model return to earth much more quickly than is expected, the usual thing is for the tail unit to part company just before the tailplane leading edge. Accordingly we fit another ply insert in the fuselage as in the heading picture.

Contact with solid objects is bound to affect the beauty of the nose and there is a danger of the fuselage splitting, so we face the nose with still more ply, or alternatively bind it with strong thread, rubbing cement well in. The leading edges of the wings may be protected by strips of tissue (heavy Modelspan grade) and complete covering with lightweight tissue helps enormously ; however, that is for the finishing department.

Let us now consider materials. For the fuselage, balsa and hardwood enjoy equal popularity, our own preference being for balsa. With hardwood there are always the attendant difficulties with the joints to balsa, while the latter wood makes a lighter fuselage and has adequate strength when details are attended to as described above. Whatever material is chosen it is usually three sixteenths or a quarter of an inch thick ; the side view is cut out and the only shaping is the rounding off of the edges, but avoid hacking away merrily until you find that you have rounded off the wing and tail seatings. Cut the slot for the ply insert with a fretsaw and press it in place (with cement of course). All that remains now is to cut the vee for the wing seating, pre-cement, and finish the fuselage by sanding.

Balsa is used for wings universally and one-eighth thickness is suitable. We use a flat plate section, as it is admirably suited to the small sizes involved and is easy to fabricate in our sheet wood.

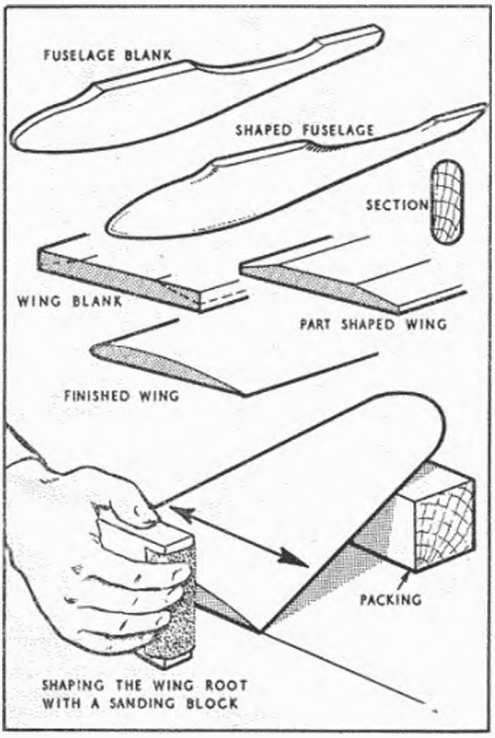
Cut out the two halves of the wing and scribe a line, spanwise, at the half chord position and one at the quarter chord line, after which we may enjoy ourselves with the balsa knife producing the rough section shown in the drawings. The best knife

for this purpose is a long straight blade ; X-acto have one in their range which is ideal. We must now complete the shaping using the sanding block. The tail unit is made from hard thin stock, and very little shaping will be required, a mere rounding off at the edges will suffice.

Now for the joint between the two wing halves. Dihedral and sweepback are employed, about three inches per foot of semi-span for the former and 10 to 15 deg. for the latter. We must now find a nice square box (if the corner of the bench is anything like ours it will not do at all). The wing half under treatment is blocked up and set at the correct angle so that the face of the joint is on the edge of our box, and the sanding block is applied with vigour using the face of the box as a guide (that's why the sideboard is out for this purpose). (Right.)

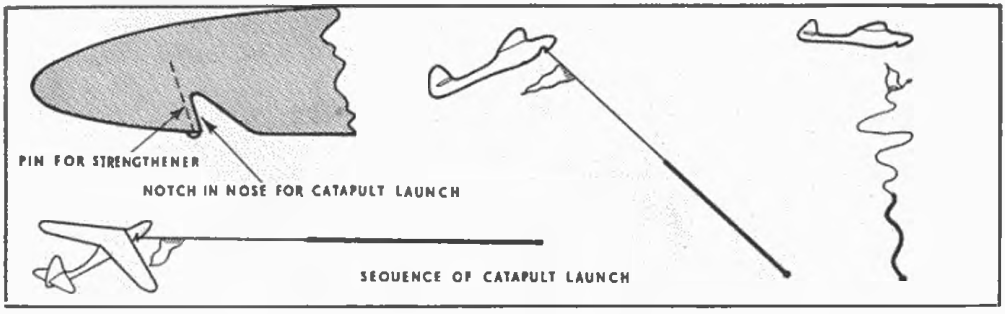
Assembly of the model is the next step and care must be taken to line it up accurately. If we have decided to use a dihedral brace the slots will have been cut in the wing and it is a good idea to key the assembly into the fuselage, but we must not cut the slot too deep or we shall have the makings of a weak spot. (Below.) The key is cemented into position in the wing and the two halves joined, then the whole unit is cemented to the fuselage. The tail unit is popped on at the back, and there we are. All joints are pre-cemented and a good cement used (medium drying). The addition of cement fillets at the appropriate spots completes the assembly. We now come to the finishing of the model.

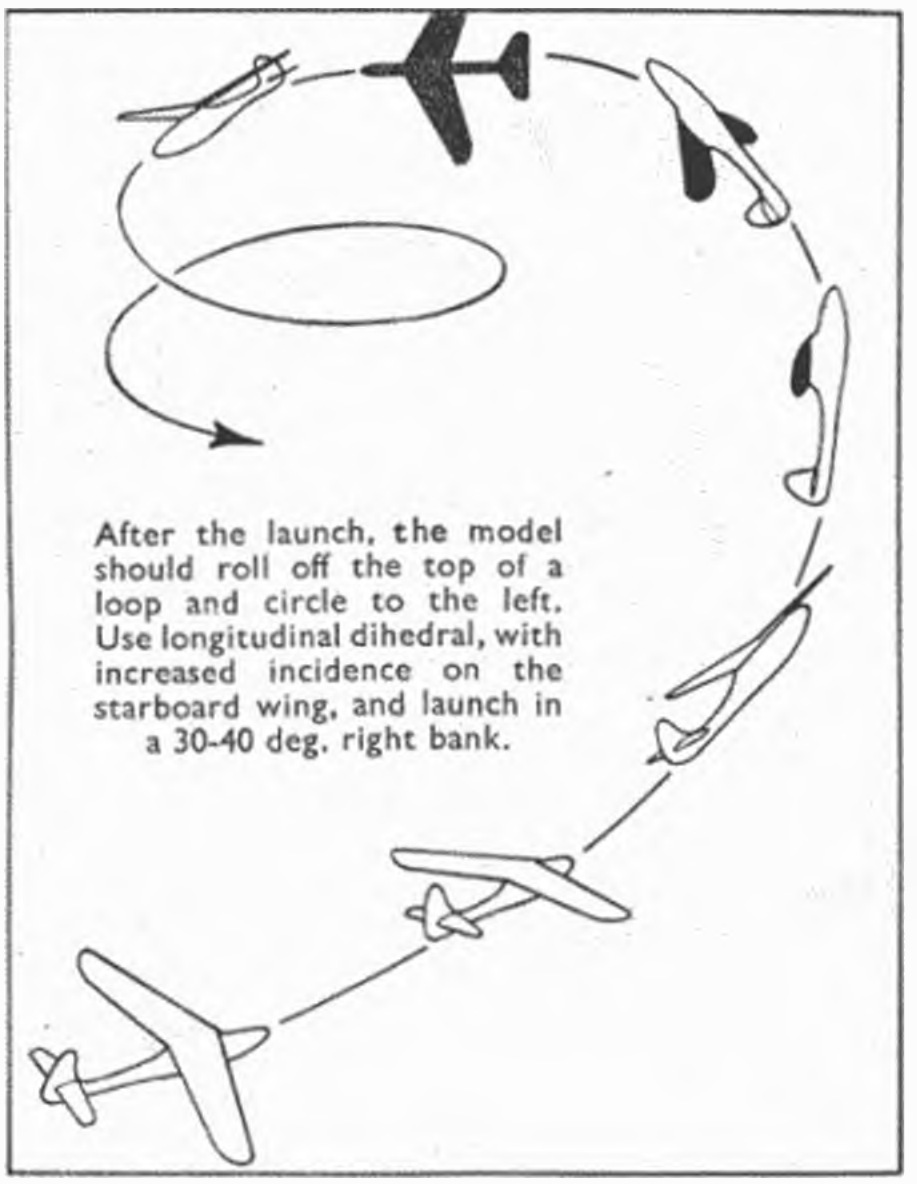
When all the joints are quite dry the model should be lightly sanded all over, and smooth over the keys. The first operation is to fill in the grain. The wood we have used will not have been very soft, so a coat of good quality sanding sealer will give us a suitable base to work on. The next thing is a covering of tissue doped on. The lightest grade available will be enough and the less wrinkles the better, although one or two small ones are permissable as the subsequent sanding will smooth them over. We may now add the tissue strip along the leading edge if desired. A light sanding follows to get rid of the hairiness of the tissue and we now apply sufficient coats of sanding sealer, sanding between each, until we have a perfectly smooth surface. Holding the surface in question almost in line with a source of light will show up imperfections. We now add another coat of sanding sealer for luck and if it is



of the glossy brand we can go ahead with the final polishing. If it is not glossy we must rectify matters with a coat of glossy dope or thin varnish. A good final treatment is to polish the model with one of the new waterproof car polishes (Autobrite or Carplate) which will give it the final gloss and render it completely waterproof—valuable when flying over wet grass.

Now for the first trimming flights. The model will have been balanced before the final finishing by adding lead at the nose. The best method, and that which is most widely used, is to manufacture lead rivets, which cannot come adrift and will not mar the smooth lines of the nose. If the balance





After the launch, the model should roll off the top of a loop and circle to the left. Use longitudinal dihedral, with increased incidence on the starboard wing, and launch in a 30-40 deg. right bank.

before finishing was correct (a few straight hand launches over a dry surface are permissible to indicate correct balance) it will now be found to be nose light. A gentle launch will show how things are and the slight stall can be almost removed with pins in the nose. Notice that we say almost removed, we must not forget that the final trim will be for circular flight which will iron out the stall completely.

The turn is provided by a little careful wing warping, turning to the left if we launch right handed and vice versa. Now here is where we consider rigging angles while thinking about the launch and subsequent glide. If we have a straight line-up, that is zero incidence on both wing and tailplane, we shall lessen the chance of a straight loop due to the excess speed of the launch, but should the model find itself going straight down it will have little inclination to straighten out, so we have a little positive incidence on the wing and turn the looping tendency to our advantage on the launch.

The excess speed on the launch has two effects : it causes a loop (in exactly the same way that a power model can loop) and the control surfaces have greater effect. That means that out wing warping will also have a greater effect so we combine the two to obtain a roll off the top of the loop. We launch the model (right handed) starting with a right bank of 30 to 40 deg. and hurl it upwards at an angle of about 45 deg. to the horizontal (reducing this figure according to the strength of the wind). If sufficient brute force has been applied the loop will be in evidence and our wing warp will roll our model out of its preliminary bank, past horizontal and round in a complete roll, the level position being reached just as the energy imparted by the throw is used up. The model will now glide to earth in a normal manner. It is quite likely that the first launch will be very different from this but we must persevere, warping a little more or less, depending upon the position in relation to the height gained when the model assumes the horizontal. If the loop is too much in evidence and we see that the model has surplus energy when it comes round straight and level we have too much wing incidence and shall have to fiddle the nose weight and indulge in a little *careful* tail warping.

