MODEL Aircraft

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THE JOURNAL OF THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

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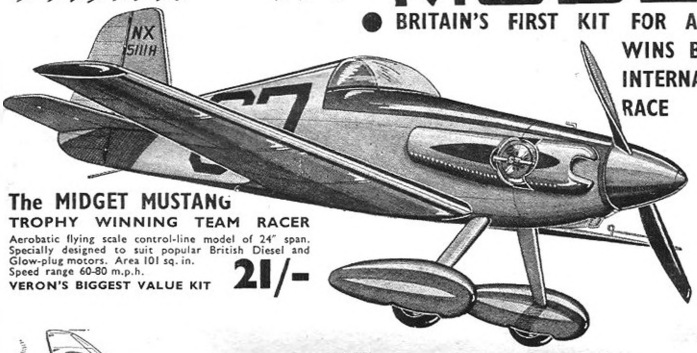

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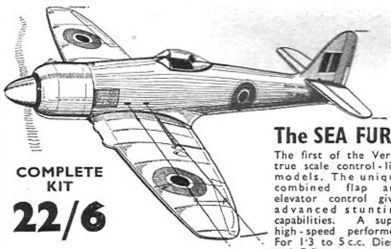

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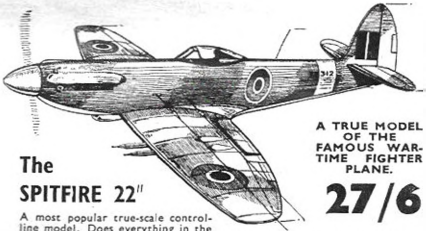

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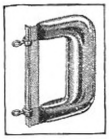

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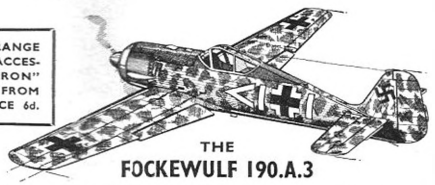

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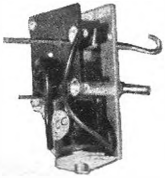

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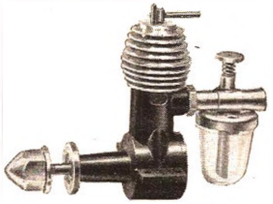

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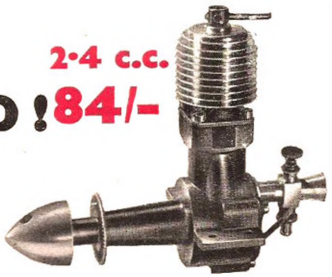

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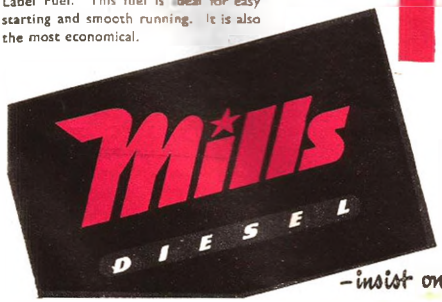

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Advertisement Manager:
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AUGUST, 1950 VOL. 9 No. 7

Contents

EDITORIAL

IT is with considerable pleasure that we are able to report that the negotiations between the Royal Air Force Model Aircraft Association and the Society of Model Aeronautical Engineers have now been completed. The former body and its ninety-five constituent clubs have now become affiliated to the S.M.A.E.

The close co-operation thus brought about will undoubtedly benefit both bodies and provide better sport and facilities for all aeromodellers. The S.M.A.E. members and modellers in the R.A.F. will now be able to compete together in all of the society's contests on an equal footing.

The association will have a representative on the S.M.A.E. council to assist in co-ordinating the activities of the two bodies and each R.A.F. Command will function as an S.M.A.E. Area for the purpose of organisation.

We are quite sure that the clubs will welcome the R.A.F. modellers to their open events and support equally enthusiastically any similar events organised by the Royal Air Force M.A.A.

This step is an important one for model aviation as it links together the efforts of the two largest organisations operating in this country concerned with the flying and construction of model aircraft.

The R.A.F. Model Aircraft Association now receives the support and encouragement of the Air Ministry, and the immense value of aeromodelling to young airmen, both as an instructional hobby and a healthy sport, seems at last to have been realised by the Air Council. We are certain that the Association will continue to prosper and we wish it a very successful future.

Cover Story

Johnny Knight, of the Kentish Nomads Club, is one of the most consistent contest fliers in the country and his success in the Wakefield Finals was well deserved. The Knights are a real aeromodelling family — Father, who is also shown in the photograph, has won many contests and Sister Daphne won the Women's Cup Contest at the Nationals.

A PERCIVAL MARSHALL PUBLICATION

Published on the 20th of each month prior to the date of issue by PERCIVAL MARSHALL & COMPANY LTD. 23, GREAT QUEEN STREET, LONDON, W.C.2. Tel: Chancery 6681-4 Annual Subscription 20s. 0d. post paid.

The Editor Comments on Current Topics

THE 1950 F.A.I. CONFERENCE This year's F.A.I. conference was held in Stockholm from May 27th to June 2nd and coincided with the celebration of the Swedish Royal Aero Club's 50th anniversary. Apart from the fact that it was held in a very beautiful city, the celebrations to mark this occasion singled it out from the usual conference and made the event quite outstanding.

The United Kingdom was represented on the Model Commission by the chairman of the S.M.A.E. in the capacity of president of this commission and a number of matters of importance to aeromodellers the world over were discussed and some important decisions made.

The work carried out at Cleveland last year in formulating rules for the conduct of international contests was rounded off and amplified where found necessary as the result of subsequent experience and a comprehensive set of rules for the control of international contests has resulted with a view to unifying the conditions under which such contests are run. All aeromodellers will thus know beforehand the exact conditions to which they will have to comply and much argument and disappointment will be avoided.

The rules include a standard flight pattern schedule for C/L aerobatic contests using the American schedule as a basis.

It was agreed to recognise *only four* international championship meetings, one for each of the following types of model : (1) Rubber, (2) Power, (3) Glider, (4) C/L. It was unanimously agreed that the Wakefield contest should be the championship event for rubber models and Sweden applied for the Nordic Contest, to be held this year near Göthenburg, to be considered as the championship meeting for gliders. This was agreed to. The power and C/L events have still to be allocated.

All other international meetings will be considered as friendly international events without championship status, irrespective of the title given to them by their sponsors. This is expected to relieve the travelling problem, and it is further suggested that a rota of the countries to run the championship events be established, so that none stay in one country, and so that all countries interested may have the opportunity of running them irrespective of whether they win the event or not. A proviso that the winning country should be given the opportunity of running the event, if it was not the previous year's winner, was made.

It was also decided to recommend to the S.M.A.E. that the Wakefield specification should be amended to make it fall into line with the F.A.I. methods of measuration, to standardise the methods of measurement, and avoid some of the ambiguities and difficulties which exist at present.

In brief it is suggested that the *total* area should be specified and not the wing area plus one third tail. That the F.A.I. method of including the wing projection through the fuselage in the area be adopted, and that the fuselage cross section be a function of the total area instead of the overall length, as at present. *It is not suggested however, that the specification should be altered in any way which will effect the main characteristics of the Wakefield type of model* and all but a few borderline models will still fit in with the proposed new formula which is briefly as follows :—

Total area of horizontal surfaces, 17dm² to 19 dm² (263½ to 294½ sq. in.)

Minimum cross section of fuselage, 0.65 dm² (10 sq. in.)

Minimum weight ... ... 230 gr. (8.113 oz.)

Among the new rules introduced for international contests is one permitting the use of two models by each contestant, the parts of which will be controlled by the organisers, but the competitor may use the parts in any combination he desires.

Manufactured propellers and wing ribs may be used.

A false start will be a flight of less than 10 sec. duration for models using power, and 20 sec. in the case of gliders.

The new rules are designed to give aeromodellers more design scope and to avoid undue disappointment through an early breakage during a contest after travelling many miles to attend it.

The officers elected for the next season are :—

President, A. F. Houlberg (United Kingdom). Vice-President, G. Dërantz (Sweden). Secretary, J. Van Hattum (Holland).

1950 NATIONALS The fourth British National Meeting held at York was no better—or worse—than its predecessors. This was not the fault of the Northern Area officials and their willing helpers, who provided good ground facilities and worked hard to make the meeting a success. The plain fact is that whilst the Nationals continue to be organised on no better lines than the average Area Rally they will never be looked upon as *the* event of the year. What is urgently needed is a change of outlook on the part of those responsible for the organisation. A tent, some ropes and stakes, p.a. equipment and a few contests seem to be considered all that is necessary to make aeromodellers flock from all parts of the country in their hundreds to attend this meeting. This fallacy has now been exploded.

Since the war there has been a great increase in the popularity of contest flying, and the number of entries has increased accordingly. On the other hand the standard of contest organisation has, if anything, deteriorated, and is, in my opinion, not up to that of the best of the pre-war meetings.

Next year the Nationals are due to be held in the Western Area and unless the arrangements are tackled enthusiastically at once, there is no doubt in my mind that it will be a flop—supported only by the Western Area Clubs and a handful of fliers from other parts of the country.

NATIONALS OR CHAMPIONSHIPS ? Apart from the suggested alteration of the date of the Nationals to the August Holiday period—which seems to me to be a sound idea, the main talking point amongst contestants at this year's event was whether participation in future Nationals should be restricted to holders of Class "A" Merit Certificates or to a percentage of fliers who have qualified by flying in events held earlier in the year. The view seems to be strongly held by Northern fliers in particular, that the "rabbits" should be eliminated from the Nationals contests.

Would this be a wise move? As Dr. Joad would say: "It all depends on what you mean by a National Meeting." If it is intended to be a National *Championships* Meeting—O.K., go ahead and make it an "experts only" event. If on the other hand it is to be the largest, and most popular meeting of the season organised by the S.M.A.E. then it should remain a free-for-all as in other countries.

I cannot help feeling that the restriction of the number of entries would be a defeatist move. It seems to me to be illogical to cope with the problem of large entries by limiting their number instead of completely revising our present out-of-date ideas on contest organisation.

By all means let us have British championships if there is a real demand for them, but we should not delude ourselves into thinking that such an event, limited to a hundred or so entrants, will appeal to the general public any more than the Wakefield "100" does, or that it will benefit the movement *as a whole* to any great extent.

AMERICAN WAKEFIELD TEAM As reported in these columns in the May issue, the A.M.A. decided to select this year's American Wakefield Team by means of trials held in five areas, viz.: West Coast, Chicago, Cleveland, New York, and Hampton, V.A. The team consists of the contestants who placed top in each Area Trial, except the West Coast where the top two qualified.

These trials have now been held and the following fliers have been selected to represent the United States in Finland: Ed. Naudzius, Highland Park, Michigan; Lo. Salisbury, Huntingdon Park, California; Fudo Takagi, San Diego, California; John Erwing, Staten Island, New York; Austin W. Leftwich, Richmond, Virginia; Ed. Lidgard, South Bend, Indiana.

WAKEFIELD TRIALS INCIDENT One cannot help but feel sorry for P. Royle of Sale who was disqualified after gaining second place in the Wakefield Trials, but he was undoubtedly very foolish to take the risk of modifying a standard Wakefield design in such a way that the S.M.A.E. officials had to decide that it did not conform to the rules.

We all know the chaps who constantly try to wangle round the rules, and if it had been one of these who had tripped up, I for one would not have been very sorry. But Royle is obviously not one of these; he made a genuine, but unfortunate, mistake, and has had to take the consequences.

Without entering into the argument as to whether the present rules defining the wing area of Wakefield models are clear or not, it is obvious that aeromodellers throughout the world know quite well what the rule in question intends to convey, and they have had no trouble in designing their models accordingly.

One important point does, however, arise out of this unfortunate affair, and that is: Was Royle's model processed before each of the Area Elimination Trials, and if so, how was it passed?

Miss Pat Maya, S.M.A.E. Secretarial Assistant, drawing the winning tickets in the Wakefield Sweepstake from the drum. Also in the photograph are Val Turner, Henry J. Nicholls and R. F. L. Gosling.

MODEL REPORT

F.A.I. Rubber-driven Lightweights

By Ron Warring

DESIGNING a rubber model for F.A.I. contest work presents a particularly interesting problem. Basically, the modeller is faced with just this. Am I to build a rubber model specifically to F.A.I. rules, taking advantage of small fuselage cross section, etc., or shall I rely on a Wakefield to cover both Wakefield and F.A.I. contests?

Now it is very doubtful that this argument can be solved on the basis of performance alone. A top rate Wakefield flier will insist that a good Wakefield will beat a model designed down to the lower F.A.I. loading. Another modeller with a tendency to favour the lightweight layout will be equally emphatic that the F.A.I. rules are far more open than those of the Wakefield specification and a better duration *design* can be built to F.A.I. rules.

Possibly the greatest single factor affecting individual choice is the amount of time available. For the modeller with only limited spare time, obviously the Wakefield is the logical choice, for he can then cover all rubber contests with the same model. As one grows older and acquires more responsibilities, spare time dwindles—and so on this score it appears that F.A.I. rubber models are more likely to appeal to the younger enthusiasts! This in itself is quite a good thing for, being younger, and therefore less conservative, they will be more ready to experiment with less orthodox layouts and so from the point of view of scope in design the F.A.I. model has a lot to recommend it.

Unfortunately, there are not enough important F.A.I. rubber contests to justify specialisation in this type to the possible exclusion of others (e.g. Wakefield and lightweight), unless the designer feels that he can produce an F.A.I. model *superior* in performance to all other types. And this is a point where it is difficult, or even impossible, to establish any definite data. It depends, to a large extent, on the type of design *layout* favoured by the individual modeller.

Direct comparison between the loading of a Wakefield and an F.A.I. rubber model shows that the Wakefield cannot have a loading of less than 2.86 oz. per 100 sq. in. total area (8 oz. total weight with full 210 sq. in. wing and full 70 sq. in tailplane). This figure, indeed, is generally considerably higher. Average Wakefield weight is nearer 9 oz. than 8 oz., and few modellers work right up to the limits on areas.

Minimum loading on F.A.I. rubber models is not very much different at 2.73 oz. per 100 sq. in total area but it should be readily possible to work right down to this figure, building the airframe somewhat on lightweight lines and making up the total weight by increasing the motor weight, as necessary.

Keeping the airframe weight low on a model of Wakefield size, and still retaining sufficient strength is something of a problem for most builders. Hence building an F.A.I. rubber model of Wakefield *size*, but F.A.I. loading and cross section may lead to similar difficulties. You may very well end up with a 9 oz. model after all, with a slim fuselage not conforming to Wakefield specification! It would appear, therefore, that in specifically designing a rubber model to F.A.I. rules a smaller size than that of a Wakefield is very desirable.

This seems to be confirmed in practice in another way. A lightweight "Wakefield," that is, a model of Wakefield size but weighing only, say 6 oz., does not appear to fly so well as a normal 8 oz. or 9 oz. Wakefield. It is impossible to get an adequate proportion of rubber weight without sacrificing strength, and vice-versa. 8 oz. total weight, in fact, seems to be about the *optimum* weight for a model of this size, although, in practice, it is noticeable that there is very little difference between the performance of a good design whether built to 8 oz. or 9 oz.

The point now remains as to whether the smaller model built to F.A.I. loading can be made equal to, or superior to a lightweight model of the same size.

Around a wing area size of about 150 sq. in. it does appear that weight is more critical, this being reflected in glide performance. That is to say, the lighter model of this size will have a noticeably lower sinking speed. Hence it would appear that the only way in which this disadvantage can be overcome is to take advantage of the increased total weight by boosting the proportion of rubber carried and aim for greater height under power. In still air conditions the overall result (i.e. total duration of flight) will probably not be as good as that of the conventional lightweight. But conditions are so seldom "still" and, where there is any possibility of lift around, the greater height of the heavier model may well give it the advantage.

Increasing the proportion of power will bring with it further difficulties, mainly as regards stabilising the model under the initial climb. It will be necessary to use the most stable layout possible and, to control the power, a propeller diameter of something like half the wing span. In such a case a folding propeller is an absolute necessity. In fact, the type of model resulting from these desirable characteristics will have a very similar appearance to that of the usual trend of lightweights or "open" contest models.

Structural weight will still be at a premium, so as to incorporate the maximum possible amount of rubber. At the same time the wings, in particular, must be made stronger than orthodox lightweight practice. But any departure from the purely slab-sided type of fuselage seems to be ruled out.

Thus we seem to have arrived at the conclusion that the best F.A.I. contest design will be smaller than a Wakefield and in appearance somewhat similar to a normal lightweight, but with a proportionately more powerful motor. To accommodate this larger motor the fuselage will have to be longer, with the cross section kept down to the minimum required by F.A.I. rules. Optimum wing area would appear to be about 180 sq. in. Above this we come into the region of critical structural weight. Below 150 sq. in. the efficiency of the model is beginning to drop off badly at the loading required. The line of demarcation is not sharply defined, of course, but we must have some arbitrary standard for design and a figure of 150-180 sq. in. appears to fit the bill.

We are now faced with the problem of stabilising a high-powered model, fitted with a propeller about half the wing span in diameter. Especially as the latter is of the folding type, a parasol layout appears to be far and away the best—or at least, the easiest—solution. It is usual, too, to employ polyhedral rather than straight dihedral in controlling high power—so hence we require a parasol-mounted, polyhedral wing.

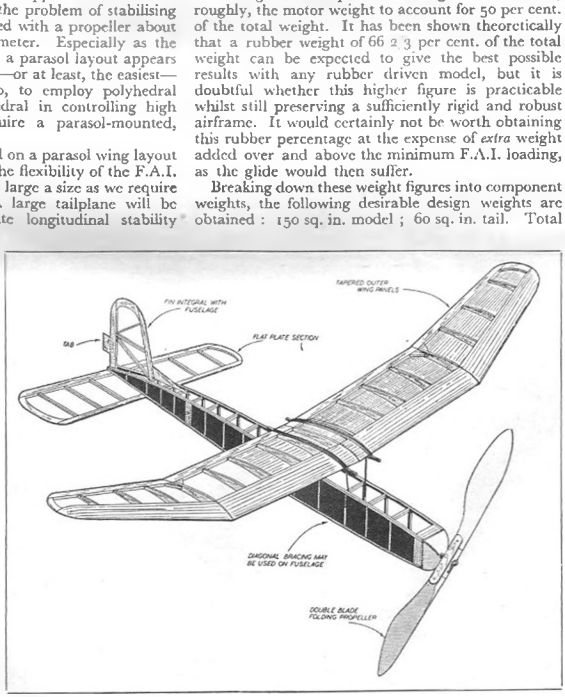
Now once having decided on a parasol wing layout we can take advantage of the flexibility of the F.A.I. rules to use a tailplane of as large a size as we require for optimum stability. A large tailplane will be helpful in giving adequate longitudinal stability both under power (high thrust) and thus enabling us to use the motor run more efficiently, and on the glide with the propeller folded. A tailplane limited to 33 per cent. of the wing area, as in the Wakefield specification, *is not really large enough for optimum stability on a parasol wing model of this type*, so that as a duration model, all other conditions being equal, the F.A.I. parasol design should be slightly superior to the Wakefield parasol of similar layout. This advantage will offset to a large extent the reduced aerodynamic efficiency due to smaller size of model.

Up to 50 per cent. tailplane area can be used to advantage on a parasol type powered model (both rubber and motor powered), but there is no point in increasing tailplane area beyond the satisfactory size. Total weight of the model is calculated on the *combined* wing and tailplane area. However rigged, the tailplane is never as effective a lift producer as the wings and so an unduly large tailplane means simply a virtual increase of *wing loading*, although the *total* loading remains the same (F.A.I. minimum). Tailplane area should be limited to 40 per cent. maximum, therefore, and can indeed be made slightly smaller, if desired. But it should never be less than 35 per cent. of the wing area.

Our 150 sq. in. F.A.I. model, therefore, requires a tailplane area of between 52.2 and 60 sq. in. Choosing the higher figure, total area then becomes 150 + 60 = 210 sq. in. Minimum weight of the model must therefore be 5¾ oz. to conform to F.A.I. rules. From this total area is also derived the minimum fuselage cross section required (total area 80), which in this case is 2.625 sq. in.

Dealing with the question of weight first we want, roughly, the motor weight to account for 50 per cent. of the total weight. It has been shown theoretically that a rubber weight of 66 2/3 per cent. of the total weight can be expected to give the best possible results with any rubber driven model, but it is doubtful whether this higher figure is practicable whilst still preserving a sufficiently rigid and robust airframe. It would certainly not be worth obtaining this rubber percentage at the expense of *extra* weight added over and above the minimum F.A.I. loading, as the glide would then suffer.

Breaking down these weight figures into component weights, the following desirable design weights are obtained : 150 sq. in. model ; 60 sq. in. tail. Total



weight required 5¾ oz.

	approx. 50 per cent. motor (*Airframe 3 oz.*)	approx. 66 2/3 per cent. motor (*Airframe 2 oz.*)
Wings	1-1⅜	½-⅝
Fuselage	½-⅜	½-¼
Fin	¼	1/16-3/32
Tailplane ...	⅜-3/16	3/32-⅛
Undercart ...	1/16	1/16
Propeller assembly	⅜-½	½-⅜
Motor weight ...	2½	3¾
Total	5¾	5¾

It will not be good practice to increase the total weight above the minimum figure required and so motor weight can become the final deciding factor. A model which comes out overweight will have to have motor weight reduced accordingly, even if this means reducing the length of motor (and thus the duration of the power run) ; or the pitch or diameter of the propeller.

A regards the design layout itself, we can now consider this in more detail. The wings as one of the most important individual components we will consider first. For an economic structure, an aspect ratio of about 6 will be best which, with a purely rectangular planform, means a minimum span of 30 in. and a chord of 5 in. Purely rectangular tips are poor, having high drag at moderate and high angles of attack, detrimental to both power and glide flight, and so the tip should be made at least semi-circular, so that the actual span of this wing becomes 32 in. An elliptic tip would be slightly better still.

Actually this is the minimum size of model for good results and the builder who can build accurately down to low structural weights may well consider a larger model half way between this size and the Wakefield—say, just over 180 sq. in. area—with corresponding rectangular wing dimensions of 34 in. span and 5½ in. chord.

Since a polyhedral wing layout is to be used, the wing will be roughly quartered for the dihedral breaks. Tip rise should be generous, but it does not really matter whether the inboard panels are left flat or given a moderate dihedral. The latter looks better, and probably is better, aerodynamically. Tip rise should be roughly span/8 and certainly not less than span/6.

An alternative wing planform, used by Norman Marcus and other members of the Croydon club, tapers the outer wing panels to get a smaller tip chord.

For the wing section, a variety of types in the moderate thickness range can be used. Excessive thickness or excessive camber (for example, RAF 32 on the one hand, and Marquardt on the other) are not advisable on account of their higher drag which will tend to spoil the climb. However, a section which is too thin, or has little camber may give a fast climb all right, but an equally fast glide. Hence, NACA 6409, Davis (A = .93 ; B = .17), and so on, should fit the bill.

Tailplane planform is not critical—neither is the section. For the latter, a simple flat plate will suffice. If a cambered section is used in order to get sufficient spar depth, it should be kept as thin as possible with a flat undersurface.

The fuselage needs only to be a simple square box, where fairly generous wood sizes can be used for adequate strength (⅜ in. sq. being satisfactory). The small cross section of the fuselage will result in a lighter structure, proportionately, than that of a Wakefield. However, fuselage length will be longer in proportion, a rough figure being to make overall length of the model the same as the wing span. Rear motor anchorage will have to be located approximately two-thirds of the fuselage length aft, which will then give a reasonably long tail moment arm.

Centre of gravity of the complete model will come out approximately at the mid point of the rubber motor, and so wing position can be located accordingly. Best c.g. position would appear to be 75 per cent. chord, with the parasol height between one half and three-quarters of the wing chord. Corresponding rigging angles should then be plus 3 degrees on the wings and plus 1 degree on the tailplane, although the actual tail setting can only be finalised by test flying.

The minimum F.A.I. fuselage cross section will be rather too small for adequate rubber clearance. A section of less than 1½ in. square should not be considered, in view of the powerful motor to be used. This section can be maintained straight from nose to tail, or curved outwards very slightly to give a better shape and slightly more clearance at the centre of the motor to allow for possible vibration.

High powered models can be very critical to slight movements of the rudder or trim tab, often with disastrous results. And as no one, as yet, has been able to evolve an exact method for determining the size and location of fin required, this is the one part of the design where a considerable amount of "guesstimation" is necessary. In conformity with current practice, a fin area of about 12½ per cent. of the wing area would appear to be sufficient, the whole of the fin being located above the fuselage datum line.

