MODEL AIRCRAFT

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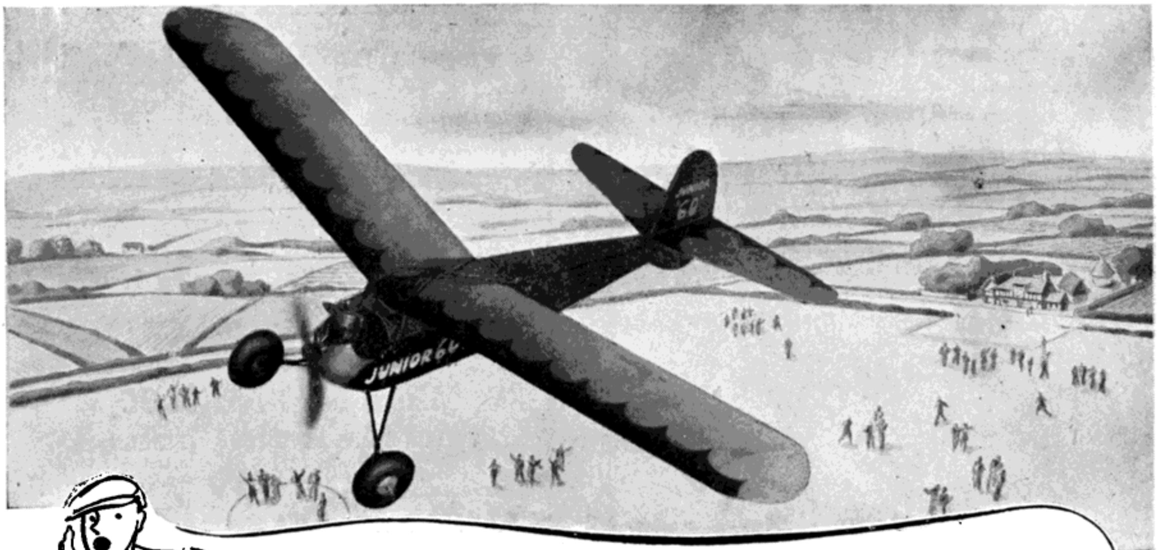
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MODEL AIRCRAFT

The Journal of the Society of Model Aeronautical Engineers

NOVEMBER 1946

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

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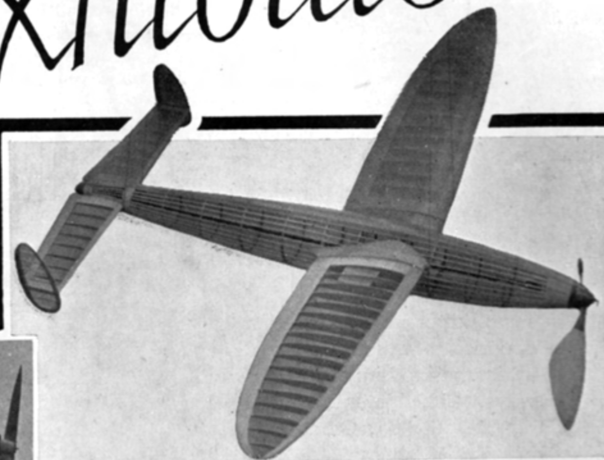
The Editor presents

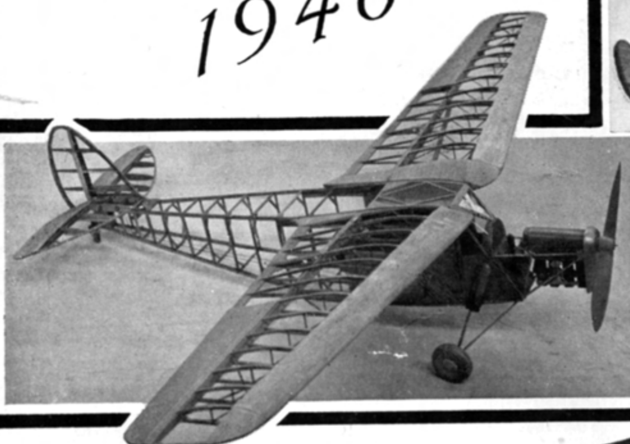
A PERCIVAL MARSHALL PUBLICATION

The M.E. Exhibition 1946

The petrol model entered by K. Raczak, which gained first place in Class 20, was an outstanding example of pleasing design and excellent workmanship. Powered with a neatly-cowled Forster "29" engine, it should also give a good account of itself in the air.



The well-designed Wakefield model entered by D. F. Proctor, which gained second place in Class 18. Shown with only one half covered.