Let us now conclude with a summary of the ways and means to success, with first an analysis of the problems.

For the launch we have the energy imparted to the model by a strong right arm, and acting against it we have old grandmother gravity and the old enemy drag. We cannot do much about gravity except to build reasonably lightly, though not too lightly or the launch will suffer (try to throw a feather as far as a chunk of lead the same shape and you will see what we mean). Drag, of course, is cut to a minimum by obtaining as fine a finish as possible, so help those muscles at the launch by plenty of polishing in the construction.

Summarising the design features, we have a flat plate section set at a small angle of incidence, a swept back wing of low aspect ratio with a fairly high dihedral angle, sitting amidships of a medium length fuselage, the whole being stabilised by a large tailplane.

Constructionally we use medium hard balsa with cement fillets at highly stressed points and ply braces at the weak spots. A good finish cuts down the drag and increases the height gained at the launch. The rest is up to the individual—so let the budding Atlas and Samson types come forward and use those rippling muscles to good effect !

MODEL AIRCRAFT

Engine Tests

(Continued from page 311)

where even figures were maintained. The engine is obviously designed for high r.p.m. and is happiest at speeds above 8,000. Below this, there is some roughness but the unit runs evenly at all useful r.p.m. up to, and exceeding, the peak output speed. Maximum shaft speed at which the engine was run was some 16,500 r.p.m.

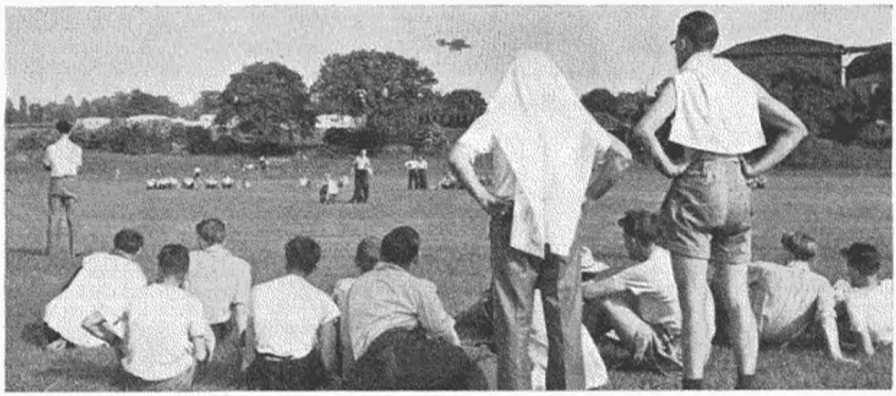
The engine is responsive, but not over-critical, to control adjustment and the inclined needle-valve is a real " finger-saver." A rather marked difference existed between the needle setting given on the makers test card and the actual setting necessary. The compression-lever gave adequate speed control, even under light loads, for reduced power free-flight testing without readjustment of the mixture control.

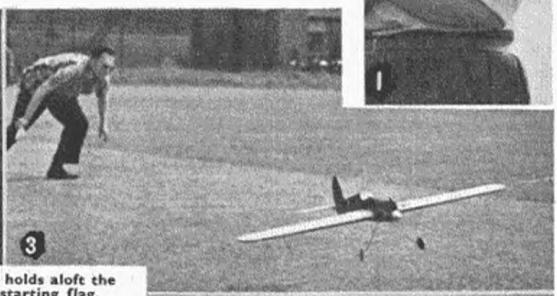
Power-weight ratio : (as tested) 0.457 b.h.p./lb.

Power/displacement ratio : (as tested) 85 b.h.p./litre.

S.M.A.E. Control Line Eliminators

held at R.A.F. Station Chigwell, Essex





1. Bill Morley holds aloft the team race starting flag.
2. Pete Wright displays his E.D. 2.46 glow-plug speed job.
3. J. Claydon's model gets cleanly away in the stunt contest.
4. C. Turk (Gravesend) holds down his "Super Saint" while D. Annal starts the Eta 29.
5. R. Marsh with his twin Frog 500 stunt model, "Snipe."
6. A. Piacentini and R. Marsh (Salisbury) prepare the former's Eta - powered speed model.
7. Eifflaender of Macclesfield and his neat stunt biplane, powered with his o/d. 2.5 diesel.

The following team was selected at this meeting to represent Great Britain at the Brussels C/L Championships :
P. Wright (St. Albans) ; J. Claydon, R. Davenport (E. London) ; P. Ridgeway (Macclesfield). Team manager will be Col. R. Yates.

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**

COMBINE WAKEFIELD AND A2 CONTESTS ?

DEAR SIR,—In view of the annual problem of raising funds to send our National teams to the Wakefield, and in recent years the Nordic Contests, there must surely be some support for a plan under which the contests are held at the same time and at the same place, the latter to be decided by the country placing highest on a points basis over the two contests in the previous year.

It is surely an economy to send a party to the combined contests rather than to send two smaller parties to possibly widely spaced countries.

This is a personal opinion and not necessarily that of the Area of which I am chairman.

Yours faithfully,

Manchester. PETER D. A. FOULKES.

● **See paragraph in " Here and There," page 292.—The Editor.**

IDEAS FROM AMERICA

DEAR SIR,—Two letters to the Editor in MODEL AIRCRAFT for February deserve much more than passing interest on the part of the S.M.A.E. and Wakefield fliers everywhere. As an ardent Wakefield enthusiast, I would like to express my whole-hearted approval of the suggestions advanced by Mr. J. M. Fullerton, of Australia. Several years ago I came to much the same conclusions as he has, and proposed (in a letter to another magazine) the adoption of a PAA-type payload dummy of at least 2 oz., to be carried by future Wakefield models. At that time the prospect of numerous 4 to 5 min. flights being made under non-thermal conditions was, of course, considerably less than at present, and my idea received no encouragement. Now that Mr. Fullerton's analysis has made the case for a bold and far-sighted revision of the Wakefield specifications, it is to be hoped that the S.M.A.E. will give the payload suggestion due consideration.

A feature of my original proposal was to include specific dimensions for the weighted payload dummy (similar to the familiar PAA rules for power models) so as to provide an inherent cross-sectional area requirement. The dummy would be of inverted-U shape so as to allow the rubber motor(s) to pass through it.

Also very worthy of serious consideration are the suggestions offered by Per Weishaupt regarding the team aspects of the Wakefield Competition. It seems entirely reasonable to me that, in addition to selecting one outstanding modeller for the grand award, official recognition be granted the highest ranking team—perhaps on the basis of the best four counting. I would continue to support such dual recognition in the event that the S.M.A.E. revises the specifications in such a manner as to render the luck element truly negligible.

For what it may be worth, may I suggest this sort of Wakefield venue : regardless of the nationality of each year's winner, rotate the finals according to a definite schedule from England to Scandinavia to Southern Europe to the U.S.A. Perhaps every tenth year we could all ship our models to Australia—and let those fellows have a crack at flying their own models in the competition. The thought behind this proposal is that all countries would be better able to plan the financing and arrangements for their teams and that small nations such as Finland would be spared excessive burdens in sponsoring the meets.

Yours faithfully,

Kirkwood, Mo. U.S.A. PARNELL SCHOENKY.

WHY NOT THE A-1 SPECIFICATION ?

DEAR SIR,—With great interest I regularly study your magazine, especially the " Letters to the Editor " column. This time I feel bound to comment on " Revised Specifications Advocated " (Mr. K. F. P. Rutter, in May MODEL AIRCRAFT, p. 226/7). I may add, that already Mr. Warring's plans for a half A-2 glider in the April MODEL AIRCRAFT have provided much food for thought. For instance, the tailplane section on Mr. Warring's ship apparently is very far from being a matching one to the wing section employed. I may admit that here in this country, we have made a somewhat deeper investigation into low speed aerodynamics and this airfoil section arrangement ought to be subject to a radical change all round in view of the latest findings, especially those relating to the influence of the Reynold's number in the slow speed field !

Far from crying down anyone's efforts I would suggest that the point to look at in the smaller sized glider models is the tailplane section or airfoil, not so much the wing ! One may recall that airfoil exponent Sigurd Isacson—now widely quoted in the A-2 section question—used a turbulator wire in front of the tailplane in lieu of one in front of the wing, on one of his outstanding A-2 designs. I can hardly believe that Mr. Rutter had this very aspect in mind, when advocating a 300 sq. inch total area as a new class for model gliders, but as a matter of fact such a class is widely used here these days. Apart from being convenient in size, this class is the most critical and most interesting one for the designer !

Since 1945, the Scandinavian countries have been using the " A "-specifications, and our German MFK (Model Aviation Committee of the German Aeroclub) did adopt the very specification in October last year ! The layout is as follows :

A-1 : Total area up to 18 dm^2 or, 279 sq. in. ;

A-2 ; Total area from 32 to 34 dm^2. 496 to 527 sq. in. ;

A-3 : Total area over 40 dm^2, i.e. : 620 sq. in., up to the general size limit of the F.A.I.

Where applicable, the general F.A.I. rules apply, as for cross-section, and area-loadings.

As already hinted above, the A-1 specification (incidentally very near Mr. Rutter's suggested 300 sq. in.) includes the region of change-over from laminar-efficient to turbulent-efficient flight pattern. In fact, the barrier between under-critical and over-critical status of flight runs right through it ! Due to this fact, a good many

fruitful discussions on stability and efficiency have been made such as the "Nimbus discussion" in Sweden around 1943, and at about the same time the German slow-speed wind tunnel tests of Ing. F. W. Schmitz, to name two outstanding ones. All the problems, well written up by aeromodelling aerodynamicist Schmitz and republished recently, are far too complicated and too numerous for a review in this short commentary. I felt, however, that a hint towards this may not be out of place. As for the line-length suggestions of Mr. Rutter, I would mention that here in Germany, since last year, the 50 metre line, i.e., 164 ft., is compulsory in all MFK sponsored competitions, and the out of sight time limit is reduced to 3 min. for gliders. To eliminate the luck-element, five rounds are to be flown off in such competitions, and in case of a four-flight tie, the fifth round shall be without a time-curtailment to find the winner. This is generally and widely considered the best competition method in conjunction with a fixed and very strict time schedule for each round.

In the International power class, I heartily advocate from my own personal angle and a 12 years' power modelling experience the increased power-loading of 10½ oz. per c.c. This ruling, I feel, is bound to bring forth a type of precision contest ship rather than the present functional "screaming pylon" designs.

The main issue is, however, that we shall all get cracking on A-1 glider design, and persuade our representatives in the F.A.I. modelling section to advocate adoption of this ruling.

Yours faithfully,

Bad Pyrmont, Germany. HANS-A. PFEIL.

PRAISE FOR THE L.S.A.R.A.