Most models of this particular layout which have appeared at present also retain much of the elementary undercarriage idea of the ultra-lightweight machines, although the single-leg unit is usually made retractable. Whether retracting a thin leg of this form and laying it alongside, or underneath, the fuselage does result in any drag reduction is questionable. It would, in fact, appear just as good to have a fixed single leg. No take-off troubles should be experienced, as with the high initial thrust the model should leap straight off the ground.

Finally, the propeller, which, we have already noted, should be about half the span in diameter. It is also to be of the folding type, and so a moderate or fine pitch can be used for maximum rate of climb. Typical block dimensions would be 1¾-2 in. wide and 1¼-1½ in. thick for any two-bladed propeller of between 15 and 18 in. diameter ; and 2-2½ by 1⅝-1¾ in. for a corresponding single blader. A reasonably robust type of hinge will be necessary.

The Wakefield Trials Analysed

THE WAKEFIELD TEAMS

Flight Averages in Three Contests	
1. J. B. Knight	228.1 sec.
2. J. L. Pitcher	222.7 ,,
3. R. H. Warring	208.4 ,,
4. E. W. Evans	180.8 ,,
5. H. R. Stevens	166.7 ,,
6. F. Adams	166.6 ,,

There appear to be two main aspects of the Wakefield Trials system to analyse. One is the relative performances in the various Area Trials. The other, comparative results by team selection as at present—taking the top six in the final (centralised) trials—and selection by overall aggregate on all three trials. The former affects the latter to a considerable extent, so will be dealt with first.

A study of the figures determining the "Wakefield 100" qualifiers shows an amazing difference between the minimum qualifying times required in the various areas. In the London area, for example, a total of 820 seconds was necessary to qualify for the "100," whereas a single five minute flight would have been good enough to get through in the Southern area (262 sec. minimum).

These variations do not follow any clearly defined rule but, as a generalisation, the larger the area concerned, i.e. the greater the number of entries, the higher the standard of the flying, and therefore the higher the qualifying times required.

It may well be that different weather conditions in different areas are the cause of a certain amount of variation. But in the light of experience it would seem that weather is a *minor*, not a major, factor, and far more likely to affect top times rather than bottom times.

Speaking for the London area; of the two first trials—the Gutteridge and the Weston—one was flown in good weather and one in very windy weather. Yet times were reasonably similar in each, although the percentage of lost models was far higher on the windy day.

One thing is clear. There is no equitable way of choosing a Wakefield team by competitive selection. Results at the end of the first, second and third trials were different in each case. In fact, the ultimate team members as a whole did pretty badly on these first trials. But those who did particularly badly on this first trial pulled up well on the second, and, of course, did very well in the Wakefield Trials proper.

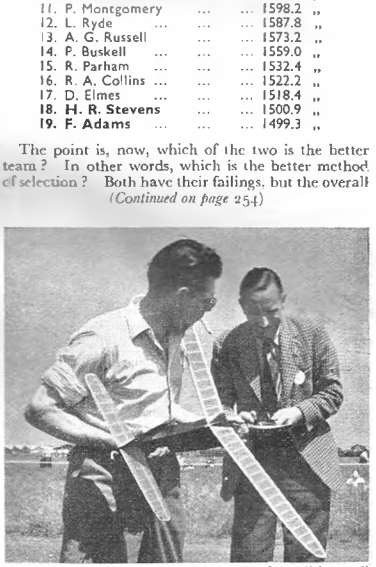
Arranging the results of all three trials on an aggregate basis we arrive at the interesting fact that only three of the 1950 team come in the first six but in exactly the same positions—Knight, Pitcher and Warring. These are the only three members, in other words, who have put up *consistently* high times through all the trials, their average flights being in the region of three and a half minutes. The other three team members place 10th, 18th and 19th on this basis.

Aggregate results of all three Trials

1. J. B. Knight	2053.1 sec.
2. R. Copland	2026.4 ,,
3. J. L. Pitcher	2004.1 ,,
4. R. H. Warring	1875.3 ,,
5. R. B. Chesterton	1783.1 ,,
6. C. Mayes	1703.0 ,,
7. F. Holland	1683.85 ,,
8. R. Cole	1664.8 ,,
9. J. North	1661.2 ,,
10. E. W. Evans	1627.4 ,,
11. P. Montgomery	1598.2 ,,
12. L. Ryde	1587.8 ,,
13. A. G. Russell	1573.2 ,,
14. P. Buskell	1559.0 ,,
15. R. Parham	1532.4 ,,
16. R. A. Collins	1522.2 ,,
17. D. Elmes	1518.4 ,,
18. H. R. Stevens	1500.9 ,,
19. F. Adams	1499.3 ,,

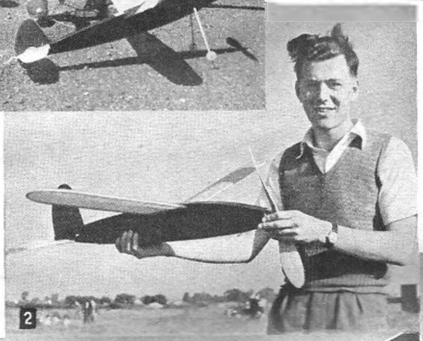
The point is, now, which of the two is the better team? In other words, which is the better method of selection? Both have their failings, but the overall

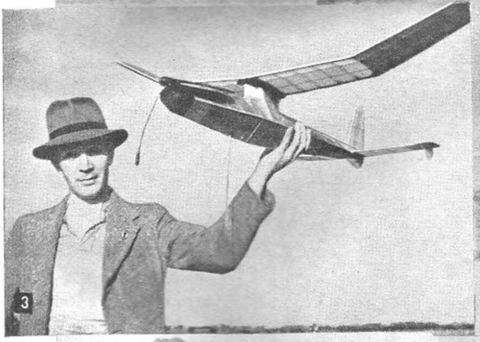
(Continued on page 254)



E. W. Evans, of Northampton, designer of the "Jaguar" and "Clipper" Wakefields, winds up for one of the flights which gave him a well deserved place in the British team.

WAKEFIELD and NORDIC TRIALS at FAIRLOP





1. Peter Hewitt, of Halstead, demonstrates a clean launch without any suspicion of a push.

2. J. B. Knight, of the Kentish Nomads, an experienced and competent contest flier, who placed first in the Trials.

3. H. R. Stevens, of Hatfield, a "dark horse" who finished in fifth place with his original design.

4. J. L. Pitcher, of Croydon, culminated a long run of successes in rubber-duration contests by gaining a well deserved place in the Team.

5. P. Royle, of Sale, with his modified "Contestor" which was adjudged after the contest to be outside the formulae.

6. Johnny Knight gets his model away well on one of its flights in the eliminators.

7. The British 1950 Wakefield Team with the Mayor and Mayoress of Ilford.

8. Don Brockman ducks smartly as Ron Warring's model gets away for its first flight.

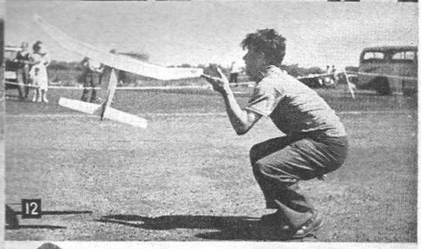
9. E. W. Evans's "Clipper" taking off. This well-known designer and flier should be a big asset to the team.

10. T. Bootland, of Scunthorpe, who placed fourth in the Nordic A-2 Trials and gained a place in the British Team which is to go to Sweden.

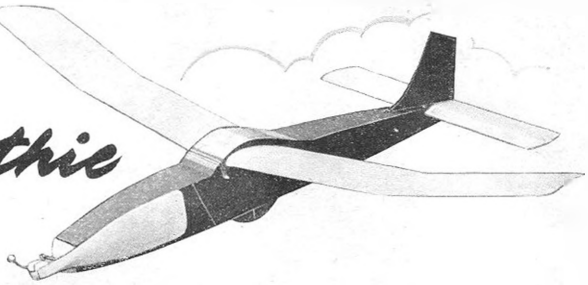
11. The Technical Secretary, H. J. Nichols, checks Stevens's model after the contest whilst Evans and Royle await their turn.

12. The wind was quite strong at times and most of the Wakefield entries leapt off the ground like the one shown in the photograph.

13. Ron Hinks, of Luton, placed second in the Nordic A-2 Trials with his "Norseman." The only modifications from standard are sheeted "windscreen" and an underfin.



Smoothie



WAKEFIELD MODEL

By

N. Standing

SMOOTHIE may not be as hot as a Benny Goodman record but if you build and trim it correctly you'll have a model that can hold its own with any Wakefield.

You may wonder why the model is called "Smoothie"; this is because it is fitted with two anti-vibration formers which you can see on the plan marked "A" and "B." These stop the motor from hitting the sides of the fuselage. This, together with the "S" type hook makes the transmission from rubber to propeller almost free from vibration.

Using a 16-strand motor combined with a fine pitch propeller the model has a terrific climb followed by a tight circling glide, This is obtained by making the model balance at 75 per cent. of the chord back from the leading edge; although this is only advised for high pylon models, no trouble was encountered in trimming under this set-up.

The model was developed from my previous experience on a streamlined Wakefield, where it was found that locking all the components (wing, tail and fin, etc.) into position was a definite advantage. The model if trimmed could be taken straight from the box and flown in a contest without any previous trimming. This eliminates the risky test flight before a contest.

The idea was to produce a model with these points combined with the usual lightweight principles (polyhedral, thin wing section, S.B. folder, retractable undercarriage, etc.). As you can see, wing, tail, and fin all lock in position.

The fuselage has very little drag and the usual large amount of structure needed to bring the fuselage up to formula is put to a more useful purpose, i.e. wing fairing and D.T. box. As you will notice, the model is very angular and therefore easy to build and repair in the case of a pile in. I have come to the conclusion that elaborate streamlined fuselages and tapered wings take too much time and trouble to construct and offer very little advantage over the slabside even chord layout, provided everything is locked in position as I have previously mentioned.

Well, there is a brief description of how the model was developed, so, if you like it, grab yourself some wood and here are the building instructions :—

Fuselage

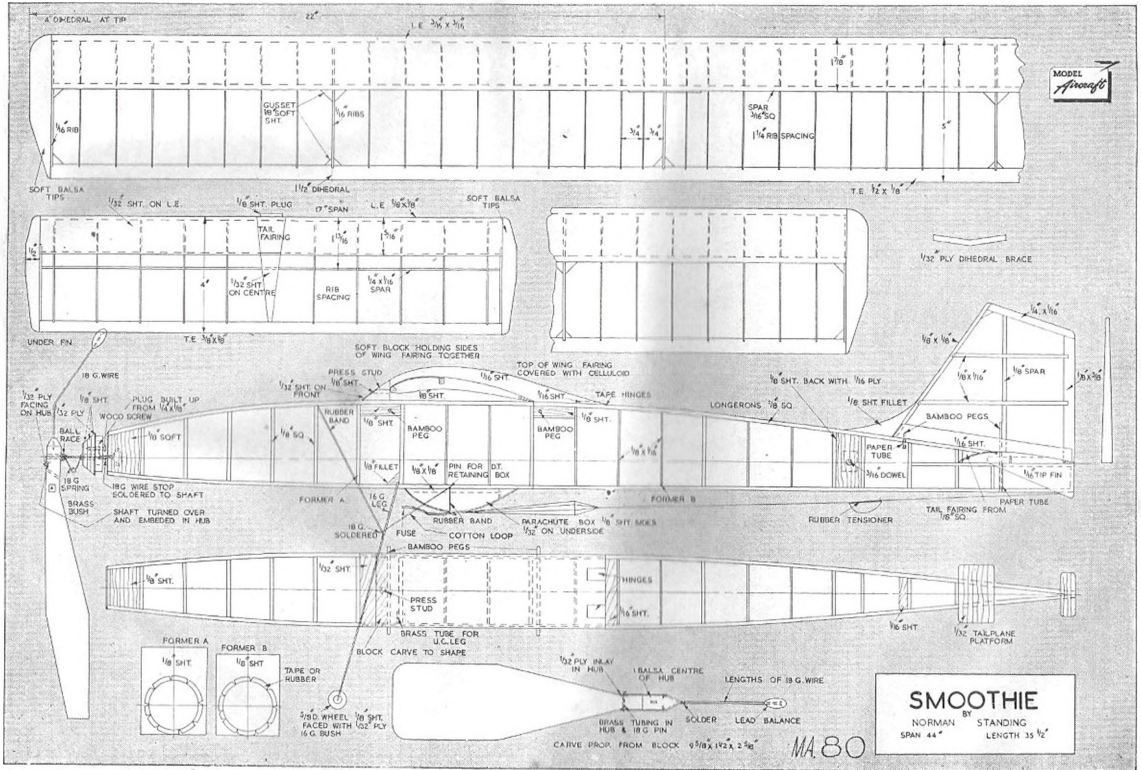
The two sides are laid down in the normal manner, not forgetting that some of the spaces are $\frac{1}{8}$ in. × $\frac{1}{16}$ in. The sides are easy to join as the fuselage has a flat undersurface, and two anti-vibration formers make it almost impossible to build the fuselage out of alignment. After the main framework has been finished the two $\frac{1}{8}$ in. sheet wing mounts are cemented in the appropriate position, the upper part of the fairing is cut from $\frac{1}{4}$ in. sheet joined by a soft block carved to shape at the front and sheet at the rear, the top of the fairing is covered with celluloid, as this was the lightest material (1/32 in. sheet would have had to be covered and doped). The fairing is hinged at the back by tape hinges and held down at the front by a press stud sewn into the wood. The D.T. box is held to the fuselage by a rubber band; the box is kept in position on the fuselage by two pieces of $\frac{1}{8}$ in. square cemented to the underside of the fuselage. The D.T. box comes away completely when the fuse operates. The box is attached to the model by a piece of thread to the tail.

The parachute is of rag tissue, 10 in. in diameter, with eight shroud lines. A small celluloid spacer is used to stop the lines tangling. A small piece of rubber is used in the parachute line so that parachute and box are pulled clean away. The undercarriage leg is bent from 16-gauge wire hinged by a small piece of brass tubing bound to the spacer. The leg is retracted by a strip of $\frac{1}{16}$ in. square rubber and is held in the down position by a loop of cotton. The fuse that operates the D.T. burns through the cotton loop holding the undercarriage down, first, and then goes on to the band holding the D.T. box in position. The length of the fuse will have to be adjusted according to the speed your fuse burns. The leg should retract about five seconds after take-off so when your model is fully wound and the fuse is lit and pulled in position you have got to be quick and get the model away. The length of fuse after burning through the loop to the D.T. can be adjusted according to how long you want it.

The fuselage is covered in lightweight rag tissue, 30 per cent. black leather dye added to the dope and the structure given three coats. Paint the dope on with pieces of cotton wool as this makes the black come out smoother and it is also quicker.

Wing

The trailing edge is pinned in position and propped up at the front. The ribs are then slotted in position



FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 23, GREAT QUEEN ST., LONDON, W.C.2. 5s. 0d. POST FREE.

except the three at the dihedral brakes. Slot in the $\frac{3}{16}$ in. square main spar and then add the leading edge. The wing is then taken from the plan, the spars cut at the dihedral brakes and the three ribs inserted ; the dihedral keepers can then be cemented in place. The top of the leading edge is sanded to shape and the 1/32 in. sheet cemented in place. When the sheet is dry the leading edge can be completely sanded to shape. The wing tip blocks can then be added and carved to shape. The wing is covered with Jap tissue and given two coats of dope.

Tailplane

This is very similar to the wing, the trailing edge and spar are pinned in position and the ribs slotted in place. Leading edge and sheeting are same as for the wing. Do not forget to add the end fins ; tips are carved from soft block ; tail is covered with Jap tissue and given one coat of dope.

Fin

Cut the spar from $\frac{1}{8}$ in. sheet and pin in position. Place in position the leading and trailing edges, then cement in place the $\frac{1}{8}$ in. $\times$ $\frac{1}{16}$ in. cross pieces and the $\frac{1}{16}$ in. sheet base. Remove from the plan and fix the cross pieces on the other side. Cover the fin with Jap tissue and give one coat of dope. A small trim tab of tinfoil can be cemented on.

Propeller and Nose Block

Propeller is carved from block as shown on the plan. Develop the blade carefully giving it about 3/32 in. undercamber. Give the blade section a good airfoil shape, just round the corners to leave as much blade area as possible. The propeller hub and counterbalance shown on the plan should be self-explanatory. Bend the shaft as shown on the plan. The motor is wound by the " S " hook which is then hooked on in the centre of the shaft. This type of hook never slips out of position (credit for this idea goes to Jack North, of the Croydon club). Nose block is three layers of hard $\frac{1}{8}$ in. sheet, faced at front and rear by 1/32 in. ply. Put in as big a wood screw as possible, a small one will only bend.

The motor is made up of 16 strands of $\frac{1}{4} \times 1/24$ Dunlop 44 in. long.

Trimming

The model should be tested for glide. First hand-glide to see that nothing is radically wrong, then wind on 50 turns and make all gliding tests from there. The model should glide in a semi-stalled condition ; then the trim tab should be bent so that the model turns out of the stall. Due to the c.g. being so far back a very tight turn will be needed.

Now for the power flying ; put about 70 turns on and work up from there. $\frac{1}{16}$ in. down and side thrust was used on the original but this will probably differ on your model. The model is dynamite under full turns so do not overdo any of your adjustments. On a thousand turns it should go up in an 80 deg. climb, so when you take off make sure everything is O.K., then get out of the way pronto.

The Wakefield Trials Analysed

(*Continued from page 249*)

aggregate method would appear to be the best.

The one main objection to the overall aggregate method is weather variation in different areas in the preliminary trials. But this is probably over-rated. Flight times in any one area are more likely to be decided by the *class of competition* in that area rather than weather. And the weather is most unlikely to stay static in any one area, so there may be more variation in weather during the day at any *one* area than between two different areas.

The big objection to the present method of selecting the team by choosing the top six of the final trials is that it still resolves itself into a matter of luck on that particular day. It would have been possible this year, for example, for someone to have made six flights of around 50 sec. each in the first two trials and qualified for the " 100 " in some areas—and then have had a very lucky day at the finals with two five minute fly-aways and a seventy second flight and got into the team. Do we want the selection of an international team to be as open as that ? Or do we want to make it a measure of consistency, where to get in the team means that each member must pull out his best in each of three competitions ?

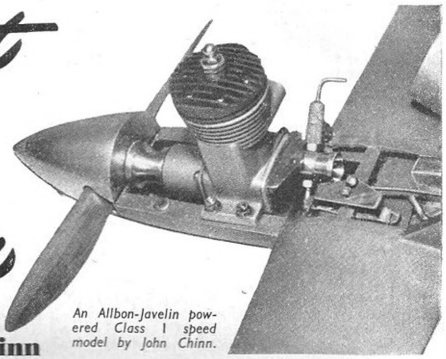
To get consistent high performance with a Wakefield demands a considerable amount of time and effort. It is as hard to get in the *British* Wakefield team as it is to win the Wakefield itself. The Wakefield proper is, after all, a single event and even the best flier in the contest could not win it unless the breaks were with him. In no other country, with the possible exception of America, is competition so keen for those top six places in the trials and the enthusiastic, *consistent* flier should be given every encouragement.

Not that the 1950 team is not a good one. It is. It contains four particularly well-known contest fliers, the other two possibly not so widely known. Any one of them is quite capable of bringing the cup back to this country. But at the same time we cannot help sympathising with Copland and Chesterton—the former in particular, who on overall merit also deserved places.

Wakefield team selection is still a controversial subject. The first post-war trials in 1948 produced similar arguments and was largely instrumental in introducing the " replacement model " rule. The '49 system introduced two trials ; and 1950 has seen three trials, with the first two grouped as qualifiers. Perhaps aggregate results may be tried out in 1951. Or what do you think ?

Accent on Power

by **P. G. F. Chinn**

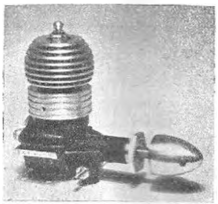


An Allbon-Javelin powered Class I speed model by John Chinn.

POSSIBLY in no branch of the movement has greater progress been made, in Britain, than in stunt flying. This becomes apparent when one considers that today's average club flier can put on a show that would probably have won him a national competition in 1948.

In fairness to the pioneers, however, it must be mentioned that the same average club flier might do a good deal worse given the sort of equipment that was in use a couple of years ago. The main reason for improvement in flying standards can be traced to development in model design and to more powerful engines. Our ideas about stunt model design have undergone a considerable change since 1947-8.

Two or three years ago, manoeuvres were being attempted with relatively heavily loaded models equipped with the then available engines. Typical 2 c.c. engines developing about 1/10 h.p. would be found in models weighing upwards of a pound with around 150 sq. in. wing area. Thus both wing and power-loadings tended to be high, i.e., approaching 16 oz. per sq. ft. and 10 lb. per h.p. respectively. With many present day models, the former figure has been almost halved, while power-loadings have been brought down to 3-5 lb. per h.p.



The new Yulon 29 engine.

Two schools of thought now appear to have developed in regard to stunt model design. In the first is found the purely functional model of asymmetrical layout designed for maximum stability and safety on the lines. In the second is the fast, streamlined model, generally of semi-scale appearance and depending more on its speed to maintain line tension. Possibly the two most well known, as well as two of the most outstanding, examples of the respective schools are the *Stunt King* and the *Monitor*.

Of the two, the first type should be the more foolproof to fly and this does appear to be the case. The *Stunt King*, which incorporates practically every known safety feature, is, undoubtedly, a remarkably safe machine. In the event of the motor cutting out at quite steep line angles, the model can be pulled out and brought down for a landing without any necessity on the part of the pilot to move from the centre of the circle. Further, it has been found, in the case of a Frog "500" powered *Stunt King*, that, with the engine running excessively rich and "four-stroking" in the air, flying speed can be brought right down to less than 30 m.p.h., without loss of control.

This ability to maintain line tension under extreme conditions is, of course, due to the wholesale adoption of "safety devices" as already remarked. For the benefit of those unfamiliar with the "Stunt King" layout, it may be mentioned that these include a total of approximately 15 deg. fin and engine offset, a pivot point well back from the centre of gravity location, an asymmetrical wing (the outer wing panel being 1 in. less span), raked lead-out wires and a weighted outer wing tip. Although the use of so many safety features may seem excessive, they appear to be justified by the performance.

The *Stunt King*, of course, makes no pretences to realistic appearance nor, being of very light construction, is it especially robust. It is, however, no trouble to repair when one does make the inevitable "pilot error."

For the more recently developed high-speed stunter an entirely different set-up is employed.

In the first place, the aerodynamic layout is

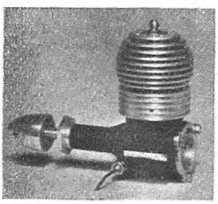
completely symmetrical, no motor or fin offset being used. Secondly, the c.g. is located close to the pivot point and little or no line rake is employed. These combine to make the model fly less "crabwise" to the circle, resulting in less drag, and thus higher speed, which is further augmented by a more streamlined shape, and, usually by the absence of an undercarriage.

Thus it is mainly on account of increased centrifugal force, generated by extra flying speed, that line tension is maintained. Normally, the only emergency feature is the use of an outer wing-tip ballast weight.

The relative flying speeds of the two extreme types may differ widely—very much more so than might at first seem probable. It has been the writer's experience that the flying speeds claimed for certain stunt models are usually somewhat exaggerated, but speeds 25-30 per cent. above those attained by strictly non-streamlined functional models are definitely possible with the modern high-speed streamliner. Admittedly, rather too much emphasis is liable to be laid on speed as a criterion of stunt model performance whereas, as has been mentioned earlier, excessive speed can be a disadvantage for accurate aerobatics. However, a well-designed high-speed stunter will take a considerable line length with fair safety and may still come within the "line length plus 10" limit.

As a matter of interest, the writer has made a habit, with the aid of a stopwatch and measuring tape, of collecting figures on stunt model speeds. The models checked have, in the main, been built from kits or published designs by average modellers, and have been powered with perfectly standard "off the shelf" engines (see accompanying table).