DEAR SIR,—Following Bill Dean's article on our new "Jetmaster" I feel that it is only fair to state that although I personally started the Augmenter Tube idea, I seriously doubt whether the project would ever have seen the light of day if it had not been for the invaluable assistance given by the Low Speed Aerodynamics Association of Farnborough.

It seems to me that the model aircraft trade could with advantage use this organisation a great deal more often than they do as they have at their disposal some of the best brains at Farnborough with an immense amount of knowledge to which the ordinary layman does not have access. They are gradually building up a great deal of useful and specialised equipment for model work and I firmly believe that there is enough industrial potential in this country to not only manufacture but produce entirely new lines if they had at their disposal a research organisation of this type. Other branches of engineering and industry are, of course, utilising both the R.A.E. and the National Physical Laboratories whenever some particularly knotty problem arises, and to my mind the support given to the L.S.A.R.A. by the model aircraft trade in general has been quite inadequate.

To return to the "Jetmaster" and illustrate more clearly what I mean; the problem that we had to face was that although the initial conception of a type of booster tube, which in itself is not new, was ours, it was only when we were able to obtain certain data supplied by Mr. N. K. Walker, of the L.S.A.R.A. that we decided to go ahead and institute a development programme, which was by no means cheap, with the confidence that this would ultimately end in success.

As a famous scientist once remarked, the most difficult thing is to realise that there is a question to answer, and if a piece of equipment refuses to work one has to find the reason for it not working before the answer can be found. This reason may be obscure and totally unrelated to any known existing fact, but if a fully trained scientific mind is brought to the subject there is a very much greater chance of this obscure reason being discovered than if the problem is tackled from a purely engineering and commonsense approach.

I think there is little doubt that in the field of model jet, rocket, and ducted fan propulsion we are now ahead of the Americans, but this does not mean that there is not an immense field of development still ahead of the whole model aircraft industry. The L.S.A.R.A. especially has always appealed to me as being of invaluable use if England is to keep her lead.

To conclude, I am not empowered to disclose any of the activities which are at present taking place either in my own concern or the L.S.A.R.A., but I can safely say that before very long some extremely interesting new developments are likely to see the light of day.

Yours faithfully,

Totton, Southampton, Hants. J. N. MANSOUR, Managing Director, Wilmot, Mansour & Co. Ltd.

SLOPE SOARING

DEAR SIR,—It was with great interest that I read the article by C. Bates on "Slope Soaring," in the May issue of MODEL AIRCRAFT. This branch of our sport has probably had less though given to it than any of the others and his excellent gathering together of the ideas and facts connected with slope soaring will, I hope, stimulate many to give this type of model sailplane flying a trial.

There is one point on which I must differ from him, that is where he states that a slope soarer must have a larger fin.

We in the Merseyside M.A.S., will be holding our tenth annual slope soaring meeting on the Clwyd Hills in North Wales, on June 29th, and from our experience over the last 19 years, we still have not found the answer to this question. In 1950 the best flight was made by a model with dorsal fins with the result that last year a large number of models turned out with these appendages thinking this was the answer. All, without exception, instead of keeping their noses into the wind, turned and either hit the hillside, or if they had gained enough height, disappeared over the top. In 1951, one of the best flights was made with a Dutch design which had a very small fin and very little dihedral and yet this held into wind in a remarkable way.

Theoretically, I think there is something to be said for a ventral fin, but I have generally relied on a normal model, preferably of fairly heavy loading, (about double F.A.I.). Lastly, the element of luck is very much greater than in normal flying.

The greatest fascination of hill-side soaring not mentioned by Mr. Bates is that one is so much closer to one's model whilst it is in flight, at any rate at the beginning of the flight.

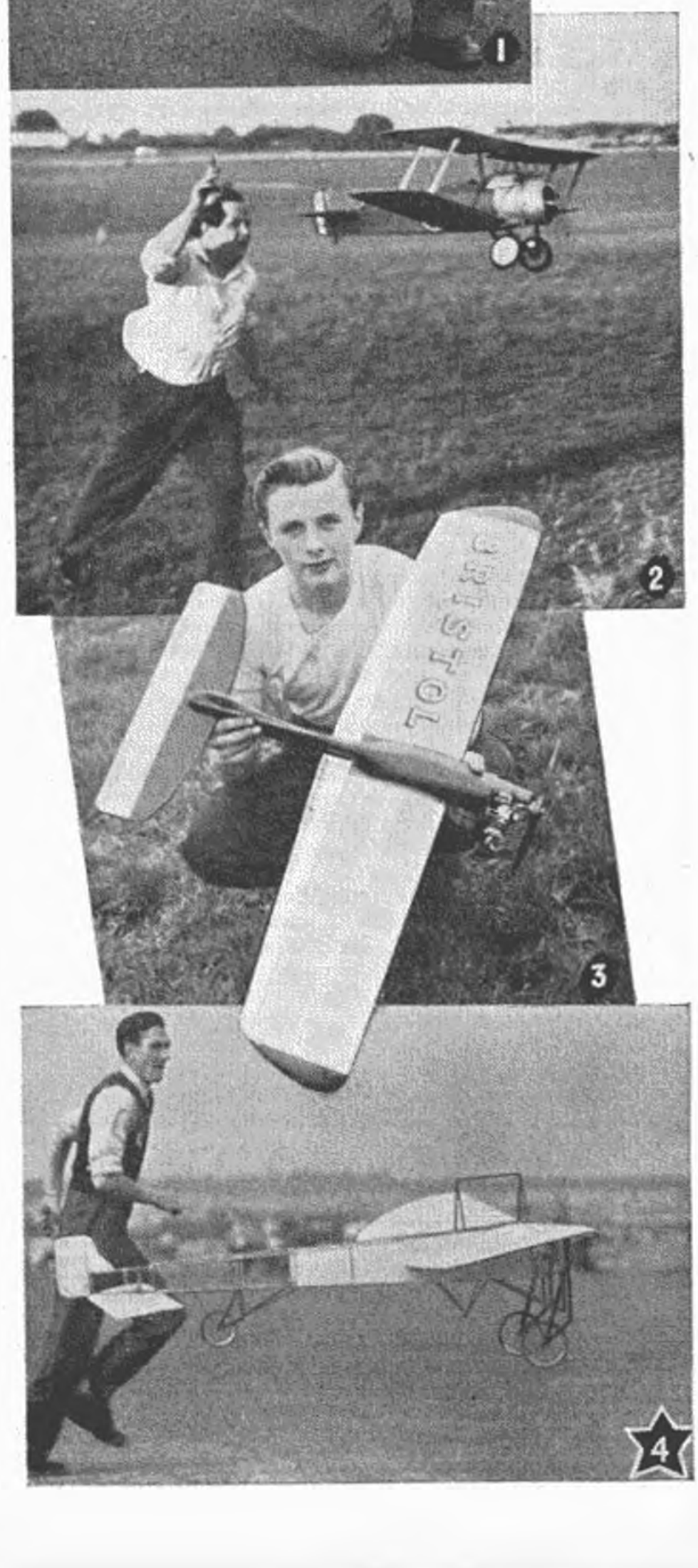
I heartily agree with his final paragraph, retrieving can be very strenuous.

Yours faithfully,

Liverpool, 8. R. F. L. GOSLING.

● **Letters from our readers on topics of general interest are welcomed by the Editor They are asked to bear in mind, however, that such letters stand a better chance of being published if they are kept to not more than 300 words. Many correspondents are disappointed each month because limitation of space prevents the publication of very long letters.**

MODEL Aircraft photonews



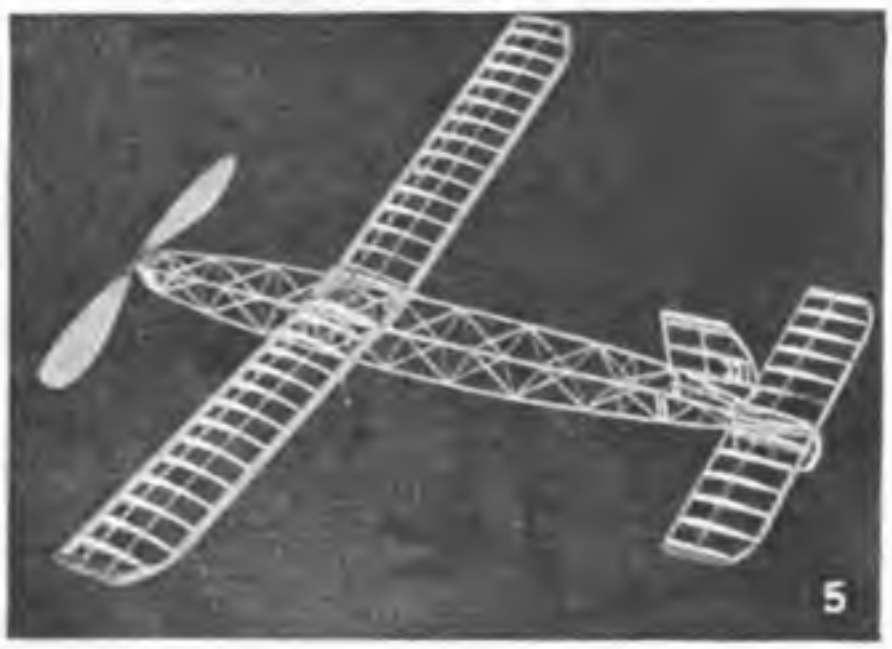
We commence operations this month in the free-flight category, and photograph **No. 1** reveals a very sleek Frog "45," in the hands of the builder, A. Piper. Powered by a Mills .75, the model flies as well as it looks.

In **No. 2**, P.E. (The Torso) Norman is seen at Epsom with his shirt—and his 48 in. span Sopwith *Camel*. This beautifully detailed model, now a popular design in the "M.A." Plans List, is powered by an E.D. 3.46 and weighs some 4 lb. The model has been well caught by photographer A. Garwood.

Terry Smith, of the South Bristol M.A.C., has made a very good job of the Veron *Panther* stunt control-liner he is seen holding in **No. 3**. Kenneth Farmer, who took the photograph, tells us it is a smooth flier and is powered by an American 5 c.c. "Cannon."

No. 4 is our star picture this month and is a fine shot of a fine model. The latter recently had its first airing at Fairlop and is a seven-foot span scale model of Bleriot's pioneer Channel-crossing machine. The builder is M. T. Mitchell, of the Northern Heights club, and with this action shot Ed. Stoffel has caught an anxious expression on his face as he runs alongside after the first r.o.g.! The model is almost entirely of hardwood construction, but plenty of power is available from a 10 c.c. Micron spark-ignition motor turning a 20 in. hand-carved mahogany prop. Quite a model—and those rubber-tyred wheels each have 32 wire spokes!

M. H. Gilbert, of Walsall, a Flying Saddler, sent us **No. 5** of his 1952 Wakefield. This is the Mk. 5 version of his *Thermopylae* series, started in 1949. Successes of earlier versions include 3rd place in the



1951 Gamage, 27th in the Wakefield "100" and first in the club's Wakefield comp. The completed framework of the present model weight 3.2 oz. and 5 oz. of rubber in 16 strands provide the urge. Details include a feathering prop. and $\frac{1}{8}$ in. × 1/32 in. spacers.