Undoubtedly, the most remarkable of these speeds is that shown by the Elfin 2.49 powered *Junior-Monitor*, and this gives a good idea of the high speeds possible with the streamlined symmetrical model. As might be expected, however, the 45 ft. line length employed was found to be far too short and an increase of at least 10 ft. on this would be better. Fifty-eight ft. lines were, in fact, later used quite successfully. It was also noticed that the model lost speed considerably in manoeuvres, causing gradual loss of height in consecutive loops and it was thought that a finer pitch airscrew, such as a 9 × 6 would be better and would make greater engine power and thrust available for stunting. This proved to be the case and, with a 9 × 6 Stant, and on the 58 ft. lines, the model proved quite capable of any manoeuvre, with the speed still above the 70 mark.



The new 8.2 Yulon 49 which weighs only 6¼ oz.

Engine and Model	General Data				Speed in level flight
	Wt. oz.	Line ft.	Prop.	Fuel	m.p.h.
Eta 29 Super-Looper ...	21	60	9 × 8*	A	68
Frog 500 Stunt-King ...	20	58	9 × 8*	E	60
Yulon 30 Super-Looper ...	23	58	9 × 8*	A	55
Yulon 30 Super-Looper ...	23	58	10 × 8*	G	61
Yulon 30 Super-Looper ...	23	58	9 × 8†	G	63
Yulon 30 Stunt-King ...	17	55	9 × 8*	A	55
Various Amco 3.5 Babets and Monitors ...	18-24	40-55	various	various	50-60
Elfin 2.49 Junior-Monitor ...	14	45	9 × 8†	F	72
Elfin 2.49 Millibomb ...	11	35	9 × 8*	C	57
Arden 099 Skystreak-26 ...	8	40	7 × 6*	F	45
E.D. Comp. Spl. Kandon ...	16	40	9 × 8*	D	36
Mills Mk.II Small-Fry ...	8¼	40	8 × 8*	F	38
Frog 100 Small-Fry ...	6¼	26	8 × 6*	B	34

Props: * = Flexible plastic types, † = hardwood types.
Fuels: A = 5/2 methanol/castor, B = 1/1/1 Ether/oil/diesel, C = Mercury No. 6, D = Mercury No. 3, E = Mercury No. 5 G.P., F = Record Comp. Diesel, G = Record-Powerplus G.P.

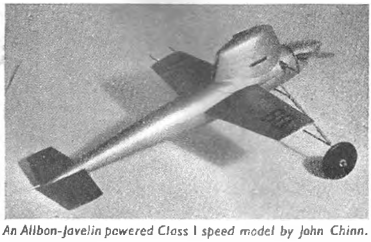
Needless to say, the speed attained by this model is in no small way due to the excellent performance of the Elfin 2.49 c.c. engine and confirms the exceptionally high b.h.p. output which the writer has obtained from these engines on test.

New Engines

Mention was made last month of the new Yulon 0.29 and 0.49 engines. The writer has now had examples of these two engines running and while it is not intended to anticipate results to be given later in a full test report, it may be mentioned that initial tests of these new models give promise of a performance fully up to that expected of direct descendants of the original and highly successful "30" type.

A feature which one is pleased to see retained by the new engines is that of the very easy starting for which the old "30" is noted. Yulon enthusiasts and new owners alike should favour the new cylinder shape and reduced fin diameter of the "29" and the extremely compact dimensions of the 8.2 c.c. "49" model are such that the unit will comfortably fit into the same space as occupied by the 5 c.c. "30" and with only an ounce increase in weight.

Although many improvements, both in manufacturing processes and structural design, have been made to the Yulon since its introduction, these new engines retain the distinctive and original layout in which full 360 deg. porting is used for both

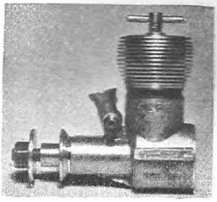


An Allbon-Javelin powered Class I speed model by John Chinn.

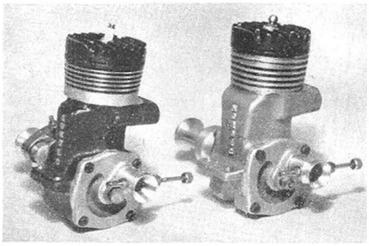
exhaust and transfer. Structural differences evident on the "29" and "49" are found in the new replaceable propeller stud, which is separate from the crankshaft, the method of securing the cylinder liner to the crankcase and the revised piston design. Photographs of the new engines appear on pages 255-6.

Another engine briefly described last month was the new Elfin 1.49. This remarkable little motor shows every indication of being one of the most successful engines for small racing models. On test, it has actually given the highest all-round performance, relative to its capacity, of any diesel yet tried out. Also due to appear shortly will be a revised version of the Elfin 2.49.

A welcome appearance in a class which, up to the present, has not been very well represented by British engines, is the new 10 c.c. Series II Nordec for Class VI racing models. This new engine should be on the market in July and will replace the existing Nordec-Special. As readers of last month's Engine Test will have seen, a prototype Series II has shown a power output of more than 60 per cent. greater than the Series I engine, a performance which now places the Nordec in direct competition with leading transatlantic racing engines.



High power and revs. are featured by the new Class I Elfin.



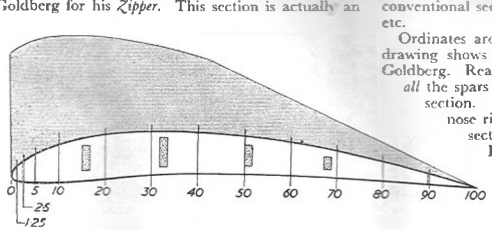
The Nordec's—Series I and II (right). The new carburettor intake and transfer passage can be seen in this illustration.

Some details regarding the essentials in which the prototype Series II unit differed from previous designs were given in the test article. Production models, however, will not have integrally-cast fins, but will revert to the separate assembly with long holding-down bolts as used on present models. Another modification will be that the crankshaft will be produced from the solid, instead of being built up as at present.

The main points of identification of the new Series II unit are the enlarged transfer passage and the large bore carburettor. These can be seen in the accompanying photograph showing the prototype engine with one on the earlier Series I models.

The Carl Goldberg Wing Section

Power modellers have still to dig deep to find a better wing section than that developed by Carl Goldberg for his *Zipper*. This section is actually an endeavour to combine the excellent glide characteristics of certain bird sections with reasonably conventional section lines and adequate spar depth, etc.



Ordinates are given in the table below, and the drawing shows a typical spar layout favoured by Goldberg. Really a multi-spar wing, but note that *all* the spars are taken through the centre of the section. Reasonably close rib spacing, and nose riblets, are advised to preserve a true section throughout the wing. Goldberg has since tried several other types of section, including several with flat undersurfaces, but none has proved superior to this original.

Station	0	1.25	2.5	5	10	20	30	40	50	60	70	80	90	100
Upper	1.5	3.8	4.9	6.3	8.4	10.6	11.4	11.35	10.6	9.1	7.3	5.3	3.05	0
Lower	1.5	0.3	0.0	0.0	.06	.15	2.12	2.28	2.3	1.9	1.45	.76	.03	0

BY BILL DEAN

● THE WEATHER conditions at the Nationals seem to become windier every year—ever since the first meeting at Gravesend in 1947. This year the wind never slackened appreciably during the whole of the three day programme at York. Least affected by the wind, was the stunt event, which was held on the first day (May 27th), at York Rugby Ground. The standard of flying was high and after the eliminations in the morning, nine competitors were left in the finals. Models were judged for appearance and finish (20 points) *before* flying—a wise precaution in view of the hazardous conditions.

First to fly in the final was "Stoo" Steward of West Essex, who entered a Frog "500" powered *Musketeer*. As usual, "Stoo" put on a calm polished performance—finishing with a special manoeuvre of an "8" from inverted. Total time to complete the flight pattern was only 2 : 26. Many spectators (including us) were surprised at this flight only obtaining 7th place in the final results.

Next to fly was Brian Hewitt of South Birmingham—using an original semi-scale design powered with a Yulon "29." This model was quite large (40 in. span) but flew at about 65-70 m.p.h. The flying brought cheers from the crowd, when Brian brought his model in to a perfect landing after completing a 3-leaf clover as his special manoeuvre. The judges awarded a total of 332.7 points out of a possible maximum of 355. This was 51.2 points ahead of what Eifflander was later to score and as a result, Brian was able to keep the "Gold" Trophy (which he won with his *Stunt King*) for another year. Details of this new model appear farther on.

"Funf" Taylor (of West Essex) did well with his Elfin 1.8 powered lightweight, in spite of an erratic running motor. His special manoeuvre was two consecutive vertical eights from inverted. Taylor was forced to land under power to keep inside the eight minute flying limit and finally placed third.

Next on the list was J. Swift of Sheffield, who was doing well until his motor cut during a figure eight. His recovery and landing were perfect, but as his pattern had not been completed, this unfortunately put him right out of the running (9th place). Swift is left-handed—but surprisingly enough flies in the usual anticlockwise direction. His mid-wing model featured full span flaps. Spectators were impressed by this competitor's clear cut loops and bunts—which were executed very close to the ground.

R. Cooke of Rotherham flew a fast Elfin powered *Firebrand* to fourth place. His flying was very pretty to watch and the landing was made just within the eight minute time limit. Special manoeuvre was a four-leaf clover, starting from a vertical "8."

Norman Butcher flew an enlarged *Happy Harold* design (Elfin 2.4) and was piling up the points nicely until he hit a sudden gust of wind at the bottom of a vertical eight and crashed.

A. R. Buck of Five Towns placed fifth with some good flying—his level flight in particular being very steady and close to the ground. His brother Gerry is quite a name in the minature race car world and holds most of the British records for this type of model.

Northern modellers had already given us glowing accounts of J. G. Eifflander's flying—so we expected a really hot performance when his name was called out over the loudspeakers. We were not disappointed—his flying is so good, it was obvious that either he or Hewitt would take first place. Eifflander uses one of his own design diesels—the P.A.W.* 2.49—which pulls his model round at a tremendous speed. This performance was one of the smoothest (and easily the fastest) of the day—and we have never seen better overhead eights. Incidentally, Eifflander flies clockwise.

Pete Russell (remember his *Profile* design of '48) flew an Amco 3.5 powered *Monitor* in the contest and gained enough points to place sixth before his motor cut out.

* Progress Aero Works, of Macclesfield.

★ ★ ★

● NOW FOR something about those modellers who didn't get through into the finals. Many promising entries were eliminated by unlucky gusts of wind. Take Roland Scott for instance—the wind blew his model straight into inverted from take off, but he managed to recover and get a reasonable score. A swept back wing original design (Madewell "49") was flown by Mr. Jones, but like many others it was written off before the schedule had been completed. Ken Ward of Birmingham arrived late in the morning and was the last to fly in the eliminations. In spite of a poor running engine, he started on his pattern—only to crash on the last bunt. Ken's loops and bunts were really slow—try to imagine a helicopter looping near the ground in a gale and you have a good idea of what it looked like.

Pete Westbrooke of the Zombies flew a good looking *Curtis Sunft*. His Frog "500" took a long time to lean out, but when it finally began to howl, Pete started to stunt well, only to hit a gust near the ground and crash in a shallow dive. Fifteen year

old Don Bowles of Hastings did remarkably well considering his rather "sick" motor—even if he did fall over a couple of times! Brian Hewitt's brother John had bad luck when his engine cut after only a few circuits. Ken Muskett of West Essex had a promising model—but he too was eliminated by his engine packing up.

Other highlights of the "C/L day" were: "Stoo" Steward and Brian Hewitt flying in adjoining circles (and at times, intermeshing!) in the eliminations. We nearly went cross-eyed in an attempt to watch both. . . . Norman Butcher and another modeller (we forget who) flying two models *each* in the same circle (after the contest), and we must give credit to Henry J. for his sparkling commentary on the flying, the Derby result, clothing styles, and anything else that came into his head!

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● NOW FOR details of Brian Hewitt's winning model—the *Stunt Queen*. The sidemounted Yulon "29" is fed from a balloon tank as last year's model—but this time the balloon is placed in a balsa box before installing it in the fuselage. Main specifications are span 40 in., length 28 in., wing area 280 sq. in. The moment arm is equal to the root wing chord (8½ in.). The flying surfaces (mid-wing) and power plant are all on the same line—so handling qualities are identical in both the upright and the inverted attitudes. The balance point is 1 in. behind the leading edge—on the front line. The lead-out wires are raked forward and weight is added to the outer wing tip. Elevator movement is 35 deg. up and 40 deg. down.

Structurally, the *Stunt Queen* is very simple—the "team racer" style fuselage consisting of sheet sides with a planked upper decking. Tail surfaces are all sheet and the wing leading edge is sheet covered. A one piece cowl completely encloses the engine and the undercarriage is faired with balsa. This design will certainly be remembered as the first really good looking stunt model to win the Nationals. Fuel used on the winning flight was *Powerplus*; the airscrew, a 9 in. × 6 in. *Tru-flo* and the glow-plug, one of the new *Champions*.

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● THE NATIONALS free-flight and R/C contests were run simultaneously on Whit Monday at Clifton Aerodrome, just outside York—many of the models in both events being wrecked by the wind.

J. A. Gorham of Ipswich put up a good score of 356.9 points to win the Sir John Shelley (free-flight) contest. The main trend in free-flight appeared to be towards more generous wing areas — as in America. As usual, the kit designs predominated—included the *Banshee, Powerhouse, Slicker, Jersey Javelin, Sail-plane, Zipper*, "8" *Ball, Super Phoenix* and many others. The contest was run on a ratio basis (max. of 15 sec. motor run)—the aggregate of two flights counting for points. Hand-launching was allowed, much to the relief of the majority of modellers.

We particularly like the Elfin 1.8 powered *Yerba Buena* original design—by Cliff Davey of Blackpool. The layout is on the lines of the *Jersey Javelin*, with a high thrust line and single leg undercarriage. This model was very stable in flight and finally placed third in the contest. Mrs. Gunter flew a *Clubman* (designed by husband Gussie) powered with a glow-plugged Amco 3.5. Until ready for launching, the motor was fed from a neat little "bowser."

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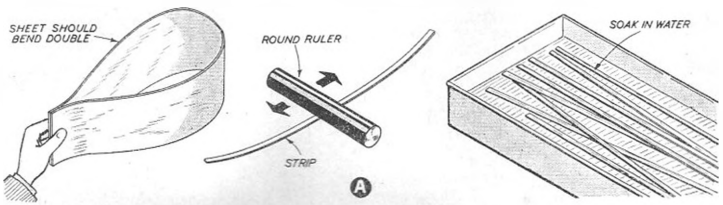
● IN THE R/C contests, it was depressing to see model after model crash or fly away downwind until they were almost out of sight. Chuck Doughty won for the second year running with 60 points (last time he got 150 points). Chuck looped (50 points) and went on looping until the wing dowels gave out under the strain. His model was a *Stentorian* with extra wing area—powered by a Forster "29." Syd Sutherland placed next with 40 points, and he probably kept his model level with the take-off position longer than any other competitor. Syd's model was powered with an Amco 3.5 and for sheer control in the prevailing 30 m.p.h. wind, we think that his was the best flight of the day. J. A. Gorham also gained 40 points and tied for second place, quite an achievement after winning the free-flight event. Honnest-Redlich of Bushy Park came 3rd with 25 points. Three modellers tied for 4th (with 10 points) and 5th place was gained with a 5 points score. Nobody else scored and 6th place went unclaimed.

Many of the entrants had trouble in getting their engines started and quite often the crashes were caused, not by radio failure, but by insufficient control surface for quick recovery. A fairly heavily loaded, fast and manoeuvrable model would have stood the best chance in these weather conditions.

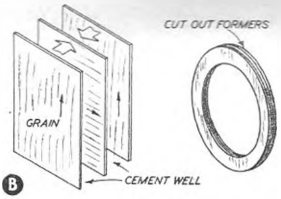
Among the models entered in the contest, were several *Rudderbugs, Falcons*, tricycle U/C equipped *Junior* "60's" and even a 40 in. *Envoy*. Ted Martin of Anchor Motors flew an Amco 3.5 design. Den Allen was controlling his model well, but was steadily beaten down wind. Eric Hook entered a neat E.D. powered low wing, fitted with "Rudevator" but engine trouble kept him on the ground. Holding an R/C contest under such conditions is useless as long as the present trend of lightly loaded, medium powered models continues. A move is afoot to push the next Nationals forward to August, when the chances of good weather are more favourable—or are they! Anyway, after the experience of the last four Nationals, few modellers will have fault to find with this proposal.

In Brief . . .

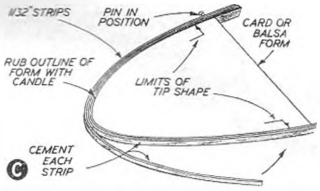
Brightest splash of colour at the Nationals was H.J.N.'s yellow shirt. To test its visibility range, we had a flight over York in an *Auster* and found that we could still pinpoint Henry at the airfield—two miles away. . . . Life at the *Half Moon* Hotel must seem very peaceful again since the Nationals visitors from the South left. . . . Business up North must be good because Len Stott is still smoking those big fat cigars.



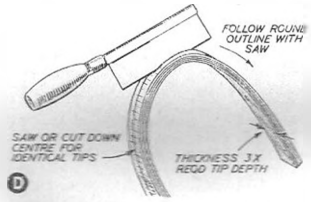
Choice of correct grade of balsa is important.



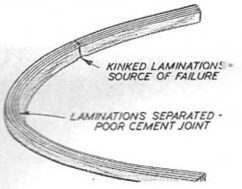
Obsolete method, wasteful, weak.



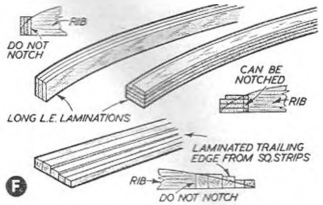
Standard method of making tips, formers.



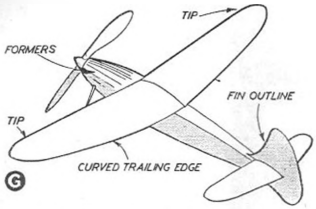
Wind two tips at once, separate when dry.



Faulty laminations are useless.



Laminated leading and trailing edges are good.



Usual points of application of laminated construction.

How to make it

NO. 7. LAMINATED CONSTRUCTION

(A) Quite a large percentage of modellers who have tried laminated construction have failed simply because they have not used the right cut of balsa originally. Most laminations are made from 1/32 in. thick strips, best cut from a single sheet. The quality of sheet required should be *flexible*, not stiff and brittle. It should be possible to take a 36 in. sheet and bend it round in a loop and bring the ends together without it splitting. This type of wood can then be laminated around almost any former shape without further treatment.

If the only strip available is on the brittle side, best plan is to cut the strips and then soak them for several hours in water. Then wind round the former, pin in place and leave to dry. Take off the former, cement, and pin back in place again. Alternatively, if you prefer to work with the wood wet, use a type of glue like *Casco* which, properly made, has excellent strength properties.

A good "dry" method of pre-forming lamination strips is to lay them on a flat board and "roll" them with a round ruler or length of broomstick. This will compress the wood fibres on one side of the strip and give it a natural upward bend. Effective and simple, and especially useful if you are in a hurry.

(B) The old method of making laminated formers was to cement three pieces of 1/32 sheet together, three-ply fashion with the grains running at right angles, and then cut the former shape out from this. Such formers are very strong and reasonably light, but in a rubber model fuselage are liable to damage should a motor break. Wound, laminated formers have a similar strength, with considerably more motor clearance and less than half the weight. The old type of laminated former is not used very much nowadays, except in special cases where the builder does not want to make up a form for a laminated unit.

(C) In laminated construction, the same method is used for tips and formers. The actual shape required, less the width of the required number of laminations, is cut out from balsa sheet or thick cardboard. Make sure that this form has a perfectly smooth outline and rub over with a candle to prevent the laminations sticking to it. The required number of lamination strips are then well coated with cement, bent round the form, pinned in place and left to set. The finished outline should not be removed for several hours, otherwise it may "spring." Note how the form is somewhat longer than the actual tip shape required, so that the strips may be pinned through at a part which is later cut off.

(D) If you use deep enough strips—and three times the required tip depth is a good average—you can make both tips at once, saving a considerable amount of time and making for greater accuracy. Mark on a centre line with a pencil and then saw or cut round the outline to separate the two tips. The sawn faces should then be sanded down perfectly smooth and used as the bottom faces when laid out over the building board.

(E) A laminated tip or former which is faulty will always be a source of trouble. The two most common faults are kinked laminations, due to the fact that the strips were originally too brittle—or not soaked long enough : or separated laminations where the cement joint is poor or non-existent. Best practice is to scrap such faulty laminations and start again with a new one.

Kinks can be avoided by proper initial treatment of the strips. To get a good cement joint, coat each strip with cement and pile on top of one another flat. Then pin one end of the set of strips to the form, bend round to shape with light finger pressure to exclude air and pin down at the other end.

(F) Laminated construction is not confined to tips and formers. Curved leading and trailing edges on wings are best built up from laminations. Vertical laminations for leading edges can be pinned out directly over the plan and ribs and tips cemented in place, but never notch the ribs into the first lamination.

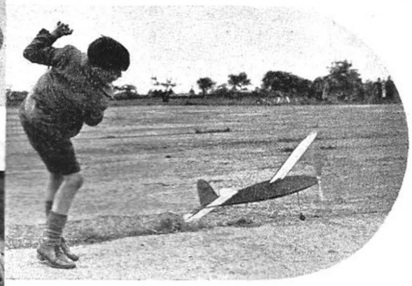
A rather more tedious, but equally effective, method is to use horizontal laminations, with each strip cut to outline shape from thin sheet and cemented on top of one another to build up the correct depth of section. This type of leading edge can be notched for ribs.

Laminated trailing edges can be built directly over the plan again, but use square section laminations of wood which will bend readily. Cement all joints well, but do not notch for ribs.

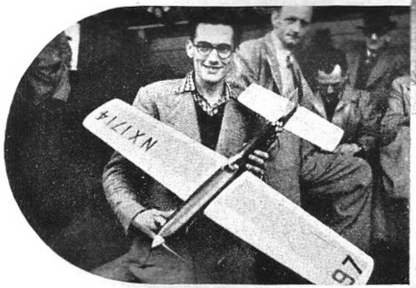
(G) Elliptic shaped wing and tailplane tips are aerodynamically good, but rather difficult to construct from sheet parts. Laminated tips are about the ideal answer here. The same applies to fin shapes. There is no reason why the whole of the fin outline cannot be formed from laminations. This will be much stronger and far less liable to warp than the normal built-up sheet and strip outline, and you can get more pleasing shapes.

THE BRITISH

J. Gorham, of Ipswich, winner of the Sir John Shelley Cup Contest, who also gained second place in the R.C. event.



13 years old David Rumley (Kentish Nomads) came third in the "Model Aircraft" Trophy Contest.



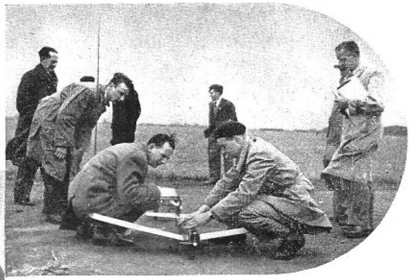
Brian Hewitt, of the South Birmingham Club, who won the "Gold" Trophy for the second year in succession.

1950 Wakefield Team member J. D. Knight helps his sister, Daphne, prepare for one of the flights which won her the Women's Cup.

Retrieving any model was difficult enough in the high wind, but E. Rogers's "Sizzling Shadow" proved a real problem child.

Robert Duncan's modified Korda Wakefield was one of the first models away in the contest for rubber-driven models.

NATIONALS AT YORK

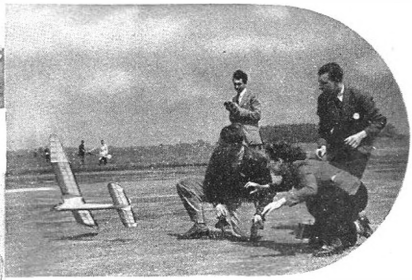


The Hook Bros. (Zombies) are assisted by Don Brockman in their unsuccessful efforts to start their engine in the R/C contest.

Two West Essex fliers, "Stoo" Steward and "Funf" Taylor, prepare the former's model for a flight in the R/C contest.

Michael Griffiths, of Southport, has plenty of assistance in holding his power contest entry down in the strong wind.

Ron Teasell of the Northern Heights Club, one of the best glider fliers in the London Area, was out of luck in the Thurston.



Although hand launching was permitted in the Power Contest, Mrs. D. A. Gunter (Bushy Park) preferred r.o.g.

The Lord Mayor of York, being introduced by E. F. H. Cosh. Bob Cosling, Val Turner, and the Sheriff of York are also in the picture.