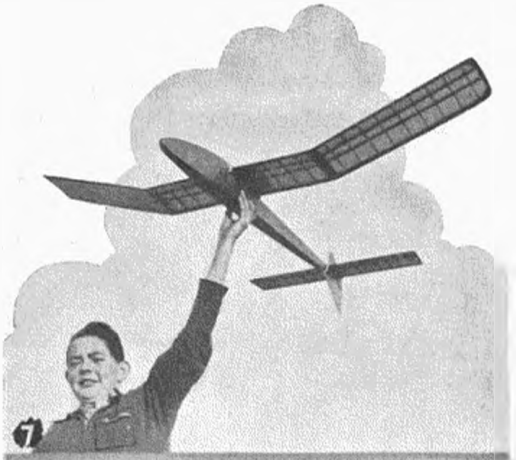
No. 6 comes to us from J. B. Stewart, of Salisbury, and is a very pleasing picture of his wife with his o/d flying wing. Very little dihedral or sweepback is incorporated in the design, with 5 deg. washout at the tips and built-on extensions to the trailing edge to provide a reflex section. Incidentally, the weather conditions in the photograph appear to be the modeller's dream—a warm clear day with just a light breeze. Funny thing, but it's never like this on a comp. day!

Young David Goodall is pictured in **No. 7** holding aloft a good-looking A-2 by I. Anderson, of the Croydon Club. Span is 60 in., using an Isaacson 53009 section, and offset towhooks are incorporated.

P. C. Gray, of Luton, sent us **No. 8** of his latest 1/72 scale solid. Again he has used C. B. Maycock's "P.W.M." feature for his information, this time on the Gloster *Grebe*. The fuselage is carved from birch and the wings from spruce, while the radial engine is built up, complete with pushrods and rockers. The model is finished in the colours of No. 23 Sqn., with the tailplane and elevators painted red to indicate the C.O.'s aircraft.

No. 9 is a good action shot by M. M. Gates, of Len Ranson launching his four-foot span tailless pusher at Fairlop. We are sorry to hear that Len is unfortunately not in the best of health these days, and is largely confined to bed. To a keen contest flier this is certainly a blow, and we hope he will make a rapid recovery and soon return to the flying field.

Our last picture, **No. 10**, is of a well-finished Chrislea *Skyjeep* by J. M. Bodey, of Heswall, Cheshire. This 45 in. span model was built from a standard Mercury kit and Mr. Bodey spent four months on its construction. Powered by a Mills .75, the model is finished in silver with royal blue trim.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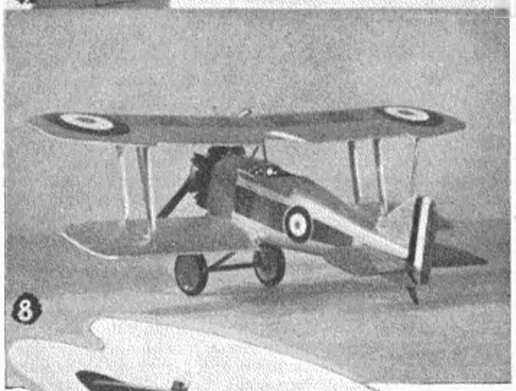
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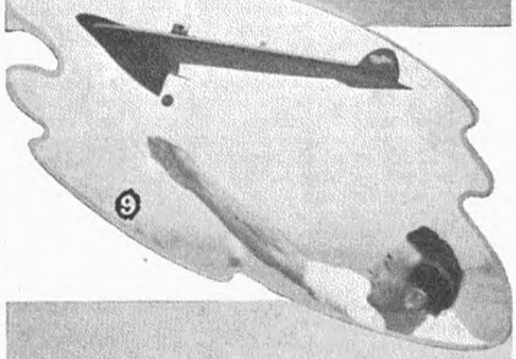
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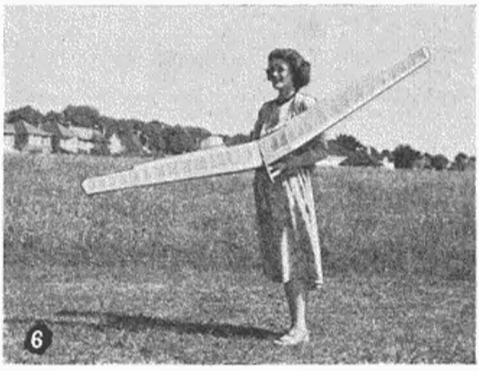
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Northern Notes

Peter Stringer, Northern Area Secretary, assisted by club-mate Gilbert Darwin, piles on the last few turns in the first Wakefield Trials at Rufforth Aerodrome.

★ THERE is no doubt in my mind but that the modellers of the Northern Area must be a proper sinful lot, for how else can one account for the fact that no matter how good the weather in the three or four weeks preceding an Area meeting, comes the day, the Heavens open, typhoons rage, local farmers get a touch of the liver and what for weeks has been a delightful, sunny, thermal-producing piece of terra firma, overnight turns into a dismal, windswept, wet and muddy piece of bog-ridden clay. I was going to say that such is the lot of the flier who desecrates the Sabbath by flying his little kite, but it seems to me that it must be a local condition ; no matter how bad the day in the North, other Areas monotonously produce their lists of three maximums plus ; even on a day when three-minute flights were good, three and a half top rate, and over that nothing but a fiddle, our neighbours in the North-West managed to produce a fifteen minuter. In fact, I personally cannot bring to mind the time when really good flying weather coincided with an important competition ; the Nationals at York provided anything as good as we have had during the last two years.

It was no surprise therefore to learn that the meeting at Rufforth on May 11th, was the usual wash out in more senses than one, in fact, at twelve o'clock there was talk amongst some of the officials of calling the whole thing off. Weather wasn't the only trouble, unfortunately, at this venue, the local A.T.C. usually spend the whole of the day in full-sized gliding, and naturally their affairs are top priority and the modellers less than the dust. Already there have been one or two flare-ups between the chief ground instructor and careless fliers who wander up and down the runway in use for gliding. The chasing of models in cars has not improved relations with the C.O. and the couldn't-care-less attitude adopted by some of the lads has done nothing to smooth the path of the officials. Emulating the example of one of the sports commentators of a leading daily, I am willing to wager a shirt that the possibility of more meetings at Rufforth is fast approaching zero. But to our muttons, as the butcher would say : final results of the Wakefield and A/2 eliminators were not available when your correspondent left the 'drome on Sunday, but it is a safe bet to say that the leading dozen in the Wakefields will include a fifty-fifty ratio of Leeds and Sheffield members and the Farrance family will figure prominently amongst the glider finalists. As to the actual flying, little can be said ; all day long it was just a gamble as to whether one got a machine off the deck or up on the line, and if you got into the air at all it was odds on that the wind carried your model to the limit of visibility and that was that. Those lads who were well up the list in the first elims. were content to sweat it out and keep a careful watch on recorded times in case any of the day's fliers looked like ousting them from the list of finalists. Personally, I think the idea of publicising the number of finalists before the second eliminator took a lot of uncertainty out of the comp., and there would have been much more fighting for the bottom places if the actual number had not been known.

★ ONCE AGAIN, my correspondent in the North-West weighs in with a letter full of informative news and unpulled punches. He comments upon the rather surprising drop in the number of entrants for the Wakefield elims. ; a drop of 30 per cent. in his particular area, and I think it would prove to be as high in the Northern Area. Personally, I think the change in rules has had very little to do with this drop, for rubber flying in general has fast been losing interest for some years, and it is a fact that the competition that once was the be-all and end-all of every serious modeller is now no attraction at all to 90 per cent. of present day fliers. No detailed times are given for any of the eliminators, but J. O'Donnell managed to turn in three maximums in the first leg of the Wakefields, the loss of his model preventing him making the fourth flight, now necessary. Models seemed to be much of the mixture as before, two geared jobs, some folders, a few featherers and two models with an idea that was quite popular before the war, single blade non-folding props. The idea of the moment, apparently, is the double bobbin. This is something new to me and it seems is an idea of the American gentleman who always wins the Wakefield Cup on paper, but my correspondent tells me it is something really good, it makes tensioning much easier and definitely gets rid of that bugbear, vibration. The North West's latest idea, Open Day at Tilstock seems to be a winner ; it appears a meet is fixed at a central ground to which all the clubs in the Area are invited, but instead of a fixed competition programme flying is free for all and fancy free all day. (Must be a bit like a glorified Fairlop, but with a bit more control, I doubt not.) Some of the clubs flew off decentralised comps., some of the lads went all out for certificate qualifications and some just flew.

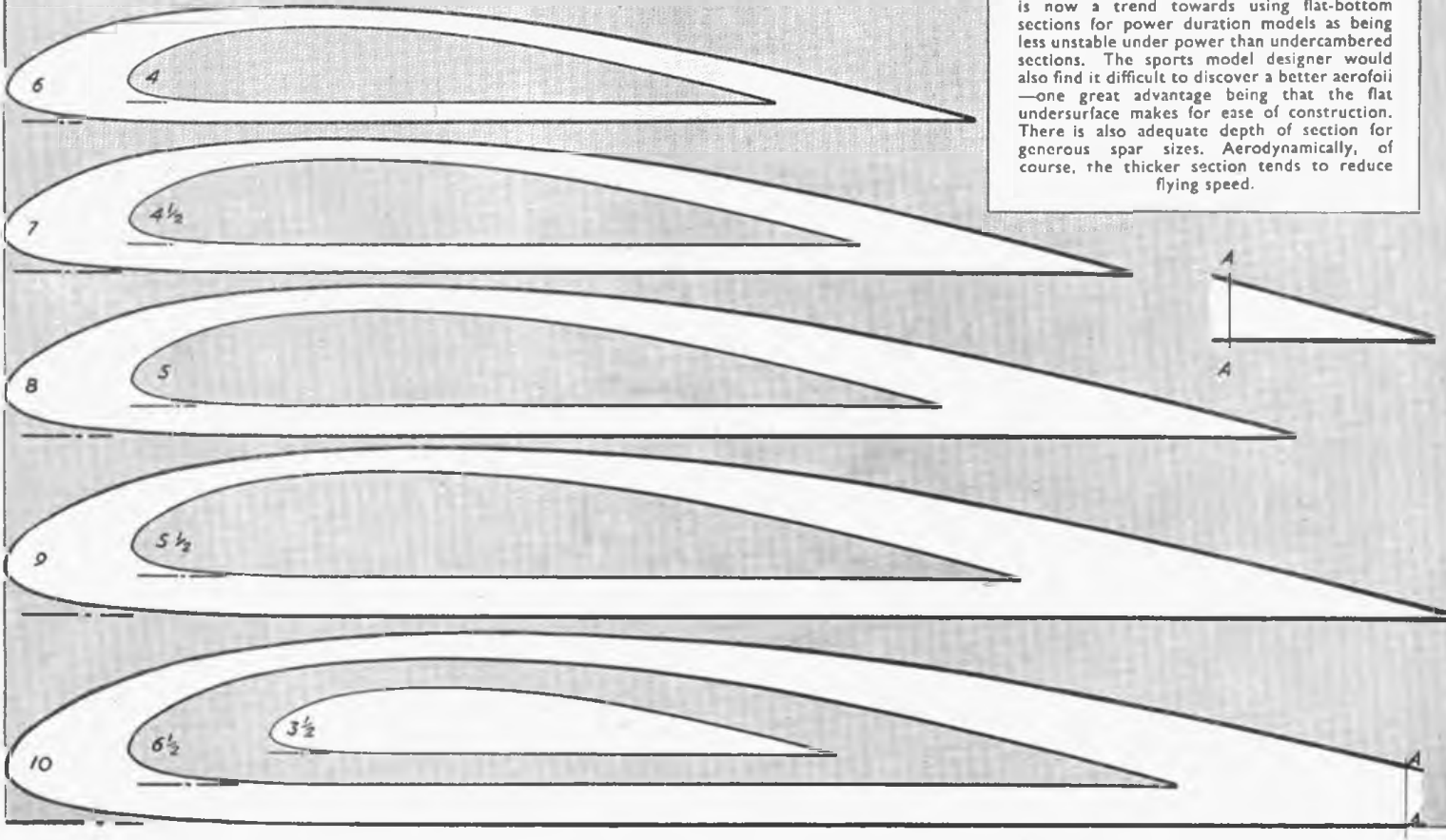
★ I NOTE that one of the regular contributors to this mag. has been asked to do a para. or two on the transport effected by modellers (leading and otherwise). Even at the risk of providing a rival with cash, by producing grist for the mill, I would be happy to collate the number of hikers and bikers in the North, but the number of car owners (especially connoisseurs) would hardly be worth the trouble of writing out.