NATIONALS IN RETROSPECT

● **Editorial Note.—Whilst we do not necessarily agree with all the points dealt with in this article we feel that this comment written by a journalist who is himself interested in model aircraft should prove of considerable interest. As an observer, with a good knowledge of the subject, he feels that the York meeting left much to be desired. Now read why . . . . . .**

POSSIBLY more than anything else the 1950 Nationals emphasised the fact that competitions, where the winner is decided by a system of points-scoring marked up by a panel of judges, can be highly unsatisfactory. Free-flight contest, where luck can enter the game to such a large extent is bad enough, but let a scoring schedule run amok and you produce a state of affairs bordering on the fantastic! Nor is it necessarily the fault of the judges concerned. They must have their individual interpretation of, and idea behind, the fixed flight schedule—even, it appears, up to some one hundred points difference in marking the same flier in the "Gold" Trophy C/L line stunt event. Any dozen modellers who watched the stunt finals would have produced a dozen different arrangements for the top placings. But few would dispute Brian Hewitt his top place and deserved congratulations here for repeating his last year's success.

It was in the R/C event, however, that the state of affairs reached the ridiculous. Being wise after the event, it can safely be said that this contest should never have been flown. The wind strength was such that it was impossible even to make head-way against it, and, below about one hundred feet, the air was so turbulent that any really stable model flying in this region was simply tossed around. The prevailing wind direction appeared to be downwards and not one entrant could climb above this turbulent area. As it was a large number of good models, with expensive radio gear, were simply wrecked through no fault of their own. Even controls were ineffective for, starting a turn, as soon as one wing dropped, the model was forced right down, often into the ground.

Accidents like this were all too frequent in the strong wind which prevailed throughout the Sir John Shelley Cup Power Contest

But by far the most distressing fact was, that as far as I can judge, the winner's machine *was never under R/C at all from the moment it was launched.* I suspect that the receiver trouble which delayed his start showed up again as soon as the model took off and from then on the model was just another over-elevated free-flight job. Points gained for a turn and a loop—less the fifty deducted for loss of R/C, still placed him higher than the next man. Yet I am positive that the rudevator was spinning all the time during those series of loops, even if we do give him the benefit of the doubt as regards "control" on that first turn. Even there I suspect that this turn was accidental—for every other entrant did his best to keep his model into wind—not turn out of it right away.

One thing I must make quite clear. I am not criticising Chuck Doughty the winner. He undoubtedly did all he could under the circumstances. Furthermore, I was very much impressed with the potentialities of his model and under more reasonable conditions (with no radio failure) would have put him amongst the short lists of potential winners. It was just the fact that the system, whereby the judges were bound to the letter of the specified flight schedule was quite unsatisfactory under the prevailing conditions.

In fact, I would go further, and say that at least two other entrants "scored" higher points by r.o.g. take-off and then crashing immediately. They spot landed—after a fashion—within 25 yd. of the

prescribed spot, with no loss of R/C! Ten plus one hundred equals one hundred and ten points?

On merit I would have no hesitation in placing Syd Sutherland of West Essex first. Flying towards the end of the contest when the wind was at its strongest, he undoubtedly made the most valiant effort of the lot to beat against the wind and complete the first leg of the triangular course. After a tremendous struggle he nearly made it, but had to give up in the end, so completed turns in either direction and a short spin. He at least demonstrated that his model was under complete R/C all the time and flew most intelligently under near-impossible conditions. Near impossible? They were *quite* impossible for radio work, at its present stage of development.

Second, I would place G. Honnest-Redlitch, one of the first competitors to fly. He made turns and spins in either direction, losing headway downwind all the time, but nevertheless under control all the while. Finally he deliberately spun the model into the ground to prevent it flying away. Den Allen deserved to take third place for another valiant demonstration of *controlled* flying. No doubt these three received some consolation from the fact that their efforts were appreciated by the spectators.

The freeflight events emphasised just how much a competition place depends upon an individual's luck. In fact, this opens up an interesting discussion point regarding *all* duration contests. I have nothing but admiration for the top class duration fliers who, time and time again, place high in the competition results. They, too, may be lucky in their turn—even appearing to have more than their fair share of this elusive element at times—but *consistent* success is basically the result of a tremendous amount of ability, skill and plenty of flying practice. How unfortunate that these three qualities alone are no guarantee of success.

Would that there were some way of descriminating between a *deserved* thermal flight, and a *lucky* long flight. By the latter I mean a model which is out of trim or otherwise performing badly, and may be turning in a very modest flight of less than sixty seconds. Then from a very low height it wallows slap into a ground thermal and up it goes, to finally clock many minutes o.o.s.!

Flying at just the right time makes a very great difference to competition chances. Sometimes conditions are just right for thermals and almost any model in reasonable trim capable of climbing to a hundred feet or so will turn in a long flight. At other times the air is dead, or even descending. Models with a potentially good performance can fly into a patch of bad air and record very modest times, even if perfectly trimmed.

This was fairly obvious watching some of the glider flights. One particularly large model I saw, which was most certainly in trim and recorded an excellent first flight time, had a sinking speed of approaching ten feet per second or so on its second flight. It was not the model's fault. The air in which it was flying was definitely descending. A few minutes later the sun came out, conditions

This modified "Stentorian" by A. T. Blackshaw of Blackburn M.F.C. was one of the number of fine models which were completely wrecked during the R/C event. The strength of the wind can be judged by the fact that although only held by the wing-tip and propeller the model is clear of the ground.

improved, and, for a while, long flights were the order of the day.

To some people this very chancy business of flying just at the right time may be all right. It is possible, with practice, to gauge the best time to fly. But both up and down currents are usually quite invisible and your "guesstimation" is just as likely to be wrong as right! Nor can this state of affairs be defended on the score that it gives everyone a break. All you need is the luck and a major National contest is yours!

I incline to the view that the time is right and proper to put model flying on a better competition basis. *Consistency* should be the keynote to success—not chance. Then an enthusiast will be able to get down to the job, happy in the knowledge that success can result from his efforts and not from the whims of Lady Luck.

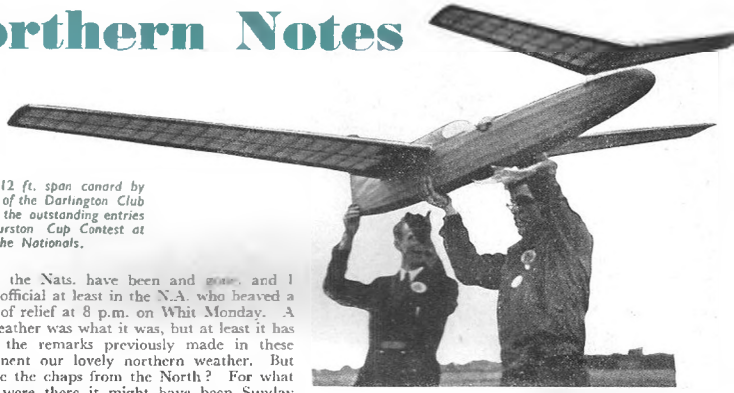
Several methods towards this end have been introduced of recent years. The first step—and in my opinion at least, about the most significant single feature improving contest conditions—was the introduction of the five minute maximum flight rule. This has been followed this year by the introduction of *two* Wakefield Trials and aggregating the results—another excellent method of bringing the consistent modellers up to the top.

In other words, you can reduce the chance element in major contest work by *increasing* the number of flights required. This, we feel, would be an important innovation at any really important event. Yet the Nationals does just the opposite—restricting the number of competition events to *two* flights only. One piece of bad luck, and a first rate flier can eliminate himself in no time. And it may not be his fault!

If modellers are to be asked to travel hundreds of miles to a Nationals then they should be given every consideration in the running and scope of the competitions. In this respect I was particularly pleased to see that in the power event, hand launching was permitted instead of r.o.g., in view of the

(*Continued on page* 276)

Northern Notes



This giant 12 ft. span canard by R. J. Poad, of the Darlington Club was one of the outstanding entries in the Thurston Cup Contest at the Nationals.

★ WELL, the Nats. have been and gone, and I know one official at least in the N.A. who heaved a large sigh of relief at 8 p.m. on Whit Monday. A pity the weather was what it was, but at least it has confirmed the remarks previously made in these columns anent our lovely northern weather. But where were the chaps from the North? For what few there were there it might have been Sunday afternoon at Fairlop rather than the loudly-demanded and long-awaited Nationals in the North. After the 100 per cent. demand for them, to see a 30 per cent. turnout was at least a bit of a shaker, but there's nowt so funny as folk is there?

★ SOME of the antics of the gliders on the tow-line were most amusing and bore out the fact that launching in calm weather is a far far different thing to launching in a good stiff breeze. I saw three models finish up as matchwood, because the launcher could not, or would not, remember the old tag "when in doubt throw the bobbin away." One effort was remarkable; went up on the line like a lift but on release went into a vertical spiral. Ah well, perhaps the bod prefers building to buying stronger bands, or were they the strongest that he could borrow?

★ THE best crack of the day on the Monday was that of a southerner who remarked, "What a *smashing* place." It was enough to make anyone dispirited (except the dealers) to see model after model hit the concrete, and I can only compliment the lads who flew for turning out and having a go. I should certainly have thought twice about chancing a valuable R/C model in the conditions prevailing; it was really heartbreaking to see model after model fighting a losing battle against the strong wind. Honnest-Redlich made a praiseworthy effort to get round the first pylon, but his beating against the wind was all in vain, and he had to spin his model in to keep it inside the drome. Chuck Doughty (who was, I understand, the only competitor to gain marks for an r.o.g.) soon realised the impossibility of completing the course and went on to do five loops.

★ QUITE frankly, the first time I have ever watched serious C/L flying was on Whit Saturday, and I thoroughly enjoyed it. A pity the heavy rain came on just as the finalists were to do their stuff, "Stoo" looked disgusted at having to face the elements, but at least the spectators thoroughly enjoyed themselves. I noticed that one or two of the N.A. "experts" preferred to give their exhibitions where there was less competition and not so critical a crowd, at least, I saw one flier whose name is not unconnected with chocolates, showing off not 200 yd. from the take-off area on the Sunday. Someone should have told him he'd mistaken the day.

★ AND so the long awaited Northern Nationals came to an end. No doubt everyone connected with them was extremely disappointed with the very poor weather conditions, but at least the Northern Area showed they were capable of laying on first-class facilities and an efficient ground organisation. Special commendation is due to the members of the Leeds Club, for their efforts in erecting enclosures, and to their "special squad" who undertook one or two unpleasant tasks; and to the members of the Darlington Club, who, complete with spiked sticks and waste baskets acted as "cleaner uppers." Individual mentions to MacCleod of Hull Pegasus who coped with stewards and timekeepers for the whole three days; to Pettingall of Leeds for his sledge-hammer gang; Chas. Exley who was one of the last away on Monday; Andy Anderton, who was willing to cope with the odd job that kept arising (including a good effort in cleaning up); to all the lads who helped out with the stewarding, timekeeping, and message running, and of course to the mercurial Sam, who was here, there, and everwhere.

★ I THOUGHT the conditions at Fairlop on Wakefield Finals day were tailor-made for the Northern Area lads ; a nice bright day with plenty of thermal activity, but with a stiffish breeze which I thought would make our lads feel quite at home and yet might cause trouble to some of the other contestants. In fact I was looking forward to the N.A. chaps giving a really good account of themselves. However, I came away a very disappointed man. I had to leave fairly early, and it may be that the picture improved after I had left, but up to that time I had seen nothing but a chapter of accidents and not one outstanding flight from them. Vic Duberry was let down very badly by his free-wheel clutch on both his first line and reserve models, and I was present on both occasions when the clutch went with full turns on the rubber, with the usual disasterous result. On the first occasion he did manage to repair the nose of the machine but, as usually is the case, the whole setting of the noseblock became altered and the resultant flight was a complete write off. Then, to see the whole nose of his reserve model torn out by a similar happening thoroughly discouraged Vic, and he wisely decided that it wasn't his day. Ted Muxlow was right out of luck, too ; his best machine became somewhat bent after a hefty crash into the runway, which improved neither the runway, the model nor Ted's morale. The same run of bad luck seemed to be affecting Stan Eckersley too, a bad motor bunch caught up inside the fuselage and the resultant heavy landing and displaced noseblock took quite a slice out of the front of his machine.

★ A LITTLE dispirited, I turned to the A/2 event, thinking we should be making a better showing there since the Sheffield contingent were present in force and they had already shown their superiority over the rest of the Area. Here again, it seemed that everything that could go wrong, was going wrong, and none of the flights was anything near the best our lads could do. I watched Chas. Exley make the best tow-up of the day, the model went up straight and as steady as a rock, and the line was dropped precisely at the correct moment, yet because of a sticking auto-rudder the model went into a series of bad stalls instead of its usual soaring circular flight. None of the other Sheffield lads seemed to be doing much better ; Jimmy Walker of Darlington got in three fair to middling flights, but not high enough to do any good and Tubbs and Cameron of Leeds also seemed to have picked an off day. All in all, the Northern Area did not give a very good account of themselves. Ah well, next year ?

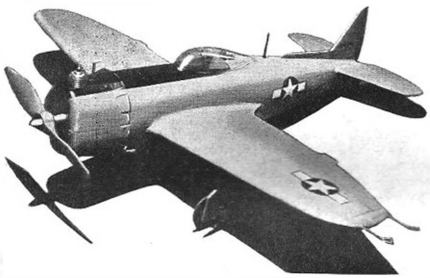
★ APART from the chapter of accidents to our chaps, I thoroughly enjoyed my day out at Fairlop. There was some pretty flying to see ; I noticed some very beautiful flights from Evans and Chesterton in particular. One thing I cannot understand is why this drome has so much glamour in the eyes of the London fliers ; the whole place was littered with cars, bikes, tea stalls, racing motor cyclists, spin dizzies, R/C fiends, picnic parties, football games, handball, rounders, in fact everything in the book but snakes and ladders : quite frankly I fail to see why it is considered a suitable venue for an important competition like the Wakefield and A/2 Finals. When a chap travels three to four hundred miles at considerable expense in an endeavour to make a good showing in the premier event of the year, he surely can expect to find conditions a little better than spectators breathing down his neck whilst he piles on the turns, and a solid wall of bikes and small boys about five yards downwind of the take-off area. I saw several machines smashed up which with a clear run would have got away, and one " gentleman " threatened violence and mayhem to all and sundry because he was asked to remove his car from the A/2 take-off area ! They might not like our weather in the north, but brother, our spectators are submissive angels compared with the Fairlop specimens.

★ MR. NOBODY wants to know. . . .

What did the waitress say when H.J.N. asked for his Yorkshire Pud—and what did Henry say when she told him what he'd done with it ? . . . Who was Betty—and why was she barred ? . . . How did Sam Messom get reduced from fiddling engines to flogging programmes—and what did he say to the bods who wouldn't buy ? . . . Did they ever get " Stoo " to the museum—and if they did, how did he get out again ? . . . Did Henry like his present from the Northern Area ? . . . What did the Lord Mayor say when he had to come back later to present the prizes and the Whitefield bod had still not turned up to fly ? . . . Is it true that the said bod was hiding along with all his club's timekeepers ? . . . Finally, isn't it about time we heard who won the Gamage Cup this year *and* the " Flight " *and* the Gutteridge ? . . . Is it true that the Wakefield Finalists are to receive a Christmas card to inform them that they qualified ?

Ronald Firth, of York, came 7th in the Thurston Cup contest with his " Thunder King " glider. The model is standard except for an Elmic timed parachute dethermaliser.

Thunderbolt by PMH Lewis



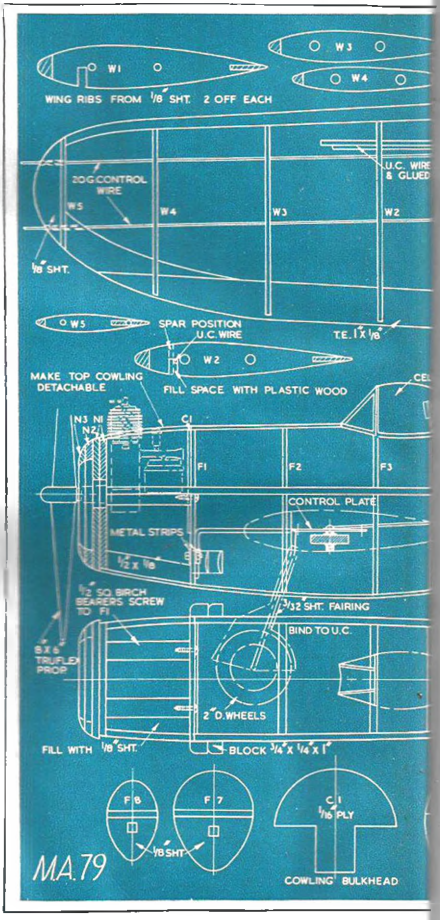
SCALE CONTROL-LINE MODEL

THIS completely scale model of the P47N Thunderbolt fighter of the late war will prove a worthwhile piece of work for the modeller who requires a C/L model which will provide a realistic appearance in flight and also one on which he can exercise his skill in finishing and construction.

Fuselage—Construction of the fuselage is commenced by building a crutch of ¼ square hard balsa directly on the plan view. Former *F*1 is next cut from ¼ in. thick plywood, and the two ½ in. square hardwood motor bearers are cut to length and glued and screwed to the former. Former *F*1 is now cemented in place between the crutch side members. Formers *F*2 to *F*8 are cut from ⅛ in. sheet, and an opening made in *F*3–*F*8 to accommodate the 16 s.w.g. push rod. These formers are now also cemented in their respective positions, above and below the crutch.

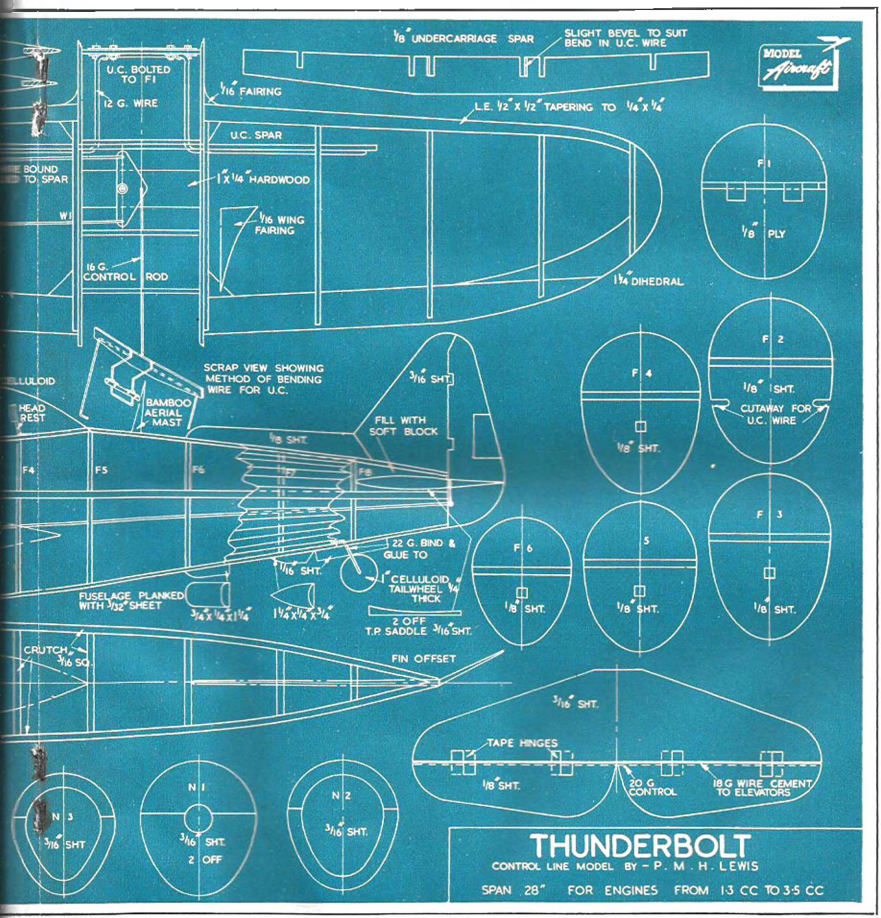
The ⅛ in. ply undercarriage spar should next be cut as shown, and the 12 s.w.g. wire undercarriage shaped in one piece as indicated. The wire is bound to the spar with thick thread and the whole well coated with glue. This assembly is then fitted across the fuselage, and the undercarriage wire bolted in place with two small metal straps to former *F*1. The ply spar is well cemented to former *F*2.

The entire fuselage is now planked with strips of 3/32 in. × ¼ in. balsa from the top downwards. When the area around the wing root rib is reached the control plate should be installed after mounting it on the 1 in. × ¼ in. hardwood beam with 6 S.B.A.



FULL SIZE DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 23, GREAT QUEEN ST., LONDON, W.C.2. 4s. 6d., POST FREE

nut and bolt. The 16 s.w.g. push rod is threaded through the formers and fitted to the control plate. The rest of the planking can now be carried out. Planking is continued up to the front of the engine cowling on the lower half. The front ring is laminated from $\frac{3}{16}$ in. sheet, *N*1, *N*2 and *N*3 being cut as shown. The top half of the cowling is next built up in the same way as the lower half. The rear ply former of the top half of the cowling has an extension piece to slot between the motor bearers and behind $\frac{1}{4}$ in. square hardwood strip to keep cowling in place. After cutting the opening for the cockpit the



fuselage is sanded down to the smoothest possible finish. Make an opening in cowling to take motor.

Tailplane—The tailplane is cut to plan from $\frac{1}{16}$ in. sheet, and is cemented on to the $\frac{1}{16}$ in. sheet saddles which are in their turn cemented to the top of the crutch. The space above the tailplane is filled with a block cut to shape from soft balsa. The elevators of $\frac{1}{32}$-in. sheet are glued to the 18-s.w.g. wire bar after the control horn has been soldered to it. The ends of the bar are bent at right-angles to press inside the elevators. The elevators are attached to the tailplane by cementing them with tape hinges. The whole unit is sanded to section as shown and a smooth finish.

Fin—The fin and the rudder are cut to shape as plan from $\frac{1}{16}$-in. sheet and the dorsal fin from $\frac{1}{8}$-in. sheet. After sanding to section they are cemented to the fuselage. The fin is given offset to starboard, and care should be taken to see that it is not fouled by the elevators in their movement up and down.

Wing—The wing is made in two halves and is built directly on the plan. The leading edge is tapered from $\frac{1}{2}$ in. square to $\frac{1}{4}$ in. square, and the trailing edge is cut from 1 in $\times$ $\frac{1}{8}$-in. sheet. The leading and trailing edges are pinned to the plan, and the wing ribs $W1$ to $W5$ are now cut from $\frac{1}{16}$-in. sheet. Holes are cut to allow the passage of the control wires of 20-s.w.g. wire in the port wing. The ribs are butt jointed to the leading edge and are slotted to take the trailing edge. The wing tips are shaped from $\frac{1}{8}$-in. sheet. Ribs $W1$ and $W2$ are cut to slot onto the $\frac{1}{8}$-in. ply wing spar on which the undercarriage wire is mounted. $\frac{1}{8}$-in. sheet gussets are glued to the wing root ribs for strengthening.

The starboard wing tip is fitted with a lead counter weight to balance the weight of the control wires and lines. This should not be left out on any account as it helps materially in keeping the lines taught. The exact amount of lead can be found by experiment in balancing the model.

The two wing halves are slotted and glued to the wing spar and the fuselage. Dihedral angle for the wing is set at the tips at $1\frac{1}{4}$ in. on drawing.

Undercarriage—The 12-s.w.g. wire undercarriage is already in place and 2 in. diameter wheels should now be fitted to the axles. The excess wire is cut off and the wheels secured in place with small washers which are soldered to the axles. The 1-in. celluloid tailwheel is fitted to its 22-s.w.g. axle which is then bent to shape and bound and glued to its place on the underside of the fuselage. A drop of oil on each wheel bearing helps a great deal towards smooth take offs.

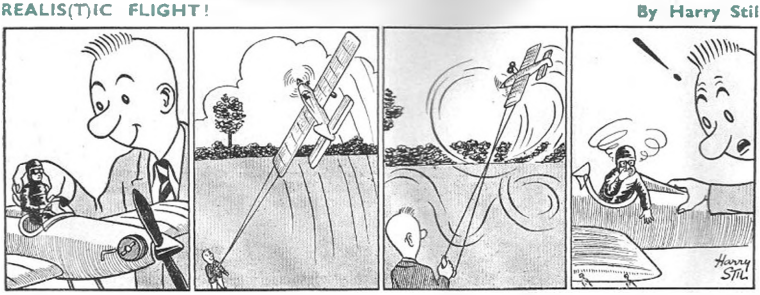
Details—The eight guns are cut to length from bamboo and placed in position in the leading edge of the wing. The cooling gills are cut from stiff card and glued to the top and lower halves of the engine cowling. The aerial mast is shaped from a strip of bamboo, and inserted in the top of the fuselage. The radiator and oil cooling vents are shaped as shown on the plan from small blocks of soft balsa. Undercarriage fairings are cut to shape from hard 3/32-in. sheet and bound and glued to the undercarriage legs. They are prevented from twisting by 20 s.w.g. wire supports which are soldered to the legs.

Covering—The whole model is covered with bamboo paper, and is given two coats of clear dope, and then two coats of silver or grey dope are sprayed on. The forward top deck of the fuselage painted black as an anti-dazzle patch. The U.S. insignia is placed on each side of the fuselage and on the top of the port wing and the underside of the starboard wing. The ailerons and flaps are marked in outline with Indian ink.

Motor—Any motor from 1.3 c.c. to 3.5 c.c. is suitable and this covers such types as Mills 1.3 and 2.4, Elfin 1.8 and 2.49, E.D. Mk. II, Competition Special and Mk. III, etc. An extension to the needle valve through the cowling can be used if necessary. A choke hole for starting can be cut in the side of the cowling or, if desired, the cowling can be replaced when the motor is running.

Flying—A smooth grass surface is advisable for take off and the tail should be allowed to rise when sufficient speed is reached. The model has been flying very successfully on 30 ft. and 40 ft. lines and looks exceedingly realistic in flight.

REALIS(T)IC FLIGHT! **By Harry Stil**

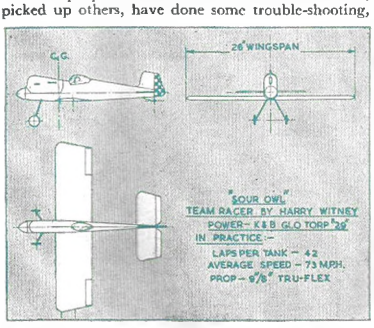


Here is TEAM RACING

By Harry Witney
Pete Wright
Ted Buxton

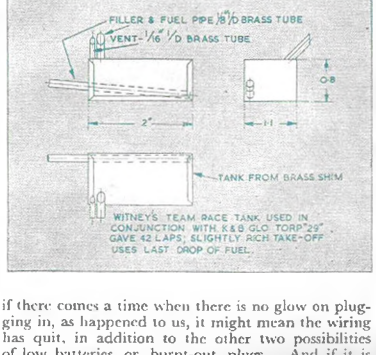
FOR thrills, team racing is it. In 20 minutes of flying at the South-East Control-line Championships we had more of them than for as far back as we can remember in aeromodelling, and that goes back quite some. We will not hazard a guess that it will stay that way, but it does seem to offer more scope than any other branch of C/L flying. Just consider who can participate : the stunt man, the speed merchant, the ordinary chap who cannot do the book nor handle a speed job, and the junior who cannot afford constant replacement of model airplanes as he learns to stunt or afford a racing engine for speed. Consider being on the outside of the circle watching, a spectator, perhaps inveigled along to the local aeromodel big meet by junior, by the advertisement in the local paper, or by just pure interest, and seeing two or more life-like model planes racing against each other from a massed start over a distance sufficiently long to involve pit stops for refuelling and when it is all finished to know who the winner is straight away.

But rooting for team racing is not the sole or even the main purpose of this article. We have some ideas, picked up others, have done some trouble-shooting,



and thought up some new ideas that we think might benefit the next chap. But first, however, let us introduce the team/authors who, incidentally, are presumptuous enough to think that they had a very good airplane at Brighton and would have shown up better had the wind not been throwing the jobs around so much. There is the chief man, the pilot, Harry Witney, who built the airplane ; Pete Wright, his cousin, who cranks up the engine ; and oldie, Ted Buxton.

For sheer durability, sheet balsa construction is the best ; that is, sheet covered fuselage and wings With this type of construction, the weight of a 5 c.c. powered job should not exceed 16 oz. and could probably come out even less. It has the additional advantage, as we found from contest experience, of being easily repairable, or at least repairable, in the event of a major crack-up. And it does, of course, give a good base for the paint job. Nevertheless, weight is not much good anywhere except in a steamroller, so that if tissue covered wings work out durable enough in practice, we will use them by virtue of the saving in weight. This saving in weight will certainly give us better acceleration and probably more speed and better consumption. Streamlining will not be affected. Be sure to have the engine mounts firmly fixed as they have to take a tousing from engine vibration over long periods and distances. Both the undercarriage and fin should be strong ; the undercarriage comes in for real usage in team racing, whilst some time you will maybe get a nose-over and that is when the fin will receive some stressing. Our opponent in the eliminations at Brighton used a bent aluminium sheet undercarriage as on an American kit team-racer and seemed to be having considerable trouble with it. Ultimately, we noticed, the thing completely retracted sideways on landing, which we believe was unintentional. Make sure to have the tank filler accessible for rapid refuelling. A word on tank filler tubes later. Harry built in a polarised plug and wired the glow-plug and earth up to it. That is a good idea, for it means that only a plug has to be pushed in for starting instead of wrestling with two crocodile clips, probably with oily fingers. It can be a mixed blessing, though, for



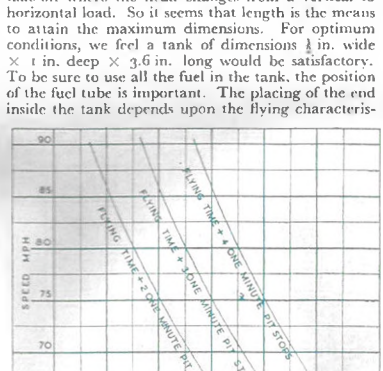
if there comes a time when there is no glow on plugging in, as happened to us, it might mean the wiring has quit, in addition to the other two possibilities of low batteries or burnt-out plugs. And if it is a burnt-out plug, it means the wiring has to be unclipped before a change can be made.

Harry used an American K. & B. Glo Torp " 29 " in his team-racer, but that does not mean it is the best engine available for team racing, although it is very good. Requirements of a good engine for team racing are : reasonably high power output and revs., nominal port timing (not grotesque racing porting), friction-free moving parts, flexibility so as to be able to run through a tank without performance dropping off too much, and easy starting. To our mind we would say a front rotary engine, preferably with ball-bearing crankshaft, would be most likely to fill the bill. We like a front rotary on another count, in that it keeps the motor mounts short. Below is some information on speed and consumption in team racing of various American engines from a friend's correspondent, and this can be readily related to engines available in this country.

Engine	Laps (60 ft. lines)	Speed
McCoy " 29 "	31	80 to 93 m.p.h.
K. & B. Glo Torp " 29 "	44	75 to 90 ,,
Ohlsson " 29 "	53	70 to 80 ,,
Ohlsson " 23 "	57	65 to 70 ,,

Right now we think we should discuss the speed versus consumption angle. Assumptions have to be made, but from experience we feel they are quite accurate. We believe a well-organised pit stop can be carried through in a minute or less, and that to save one pit stop in a race, either by special fuels or a smaller engine, will mean a sacrifice of 10 m.p.h. in flying speed. On those assumptions we plotted out some graphs, from the outcome of which we will settle for speed, thank you very much. You can work it out for yourself. For a 10-mile race at 80 m.p.h. and three 1-minute pit stops, the total time taken would be 10 min. 30 sec. At 70 m.p.h. and only two 1-minute stops, the total time is 10 min. 36 sec. Not much difference, you say ; but there is a difference and an agile pit crew can make it look even better. For the records, our Glo Torp was ticking off 42 laps (just over 2½ miles) on a 30 c.c. tank using a methanol-base fuel at 73 m.p.h. on a 9 in./8 in. TruFlex propeller during practice, and was turning better at the contest with a regular Stant 9 in./8 in. wood propeller. Incidentally, that 73 m.p.h. was over a whole flight which therefore includes the slightly rich first few laps, the laps when the motor is really " in," and the lean last laps. It can be seen that a 40-45 lap tank will give three pit stops about equally spaced in a 10-mile race, and not the lightest advantage will accrue until 54 laps per tank has been attained, when only two pit stops are required.

Now for that important item, the tank. Desirable features are that it gives a motor run that is " on the step " right the way through, that it uses all the fuel, and that it is easy to refuel. In any tank there is a variation of head of fuel throughout the flight, and it is this that gives the rich take-off and lean end. Some engines seem capable of accepting this change of head better than others, but it should be the aim to reduce this change to a minimum. To that end, the tank should be kept as narrow as possible (recollect, the change of head is substantially in a horizontal direction during flight). On the other hand, the tank should not be too deep, or there may be difficulty in running the engine on the ground and during take-off where the head changes from a vertical to horizontal load. So it seems that length is the means to attain the maximum dimensions. For optimum conditions, we feel a tank of dimensions ½ in. wide × 1 in. deep × 3.6 in. long would be satisfactory. To be sure to use all the fuel in the tank, the position of the fuel tube is important. The placing of the end inside the tank depends upon the flying characteris-

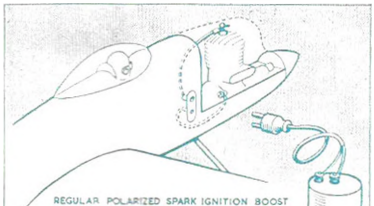


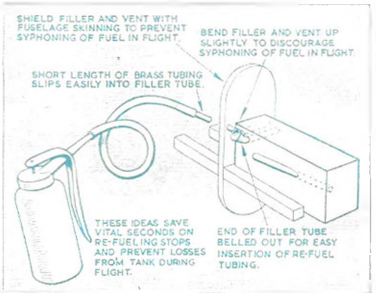
Speed against total time for 10 miles. Note how flying speed of 75-80 m.p.h. appears to be optimum. At 70 m.p.h. and two 1 min. stops, 10 miles takes 10 min. 35 sec.; 80 m.p.h. and three stops 10 min. 30 sec. ; 90 m.p.h. and four stops 10 min. 40 sec.

ties of the model. For instance, it would be no use putting the pick-up at the back of the tank if the model flew in a nose-out attitude (looking from the top), for the fuel would naturally surge to the front of the tank. The filler tubes have to be accessible for refuelling, yet not permit any syphoning of fuel due to the airflow over them. Harry had a smart idea for refuelling: instead of having to wrestle the plastic tube from the fuel squirt gun over the filler tube, Harry fitted the plastic tube on to a short length of brass tubing. The plastic tubing covered only half the brass tube, and the other half slipped into the tank filler tube when refuelling. This was or is a small but practical time-saver. For even easier insertion of the brass tube, the filler tube could be belled out slightly.

Pit work is just a matter of getting a routine entailing the least amount of movement and which is reasonably foolproof, polished up. We have not yet decided whether large-bore filler tubes with gravity-feed fuel from the can are best, or whether the pressurised method of the squirt gun is the solution. In either case, it is necessary to prevent the fuel from flowing from the tank during refuelling or the engine will be flooded. At our first meet, we forgot to (or, rather, did not realise we should) close the needle. Of course, with a fuel shut-off in the fuel system, as is required at the All Herts Rally, this trouble will not arise. In contests where no shut-off is required and the pilot flies his ship until the fuel is finished, the airplane may land anywhere round the circle, and, as the S.M.A.E. rules stand at present, the team has to run around the circle to the model. Also it means that the pilot may have to take off again up-wind. These two disadvantages are eliminated by using a fuel shut-off. To speed up the refuelling and restarting routine, we are considering doing the two things at once. If we can restart the motor just after commencing the refuelling, the flooding difficulty should not occur. But as we said at the beginning, this is one of the new and as yet untried ideas. Incidentally, or rather, not so incidentally, a well laid-out toolbox with everything easily accessible is a must.

As for flying, Harry, who had only flown alone





before the contest, says flying two to three in a circle is not as difficult as he had been led to imagine. The biggest bugaboo at Brighton was the wind (gale) which kicked his airplane about and which made the other boys fly their models somewhat above the required 6 ft. altitude. Overtaking was therefore a precarious business. It was during such an operation that a gust of wind threw his plane downwards, and another upwards; lines became entangled, and he came the cropper.

As far as designs went at Brighton one or two interesting variations were seen. Phil Smith, the winner, flew an Amco "35" diesel scale *Long Midget*. Scale jobs usually come out rather bulky by the time the engine has been fitted in. Having selected to build a scale model, however, one has to accept the limitations in choice and scope that that decision imposes. One airplane there, we believe, was flying on spark ignition until the rain got at the works; whilst we gather that another using tissue-covered wings fell apart as the rain soaked through. Norman Marcus had a boxy semi-scale airplane as reminiscent of Steve Wittman's pre-war boxcar racer, *Oshkosh Chief*, as anything we could think of.

Well, that is team racing as is. How the team-racer will progress and develop we do not know, but if it keeps on as it has started, then it means a load of fun for the fliers and thrills for the spectators.

The Editor invites you . . .

to submit articles, plans, photographs or other suitable material, for his consideration. Send MSS, etc., to The Editor, "Model Aircraft," 23, Great Queen Street, London, W.C.2.

M.A. Engine Tests

No. 14—THE ELFIN 1.49

THE introduction of the original 1.8 c.c. Elfin engine towards the close of the 1948 season, came at a time when the popularity of the compression-ignition engine was being seriously threatened by the then new glow-plug type of ignition. Diesels, at this period, were suffering from lack of revs. and excessive weight for competition use, and were mostly of orthodox and somewhat stereotyped design. The Elfin, by contrast, broke away completely from previous diesel practice in employing an annular porting system—similar to that so successfully used on the American Arden engines—to give substantially higher peak revolutions and output, and in reducing weight to a figure where the power/weight ratio obtained was comparable with the best in other types.

Thus did the Elfin become the forerunner of the modern school of high performance diesels. Practically all current lightweight competition diesels follow the same basic layout as the original 1.8.

The 1.8 was followed, last year, by the Elfin 2.49, built to the Class II limit capacity, which, with modified porting and the addition of sub-piston induction, gave a greater specific output and improved power/weight ratio. F. G. Buck, one of Britain's leading model racing car exponents, later used one of these engines to raise British Class "C" model car records.

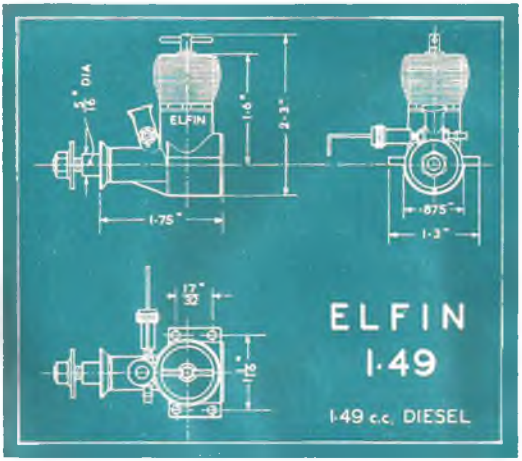
That the new Elfin 1.49 subject of this month's test, is a worthy addition to these two models is evident from the performance figures obtained. Under test, this new engine has actually shown a higher performance than any other of similar capacity, and the highest power/displacement ratio and highest peak r.p.m. yet reached with a model diesel.

Although well suited to other C/L types and to power/duration models, the 1.49 is, of course, primarily intended for S.M.A.E. Class I speed C/L work. Speeds of 90 m.p.h. have been mentioned in this connection which, at the time of writing, are some 20 per cent. up on the best "unofficial" performances obtained in Class I. It is interesting to note that such an increase would call for more than 70 per cent. extra b.h.p., assuming similar airscrew efficiency and an identical model. Allowing for some improvement in the latter, therefore, the b.h.p. shown by the test 1.49, which is some 30-40 per cent. up on that obtained with other Class I engines tested, suggests that substantial increases in Class I speeds may, in fact, be expected with suitable models powered by this engine.

Due to its moderate stroke/bore ratio, the new engine is of compact dimensions, while its weight is only a little over 2½ oz. The power/weight and power/displacement ratios are well above those we have hitherto associated with small diesels.

Specifications

Type: Single cylinder, air-cooled, two-cycle, compression-ignition. Rotary-valve induction through hollow crankshaft. Annular exhaust and transfer



porting with sub-piston supplementary induction. Conical piston crown.

Swept volume: 1.49 c.c. Bore: 0.503 in. Stroke: 0.466 in. Compression: Variable. Stroke/Bore ratio: 0.926 : 1. Weight: 2.6 oz.

General Structural data: Aluminium pressure-die-cast crankcase and main bearing housing with detachable rear cover. Nickel-chrome steel cylinder-liner. Cast-iron piston. Unbushed duralumin connecting-rod. Nickel-chrome steel crankshaft running in cast-iron main bearing. Dural cylinder head/barrel threaded on to liner. Spray-bar type needle-valve assembly. Beam type mounting lugs.

Test Engine Data

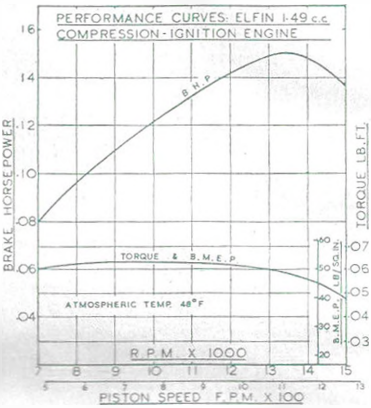
Total timed logged prior to test: 2 hours.

Fuel Used: "Record" racing diesel blend, (castor base—nitrated).

Performance

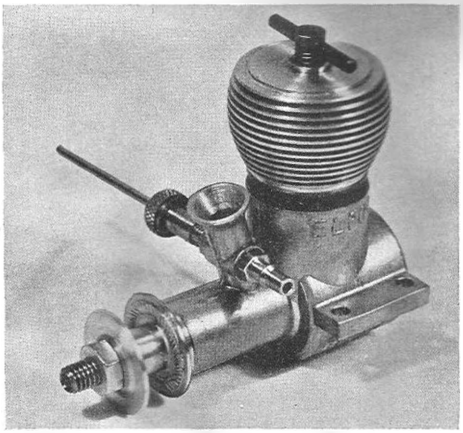
As noted above, the Elfin was first run-in for two hours before tests were undertaken. Running-in was carried out in short runs of about two minutes' duration and was spread over a period of 2-3 weeks. Power loss with warming up from cold was, as usual, reduced but not entirely eliminated after this time, but since it would appear, from recent observations, that, in the air, this loss is often partially, if not entirely, restored, it was decided to take a series of quick readings, restarting the engine from cold each time, to secure favourable results.

On the dynamometer, readings were taken from 3,500 r.p.m. up to a shade over 15,000 r.p.m. and, although loading down to much less than 7-8,000 r.p.m. would not, of course, be normally encountered



in practice and produces fluctuations in power output, it is interesing to note that, at low speeds, the 1.49 was actually below average output. This is probably due to the port timing which, intended for high revolutions, results in an excessive charge loss at low speeds.

As speed was pushed up, however, readings evened out and, once above 10,000 r.p.m., the 1.49 was delivering well in excess of the power obtained with other Class I engines. Torque values, which were at their highest around 9,500 r.p.m. were good without being exceptional. The 1.49 gains its high power output by the manner in which an almost constant torque is maintained. Not until the 13,000 mark was passed, did torque begin to decline at an appreciable rate with the result that, at the peak of the curve, a full 0.15 b.h.p. was indicated at 13,500 r.p.m.—a truly exceptional performance.



Actually, to the average user, this very high output might not become apparent in anything except a speed model, where these high revolutions can be used. Compared with other good Class I engines, at normal free-flight and stunt models speeds—say 8,000-10,000 r.p.m.—there is not any great difference to be noted. On the test rig, however, the extra power of the Elfin at high revs. soon becomes evident.

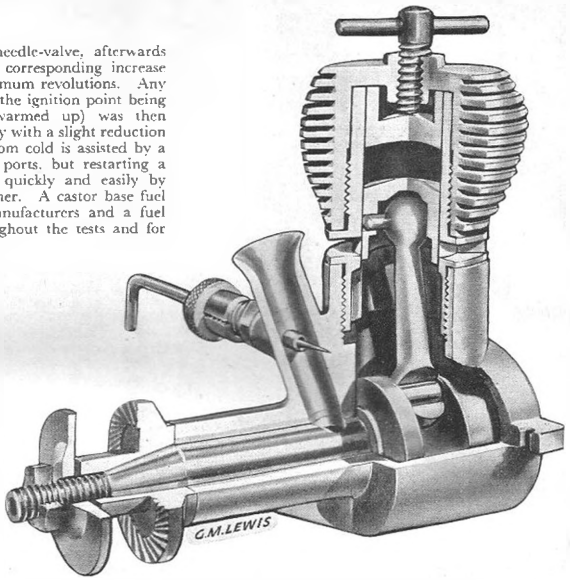
Despite its high performance, the 1.49 starts easily. Procedure found effective with the test engine, using small high-speed propellers, was to

start on 1¾ turns of the needle-valve, afterwards reducing this to 1¼ with a corresponding increase in compression to give maximum revolutions. Any slight slowing down (due to the ignition point being advanced as the engine warmed up) was then compensated in the usual way with a slight reduction in compression. Starting from cold is assisted by a prime through the exhaust ports, but restarting a warm engine is performed quickly and easily by choking in the normal manner. A castor base fuel is recommended by the manufacturers and a fuel of this type was used throughout the tests and for running-in.

Apart from an occasional tendency for the cylinder liner to slacken when running under test at high speeds (a common occurrence with engines of this type which, happily, is less evident under flying conditions), the 1.49 gave no trouble at all. Despite its light weight, the engine appears to be of amply robust construction and well able to stand the knocks of model aircraft use.

Power/Weight Ratio : (As tested), 0.92 b.h.p./lb.

Power/Displacement Ratio: 100 b.h.p./litre.



Nationals in Retrospect

(Continued from page 265)

conditions. Most contest fliers will confess to a feeling of tension during an r.o.g. launch, even with a tried and tested model. When conditions are poor, anything can happen—and often does! So any move to consider the *competitor* is particularly welcome.

Finally, attendance. This again was poor. In fact it seems that modellers, as a breed, are not prepared to travel long distances to take part even in important events, *if they are largely left to fend for themselves*. In other words, they do not like the bother and fuss of fixing hotel accommodation and the like and, in many cases, frankly cannot afford it. What do we do? Say, "if they cannot be bothered, leave them to it"? Also it seems all too obvious that Whitsun is too early in the year for the Nationals. Modellers are largely unprepared and have not had the time to develop and trim their new models. The August Bank Holiday week-end would seem a much better choice.

Frankly, again we consider it is worthwhile to make things easier for the competitors. It would mean more and more work for the officials again—and they have enough at present, with few thanks for what they do achieve—but we think it could be worked out.

As far as successful model meetings are concerned, probably nothing in this country has ever equalled the Wakefield week-end at Cranfield last July. All the modellers and everyone else associated with them lived in an aeromodelling village for the period of their stay. They slept, ate and spent the whole time on the edge of the flying field. It was a modelling week-end, with a model flying atmosphere.

Just suppose it were possible to get a place like Cranfield every year for the Nationals, where every entrant registered himself for board and lodging at the same time as he sent in his entry form. And with other accommodation to go round for the non-fliers who cared to come. No enthusiast worthy of the name would possibly want to miss such a chance!

Such a possibility could become a *probability*—and it would certainly seem to be worth a trial. People who attended that last Wakefield still talk of their experiences. It is time that each Nationals achieved a similar distinction.

F. L. STREET

Correspondence

● *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*

BORDERLINE WAKEFIELDS

DEAR SIR,—One always hesitates to offer advice, however well-meaning, to experts about activities in their own particular field.

In view of my experiences, however, as Technical Secretary of the S.M.A.E., in checking Wakefield models during the past year, I feel that some such advice should be offered.

Some of the models at present being flown by our experts are so near the margin that they can only be regarded as borderline cases. To quote a case in point : a model recently checked by me required a fuselage cross-sectional area of exactly 13 sq. in. and on being accurately computed was found to be 12.96. The margin of error in measuring and calculating the cross-sectional area of any fuselage is such that that particular model was allowed to pass as I feel certain it should have been, but the point I wish to make, is this. No system of checking models can be 100 per cent. accurate and for that reason alone every competitor should allow himself a reasonable margin within which to work.

It must be remembered, too, when models are checked at the actual Wakefield contest overseas it is going to be even more difficult if models are found to be borderline cases. First of all there is the language difficulty, and secondly it is quite likely that models will be checked in the metric system and there is again a possibility of introduction of error in converting the calculated areas of the models from metric to inches and/or vice versa.