★ I SEE that the recent correspondence on "giving until it hurts" is producing the usual crop of fors and againsts, but I am surprised to see a club come out with the statement that they are already past the hurting stage. As far as I know, or anyone else either, the recent guinea levy is the first time in the history of the movement that the Society has made a direct demand, other than the usual affiliation fee, upon clubs in general. I do know that upon countless occasions the governing body has had to go, cap in hand, to influential persons and associations to seek financial assistance, for how else could teams have been sent abroad, and the Wakefield Trophy staged in this country?

STATION	0	1·25	2·5	5	10	20	30	40	50	60	70	80	90	100
UPPER	3·50	5·45	6·50	7·90	9·60	11·36	11·70	11·40	10·52	9·15	7·35	5·22	2·80	·12
LOWER	3·50	1·93	1·47	·93	·42	·03	0	0	0	0	0	0	0	0

CLARK Y

Many designers now think it "unfashionable" to use this section for wings but in many respects it is still as good, and perhaps better, than many modern sections. In America there is now a trend towards using flat-bottom sections for power duration models as being less unstable under power than undercambered sections. The sports model designer would also find it difficult to discover a better aerofoil —one great advantage being that the flat undersurface makes for ease of construction. There is also adequate depth of section for generous spar sizes. Aerodynamically, of course, the thicker section tends to reduce flying speed.



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

REPORT OF THE S.M.A.E. COUNCIL MEETING HELD AT LONDONDERRY HOUSE, 19, PARK LANE, LONDON, W.1, ON MAY 17th, at 2 p.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. Cosh (London), B. A. Messom (Northern), D. Salloway (N. Western), N. F. Couling (S. Western), G. Foden (E. Anglian), R.W. Bennett (Midland), R. L. Yates (Southern), H. G. Hundleby (S. Midland), E. Crumplin and R. W. Roberts (S. Wales), J. Taylor (W. Scotland), G. Bishop (Western).

Arising out of the minutes

Mr. E. Crumplin objected to the wording of the minute relating to the 1951 Nationals and stated that the accounts relating to this meeting were in the hands of the treasurer before the last Council meeting. He also denied knowledge of the Council's instruction that expenditure should not have been incurred without the approval of the Council.

Mr. Crumplin informed the Council that all of the uncollected Nationals prizes had been despatched but the receipt of a number of them had not been acknowledged by the winners.

Belgium v. Great Britain C/L Challenge Match

The Council were informed that the revised date of this contest at Namur, Belgium, is August 10th.

International Contests

Captain Taylor informed the Council that the bookings had been made for the Wakefield Team in Sweden.

No venue has yet been announced for the World Power Championships which are to be held in Switzerland on September 14th.

The World C/L Championships on July 4th-7th will now be held at Brussels instead of Knokke and the Council appointed Col. R. Yates to act as team manager.

The managers of the Wakefield and A/2 teams will be appointed by the Council after the Trials.

National Contest

Mr. D. Salloway (N. Western Area Delegate) stated that his area was prepared to organise the U.K. Challenge Cup Contest at Tilstock Aerodrome and to donate 10 gns. towards its cost. The Council unanimously thanked the N.W. Area for its generous gesture.

Competitors will have to pay the first £2 of their travelling expenses and the Society will pay any costs involved in third class travel over this sum.

British Nationals

Col. R. Yates reported that the arrangements were going ahead satisfactorily for this meeting and the following Area Officials had been appointed:—H. J. Towner (S.E.), and W. Henderson (S.), publicity; D. Waters (S.) and N. F. Couling (S.E.), contests; Captain S. D. Taylor, S.M.A.E. adviser; K. J. A. Brookes, publicity and liason; Col. R. Yates, chairman of organising committee; C. V. Christoff (S.E.), Nationals secretary.

Mr. E. F. H. Cosh informed the Council that the Federation of Model Aeronautical Manufacturers and Wholesalers had agreed to donate the sum of 50 gns. to the Nationals Prize Fund, and the secretary was instructed to write a letter thanking the Federation for its valuable assistance. The Council decided to add a further £25 to the prize fund from the general funds.

P.A.A. Load

Mr. K. J. A. Brookes informed the Council that Pan American Airways had agreed to present three wrist watches to the winners of the P.A.A. Load Contest.

Finance

Mr. H. W. Barker presented his statement of accounts which showed a balance in hand of 4s. 5d. After a number of delegates' questions had been answered by the treasurer the accounts were unanimously accepted.

Insurance

Mr. B. A. Messom suggested that Area competition secretaries be reminded that insurance certificates must be produced by competition entrants before their entry is accepted. This was agreed.

Records

The following record applications were accepted:—Lightweight hand-launched glider, G. K. Gates (Southern Cross), 8 min. 45 sec., 16/2/52. Rubber-driven tailless, G. A. T. Woolls (Bristol & West) 1 min. 35 sec., 24/2/52. Rubber-driven *Canard*, G. H. Harrison (Hull Pegasus) 6 min. 12 sec., 23/3/52. Lightweight tailless glider H.L., A. H. Nichols (Southern Cross) 1 min. 34 sec., 27/4/52. Lightweight tailless glider H.L., A. R. Lucas (Port Talbot), 2 min. 23 sec., 4/5/52. Rubber-driven tailless, G. A. T. Woolls (Bristol & West) 2 min. 00 sec., 4/5/52.

Merit Certificates

Merit Certificates were awarded to the following:—Class B, No. 236, Royle, P. J. (R.A.F. St. Mawgan); 251, Wytcherley, G. (Five Towns); 302, Lewis, R. H. (Winchester); 370, Parmenter, D. E. (Knutsford); 389, Archer, W. (Cheadle); 412, Lamble, J. E. (Wayfarers); 429, Couroy, J. F. (North Wirral); 446, Hulme, J. D. (Knutsford); 499, Sandy, R. F. (Henley); 507, Shaw, J. (Oldham); 522, Rooker, V. (Barnsley); 551, Woodward, T. (Foresters); 581, Webb, R. W. J. (Ashford); 592, Donald, K. (Southern Cross); 605, Chadwick, J. (Ashton); 627, Faulkner, R. A. (Whitefield); 643, Johnson, H. G. (York); 644, Williams, G. S. (York); 667, Boyden, J. A. (Barnsley); 668, Pengilley, P. S. (Henley); 670, Barkworth, G. E. (Hull Pegasus), 673, Smith, F. C. (Southern Cross); 677, Green, K. J. R. (Littleover); 698, Keily, W. A., (Regents Park), 700, Grasmeder, R. A. (West Essex); 710, Wannop, U. A. (Buckeburn); 718, Williams, E. D. (Outlaws); 736, Crane, A. (Salford); 737, Mitton, D. H. (By-Pass); 770, Brimelow, G. R. (Cheadle); Class A, No. 749, Ridal, B. F. (Sheffield); 750, Mellar, G. H. (Sheffield); 751, Bainbridge, D. A. (Foresters); 752, Colquhoun, D. (North Wirral); 753, Dulson, W. F. (Salford); 754, Clark, S. H. (West Bromwich); 755, Jesson, D. S. (Barnsley); 756, Mount, V. J. (Pilgrims); 757, Woodruffe, R. A. (Pilgrims); 758, Forman, J. (Skegness); 759, Taylor, R. L. (Brixton); 760, Peacock, A. F. G. (Huddersfield); 761, Keens, W. D. (Headley), 762, White, R. (Headley); 763, Hodgkinson, F. B. J. (Headley); 764, Yates, R. L. (Headley); 765, Smythe, C. (Five Towns); 766, Rogers, B. J. (Hull Pegasus); 767, Kackson, G. E. (Littleover); 768, Jackson, R. E., Jnr. (Littleover); 769, Powell, C. E (Foresters); 770, Brimelow, G. R. (Cheadle); 771, Hotchkiss, R. (North Wirral); 772, Thornton, J. E. (Isle of Thanet); 773, Gates, K. (Southern Cross); 774, Moore, L. E. (West Coventry); 775, Davies, G. W. (St. Helens); 776, Batchelor, J. (Whyteleafe); 777, Arnold, A. J. F. (Bournemouth); 778, Raven, A. D. (Bournemouth); 779, Neal, H. W. (Bournemouth); 780, Bennett, J. M. G. (Belfast); 781, Spiers, R. S. (Lanark); 782, Amor, R. C. (Ilford); 783, Townsend, P. (Huddersfield); 784, Higson, W. R. (Macclesfield); 785, Wyatt, C. (Ashton); 786, Robinson, T. L. (Seaham); 787, Revell, N. (Sunderland); 788, Sutcliffe, A. (Skyrangers); 789, Marsh, C. J. (Ilford); 790, Cook, A. R. (Ilford); 791, Parker, J. C. G. (Knutsford);

S.M.A.E. officials at the Control Line Eliminators at Chigwell. K. J. A. Brookes (P.R.O.), Capt. S. D. Taylor (Comp. Secretary) and, at the mike, Max Coote (Technical Secretary)

792, Grainger, G. W. (Knutsford); 793, Clarke, D. (Knutsford); 794, Hirby, K. H. (Hull Pegasus); 795, Upfold, A. E. (Headley); 796, Webster, K. M. (Pontefract); 797, Marsh, D. (Crosby); 798, Lamb, W. E. (York); 799, Ambrose, N. P. (R.A.F. Felixstowe); 800, Faulkner, G. (Crewe).

Official Timekeepers

The competition secretary stated that on merit certificate applications and on competition results forms, the names were being given of timekeepers who were not registered with the Society. After a discussion it was decided that the present system of registration be discontinued and that all senior members of affiliated clubs be permitted to act as official timekeepers in future.

Applications for Affiliation

The following applications for affiliation were accepted:—Sissinghurst Aero Modellers Club (S.E.), S.6, J.12; West Calder Regal Model Flying Club (W. of Scotland Area), S.15, J.7. Lewisham & Dist. M.F.C. (London), S.5, J.5; Ickenham Community Assoc. M.A.C. (London), S.7, J.3.

Applications for Re-affiliation

Sale Aero Club (N.W.), S.24, J.4; Men of Kent Aeromodellers (S.E.), S.6, J.5; Wimbledon Power M.A.C., (L.), S.12, J.1; Icarians M.A.C., (S.M.), S.8, J.3; Belfast M.F.C., (N.I.), S.12, J.4; Worcester M.A.C., (M.), S.13, J.4; Dagenham M.A.C., (L.), S.15, J.8; Sevenoaks & Dist. M.A.C., (S.E.), S.14, J.2; Timferley & Dist. M.F.C., (N.W.), S.10, J.21; West Bromwich M.A. & C.S., (M.), S.12, J.6; Evesham & Dist. M.A.C., (M.), S.17, J.5; Tottenham M.F.C., (L.), S.23, J.3. Leicester M.A.C., (M.), S.20, J.10; Wakefield M.F.C., (N.), S.10, J.11; Cambridge M.A.C., (E.A.), S.20, J.10; Malton Norton & Dist. M.A.C., (N.), S.14, J.1; Oldham & Dist. M.A.C., (N.W.), S.29, J.12; Skegness M.F.C., (E.M.), S.7, J.4; Pontefract & Castleford M.F.C., (N.), S.25, J.12; Dover & Dist. M.F.C., (S.E.), S.8, J.3; Letchworth M.A.S., (S.M.), S.16, J.10; Accrington M.F.C., (N.W.), S.6, J.—; East London M.A.C., (L.), S.24, J.2; Victoria M.F.C., (L.), S.17, J.—; The Fulham M.A.C., (L.), S.12, J.4; Outlaws, (Cannock), M.A.C., (M.), S.14, J.4; Crosby M.A.C., (N.W.), S.25, J.6; Wolverhampton M.A.S., (M.), S.7, J.6; Bolton M.A.S., (N.W.), S.12, J.6; Whitefield M.A.C., (N.W.) S.18, J.10; Leeds M.F.C., (N.), S.41, J.5; Gainsborough M.F.C., (E.M.), S.9, J.—.

(*Correction.*—In the list of applications for re-affiliation which appeared in the May issue of MODEL AIRCRAFT, the number of members in the Blackpool & Fylde M.A.S. was given as Seniors 3, Juniors 13. This should have read, Seniors 31, Juniors 13).

Adjourned A.G.M.

It was decided to hold the adjourned annual general meeting at Londonderry House, on June 28th, 1952, at 2 p.m.

1952 *F.A.I. Conference—Madrid*

Mr. A. F. Houlberg gave the Council a brief report of this conference which he had attended on behalf of the Society. He mentioned that there was every likelihood of the Model Commission receiving greater co-operation and financial support from the F.A.I. next year.

The meeting terminated at 8.0 p.m. with a vote of thanks to the chair.

SOUTH MIDLAND AREA

The second South Midland Area meeting was held in fine sunny conditions at Kidlington Aerodrome, Oxford. In the first round of the Weston two maximums were recorded—one by White, of Icarians, who lost his model (no d/t) and the other by Fraser, of Hatfield. In the second round Fraser kept his lead and Cooke (Henley) moved into second place, with Jeffrey (Reading), who scored the best second round flight of 4 min. 22 sec. in third position. In the final round these three retained their positions, although Fraser increased his lead with the best third round flight time of 2 min. 40 sec.—the conditions having changed to dull, windy and cold.

In the Astral Trophy the standard of flying showed quite an improvement on that of the previous meeting and in the first round Stott and Sullivan, both of Luton, scored max's, with Bennett (Chorley Wood), recording 4 min. 50 sec. Lamble (Wayfarers) and Jones (Reading), scored max's in the second round, but Bennett went to the head of the list, followed by Stott in second place and Waldron (Henley) third. Waldron scored the only max. of the final round and took the lead, just over half a minute in front of Bennett, with Stone (Reading) in third position. The top man in the International Eliminators was the first eliminator winner, Stott, of Luton.

SOUTHERN AREA

Area flying meetings are now being held at Andover Aerodrome, by kind permission of the C.O., with the use of part of a hangar for assembly and processing.

The second Area meet on April 20th, was well supported, even although the weather was by no means ideal, a high wind blowing all day and taking its usual toll.

In the Astral Trophy top honours went to E. J. John, of Grange, who also came second in the National results for the Halfax, but generally the standard of flying in the power left much to be desired.

Wakefields do not seem to be very popular in the Southern Area, there being only seven entries in the Weston Cup, but even so the standard of flying was good considering weather conditions.

Top man was J. Blackmore (Grange), with 10 min. 08 sec. aggregate.

Twenty-five entries were made in the Area Open Glider comp., held on the same day, several maximums being obtained.

Johnny Blackmore (Grange) topped the results with 11 min. 45 sec. aggregate. The Area even made eleven shillings profit *after* paying out the prize money!

May 11th dawned with the prospect of more high wind and showers so that flight times in both Wakefields and Nordic classes were low. At last the Grange run of successes had been broken, although they were only pushed into second place by Col. Yates, of Headley, who flew a *Marauder*.

S.M.A.E. CONTEST RESULTS

ASTRAL TROPHY

1. P. Wyatt	R.A.F. Melksham	...	14.10
2. G. Perkins	Croydon	...	13.21
3. J. Waldron	Henley	...	11.29
4. J. Bickerstaffe	Accrington	...	11.27
5. G. Lingford	Loughboro Coll.	...	11.09
6. G. Brimelow	Cheadle	...	11.03

(240 entries)

WESTON CUP

1. R. Monks	Birmingham	...	16.58
2. J. O'Donnell	Whitefield	...	15.00
3. N. Marcus	Caydon	...	14.58
4. E. Bennett	...	...	14.09
5. W. Rockall	Lincoln	...	13.39
6. J. Gosham	Ipswich	...	12.26

(258 entries)

KEIL TROPHY

1. A. Bennett	Whitefield	...	65.91
2. N. Butcher	Croydon	...	63.90
3. J. Chinn	Gt. Yarmouth	...	55.15
4. R. Woodhouse	Whitefield	...	52.2
5. A. Brooks	Grange	...	50.85
6. A. Upfold	Headley	...	49.82

(86 entries)

LADY SHELLEY CUP

1. A. Lucas	Pt. Talbot	...	12.08
2. D. Edwards	St. Albans	...	11.06
3. G. Gates	S. Cross	...	10.28
4. B. Rowe	St. Albans	...	9.38
5. R. May	...	...	8.25
6. O. Boulter	Pt. Talbot	...	7.51

(26 entries)

T. S. Nacntman of the Polish Air Force M.A.A. launching his R/C glider at Northwick Park, Harrow

LUTON & DISTRICT M.A.S.

After topping the Area in the "Halfax" G. Stott was dogged by bad luck in the "Astral." A/2 and Wakefield men are busy testing new jobs to make up for those lost or smashed in previous rounds. T. Clark has a full size Warring A/2 (April MODEL AIRCRAFT) which tows up dead straight overhead and looks very promising. Gilder has gone back to gears for his Wakefield, while Clements and Chapman retain single drives; all have the normal 40 in. fuselage. The Stott brothers are testing their new Wakefields. This model boasts geodetic wings and tail, two-bladed folder; with over 5 oz. of rubber the model is still underweight!! Some of the C/L lads are trying their hand at ¼A F/F, most promising is R. Brunning's .5 Elfin job. Several power scale models are being produced; most noteworthy to date are J. Symmond's *Swordfish* and D. Blackey's *Southern Cross*, both powered by 1.3 Mills. The latter member has also had considerable success with powered helicopters.

BRISTOL & WEST M.A.C.

The club seems to be making a slow start this season, no doubt due to the weather being rather unkind. Andy Wilson and George Woolls were the sole representatives in the Wakefield eliminations. Wilson's approximately 48 in. long job with a 20 in. single bladed folder appears happiest in fairly still air when it puts up good times. Woolls's *Wizard II*, lost o.o.s. on a test flight (d/t failed) before the Weston, d/t'd 4 min. 20 sec. on its first Gutteridge flight, in a 15-20 m.p.h. wind. It was not recovered, and his second string of a different design failed to get away in the second round, smashing the centre section. Wilson also had trouble with the strong wind after a good first flight.

Woolls's tailless rubber job has now bettered 2 min. in the rain, and this time has been submitted as a new record.

Ace speed control-liner, A. V. Coles, was getting good times from his Dart powered high thrust line pylon free flight, before an accidentally moved trim tab caused a very spectacular spiral dive.

It is hoped that the regular Friday evening meetings on Durdham Down will arouse more interest among our junior and new members, but *everyone* is welcome to come along and fly glider or rubber.

WHITEFIELD M.A.C.

The club very much regret to announce the death of the club chairman, Mr. R. Lawton, who died suddenly on April 25th. He had been with the club since its formation and was a great helper and organiser in all its activities. He will be greatly missed and we offer our deepest sympathies to Mrs. Lawton.

The club have done well in contest activities at the Area meeting on April 20th. J. O'Donnell managed three maximums in the Weston but unfortunately no flyoff. The model was badly damaged by cows after the second flight, but after the substitution of fresh wings and much repairing was able to do a final maximum (o.o.s and lost !) Fifth and sixth in the Area were A. D. Bennett with 8 min. 50 sec. and H. O'Donnell with 8 min. 26 sec. All three of the top club members were flying diamond pylon models, complete with feathering props and carrying up to 5 oz. plus of rubber ! In the Astral, E. Horwich and A. D. Bennett were third and fourth in the Area with approximately 7 min. 45 sec. and 7 min. 30 sec. respectively. Both were flying club design models. On combined results of the two power eliminators the club have three out of the top five Area placings.

The club went to the open day at Tilstock, on May 4th, and had exceptionally good weather. A. D. Bennett was top in the Keil with 66 agg. ratio, flying an Amco 3.5 design, which possesses a better glide than most Nordics. Second with 52 ratio was R. Woodhouse, flying an Elfin 1.49 lightweight, followed by E. Horwich with 35 ratio. In the Lady Shelley, H. O'Donnell was the only entrant to manage three flights and totalled 3 min. 29 sec. Much testing was managed in addition to several sets of flights for A, B and C certs. All told the club did 20 maximums during the day. Only lost model was junior member A. Bagnall's 7-foot long Nordic, which disappeared vertically up after a d/t failure.

The club did well in the second Wakefield and Nordic eliminators, despite wind and rain. Top in the N.W. Area in the K.M.A.A. was H. O'Donnell, with 13 min. 29 sec. flying a high A.R. design ; followed by R. Askew flying an 80 in. stick model to 11 min. 52 sec. Third in the club was Wendy Bennett with approx. 9 min. 50 sec.