In these circumstances it would surely be wise for all fuselage cross-sections to have that extra ½ sq. in. which would ensure their being well within formula and would hardly affect the performance of the model to any extent, and the same applies of course to wing and tail areas under the present ruling.

Nothing would be more unfortunate than to find a first-class competing flier put out of a contest through some disagreement over a model whose dimensions were a borderline case, and this must surely be avoided at all costs.

Yours faithfully,
London, N.4. HENRY J. NICHOLLS.

FROM BILL DEAN

DEAR SIR,—In the recent Wakefield Trials at Fairlop, Mr. P. Royle (who placed 2nd) was disqualified as his model failed to pass the judges' examination after the contest. The model flown by Mr. Royle was a *Contestor*, with a slightly modified wing.

As the designer of this model, I should like to make it quite clear that the *standard* kit plans *do comply* with the Wakefield rules. Owing to a printer's error, the tailplane area is stated on the kit leaflet as 69.25. In actual fact, the area is 67.25, which complies with the 33 per cent. tailplane area rule. With the 208 sq. in wing, a tailplane area of 68.63 would be permissible. I have rechecked the plans and confirmed the original calculations made in 1947.

In the June issue of MODEL AIRCRAFT "Over the Counter," it was incorrectly stated that the *Skystreak* started out as a tailless design. Actually, *all* versions have featured conventional tailplanes. On the earlier models, the flying surfaces were swept back, but the two final kit designs featured straight trailing edges.

J. R. Vanderbeek is apparently also under the impression that the first *Skystreak* was of the tailless type and that it bore a striking resemblance to one of his own models. As I have never built a tailless stunt model, obviously someone has his facts mixed! Or perhaps a mystery man is building some quite original *Skystreaks*! None of the ones I have designed are like Mr. Vanderbeek's model, unless he is referring to the fact that we both followed the present trends of full size fighter design and decided to use swept back wings.

Yours faithfully
Thornton Heath, Surrey. BILL DEAN.

"MOVING FINGER" CORNY ?

DEAR SIR,—Possibly the best suggestion regarding a *nom de plume* for the author of "Northern Notes" is not to have one at all. If a chap has the courage of his convictions then he will not be loth to use his own name.

A *nom de plume* serves no useful purpose and gives the impression that the writer wishes to hide behind another name for some ulterior reason.

For the same reason I hope the "Moving Finger" does not return. For another reason I feel that while I might have been slightly amused at that column way back in the 'thirties, it would seem no end "corny" nowadays. Whilst for another reason, and one which I believe to be the most important, the column only meant anything to a relatively small circle. I, as a then untravelled modeller, could only appreciate one or two of the so-called cracks. I should think then, that with the expanding (I sincerely hope) circulation of MODEL AIRCRAFT anything like the "Moving Finger" would have too limited in appeal, if not a retarding influence. Generally, the place for a scandal column is in club magazines and news-sheets.

Yours faithfully,
St. Albans, Herts. E. J. BUXTON.

Many readers have suggested "Northern Light" as a nom-de-plume for the writer of Northern notes, but we should like to hear from other readers before making a final decision.—The Editor.

Over the Counter

THIS KIT SURVEY HAS BEEN LIMITED TO A DISCUSSION OF EXISTING PRODUCTION TYPES RATHER THAN ABRIDGED "DESIGN REVIEWS" AS IN PREVIOUS ARTICLES IN THE SERIES

THIS month's survey covers rubber model kits and these have undoubtedly proved more prolific than any other single type. In other words, over the past two or three years when power modelling has enjoyed such a vogue, and C/L stunt and free-flight power have topped the popularity poll, the number of rubber *kit* models has exceeded both these types.

One of the reasons for this will be seen on examining the second diagram, which shows the relative popularity of different *sizes* of rubber models. Over one half of the kit models produced do not exceed 30 in. in span, hence use only the minimum of materials and can be produced quite cheaply. Competition interest is not catered for in these sizes, and so the bulk of rubber model kit sales has been to the younger aero modeller who likes to build and fly a "powered" model, and the small rubber job is well within his means.

Not that the competition flier is ignored in the kit field. Two Wakefield winners and a world's record holder are included in the lists, and several other kits are of contest winning prototypes, or have subsequently gained top honours in various events. The kit of Korda's 1939 Wakefield winner is no longer in production, but that of the *Jaguar* (1948 winner) proved particularly popular during the past season. Two *Jaguars* were included in the 1949 Wakefield team, and are still in evidence this year, although in the London area, at least, they are not so frequently seen.

The *Jaguar*, of course, was designed by E. W. Evans, of Northampton, a leading Midlands Wakefield flier, and so his later design, the *Clipper*, is sure to prove of considerable interest to Wakefield enthusiasts. Several leading fliers are, in fact, flying *Clippers* this year, where hitherto they have been *Jaguar* fans.

As yet, the *Clipper* is not available in complete kit form—only plan and printed sheet (propeller blank also available), but there is every chance that, with a successful contest season behind it, it will be kitted later in the year.

Amongst the products of the larger manufacturers may be mentioned the Keilkraft *Gypsy* and *Contestor*, both to Wakefield specification and designed by W. A. Dean; and Phil Smith's 1948 Queen's Cup winner which is a larger version of the *Hi-Climber*, a Veron Wakefield kit. All have proved good contest models, New Zealand and South African '49 Wakefield teams both including *Contestors*. Out of production, but still available, is another outstanding Wakefield kit model—the *Flying Minx* designed by Len Stott and Norman Lees—produced by Halfax. A relatively difficult model to build, being a streamliner, a number of modellers have, nevertheless, achieved considerable success with this kit design.

As is only to be expected, streamliners are in the minority in the kit field. Grouping both full streamliners (circular or ovoid fuselage, with former and stringers) with semi-streamliners (basic slabsided fuselages with fairings), these account for only 14 per cent. of the total. The simple slabsider with high wing is the most popular (44 per cent.), followed very closely by the cabin type slabsider (42 per cent.). Simplicity of construction makes these two types ideally suited to commercial designs. They are virtually the only suitable for the popular small class of rubber model which forms such a high percentage of the total production.

Whilst on the subject of size, it is interesting to compare prices in the various ranges. Production costs increase relatively as the size of the model increases. If you build a model of twice the size, you need not twice, but six times the material, so that

whilst some production costs are down on larger sizes (such as proportionate costs of printing, boxes, labels, etc.), overall costs are very much higher. For an "attractive" price, therefore, the small models are the best proposition.

Comparative prices of various group sizes work out roughly as follows, well illustrating this point.

Span	Average price	Price "per in. span"
Under 20 in.	3/9	2d.-2½d.
20-24 in. ...	4/3	2d.-2⅝d.
25-30 in. ...	7/6	3d.-3⅛d.
30-36 in. ...	10/6	3⅛d.-4d.
36-40 in. ...	15/-	4⅛d.-5d.
40-50 in. ...	21/-	5d.-6d.

As regards other major design features, the high wing layout is not unnaturally top favourite (59 per cent. total), followed by parasol-and shoulder-wing layout, respectively. Low wings are rather more popular than one would suppose, coming fourth on the list, whilst the rather attractive biplane layout is a poor last. With but one or two exceptions all models are of the orthodox tractor layout, with span sizes ranging from 15 in. to 52 in.

Larger rubber models are not considered practical —a Wakefield being about the biggest rubber model most builders would contemplate. If you make rubber models much above this size their use is relatively restricted and it may well work out that to replace rubber motors and keep them flying the cost is higher than that of maintaining a power model! But the complete list of rubber model kits produced during the past two or three years does offer a sufficient variety to suit all tastes. A fair proportion are now out of production, but may still be in stock on retailers' shelves.

There are also a considerable number of flying scale rubber model kits on the market, but these are not included in this survey as they will be the subject of a further article in this series.

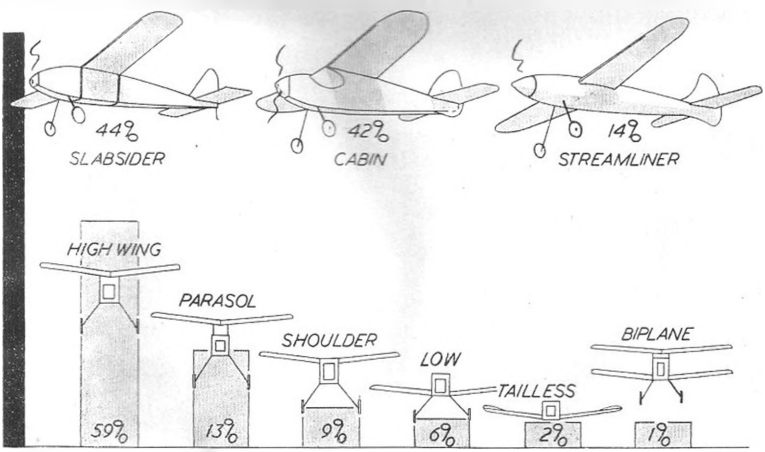
* * *

The "rubber myth" concerning the respective merits of American brown and British grey rubber is still as confused as ever. Various writers commenting on the subject have only added to the general misunderstanding.

The facts, briefly, are these. Following the war and up to the beginning of 1948 it was very difficult indeed to obtain good rubber. There was quite a bit of rubber strip available but it had, as a general rule, poor characteristics. With the reintroduction of American brown (T-56), therefore, many modellers went out of their way to get hold of this and found it better than most of the material on hand. This T-56, however, was different from prewar American brown, and definitely not as good.

The Dunlop Rubber Company then started manufacturing aero strip in this country and appear to have experimented with different mixes, or different curing methods. Whilst on the average the rubber they produced was good, quality varied with different batches—and still does at the present time.

One particular batch of Dunlop, however, produced in the early part of 1948 was particularly good. It was some of this rubber that the '48 Wakefield team took to America and started all the fuss. It was definitely superior to T-56. However, few subsequent batches of Dunlop appear to have reached even similar standards, although the manufacturers have produced to the same formula.



RUBBER-DRIVEN MODEL KITS

This table has been compiled to include all rubber model kits produced between 1948 and the present date, June, 1950, but restricted to sport and contest types only. Flying scale models are not included. Whilst every effort has been made to make these data as complete as possible we can accept no responsibility for errors or omissions.

Span in.	Model	Weight oz.	Designer	Manufacturer	Type	Specification	Price
15	PICKANINNY	—	—	Aeromodels	Slabsider	High Wing	6/3
15	GILEY	—	C. A. Shaw	Shaws Model Aircraft	Cabin	High Wing	3/9
16	MIDGE	—	—	Elite Model Airplane Supplies	Slabsider	High Wing	2/6
16	SNARGASHER	—	D. Jackson	J's Model Centre	Biplane	Stick Fuselage	5/-
16	SKYNOVA	—	—	British Model Aircraft	Slabsider	High Wing	1/6
16	LITTLE GEM	—	—	Premier	Slabsider	—	2/6
16	SAURUS	—	—	Aeromodels	Solid	Flying Wing	4/-
19	JUNIOR	—	A. H. Lee	Model Airport (Bristol)	Slabsider	High Wing	4/11
19	SKAT	—	—	Don Models	Slabsider	High Wing	3/6
20	ELF	—	—	Elite Model Airplane Supplies	Slabsider	High Wing	4/3
20	PIXIE	—	—	—	—	—	4/3
20	BEE	—	—	—	—	—	4/3
20	WINNER	—	C. H. Saunders	Worcraft	Cabin	High Wing	3/6
20	PLAYBOY	—	W. A. Dean	E. Keil & Co.	Cabin	High Wing	3/3
20	MINOR	—	—	Halfax	Slabsider	High Wing	3/3
20	GOBLIN	1¼	P. H. Smith	Model Aircraft (Bournemouth)	Diamond	Shoulder Wing	3/3
20	SNIPE	1¼	P. H. Smith	Model Aircraft (Bournemouth)	Cabin	High Wing	5/-
20	GNAT Mk I	2	T. R. Kennedy	Model Shop (Newcastle)	Cabin	High Wing	4/6
21	PUP	—	A. H. Lee	Model Airport (Bristol)	Slabsider	High Wing	5/9
21	ZIP	—	—	Paramount	Cabin	High Wing	6/6
21	SKYLARK	1	P. H. Smith	Model Aircraft (Bournemouth)	Cabin	High Wing	4/6
22	ATO "22"	—	—	Ato Model Crafts	Slabsider	High Wing	5/6
22	GREYHOUND	—	—	M.S.S.	—	—	—
22	FALCON	—	—	British Model Aircraft	Cabin	High Wing	3/6
22	FANTAIL	1½	P. H. Smith	Model Aircraft (Bournemouth)	Shoulder Wing	Pusher	5/-
23	ORION	—	A. Hatfull	E. Keil & Co.	Slabsider	Shoulder Wing	3/6
24	ACHILLES	—	L. Heath	E. Keil & Co.	Cabin	High Wing	4/-
24	BAGLET	—	W. A. Dean	E. Keil & Co.	Cabin	High Wing	4/6
24	GOBLIN	—	C. T. Buffery	International Model Aircraft	Cabin	High Wing	4/9
24	FLEDGELING	2½	P. H. Smith	Model Aircraft (Bournemouth)	Slabsider	High Wing	6/9
24	RASCAL	1½	P. H. Smith	Model Aircraft (Bournemouth)	Cabin	High Wing	4/6
24	MIDGE	2½	F. R. Kennedy	Model Shop (Newcastle)	Low Wing	Semi-scale	5/6
24	SPRITE	—	E. A. Ross	International Model Aircraft	Slabsider	High Wing	—
24	COMMANDO	—	—	Halfax	Slabsider	High Wing	5/-
24	SCOOTER	—	L. Heath	Southern Junior Aircraft	Parasol	Diamond Fuselage	4/-
24	PETREL	—	—	Elite Model Airplane Supplies	Cabin	High Wing	6/-
24	CADET	—	—	British Model Aircraft	Slabsider	High Wing	5/6
24	HAWK	—	—	British Model Aircraft	Cabin	High Wing	4/6
24	ROVA	—	—	Worcraft	Cabin	High Wing	4/11
24	SKIPPER	—	—	Don Models	Cabin	High Wing	4/6
26	ALPHA	—	—	Chingford Model Aerodrome	Cabin	High Wing	10/6
26	GNAT Mk II	3	T. R. Kennedy	Model Shop (Newcastle)	Cabin	High Wing	6/6
26	SPUPSTER	1½	—	Model Shop (Newcastle)	Parasol	Semi-scale	10/6
29	SKYROCKET	—	C. H. Saunders	Elite Model Airplane Supplies	Parasol	Slabsider	7/-
30	AJAX	—	L. Heath	E. Keil & Co.	Cabin	High Wing	6/-
30	MAJOR	—	—	Halfax	Slabsider	High Wing	5/6
30	KEELBILD	3½	—	Model Shop (Newcastle)	Parasol	Streamliner	14/6
30	DRAGONFLY	1½	—	Model Shop (Newcastle)	Cabin	High Wing	10/6
30	CABIN COUPE	3	—	Model Shop (Newcastle)	Cabin	High Wing	12/6
30	CRUISER PUP	—	C. A. Rippon	Premier	Cabin	Low Wing	9/11
30	SATURN	—	J. R. Vanderbeek	International Model Aircraft	Cabin	Semi-scale	10/6
30	CAVALIER	—	—	British Model Aircraft	Parasol	Slabsider	5/6
30	EAGER BEAVER	—	I. Lewis	Shaw's Model Aircraft	Parasol	Slabsider	10/6
30	BABY DURATION	—	C. A. Bowden	Worcraft	Cabin	High Wing	10/6
30	LYNX CUB	—	—	M.S.S.	—	—	—
30	WIDGET	—	—	Don Models	Parasol	Diamond Fuselage	6/9
30	PHANTOM	—	—	Avion	—	—	10/-
31	LINNET	—	A. H. Lee	Model Airport (Bristol)	Slabsider	High Wing	9/6
32	PHANTOM	—	—	Elite Model Airplane Supplies	—	Flying Wing	5/6
32	PYM	—	—	Don Models	Slabsider	High Wing	6/-
32	COMPETITOR	—	W. A. Dean	E. Keil & Co.	Cabin	High Wing	7/-
33	JUNIOR CONTEST	—	—	Elite Model Airplane Supplies	Slabsider	—	10/-
34	SENTINEL	2½	P. H. Smith	Model Aircraft (Bournemouth)	Cabin	High Wing	10/-
34	PARATROUPER	—	—	Masco	Cabin	High Wing	12/6
34	MONITOR	—	—	Airyda	Slabsider	—	8/6
35	MAJOR PUP	—	C. A. Rippon	Premier	Cabin	Low Wing	13/4
36	WITCH	—	C. T. Buffery	International Model Aircraft	Hex. Fuselage	High Wing	—
36	JAKE	—	—	Power Models	—	—	13/6
36	CLUB CONTEST	—	—	Model Aerodrome	Slabsider	High Wing	12/-
36	SETTER	—	A. H. Lee	Model Airport (Bristol)	Slabsider	Low Wing	19/9
36	THERMAL KING	—	A. H. Dadd	A. F. Peters	Slabsider	—	12/6
36	JUPITER	—	C. T. Buffery	International Model Aircraft	Cabin	Low Wing	15/-
36	LANCER	—	—	Halfax	Cabin	High Wing	15/-
36	QUESTER	—	—	Southern Junior Aircraft	Slabsider	—	10/6
37	STARDUST	—	J. R. Vanderbeek	International Model Aircraft	Parasol	Slabsider	10/6
37	ST. GEORGE	—	C. A. Rippon	Premier	Parasol	Diamond Fuselage	21/-
37½	AIR CADET	—	C. A. Rippon	Premier	Slabsider	High Wing	15/4
37½	NORTHERN STAR	4½	R. Copland	Premier	Slabsider	High Wing	19/4
38	HI-CLIMBER	8½	P. H. Smith	Model Aircraft (Bournemouth)	Cabin-pylon	Slabsider	25/-
38	PANDA	—	—	M.S.S.	—	—	—
38	VENUS	—	A. A. Judge	International Model Aircraft	Shoulder Wing	Streamliner	15/-
40	GIPSY	8	W. A. Dean	E. Keil & Co.	Cabin	High Wing	10/6*

Span in.	Model	Weight oz.	Designer	Manufacturer	Type	Specification	Price
40	DURACADET	5	C. A. Rippon	Premier	Slabsider	High Wing	21/-
40	NORTHERN ARROW	5	I. Hall	Premier	Slabsider	High Wing	19/4
40	LIBRA	5	C. A. Rippon	Premier	Shoulder Wing	—	19/4
40	SENIOR	—	—	Airyda	—	—	9/6
40	DROME	—	—	Model Aerodrome	Cabin	High Wing	12/6
40	BETA	—	—	Chingford Model Aerodrome	Slabsider	High Wing	17/6
40‡	LYNX	—	—	M.S.S.	—	—	—
40‡	G.H.91	8½	G. W. W. Harris	Cartwrights	Slabsider	High Wing	12/6
42	STRATOSPHERE	6	A. E. Ross	International Model Aircraft	Parasol	Streamliner	17/6
44	KORDA	8	R. Korda	British Model Aircraft	Cabin	High Wing	17/6
44	JAGUAR	8½	E. W. Evans	Halfax	Mid-wing	Diamond Fuselage	21/-
44	TAURUS	8½	R. H. Warring	Astral	Cabin	High Wing	21/-
45	G.B.3.	9	R. Copland	Premier	Streamliner	Shoulder Wing	33/6
45	MASTERPLANE	6	R. Copland	Premier	Stream-slabsider	Shoulder Wing	32/-
45	MASTER	—	—	Airyda	Slabsider	—	22/6
45‡	WARRING'S WAKEFIELD	8½	R. H. Warring	Paramount	Stream-slabsider	Shoulder Wing	29/6
45‡	CONTESTOR	8	W. A. Dean	E. Keil & Co.	Cabin	High Wing	23/6
46	CLIPPER	8	E. W. Evans	Super Model Aircraft Supplies	Diamond	Shoulder Wing	8/6†
48	FLYING MINUTES	8	L. Stott & N. Lees	Halfax	Streamliner	Parasol	21/-
50	SUPER CRUISER	12	C. A. Rippon	Premier	Cabin	Low Wing	29/3
52	Q. CUP WINNER	12	P. H. Smith	Model Aircraft (Bournemouth)	Cabin-pylon	High Wing	10/-†

* Dry Kit. † Plan and printed sheet only.

In the light of the '48 Wakefield experience, meanwhile, the American Rubber Company have amended their production of T-56 and produced a new range in 1/24 sizes rather than their standard 1/30 thickness. Again quality was very variable. Some was good, and about the equivalent of the best Dunlop or Caton strip then on the British market. Other batches were poor, but so also was some of the British grey rubber.

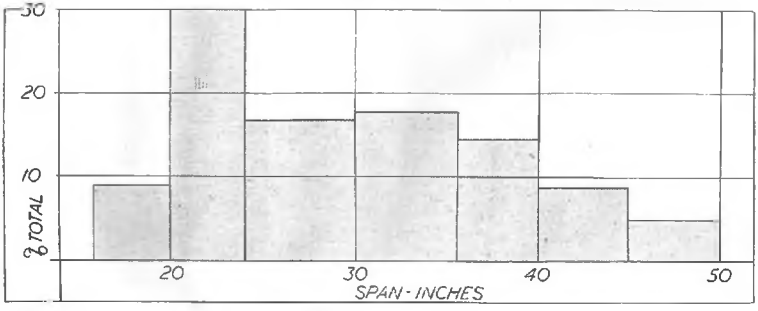
That is still the position. It is only possible to assess the respective merits of different brands of rubber by comparing actual skeins and most misleading to generalise on the subject as the result of isolated tests. For normal sport flying the average British grey rubber is usually more than satisfactory, but for contest work the necessity of obtaining the best rubber available is obvious. Unfortunately there is no simple answer.

Now another brand of rubber has entered the field and is being endorsed by several of the leading contest flyers. This is Pirelli, made in Italy. Pre-war, Pirelli aero strip gave better torque characteristics than any other aero strip and the same desirable characteristics seem to have been retained in their post-war production. It has its faults, however, for it breaks up very readily. It is a fairly common experience for a new Pirelli motor to break up completely, so it needs the most careful treatment. It is therefore not recommended for purely sport flying. But for competition flying it is certainly capable of giving that extra performance.

Italian production of Pirelli has been very limited and spasmodic until recently. Now there does appear the possibility that supplies may be available in this country in the near future. But it is interesting to note that Italians do not all favour their "home-produced" rubber (largely on account of its property of breaking up) and several of their leading Wakefield fliers have gone out of their way to obtain British Dunlop! Which brings us back to the start of the argument again!

* * * *

Incidentally, one of the few firms producing a satisfactory soft soap lubricant for rubber these days is Mercury Model Aircraft Supplies. Mercury lubricant is compounded from pure soft soap and glycerine only and is supplied in handy size jars It is definitely on the thick side and has a certain tendency to dry out, but appears to maintain adequate lubrication even in this state.



Prototypes Worth Modelling

No. 3. THE "ANTOINETTE" MONOPLANE

By C. B. Maycock

THE *Antoinette* monoplane of 1909 was noted for three things, good looks, superb workmanship, and being in advance of its time. It lends itself well as a subject for a flying scale model and owing to the general layout should appeal to the rubber-motor fraternity; any necessary alterations to the tail unit would be quite legitimate because it is true to say of all these early machines that no two were exactly alike, they had some variation somewhere, particularly in the tail.

The wings were perhaps the finest of any pioneer machine and were built up of two main spars and a multiplicity of profile strips which ran spanwise and chordwise. These when covered with rubberised fabric (this was before the days of dope) formed as near a perfectly contoured lifting service as was humanly possible, and those *Antoinette* joiners mostly recruited from the best of the piano and showcase-making trades certainly knew their stuff. Lateral control was by warping, except in the *Antoinette IV* (Latham's first Channel crossing attempt) where trailing flap ailerons were used.

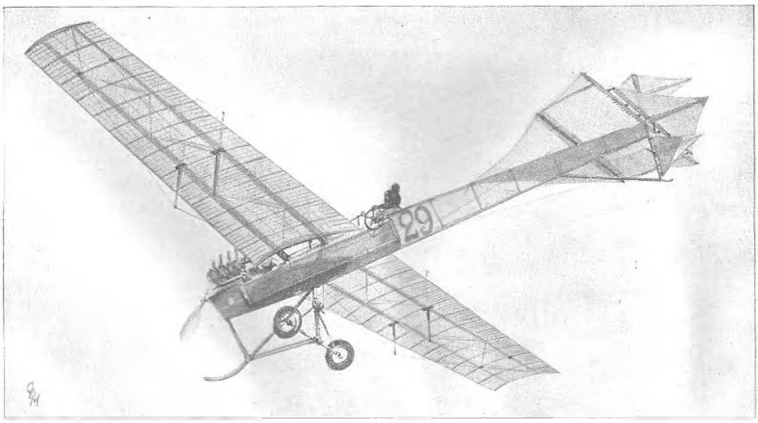
The fuselage was of plain triangular section, cross braced with piano wire and fabric covered as far as the cockpit and from then on covered each side with thin planks of polished cedar.