Times in the Gutteridge were not quite as spectacular, top being A. D. Bennett with approx. 8 min. 15 sec., followed by R. Woodhouse with 7 min. 30 sec.

On combined results of both eliminators the club did exceedingly well, the contest group qualifying *en bloc* for the trials. We comprised 50 per cent. of the N.W. Area quota: having eight members in the Nordic and six in the Wakefield. Top in Nordic and Wakefield in the Area were R. Askew (20 min. 33 sec.) and J. O'Donnell (20 min. 41 sec.) respectively.

HENLEY MODEL CLUB

The fine weather on Easter Sunday saw three of our members out flying for their "B" certs., and two, R. F. Sandy and P. S. Pengilley, put in the necessary flights. Sandy, flying his Wakefield, had successive r.o.g. flights of 3 min. 45 sec.; 5 min. 9 sec. (new club record) and 4 min. 36 sec. d/t'd whilst Pengilley did 4 min. 58 sec. d/t'd; 3 min. 14 sec. and 4 min. 40 sec. with his 6-ft. lightweight glider. Cooke was the unlucky member as he pranged his 6-ft. glider after flights of 7 min. 5 sec. d/t'd and 4 min. 42 sec. d/t'd.

On the following Sunday the club made a very successful trip to the second S. Midland Area meeting, at Kidlington, J. G. Waldron taking first place in the open Astral Trophy with 11 min. 39 sec. from his *Contender* (Elfin 2.49), and A. W. M. Cooke flying his o/d Wakefield into second place in the Weston Cup, scoring 8 min. 20 sec. R. F. Sandy also flew in the Wakefield event, recording a total of 3 min. 57 sec. after a first round prang and D. Wilkinson, flying in the Astral could only record 1 min. 41 sec. before he too pranged.

An outstanding model aircraft at the recent Andover Model Engineering Exhibition was this power-driven helicopter by A. Hodgson. It is based on his successful M.A. plan design, "Waltzing Matilda"

WALSALL M.A.C.

The Walsall M.A.C. will be holding its fifth annual C/L rally on Bank Holiday, Monday, August 4th. The rally will run from 10 a.m. to 6 p.m. and all—repeat all—will be welcome. We again have the use of the Walsall Arboretum and this year prizes amount to thirty guineas.

The day's events will be:—1, Concours d'elegance (Walsall Ironfounders. Cup); 2, Open stunt (Deanson Trophy); 3, speed, class I; 4, speed, class II; 5, combined classes III and IV; 6, combined classes V and VI; 7, team-racing, class A; 8, team-racing, class B. For all these events pre-entry is desirable.

We are expecting to repeat the successes of past years, so roll up, bods, and have fun.

Various club members have been enjoying successes in the past few weeks. At Bramcote, on April 20th, in the Weston Cup, Les Lowbridge gained 15th place with an aggregate time of 6 min. 35 sec., while Terry Larkin had some bad luck when his own-design job hit two timekeepers !

EXETER M.A.C.

Exeter M.A.C. staged a full-scale model flying display on Woodbury Common (near Exeter) on Sunday, April 27th, which attracted a crowd estimated at 4,000 (is this a record for a one-club effort ?). Prior announcements on the B.B.C. West Region News Bulletins and local press publicity ensured a good attendance, and a brief report was broadcast on the following day. The club derived wide publicity and several new members have already joined as a result, while club funds benefited to the tune of £20, after paying all expenses. Highlights of the display were demonstrations of R/C by guest-flier H. L. O'Heffernan, of South Devon, parachute jumps by lifelike 12 in. tall "Flying-Officer Kite," streamer-dropping with prizes for the first three children bringing a streamer back to control, and a mass launch of outside gliders. The whole show was enthusiastically acclaimed by the large crowd, who were kept informed of the "goings-on" by loudspeaker. Special buses were laid on by the local bus company direct to the site, and 300 passengers were carried, while hundreds more came in cars, on motor-cycles, cycles, and even on foot. A small force of police (an inspector, sergeant, mobile patrol and three constables) were needed to direct the traffic, which in itself gives some idea of the attendance ! Another show is planned for July 27th at the same venue.

In the S.W. Area Championship race, Exeter is running "neck-and-neck" with Plymouth, present holders of the shield. In the Area open glider contest on April 20th, Exeter secretary, Harry Stillings, placed first with his *Satu* with 10 min. 3 sec., closely followed by treasurer Sam Hecker, with 9 min 44 sec. Incidentally, Sam's scaled-up *Tern* covered 12 miles on its last flight in this contest !

SWINDON & TROWBRIDGE CLUBS

Keevil Aerodrome was the scene of yet another "battle royal" recently when the Swindon and Trowbridge clubs competed for the "Swindon-Trowbridge Challenge Shield."

Competition was keen and with the co-operation of the weather man—who supplied some perfect flying conditions—good times were recorded and several records broken.

In the Swindon club these included the 1951 Open Glider record of 9 min. 1.5 sec., held by B. Howden and the A/2 record of 5 min. 10 sec. made by R. Offen last year.

Both these times were exceeded in the open glider event by R. Smith, who clocked 9 min. 15 sec. o.o.s. with his *Nord II* (model was eventually found near Westbury).

D. ("Flip") Turtel's fine flight of 9 min. 17 sec. o.o.s. with a *Mallard* in the power ration event set up yet another record for Swindon. An engine run of 20 sec. gave "Flip" a ratio of 27.85 thus beating the old record of 24.2 held by M. Greenwood since 1948.

The contests, which were for glider, power and rubber types, were run under a new points system (by mutual agreement of the two clubs) this being 6, 5, 4, 3, 2 and 1 point for first six places respectively.

After a grand fight the scoreboard read Swindon 30, Trowbridge 27 points.

G. Waldron's stout retrieving efforts, during which he covered more than 20 miles on his motor cycle, was much appreciated by members of the two clubs (especially by those whose cross-country racing days are but a memory !).

The success of the meet was due in no small measure to the splendid handling of affairs by Trowbridge who were the hosts.

CHRISTCHURCH M.A.C.

The club has seen much active flying at Hurn—our home ground—during the past few months, and despite inclement weather the meetings have been well attended and very successful. In addition to these pleasant afternoons, the club has attended two Area Meetings at Andover, on April 20th and May 11th. A coach was arranged to transport members to and from Andover, which greatly added to the pleasure experienced at the meetings.

It has been very gratifying to all concerned that the Club has become so active this year, as, due to lack of support last year, it was anticipated that the Christchurch M.A.C. would have to be dissolved.

The club intends to hold an exhibition at the local sports and model shop, in the very near future, and all members are engaged upon building bigger and better models to be scrutinised by the citizens of Christchurch !

With the approach of summer, it is hoped that the Christchurch M.A.C. will gain many new members and add a few "laurels" to its credit.

FORESTERS (NOTTINGHAM) M.F.C.

The Foresters' club but is resonating long into the night with hordes of *Quickie* builders hard at it. To even suggest that there are other A/2's is tantamount to heresy and a balsa-knife in the back of one's hand. Pete Ball's version consistently does 4 min. in evening air.

Nevertheless, the best flight recently was Cyril Powel's 14 min. o.o.s. with his O/D high A/R A/2 [!]

Bill Ward has built an interesting swept-forward-tailless model with a Mills .75. A few hectic test flights have shown great promise.

R/C is pressing on and Dougie Bolton's latest job sounds like a tube train but produces proportional non-sequence rudder and independent engine cutoff. The snag so far is that the engine cut-off is too mad-keen. Cyril Powel's R/C monocoupe has made some very pretty flights, but the small tail is proving troublesome.

PLYMOUTH M.F.C.

The club held, on April 27th, the first round of its rubber, glider, power and Jetex championships, which this year are to be held over 6 rounds.

Weather conditions were ideal on the club's site near Lee Moor, being cloudy with breaks of sunshine and a very light breeze, which freshened about 5 p.m. and then died away again. Thermals were present, if you could catch them.

There was a total of 22 competitors for the championships and, of course, the usual number of sport and non-competitive members present taking advantage of the weather.

One of the non-competitive members lost his glider, the only one lost during the day, after a flight of 7 min. 13 sec. What a waste of energy!

The top place in the glider contest was taken by a junior, G. Parkhouse, flying a *Satu*, with an aggregate of 7 min. 24.8 sec., the highest individual flight was also by a junior, A. M. Shipman, with a flight of 5 min. 21.5 sec.

In the rubber contest, the top man again was a junior, D. Brock, with an aggregate of 8 min. 44.2 sec., while a junior, R. Lynn, was top individual flier with 6 min. 14 sec.; both were flying *Senators*.

In the power contest, the story was the same, a junior, A. Thomas, being highest aggregate flier with 9 min. 19.8 sec., and highest individual flier with 4 min. 54.2 sec.

BRITISH NATIONALS

Royal Naval Air Station, Gosport Hants

August 3rd and 4th, 1952

The programme of events is as printed in the S.M.A.E. Handbook, copies of which can be obtained from Londonderry House, Park Lane, London, W.1, price 2s., or 2s.3d. post free.

Contests are open to all, but entries must be made on the official forms in the Handbook and reach the S.M.A.E. Competition Secretary, at Londonderry House, together with the appropriate fees, not later than July 21st.

Attractive prizes (*not* kits, etc.) will be awarded and those not presented after the events will be despatched to the winners as soon as possible.

Flying will commence at 11 a.m. on both days and should cease at 5.30 p.m. on the second day.

The Class "A" Team Race will be flown on August 3rd, and the Class "B" event on the following day.

Lists of accommodation in Gosport can be obtained from the Town Clerk, Gosport, Hants. As the Nationals are being held during Navy Week early booking is essential.

Details of accommodation at Fareham and elsewhere locally will be sent to all clubs as soon as available.

Car and coach parks will be provided on the aerodrome and the N.A.A.F.I. canteen will be open.

Visitors who book accommodation in Gosport, but require meals at the aerodrome, also those who desire other accommodation booked should write *without delay*, giving definite information *re* numbers, to:—C. V. Christoff, Hon. Secretary, British Nationals, 3, The Broadway, Haywards Heath, Sussex.

Only in the Jetex contest did the seniors get their noses in front when M. D. Richards returned one flight of 7 min. 57.7 sec., which was sufficient to be top scorer and highest individual flier.

Three club records were broken: the H.L. rubber, power and Jetex.

The club goes out to encourage its juniors and their eclipse of the seniors in this first round shows the promise of things to come.

BEDFORD S.A.M.

Our first fine weather meetings this year have been well attended by some 50 members and friends. The Comp. Sec., M. A. Grace, has arranged many club contests which should stimulate an equal interest throughout the season. The president, Mr. Racker, has helped this along by generously donating £5 for a contest prize.

Times have not yet reached last season's standard, but one outstanding performance was the unofficial 16 min. 30 sec. by hon. sec. J. R. Mathers' sailplane. The official club record is 15 min. 20 sec. A consistent performer in power is C. Bodle's Elfin 2.49 powered *Mallard*, a *Junior Mallard* holds the club record at 23 min. 00 sec. A. H. W. Mcbean's "notorious" flying wing *Thunder Bird* is still performing, but is now powered by a 2.4 c.c. diesel; it is rumoured that its original Dynaiet may replace the Nordec in Don Beattie's large stunter.