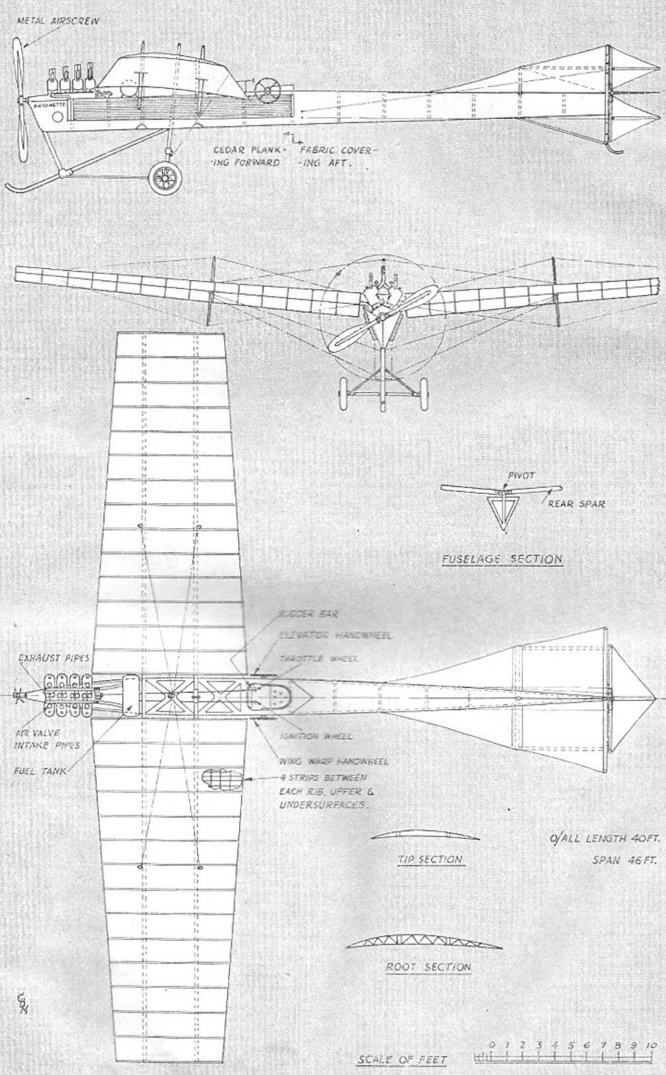
The tail surfaces were rigged in the manner of yacht sails, the fabric being laced to the spars of tailplane and rudders.

The undercarriage was interesting; a vertical steel tube combining the main undercarriage strut and centre section king-post, housed a spring plunger connected by a sliding collar to the diagonal struts to the axle.

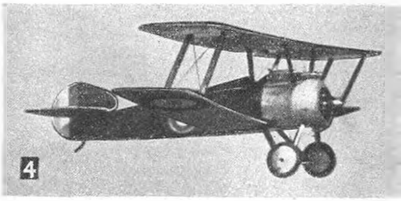
Antoinettes had their own method of control which needed energetic handling, lateral control was by a handwheel on the port side of the cockpit and the elevator cables were connected in a similar manner to the starboard hand wheel, the rudders were connected to a foot bar in the normal way.

The power plant was usually a 50 or 80 h.p. vee-eight, steam cooled motor with petrol injection and coil ignition. Air was drawn into the cylinders through valves, which in a carburettor type of motor would be the inlet valves. The exhaust was expelled through separate pipes from each cylinder and grouped on the centre line fore and aft. Each cylinder was copper jacketed and the water carried was the minimum. The resulting steam was condensed in two radiators one each side composed of 22 aluminium tubes each radiator. To facilitate the air-flow the cedar planking was not extended behind these radiators. A small handwheel controlled the throttle or rather the stroke of the fuel pump and another the ignition. The crankcase of aluminium was extended to house the mainbearing for the airscrew shaft. The metal airscrew was adjustable for pitch but not in flight.





ANTOINETTE MONOPLANE 1909



MODEL Aircraft

photonews

PHOTOGRAPHS for "Photonews" have been rolling in this month from readers in all parts of the world. No. 1 was sent by D. R. Hughes, of Birkenhead, and shows Al Molyneux, of Wallasey M.A.C., holding fellow club member Calkin's Nordic glider in the anti-wind launching position used by many of the competitors in the N.W. Area K. & M.A.A. cup contest, at Bury.

The "Photonews" star model of the month is shown in No. 2, with its owner, S/Ldr. E. D. Cable, secretary of the R.A.F. Model Aircraft Association. This beautifully constructed and finished R/C model is fitted with Good Bros. equipment and weighs 7½ lb. all up. The power unit is an Ohlsson 29.

Ray Moodie is the subject of our next photograph which shows him with the E.D. Comp. Special powered *Slicker* "50." with which he won the under 3.5 c.c. class power duration event at the 1950 Australian National Championships, held at Melbourne, in April. Ray says that the fuselage was damaged on an early flight but the rough splicing repair which can be seen in the photograph enabled him to complete his flights.

On Epsom Downs recently, K. J. Miller, of South Croydon caught one of P. E. Norman's circus of scale 1914-18 planes, a *Sopwith Camel*, in flight and the result is shown in No. 4.

K. J. Grieser, a correspondent in Iserhagen, in the American Zone of Germany, sent us the next photograph, which shows a typical German beginner's glider which has won many contests.

D. Robertson, who lives in Heliopolis, Cairo, sent us photograph No. 6 of his American *Buccaneer*, which he has modified from the kit model by fitting a trike undercart. The Baby Cyclone engine has

been inverted and cowled-in. In his letter he says: "I don't know an ohm from a watt and so I am not interested in radio control, but I should think that this aircraft would be just the job for it." We quite agree.

No. 7 comes from a member of the Exeter Club, H. A. Stillings. The model was made from a popular Model Shop (Newcastle) *Wasp* semi-scale kit and is powered by an E.D. Bee engine. In addition to its good looks it has, so we are told, an excellent flight performance.

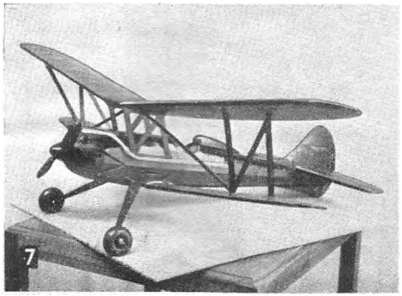
A Belfast reader, N. Osborn, took photograph No. 8. The modeller is Howard "Stevie" Stephenson, who specialises in gliders and takes a keen interest in the activities of the L.S.A.R.A. With the photograph came very complete details of the model—an example which we wish other readers would follow. Main features are:—Span, 72 in.; wing section, laminar flow type; weight, 2 lb.

Another winner at the Australian Nationals is shown in the next photograph, which is of John Lamont, of Victoria, who won the Junior stunt event in the C/L section of the championships with his Frog "500" powered model.

The *Fairey Junior* free-flight scale model shown in No. 10 was made by Les Steele, of Cardiff, from a standard Powakit design by Howard Boys. The photograph was taken by P. J. Banks, who tells us that this attractive little plane, which is fitted with a Kalper 0.32 c.c. engine, flies very well indeed.

Geoff Weale, of Penarth, took the last photograph and describes it as showing two members of the Swansea club, who set themselves up in business as firewood merchants at a recent S. Wales Area rally. They look quite cheerful about it anyway.

Cheerio chaps—keep those shutters clicking!



WEST ESSEX GALA DAY

THE only thing that marred the West Essex Gala, held at Fairlop, on June 18th, wa. the high wind which the Clerk of the Weather seems to have ordained shall ruin most of the meetings this year.

The organisation was excellent and, as the West Essex Club did not allow their own members to compete, they were all available to do the many jobs which have to be done to get a show of this kind going.

Tremendous enthusiasm was aroused amongst the competitors and spectators by the team racing event, which was definitely the highlight of the day. Controversy raged over the insistence of the St. Albans team on using a mechanical starter throughout the contest and several ears were red at the " Bronx cheer " that went up when they broke a prop. half way through the final. There is, without doubt, a big future for events of this kind and with greater experience, the discipline in the flying circle will be improved.

Congratulations to Allan Allbon, of Bushy Park, for winning the free flight power event, particularly as it was the first contest of this kind which he had entered. By the way, a little dicky bird whispers that Gussie Gunter has been giving Allan some coaching on trimming free flight models—the old maestro should be proud of his new pupil.

We were all pleased to see Pete Russell, who has travelled all the way from Worksop, win the Stunt event with [illegible].

There was a good turnout for the R.C Contest and the judges, all of whom were experienced R.C fliers, did their best to adapt the competition to the windy conditions by putting the pylons reasonable distances from the take-off and marking a fairly large area for the spot landing attempts. Despite their efforts, however, the wind was still too much for the competitors, none of whom succeeded in completing the course satisfactorily.

All in all a very enjoyable day was had by everybody present and the West Essex boys are to be congratulated on having put in a lot of hard work to give their visitors a fine day's flying.

Results

Rubber Duration. Agg. 2 flights.

1.	R. J. North	Croydon	577.2 sec.
2.	L. Brown	Solihull	460.1 ,,
3.	D. Bushell	Surbiton	402.2 ,,

Power Ratio. Agg. ratio 2 flights.

1.	A. L. Allbon	Bushy Park	43.7 ,,
2.	V. Jays	Manor House	31.77 ,,
3.	A. G. Russell	Kentish Nomads ...	31.6 ,,

Team Race. 10 miles.

1.	D. W. Rowe	Country member.	
2.	N. Butcher	Croydon	
3.	J. Nunn	Barking	

C/L Stunt

1.	P. Russell	Worksop	[illegible]
2.	R. Prentice	Chesfort	[illegible]
3.	N. Butcher	Croydon	[illegible]

Radio Control

1.	S. Allen	Battersea	115 pts.
2.	P. Wallis	Barnes	105 ,,
3.	E. Higlett	Eastleigh	70 ,,

C/L Speed

Class	I.	C. Shaw	Zombies	75.4 m.p.h.
,,	II.	J. Clarke	Ruislip	
,,	IV.	1. L. Wright	St. Albans	103.2 m.p.h. (Eta 29 -
		2. D. Powell	E. London	92.9 ,,
		3. D. Chinery	Surbiton	82.9 ,,
,,	VI.	1. F. Guest	Country mem.	121.5 ,, (Dooling).
		2. N. G. Taylor	Wimbledon	115.2 ,, (McCoy).
		3. —. Billington	Brixton	109.0 ,, (Nordec).

Handicap	1.	C. Shaw	Zombies	83.8 per cent.
	2.	J. Clarke	Ruislip	82 ,,
	3.	F. Guest	Country mem.	81 ,,

Photographs

1. The team racing event in progress.
2. The Mayor of Ilford, Alderman J. Barker, with Doug Gordon and two of the contestants at the control.
3. Pete Wallis (Surbiton) flew his Junior 60 into second place in the R/C contest, using E.C.C. equipment.
4. N. G. Taylor of the Wimbledon Power Club, and British Class VI speed record holder changes a propeller on his McCoy 60 powered Lazybones III.

S.M.A.E News

REPORT OF S.M.A.E. COUNCIL MEETING HELD AT LONDONDERRY HOUSE, PARK LANE, LONDON, W.1., ON SATURDAY, JUNE 10th, 1950 AT 2.30 p.m.

The following were present : Messrs. A. F. Houlberg (Chairman), R. F. L. Gosling, D. A. Gordon, H. W. Barker, H. R. Turner, C. S. Rushbrooke, H. J. Nicholls, F. E. Wilson, F. F. H. Cosh (London), G. Foden (E. Anglia), R. C. F. Day (Southern), H. G. Hundleby (S. Midland), W. W. Lowery (S. Wales), J. S. Bishop (Western), B. A. Messom (Northern), D. Salloway (North Western).

Matters Arising Out of the Minutes

Further correspondence from the organisers of the International C/L Meeting to be held at Knocke, Ostend on July 8th and 9th, was considered and it was decided to invite the first and second place winners in the "Gold" Trophy contest, and two speed record holders to constitute the British team for this event.

Participation in the Irish Nationals was again discussed, and it was decided not to send an official team. Messrs. R. H. Warring, D. Brockman, R. Copland and D. Dudley who had intimated their intention of attending this meeting were authorised to act as official representatives and were granted £2 10s. each towards their expenses.

S.M.A.E. Diplomas

Mr. E. F. H. Cosh submitted designs for a new S.M.A.E. diploma to the Council and was authorised to go ahead with the preparation of the design which was selected.

Correspondence

A letter was read from the secretary of the Upton M.F.C. in which it was pointed out that no badges had been awarded to the 2nd and 3rd place winners in last season's contests. Mr. Cosh was asked to obtain quotations for suitable badges in silver-gilt, silver and bronze, and to place an order for 100 of each.

Messrs. E. Law & Son's letter offering a trophy for a team-racing contest was read and it was agreed that although such an event could not be included in this year's programme, this generous offer would be borne in mind for next year.

Correspondence from the Eaton Bray Model Speedsmens regarding their International Week was read. Two official British entries were invited for each contest and it was agreed to request clubs to advise the S.M.A.E. of the names of any of their members who intended entering the events at this meeting in order that official entrants might be selected from these.

A letter from Mr. D. Salloway of the North Western Area was read in which it was pointed out that the acceptance of jet-powered entries in the Sir John Shelley Cup at the Nationals was not in accordance with a resolution passed at a previous council meeting. The resolution mentioned confined entry in all S.M.A.E. power contests to models fitted with mechanical motors as defined in the F.A.I. rules, viz. : Motors in which the motive force is obtained by combustion or by the expansion acting on one or more pistons having a reciprocating motion. The resolution in question was inadvertantly omitted from the 1950 S.M.A.E. Handbook and the Council decided that in the circumstances it could not be enforced this year.

Fairlop Aerodrome

The chairman and Mr. E. F. H. Cosh, who had attended a recent meeting with representatives of the Air Ministry, Ministry of Civil Aviation, and other interested parties, concerning the future of Fairlop Aerodrome, reported on the present position and stated that the negotiations were proceeding.

Area Correspondence

A letter from the S. Midland Area was read in which it was complained that the prizes awarded at the Nationals were inadequate.

The Midland Area suggested in a letter that the P.R.O. should make an effort to counteract adverse publicity in the daily press, including the publication of photographs of modeller's wearing fancy headgear.

The secretary of the London Area wrote to the council complaining of the action of the South Eastern Area in holding their Spring Rally on Epsom Downs. It was pointed out that the London Area had purposely avoided holding any organised meetings on this ground, because of difficulties which had been experienced with the local council, and in order not to jeopardise the interests of the members of affiliated clubs who normally fly there. Mr. D. A. Gordon was instructed to write to the secretary of the S.E. Area and advise him that the council would not agree to the use of this venue for the Area Autumn Rally.

A letter from the Western Area was read in which a complaint was made concerning the non-publication of the results of this season's contests. It transpired that this had been due to a misunderstanding between the P.R.O. and the comp. secretary and it was decided that in future, the publication of contest results shall be the responsibility of the secretary.

Finance

The treasurer, Mr. H. W. Barker, presented his report which showed a balance in hand of £1,313 7s. 4d. and was accepted.

Wakefield and Nordic A2 Contests

The arrangements for these two meetings were discussed. Mr. A. F. Houlberg was elected as Team Manager of the Wakefield Team and Mr. R. F. L. Gosling as manager of the Nordic Team.

1951 *Contest Programme*

It was decided to hold a special council meeting to deal with this matter on July 8th, 1950.

Radio-Control Sub-Committee

Mr. E. F. H. Cosh reported to the council on the negotiations which had taken place between the members of the R/C sub-committee, the Radio Society of Great Britain and the R/C Models Society regarding the possibility of an approach being made to the G.P.O. for some concession regarding the wave-band allocation. Further consultations are to be held.

1951 *Festival of Britain*

The arrangements for the proposed demonstrations of models of all kinds in connection with the Exhibition were explained by Mr. Cosh, who suggested that this matter should now be dealt with by the secretary.

Records

The following records were ratified : Outdoor—Class "C" Power, D. S. Lund (Wakefield M.F.C.), 6 min. 46 sec. ; Class VI C/L Speed, N. G. Taylor (Wimbledon Power), 132.4 m.p.h.; A/2 Glider (T.L.), J. Truscott (Belfairs M.A.C.), 6 min. 25 sec.

The following record applications were recorded : Outdoor—A/2 Glider (T.L.), R. C. F. Day (Portsmouth & D.M.A.C.), 7 min. 50.8 sec., ditto D. Willmott, (Belfairs M.A.C.), 10 min. 52 sec. ; A/2 Glider (H.L.), D. Willmott (Belfairs M.A.C.), 1 min. 12.9 sec. Glider (H.L.) (F.A.I.), P. E. Field (Belfairs M.A.C.), 7 min. 5.2 sec.; Glider (T.L.) (L'wt.), J. A. Mace (Upton M.F.C.) 28 min. 17.2 sec.

Details of models used for the above mentioned flights : Claimant, R. C. F. Day, Class A/2 (T.L.), Span 56 in. total area 320 sq. in., loading 4.54 oz., length 41 in., weight 16.4 oz. D. Willmott, A/2 (TL), 72 in. 515 sq. in., 4.3 oz, 37 in. 14.5 oz. D. Willmott, A/2 (H.L.) 72 in., 515 sq. in., 4.3 oz., 37 in., 15 oz. P. E. Field, (H.L.) Glider (F.A.I.), 75 in., 810 sq. in., 4.3 oz., 45 in., 24.2 oz. J. A. Mace, (T.L.) Glider (L'wt.), 96 in. 966 sq. in. 4.75 oz. 50½ in. 24½ oz. D. S. Lund, "C" Power (10 c.c. Ohlsson), 88 in., 1,429 sq. in., 8.8 oz., 54 in., 5 lb. 7 oz. N. G. Taylor, Speed VI (10.9 c.c. McCoy). 20 in. 84 sq. in., 64 oz., 20¼ in., 34 oz. J. Truscott, A/2 (T.L.), 72 in., 505 sq. in., 4.55 oz., 37 in., 14¼ oz.

Merit Certificates

These were awarded to the following : Class "A," No. 360 Rockwell W. (Gainsboro) ; 361 Wyatt, P. B. (Ipswich) ; 362 Holt, J. R. (Upton ; 363 Humphrey, E. (West Yorks) ; 364 Poole, T.

(Sheffield) ; 365 Hodgson, R. (York) ; 366 Gorham, J. A. (Ipswich) ; 367 Field, W. R. (Southampton) ; 368 Cartwright, G. (Sheffield) ; 369 Cochrane, J. (Aintree) ; 370 Parmenter, D. E. (Knutsford) ; 371 Wilson, P. (Knutsford) ; 372 Paxman, G. A. (Huddersfield) ; 373 Green, J. K. (Oldham) ; 374 Holland, F. (Swansea) ; 375 Webb, L.A.R. (Swansea) ; 376 Cole, R. E. (Swansea) ; 377 O'Nions, L. E. (Tipton).

Applications for Affiliation

Applications from the following clubs were accepted :

Brightlingsea Power Flight A.C., Seniors 4, Juniors 14, fee 24s. Seaford & District M.A.C., Seniors 9, Juniors 6, fee 28s. 6d. Kingshury M.F.C., Seniors 10, Fee 25s. Four-one-Four A.T.C. M.A.C., Seniors 1, Juniors 15, fee 21s. Acton Technical College A.C., Seniors 10, fee 25s. De Havilland Gypsies M.A.C., Seniors 9, fee 22s. 6d. Beeston A.T.C. (1359 Sqdn.) M.F.C., Seniors 16, Juniors 1, fee 41s. Rugby M.A.S., Seniors 8, Juniors 8, fee 28s. Chesterfield & District M.E.S., Seniors 9, fee 22s. 6d. Woodlands M.F.C., Seniors 6, Juniors 14, fee 29s. Creswell & District M.F.C., Seniors 9, Juniors 5, fee 27s. 6d. Eston Area M.A.C., Seniors 15, Juniors 10, fee 47s. 6d. Bolton Wools M.A.C., Seniors 9, Juniors 2, fee 22s. Forest Cottage M.A.C., Seniors 14, fee 35s. Stretton Modelling Club Humphrey Park M.A.C., Seniors 5, Juniors 12, fee 24s. 6d. " Solent Heights " M.F.C., Seniors 6, Juniors 4, fee 21s. Hungerford & District M.A.C., Seniors 14, Juniors 2, fee 37s. Banbury M.E.S. Seniors 7, fee 21s. Sunningdale M.A.S., Seniors 4, Juniors 4, fee 21s. Cardiff Contro. Fliers, Seniors 10, fee 25s. Cynon Valley M.A.C., Seniors 8, fee 21s. Rushden M.A.C., Seniors 8, Juniors 4, fee 24s.

R.A.F. Model Aircraft Association

The affiliation of the 95 clubs in the above association was confirmed by the council. These are divided into 9 command groups which will operate as areas.

International R/C Trophy

On behalf of the *Aeromodeller*, Mr. C. S. Rushbrooke offered the society a trophy for an International R/C contest to be held in 1951. The council expressed their thanks for this offer, which will be borne in mind when preparing next season's contest programme.

Wakefield Draw

Mr. B. A. Messom informed the council that the total amount received from the Draw so far was £684 2s. Fifty-seven prizes had been donated by the trade and the council decided to purchase the balance of prizes required to bring the number up to 100. A vote of thanks was recorded to Messrs. Messom and Rushbrooke for their work in connection with the draw.

Annual Dinner and Prize Giving

Miss P. Mayo, the secretarial assistant, stated that some difficulty was being experienced in obtaining a suitable venue in London for this function, which is to be held on Saturday, November 4th, 1950, but further efforts are to be made to find suitable accommodation.

F.A.I. Annual Conference

The chairman reported on the above conference which was held in Stockholm in June. (*See* " Here and There " for details.) A vote of thanks was accorded to Mr. Houlberg for attending the conference on the society's behalf.

The meeting terminated at 7.30 p.m. with a vote of thanks to the chair and the draw for the Wakefield Fund prize winners was proceeded with.

CONTEST CALENDAR

July 22nd **Wakefield Trophy**—Finland
" 23rd & All-Herts Rally, Radlet, Herts.
" 30th **A.2 Glider Contest**—Sweden.

Aug. 6th Bolton M.A.S. Rally, Afterside.
" 6th **Bowden Trophy.** Power Precision.
" & **Taplin Trophy.** Radio Control.
" 7th **Control-line Speed.** Centralised—venue to be announced.
" 13th South Coast Gala, Brighton. (Power duration
" 15th-25th Eaton Bray Rally. classes only.)
" 27th Huddersfield Air League M.A.C. Rally.
" 27th Merseyside M.A.C. Slope Soaring Meeting, Clwyd Hills, N. Wales.

Sept. 3rd **AREA AUTUMN RALLY**

Farrow Shield. Unres. Team Rubber.
" **Model Engineer** " **Cup.** Unres. Team Glider.
Astral Trophy. Power Ratio.
" 17th **S.M.A.E. Cup.** Open Glider. D.C.
" 17th " **Flight** " **Cup.** Open Rubber. D.C.
" 17th **Frog Junior Cup.** Open Rubber. D.C.
" 17th Portsmouth and District M.A.C., Southern Counties Rally, Thorney Island, Hants.

S.M.A.E. CONTESTS IN BOLD TYPE

CONTEST RESULTS

WESTON CUP

1.	Holland, F.	Swansea			753.4
2.	Smith, E.	Icarians			742
3.	Taylor, P. T	Thames Valley			673.5
4.	Warring, R. H.	Zombies			667
5.	Mckenna, J.	P.M.A.L.			656.2
6.	Cole, R.	Swansea			652
7.	Ryde, L.	Northern Heights			647.2
8.	Montgomery, P.	Kirkcaldy			629.5
9.	Dubery, V.	Leeds			615
10.	Copland, R.	Northern Heights			609.2
11.	Yale, A. A.	Bournemouth			608.8
12.	Knight, J. B.	Kentish Nomads			596.5
13.	Rutter, K.	Harrogate			594.6
14.	Glennie, A.	Streatham			592.8
15.	Howard, J. A.	Kentish Nomads			566.5
16.	Stuart, L.	P.M.A.L.			550.8
17.	Fraser, R.	Kirkcaldy			546.5
18.	Evans, E.W.	Northampton			529.5
19.	Holt, J.	Upton			527.5
20.	Pitcher, J.	Croydon			518.5

290 entries—58 no score

K. & M.A.A. CUP

1.	Yeabsley, R.	Croydon			736.6
2.	Tassell, R.	Northern Heights			698.3
3.	Brain, J.	P.M.A.L.			631.2
4.	Barr, L.	Pharos			614.1
5.	Moore, M.	West Coventry			598.1
6.	King, M. A.	Belfairs			592.7
7.	Geesing, T.	Croydon			583.2
8.	Marshall, J.	Hayes			577.6
9.	Smith, D. C.	Loughborough College			572.4
10.	Wheeler, B.	Birmingham			568.6
11.	Ward, R. A.	Croydon			557.8
12.	Exley, R.	Sheffield			549.6
13.	Walker, F. W.	"			549.4
14.	Cartwright,	"			547.3
15.	Bainbridge, R. M.	Seaham			522.7
16.	Gilbert, P.	Pharos			514
17.	Robins, J.	Bushy			507.5
18.	Young, M.	Northern Heights			497.5
19.	Sootland, T.	Scunthorpe			489.7
20.	Hill, D.	Wolves			488.1

253 entries

NORDIC A2 TRIALS

1.	**Hanson, M. L.**	**Solihull**	**287.5**	**202.0**	**276.0**	**765.5**
2.	**Klinks, P.**	**Luton**	**359.6**	**253**	**98.2**	**611.2**
3.	**Bennett, J.**	**Yeovil**	**238**	**138**	**269**	**645**
4.	**Bootland, T.**	**Scunthorpe**	**234**	**194.5**	**207**	**635.5**
5.	Richmond, J. S.	Wolves				557.8
6.	Robins, J.	Bushy				518
7.	Barr, L.	Pharos				512
8.	Knight, J. B.	Kentish Nomads				507
9.	Marshall, J.	Hayes				501.1
10.	Taig	Bristol & West				496
11.	Poole, T.	Sheffield				492.2
12.	Nelson, W.	"				466.1
13.	Noel, T.	Wayfarers				451.8
14.	Brown, L.	Solihull				422.5
15.	Yeabsley, R.	Croydon				400
16.	Exley, C.	Sheffield				392.8
17.	Hewitt, A. J.	S. Birmingham				391.8
18.	Molyneux, A.	Wallasey				383
19.	Young, M.	Northern Heights				382
20.	Barker, J.	Grantham				372.6

74 entries

WAKEFIELD " 100 "

1.	**Knight, J. B.**	**Kent. Nomads**	**306.1**	**205.6**	**271.3**	**776.9**
2.	**Evans, E. W.**	**Northampton**	**323.6**	**263.5**	**166.5**	**730**
3.	**Pitcher, J. L.**	**Croydon**	**191**	**250**	**282**	**723**
4.	**Warring, R. H.**	**Zombies**	**329.9**	**233.6**	**151.1**	**684.7**
5.	**Stevens, H. R.**	**Hatfield**	**350.1**	**231.2**	**140.6**	**671.8**
6.	**Adams, F.**	**Northampton**	**243.5**	**312.6**	**125.1**	**668.6**
7.	Ryde, L.	Northern Heights				652.9
8.	Copland, R.	"				649.4
9.	Chesterton, R. J.	Loughborough College				646.7
10.	North, R. J.	Croydon				593.3
11.	Montgomery, P.	Kirkcaldy				565.8
12.	Collins, R.	W. Essex				547.8
13.	Cickery, P. M.	Port Talbot				545.4
14.	Mayes, C.	W. Essex				528.5
15.	Elmes, D.	Ilford				526.9
16.	Buskell, P.	Surbiton				520.6
17.	Smith, E.	Icarians				509.8
18.	Norton, R.	Plymouth				505.6
19.	Harris, J.	Swansea				502.1
20.	Russell, A. G.	Kentish Nomads				485.5

6 returned no score

WAKEFIELD DRAW RESULTS

No.	Name	Club	Ticket No.
1	F. Walker	Kendal	S.803
2	S. Magson	Halifax	T.829
3	Mrs. Riley	Blackpool	M.719
4	E. Coates	[illegible]	U.100
5	J. B. Stewart	Salisbury	T.493
6	Upton M.F.C.	[illegible]	K.93
7	C. P. Standley	Country Member	A.1505
8	Dorothy Sullivan	[illegible]	Q.630
9	Liverpool M.A.S.	[illegible]	N.386
10	B. C. Gunter	Bushy Park	Q.199
11	J. Turnor	Icarians	F.566
12	J. G. Burch	Kentish Nomads	J.977
13	K. Hammond	Chester	H.155
14	G. A. Slater	Halifax	A.1317
15	P. Conway	Brent Vale	Q.105
16	Margaret Lolli	Warrington	N.944
17	K. Prentice	Lanark	Q.205
18	S. M. Brown	[illegible]	I.395
19	H. Steele	Regent's Park	A.333
20	E. Linge	B.O.M.S.	J.472
21	C. Glover	Blackheath	O.629
22	Joyce Statham	[illegible]	B.1494
23	G. M. Rolfe	[illegible]	A.1517
24	B. G. Guise	Country Member	Y.147
25	T. P. Earl	Torquay	F.474
26	J. M. Barnes	[illegible]	H.528
27	A. S. Duff	Wirral	N.236
28	A. Griffiths	Ebbw Vale	V.656
29	W. King	Whitefield	N.993
30	E. Keil	West Essex	P.966
31	G. Holt	[illegible]	D.695
32	N. G. Bryce	[illegible]	D.769
33	W. H. Jones	[illegible]	B.1832
34	R. Ablett	Spalding	B.1785
35	Joyce May	[illegible]	G.97
36	R. G. Crawley	Salop	E.578
37	W. L. Trotter	Scunthorpe	O.479
38	J. Pickles	Lancaster	N.526
39	C. P. Williams	Erdington	C.823
40	J. Langan	Rugby	D.58
41	R. W. Hughes	Kentish Nomads	B.1977
42	S. W. Squire	[illegible]	E.762
43	J. Stubley	Spalding	B.1791
44	Peterborough M.A.C.	Peterborough	C.1011
45	D. J. Taylor	Bredbury	H.54
46	J. L. Cawdell	[illegible]	A.1905
47	Bray	[illegible]	Q.193
48	J. G. Joyce	Leeds	U.172
49	J. Page	Staines	Q.722
50	F. Walker	Kendal	S.804
51	G. Neorrs	[illegible]	Y.566
52	J. F. Huxley	K.L.G.	P.195
53	L. F. Wyne	Maidenhead	G.329
54	W. E. Lillyman	Hatfield	L.421
55	H. Boyd	Kentish Nomads	J.967
56	L. W. H. Barratt	Andover R.A.F.	K.950
57	A. C. Davidson	[illegible]	A.1590
58	G. M. Chegwin	[illegible]	F.583
59	R. H. Dach	[illegible]	G.545
60	J. Dodd	Neath	V.793
61	R. Butcher	Blackheath	O.627
62	Mrs. L. Bartlett	[illegible]	E.599
63	R. B. Lord	[illegible]	Z.677
64	J. Cooke	Congleton	H.203
65	G. A. Knight	[illegible]	Y.563
66	E. Marsden	Skyliners	A.899
67	Mrs. V. Akenfield	[illegible]	B.1829
68	E. C. W. Clark	Luton	F.626
69	J. Lodge	Blaydon	I.770
70	J. Green	Oldham	N.555
71	G. D. Coupe	[illegible]	B.1287
72	M. Phillips	[illegible]	Y.457
73	W. M. David	Wallasey	H.631
74	C. E. Dennis	[illegible]	X.560
75	N. H. Turner	[illegible]	E.859
76	P. Brown	[illegible]	O.111
77	P. Runner	Southport	Y.983
78	E. L. Mason	By-Pass	R.583
79	Mrs. Reid	Kirkcaldy	T.320
80	Secretary	Hunts	L.646
81	R. A. Reffell	Guildford	V.179
82	L. Stancer	Spalding	B.1794
83	R. Knaggs	Torquay	F.459
84	R. W. Bennett	Leicester	B.41
85	S. Leighton	Zoomers	O.205
86	R. A. Geeves	[illegible]	C.857
87	A. Servaes	Chorley Wood	L.380
88	J. W. Dowding	St. Paul's	P.649
89	R. Harper	Country Member	Y.312
90	Betty Dutson	[illegible]	D.531
91	D. H. Crawford	Matlock	B.117
92	I. Stringer	[illegible]	X.908
93	H. E. Hall	Stourbridge	D.772
94	R. Adamson	Derby	A.903
95	Mr. Whitton	Wakefield	U.656
96	H. Wells	Boston	O.75
97	R. Lyon	Mansfield	B.409
98	A. Hopkins	Icarians	F.779
99	R. I. L. Rose	[illegible]	J.77
100	C. A. Rippon	[illegible]	C.1172

NEWS *from* the CLUBS

CROYDON AND DIST. M.A.C.

The de-rationing of petrol on Nationals week-end enabled a few members to make the journey up to York and in spite of the gusty weather Jack North, T. A. Geesing and Roy Yeabsley placed 3rd, 5th and 6th in the Thurston Cup. Norman Butcher was one of the finalists in the Gold Trophy, but was prevented from completing his schedule when his *Happy Harold* literally fell out of the sky on one of the downdrafts. This didn't prevent him from putting on a show of "two model flying" afterwards—the first time since last year's "Gold." Having more sense than models, we did not participate in the Sir John Shelley, due to the howling gale which was blowing, but instead headed for home and the better weather. That's what we like about the south !

A week or so previous to this the motor cycling section were able to visit the South Wilts Rally at Old Sarum, with quite a measure of success. Apart from 1st, 2nd and 3rd in the glider ; 1st and 3rd in the power ; and 2nd in the rubber event, we also topped the stunt list. That man Butcher again ! On the whole quite a satisfactory day.

Our first club comp. the President's Cup for rubber or gliders, has been run off, and Jack North proved a worthy winner in the Senior and Mike Street in the Junior.

We had several representatives in the Wakefield and Nordic Trials at Fairford and heartiest congratulations are due to Mr. J. L. Pitcher for his place on the 1950 Wakefield team. As one of the most consistent exponents of this type of model in the country today we are sure no one deserves this honour more.

WALSALL M.A.C.

Due to the great success at our last two Annual C/L Rallies, we shall be holding another on August 7th (Bank Holiday Monday) in which there will be Open Stunt, Team Racing (if there are enough entries) and speed in all classes except jet.

Recently the club held a display of models in one of the town's cinemas. The manager gave prizes for the three best models in the display. The winners were :—

1. Mr. H. Michell with a rubber-powered *Mosquito XVI*, 2. Mr. J. Hall with an Atwood-powered *Go-Devil*. 3. Mr. J. Shelley, with an Albon-powered *Cirrus*.

Also in this display was the club model *Miss America II*, which as a free-flight model proved to be exceptionally good. It is powered by a Cunningham 5 c.c. diesel, and is now being tested with a pay-load, as it will shortly be having the club's R/C unit installed.

BLACKHEATH M.F.C.

Three interesting models made their appearance recently. The first, by Mr. Moore, is a scale model of the *Auster Autocar*. The model is to the scale of 2 in. to 1 ft., is 6 ft. span and weighs 3 lb. Power is supplied by an Allbon 2.8, and R/C is contemplated after testing.

From Mr. Churchill, one of our new members we have a 372 sq. in., 14 oz. pylon model powered by a Mills Mk. I. This model has a very good glide.

The third is a 50 in. cabin model powered by another Mills Mk I. Designed and built by D. Butcher, the model weighs 16 oz. and is intended for the " M.E." Exhibition.

WHITEFIELD M.A.C.

The club had a very good attendance at the Nationals and although times were not too high, some good flying was done. Best club times in the glider contest were J. O'Donnell and B. L. Williams with totals of about 200 sec. In the power event J. O'Donnell placed about 15th with an aggregate of 173. The club returned minus two models, one being M. O'Donnell's *Coffin Ship* 6 which disappeared going up for 2 : 11.5.

Some good times were done in the week after the Nationals. Best flight was R. Faulkner's 5 : 59.5 o.o.s. with a *Gili Chopper* fitted with *Jaguar* wings ; J. O'Donnell lost a lightweight glider for 5 : 30 and later made the glider flights for his " C " Cert., doing 3 : 25, 3 : 15, 3 : 59.8. Three other members made flights over 3 min., A. Cropper having a 600 aggregate for his " A " Cert. flights.

An afternoon's slope soaring by J. O'Donnell and A. Cropper has resulted in a claim for the British A2 glider (H.L.) record. A. Cropper managed 2 : 05, only to have it beaten by 2.5 secs by J. O'Donnell. The models were widely different being respectively, a slabside, low aspect ratio model with a " Marquardt-type " section, and a streamline pylon job of higher aspect ratio and considerably heavier weight.

A building contest held at Lewis's recently resulted in M. O'Donnell winning first place in the Junior Contest, and a very substantial cash prize. Model was a Veron *Rascal*.

L.S.A.R.A. NEWS

The L.S.A.R.A. especially have experts on the various aspects of its work in attendance at the Association Stand during the " Model Engineer " Exhibition, for the purpose of answering visitors' queries. For questions which cannot be answered immediately, a form will be available on which questions can be entered. A charge of 6d. will be made for this in order to cover the cost of postage to and from the expert concerned.

The following is a provisional timetable for the stand :—

	Subjects	*In Attendance*
Opening day 9th August	Stability and Control Aerofoils and Airscrews	N. K. Walker
	Radio Control	D. W. Allen
10th "		T. Dorricott
11th "	Structures and Aerodynamics	J. C. Gibbings
12th "	Structures and Aerodynamics	J. C. Gibbings
"	High Climb Models	R. H. W. Annenberg
"	Propellers	P. R. Payne
14th "		
15th "		
16th "	Not yet decided	
17th "		
18th "		
19th "	Radio Control	D. W. Allen
Closing day	Stability and Control Aerofoils and Airscrews	N. K. Walker
	Structures and Aerodynamics	J. C. Gibbings

COVENTRY AND DIST. M.A.C.

Our club membership has increased in the past two seasons from around 30, to its present strength of over 60, in particular the increase in the number of juniors has been particularly gratifying. We are fortunate in having at our disposal an excellent naval aerodrome just outside Coventry, and also club rooms at a local community centre.

We have a very comprehensive outdoor programme this season with trophies for juniors (rubber and glider), seniors—Wakefield, sailplane and power ratio, and we have also a team trophy in which four teams selected from all the club members, compete against each other once a month for points, the team having the highest aggregate of points holds the trophy for that year. It is so arranged that C/L, rubber, sailplane and power modellers all fly off on competitive basis, and that no team amasses too high a points lead. It certainly causes keen rivalry and develops a keen " team spirit " amongst members.

Two of our club records have been lowered this year by Messrs. Clarke and Haywood and if the present standard of flying continues, many more will be broken by the end of the season.

Club records are as follows :—

Open Rubber, (H.L.). R. J. Cooke, 1,106.0 sec., o.o.s. (R.O.G.), A. J. Barr, 737.5 sec., o.o.s.

Wakefield, (R.O.G.), T. B. Clarke, 276.2 sec.

Sailplane, (T.L.), L. Selga, 647.2 sec., o.o.s. (H.L.), 930.0 sec., o.o.s.

Power, (Ratio), R. Haywood, (5 sec. E.R.), 15.4. Duration, G. H. Ginns, (21 sec. E.R.), 574 sec.

NORTHERN HEIGHTS M.F.C.

More than a dozen N.H. members attended the S.M.A.E. Nationals at York, where Bob Copland, flying a new semi-streamlined Wakefield won the " Model Aircraft " Trophy. The remaining members found the elements more than they could successfully overcome, although several made good individual flights.

The evenings, however, made up for any disappointments at the rather poor weather which York provided for the meeting, and it was a great pleasure to once again be able to meet so many of our old friends from the north.

At a recent club power contest G. Moss emerged the winner with flights of 2-½ min. on 15 sec. engine run, the contest being remarkable for complete absence of any signs of thermals despite otherwise perfect conditions.

SUNDERLAND AND DIST. M.A.C.

Better weather has persuaded some of the hangar fliers to drop their handles and crawl out into the sunshine. It's hard to believe that the Potts Cup contest (F.A.I. gliders) had to be cancelled because of models getting lost in the fog, in spite of two cars and a motor-cycle doing high-speed retrieving down the main runway ! One of the steadiest fliers was a *Sunnavind* whose owner scorned the 300 ft. line and used one nearer 150 ft.—which at least kept his model visible all the time.

A *Gili Chopper* built by P. McAlroy, spent three days birds-nesting before a friendly farmer retrieved it and sent him a post-card to come and collect it. Three days did strange things to the tailplane but on its next outing it showed that all was forgiven by turning in a flight of 2 : 20. Recent meetings have been well attended, both at the flying field and the club's rendezvous, Beach Cafe, Roker, Sunderland, where a meeting is due on June 30th, 1950, and every fifth Friday after that. Among the interesting models seen at the R.A.F. station, Usworth, during the recent good weather, was a detailed scale model of an A.B.C. *Wren* fitted with a Mills 0.75. This job was built by the chairman, Mr. J. Robson, and is one of the most true-to-life seen on the field, right down to individually glazed instrument dials. Having access to a hangar for C/L flying—in any weather—brings out some varied efforts. The photograph shows Ken Chapman's Mills 1.3 powered *Spitfire* from the well-known Veron kit. The team racing bug has bitten a few, but up to now no actual racing has been done. Promised shortly are a *Midget Mustang*, a modified *Magnette* and a Lockheed *Sirius* scale job, while a 24 in. *Inspiration* biplane (Mills 2.4) (MODEL AIRCRAFT, August, 1949), is waiting to provide some variety in the ring.

Forthcoming attractions include an Open Power Free-Flight contest on July 23rd, 1950 ; followed by C/L stunt on August 13th, 1950, with cash prizes for seniors and juniors. All contests being held on R.A.F. Usworth, open only to club members under the S.M.A.E. scheme.

SOUTH WILTS RALLY, R.A.F. OLD SARUM

Thunderstorms interrupted the first South Wilts Model Aircraft Rally, organised by the Aircraft Section of the Salisbury and Dist. Model Engineer Society on Sunday, May 21st, and the uncertain weather probably kept many local aeromodellers away. There were a number of visiting clubs, however, among them being Croydon (who were compensated for their long journey by taking home most of the prizes), Odiham, Basingstoke, Eastleigh, Winchester, Headley, Bristol Aces, Alton, New Milton, Southern Heights and West Essex.

Between the storms, flying conditions were very good and two or three models were lost, including a Forster engined model belonging to R. A. Ward of Croydon on which the timer stuck and T. A. Geesing's sailplane which the timekeepers gave up timing after seven minutes. This model has since been found at Durrington, ten miles away.

At the prize-giving ceremony, four year old Ann Read, daughter of the secretary, presented a bouquet to Mrs. Morris, wife of the Commanding Officer, R.A.F. Old Sarum, who presented the prizes.

The secretary, on behalf of the society, thanked Wing Commander E. Morris, D.S.O., D.F.C. for judging the *Concours d'Elegance* and allowing the use of the airfield (the convenient and open situation of which attracted favourable comment from the visitors), Warrant Officer Street, and Staff Sgt. Worrall for their help in organising the rally ; Magnet Stores and all others who had generously given prizes, and the visiting clubs who had come long distances to attend. Special thanks are due to the Headley Club, who were the first to arrive and sportingly volunteered timekeepers, and who, though unsuccessful in the contests, gave a donation towards the expenses of the rally.

Results :

Rubber Duration Contest (aggregate of 3 flights) : 1. P. Norton, (Basingstoke), 384 sec. 2. N. Standing (Croydon), 283 sec.

Sailplane Contest (aggregate of 3 flights) : 1. T. A. Geesing (Croydon), 691 sec., (5 min. rule on last flight). 2. R. J. North (Croydon), 434 sec. 3. N. J. Butcher (Croydon), 348 sec.

Power Ratio Contest (engine run to total flight) : 1. N. G. Marcus (Croydon), 17.5. 2. M. Campbell (Eastleigh), 13.3. 3. R. J. North (Croydon), 12.3.

C/L Stunt Contest (max. points 355) : 1. N. J. Butcher (Croydon), 299. 2. A. Piacentini (Salisbury), 290. 3. D. Palmer (Basingstoke), 215.

Concours d'Elegance (max. points 100) : 1. E. Higlett (Eastleigh), *Junior* 60, 100. 2. J. Ross (Winchester), *Seafire*, 80.

LEEDS M.F.C.

Following a request by the West Riding Police, a C/L display was given at a local " Road Safety Week." The highlight of a two hour display was a " Crazy " act, given by G. Butler, flying his Frog " 500 " powered *Mad Carew*. While giving a stunt performance with his model, he persisted in lying down eating a meal, drinking cups of tea, and (intentionally) ? ? ? shedding the outer part of his wing in mid-air.

A very good running commentary was given by Mr. Joyce, and as a result, the club has been " booked " for three further displays, at various galas, etc., in the next few weeks.

Incidentally, our speed expert R. Foster, has unofficially lapped at speeds of 115 and 124 m.p.h. with Frog " 500," and Eta " 29 " powered *Speedwagons*.

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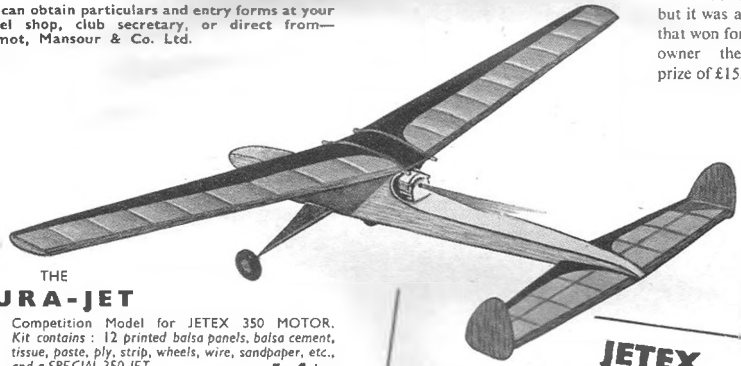
We are expecting entries from various countries including, America, South Africa, France, Sweden, etc., giving this event a truly international flavour. The winner will hold the I.C.I. Challenge Trophy (presented by Imperial Chemical Industries Ltd.) for one year, and will also win £20 in cash. However small your Jetex motor, you can still win! Last year a "200" took first prize, but it was a Jetex 50 that won for its lucky owner the second prize of £15.

You can obtain particulars and entry forms at your model shop, club secretary, or direct from— Wilmot, Mansour & Co. Ltd.



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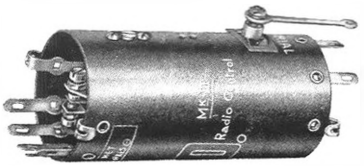

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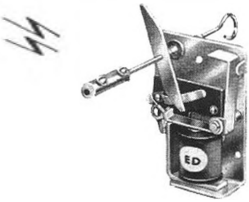

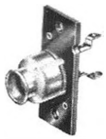

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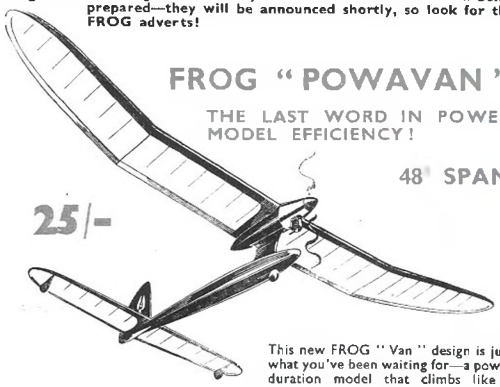

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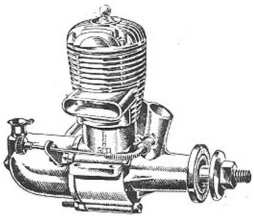

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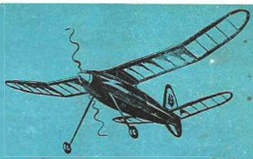

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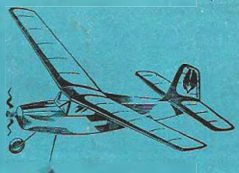

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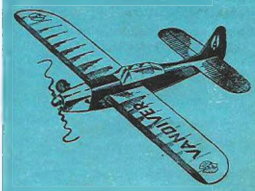

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