There is much activity in R/C. J. R. Mathers has flown a 12 ft. sailplane, R. E. Puddephatt's proportionally controlled Junior 60 has flown with every degree of control from free-flight to full control, and E. Sills is experimenting with elevator control.

A miniature team race is being arranged; the rules are:—Max. capacity 0.89 c.c., min. wing area 30 sq. in., tank size 7.5 c.c., line length 17 ft. and a reasonably scaleish appearance. Best speed so far with a model of this type is I. A. Bates and R. E. Puddephatt's 36.5 m.p.h. with an Allbon "Dart."

WINCHESTER M.A.S.

At last it's happened! We have flown on a Sunday, and not only for one, but for three in a row. Two competitions have been flown on the dates arranged and we hope that this is a portent of what is to come. We could do with a few more fliers though, the ratio at the moment is about 3 to 1; that is three spectators to one flier.

Chuck Glider Contest on April 14th, 1952. This offering at the altar of brute force and ignorance was enjoyed by both entrants and spectators alike. The earlier part of the Easter Holidays were spent in throwing, wrecking and frantically rebuilding chuck gliders and on the day most entrants had stiff arms and aching torsos and patch-work models. This event proved to be a win for the outsider with the googly throw who showed himself to be the top brute or "ignoramus"—whichever you like. Times were not high and the weather was not altogether helpful. Technique could be improved upon but Bill evidently found it "child's-play." However, the top two had another enjoyable tussle.

Results

1. H. J. Childs, 64 sec. (agg. 3 flights).
2. P. H. Ivory, 59 sec.
3. B. Oulton, 50.6 sec.

After the competition several members amused themselves and alarmed others with catapult launching—even more brute force here. Bill's "singing" chuck glider and Brian's *Meteor*-like loops were great fun. All most enjoyable if not very enlightening.

Open Sailplane Contest on April 20th, 1952

This contest was distinguished by the number of Nord II models entered, a tribute to the designer, there being four out of the entry of six. We think the others wished they had Nord's too. Two of these models were flown for the first time that day and with the barest minimum of trimming one recorded a maximum and was clearly set for another when the dethermaliser came in. The other was similarly *dit*'d before reaching a maximum which could otherwise hardly have been missed. Both Bill Childs and Peter Ivory were sadly off-form that day. John Lewis with a *Chief* wings and tailplane tied on to a *Marauder*-like fuselage flew away very neatly on his second flight. No de-thermaliser, no name and address, no model. Well, well; some never learn!

SOLIHULL M.F.C.

Having won our way into the finals of the Area knockout contest we now await the arrangement of venue and date. In the meantime, work is going ahead on the long fuselage Wakefields and from trimming flights, at least one is successful.

In the first A/2 eliminator the two highest placed in the club were—J. Rogers, 3rd in the Midland Area, and M. Hanson, 5th. The standard A/2 of the club, designed by M. Hanson, is proving itself capable even in the hands of our youngest members, flying, so to speak, straight off the board. To encourage the building of Wakefield models, Reg Averill, has presented a cup to the club for the best Wakefield flight put up during any one month. The spare time on club nights is being spent by holding a model aero quiz with the members divided into teams.

SOUTHERN CROSS A.C.

"*Gliding to Victory.*"—Such was a headline in a local newspaper on the day after it was announced for the second year in succession, Grahame K. Gates, had won the Pilcher Cup. We join with the entire club in congratulating Grahame on this outstanding performance and can find no better way of expressing our feelings than by repeating Grahame's own words in a letter he wrote to the comp. sec., after his success last year—"Naturally, I am extremely pleased with the result, both for the club's sake and for my own."

Forest Flying. The second area meeting at Ashdown Forest on April 20th was more fortunate than its predecessor, the official description of the weather was "bright periods, moderate to fresh winds," and we understand several good flights were recorded by the Men of Kent boys.

—AEROBODS OF NOTE—

No. 4.
HENRY J. NICHOLLS
Besides being a designer and practical aeromodeller, 'Henry J' keeps an aeromodelling 'Horn of Plenty' known to countless aerobods as '308.'

A Contest for the Comp. Sec. The nominated time contest which was devised and directed by the comp. sec., was also won by the comp. sec. Results 1, F. C. Smith, 9 min, 28.5 sec. time nominated, error 11.5 sec.; 2, K. Donald, 15 min. time nominated, error, 147.1 sec.; 3, R. E. Delves, 10 min. 15 sec. time nominated, error 279.6 sec.; 4, G. K. Gates, 15 min. 15 sec. time nominated, error 720 sec.

SHEFFIELD S.A.M

The third annual exhibition of hobbies and crafts, put on by the Sheffield Society of Aeromodellers, at Easter, was a great success in all respects.

Mr. Cosh and Mr. R. F. L. Gosling judged the aircraft section, and awarded prizes as follows: Glider, G. H. Mellar; Rubber, G. H. Mellar; Power, K. Thackray; Control line, J. A. Seymour; Solid scale, J. D. McHard; Flying scale, J. D. McHard.

The latter model a *Vought S.B.U.-1* Carrier Based American bi-plane, powered with an Albon Dart, was also judged the best model in the exhibition.

G. H. Mellar, in glider and rubber, was, until February, a junior member, and is a very up and coming young man, not only in concours events, but also on the flying field.

PARK M.A.L.

The club has now started to get back on its feet after an orgy of motor cycles. A grand day was spent on Epsom Downs on May 27th, when we flew against Surbiton & District M.F.C., in the first round of the London Area Competition. Although we lost the round some good times were put up by both teams. The club members flying and their total times were:—

Rubber:	W. Hunter,	10 min. 1 sec.
	R. Pullen,	6 min. 35 sec.
Glider	G. D. Crabbe,	7 min. 20.5 sec.
	R. Mount,	11 min. 43 sec.

R. Pullen's model when all set for a maximum on its second flight suddenly lost its wings due to the efficient operation of the d/t and the fuselage was completely wrecked.

Any one who is interested in joining the club which has again started running club competitions should contact R. Mount, 127, Merton Mansions, Bushey Road, S.W.20.

MODEL AIRCRAFT CONTEST CALENDAR

June	22nd	†"FLIGHT" CUP. Unrestricted Rubber. D/C.
,,	22nd	C.M.A. CUP. Unrestricted Glider. D/C.
,,	22nd	Butlin's Contests. Filey, Ayr, Pwllheli and Skegness. All classes of events.
,,	29th	Northern Heights Gala Day. Langley Aerodrome, Bucks.
,,	29th	Huddersfield M.A.C. Rally. David Brown's Airfield.
,,	29th	10th Annual Clwyd Slope Soaring Meeting.
,,	29th	East Midland Area Rally, Cranwell Aerodrome, Lincs.
July	4th-7th	World Control-Line Championships. Brussels, Belgium.
,,	6th	"FROG" JUNIOR CUP. Unrestricted Rubber Glider. D/C.
,,	6th	HAMLEY TROPHY. Unrestricted Power. D/C.
,,	6th	Irish Nationals. Baldonnel Airport, Dublin.
,,	10th-14th	Wakefield Trophy Contest. Norrkoping, Sweden.
,,	20th	*FARROW SHIELD. Team Rubber. Area.
,,	20th	WOMEN'S CUP. Unrestricted Rubber/Glider. Area.
,,	20th	JETEX CUP. Ratio Duration. Area.
	20th	THE BRITISH NATIONALS. R.N. Air Station, Gosport, Hants.
Aug.	3rd	†"MODEL AIRCRAFT" TROPHY. Unrestricted Rubber.
,,	3rd	THURSTON CUP. Unrestricted Glider.
,,	3rd	"GOLD" TROPHY. Control-Line Stunt.
,,	3rd	Class "A" Team Race.
,,	3rd & 4th	S.M.A.E. R/C TROPHY. Radio Control.
,,	3rd & 4th	CONTROL-LINE SPEED CONTESTS.
,,	4th	SIR JOHN SHELLEY CUP. Power Duration.
,,	4th	Class "B" Team Race.
,,	10th	Swindon M.A.C. Slope Soarign Meeting, Wiltshire Downs.
Aug.	10th	Belgium v. Gt. Britain C/L Challenge Contest. Nemur, Belgium
,,	13th-17th	Swedish A2 Glider Cup. Graz, Austria.
,,	24th	All-Herts Rally. Radlett Aerodrome, Herts.
,,	24th	Irish International Meeting. Baldonnel Airport, Dublin.
,,	24th	Bolton M.A.S. Rally, Edgworth, Lancs.
,,	31st	BRITISH CHAMPIONSHIPS and TAPLIN TROPHY. Radio Control. Cranfield Aerodrome, Beds.
,,	31st	"Daily Dispatch" Rally. Woodford Aerodrome, Ches.
Sept.	6th & 7th	Royal Air Force Championships.
,,	7th	"Yorkshire Evening News" Flying Festival, Sherburn, Yorks.
,,	14th	World Power Championships. Switzerland.
,,	14th	U.K. CHALLENGE MATCH. Rubber Glider/Power. Tilstock Aerodrome, Lancs.
,,	21st	Butlin's Contests. Filey, Ayr, Pwllheli and Skegness. All classes of events.
,,	21st	Southern Counties Rally, Thorney Island, Hants.
,,	28th	"THE MODEL ENGINEER" CUP. Team Glider. Area.
,,	28th	"FROG" SENIOR CUP. 1.5 c.c. Power Duration. Area.
,,	28th	South Midland Area Rally. Halton Aerodrome, Bucks.
Oct.	12th	RIPMAX TROPHY. Radio Control.
,,	12th	DAVIES TROPHY. Team Race.
,,	12th	CONTROL-LINE SPEED CONTESTS. Centralised—Venue to be announced.

*Indicates Plugge Cup Events.

†Indicates Caton Trophy Qualifying Events.

S.M.A.E. CONTESTS IN CAPITALS

Clubs intending to organise rallies are advised to send the dates of these to us without delay. Early publication in the M.A. Contest Calendar will help to avoid their clashing with other events.

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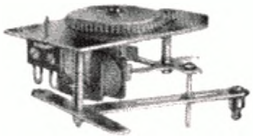

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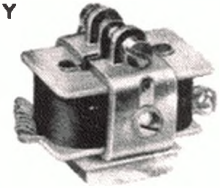

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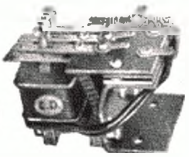

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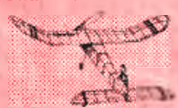

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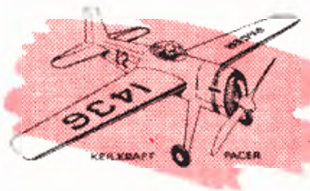

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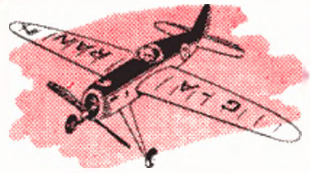

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