Above: This "Leopard Moth," by H. C. Baines, of New Cross, won second place in Class 19. Note the inclusion of a dummy engine—an unusual feature in flying scale models.

Right: The remarkable models of the leading single-seater fighters of two wars, made from matchsticks glued together, by P. T. Capon, won him a well-deserved second place in Class 22. The size can be gathered from the easel made from matches, carrying the number 265.

The large red petrol model "Captain Kid," which won the second place in Class 20 for G. E. Dunmore, of Leicester, is here shown on its native ground at Stoughton Aerodrome, Leicester. The quality of workmanship displayed on this machine was of the usual high standard produced by this entrant.

News Review

Our Cover Picture

This month we publish an attractive close-up of " Gussie " Gunter concentrating on the preparation of his petrol-driven model for the Keil Trophy, which is symbolical of applied energy in the grooming of a contest machine before an important event. Mr. Gunter was eventually successful in winning this contest, thus adding yet another major win to the long list of successes achieved by members of the Bushy Park Club in the petrol model field.

This success is particularly meritorious as we understand that the machine was built in a great hurry, in the short space of a fortnight, and that it flew successfully literally " straight off the drawing board," only some two trimming flights being indulged in prior to the actual competition efforts. It is a good example of what can be achieved when one knows what one is doing, coupled with care and methodical handling.

The photograph was taken by Mr. R. S. Barber, of Highbury Hill, London.

The 1946 F.A.I. Conference

After a lapse of six years an F.A.I. conference with real international representation was held in London on September 10th at which various proposed alterations to the model regulations submitted by Great Britain, France, Holland, Switzerland and Sweden were reviewed.

As a result, a number of major alterations were agreed upon which will make the rules fit the changed conditions arising from the developments which have taken place during the war period.

For instance, the advent of the flying bomb has made an alteration in the definition of model aircraft essential, as the original definition would include weapons of this type—an obviously undesirable position.

On a proposition from France, it was agreed that the area of all horizontal surfaces should be taken into consideration when calculating the loading in order to give more freedom of design and to relieve the tail-less machines of their present handicap. The actual loadings have been modified to suit, and a method of defining where the wing starts and the fuselage finishes, in cases where difficulty is encountered, has been devised.

Another alteration of note is a modification to the fuselage formula, which will in future be based on the total area of the surfaces (including tailplane) and not on the length of the machine.

The object of this alteration is again to give more scope to design, and to simplify calculations of the cross section by eliminating the square root feature, as the cross section varies in direct proportion to the area.

The British proposition that timekeepers should remain stationary was not agreed to by the other nations for record purposes, but it was agreed that for contests the timekeepers should be stationary and not use optical devices.

Additional records clauses were introduced to cover recent and possible future developments.

It was also agreed that the maximum length of line for use in launching gliders should be restricted to 100 metres and that there should be no restriction to the length of run in the case of either a running launch or winch launch. A combination of both type of launch is therefore now possible, the point of departure of the model being the point from which the competitor *starts* the launch. The catapult launch has been eliminated as being obsolete.

Several other minor alterations have also been introduced, and these will be dealt with in detail in our pages as soon as space permits. Generally speaking, the new rulings will meet with favour in this country, except the moving timekeepers for duration records, and possibly the new loading and fuselage cross section formulas, until we become accustomed to them and realise their full scope.

Another S.M.A.E. International Win

At the urgent invitation of the Royal Aero Club of the Netherlands the S.M.A.E. sent a team of four glider specialists to compete with a team of Dutch modellers on Sunday, October 6th, on the moors just north of Arnhem, close to the scene of the epic action in the recent war.

The British team consisted of L. M. Walker, G. W. W. Harris, D. C. Butler and A. H. Taylor, shepherded by A. F. Houlberg. The Dutch team comprised P. Vriend, H. Hekking, F. V. de Kreek and W. Hamersteen, under the direction of J. Van Hattum.

The day of the contest, though relatively fine, proved to be very windy, and as a result neither team performed up to their usual standard ; in fact, it was anybody's contest right up to the last flight, when D. C. Butler's badly crashed and repaired machine was put into the air to achieve a flight of 47.4 sec., to give Great Britain the winning margin of 37 sec.

The best performance of the day was that of L. M. Walker, who flew very consistently to record an aggregate for three flights of 359.7 sec., which included one flight of over 3 min.—a very creditable performance under the conditions prevailing. The next best performance was that of P. Vriend, of Holland, who achieved an aggregate of 295.3 sec. with an excellent "Gull Wing" machine and who also exceeded 3 min. on one flight.

The final score was Great Britain 745.3 sec., Holland 708.3 sec., and a more detailed account of the meeting will be given in our next issue.

The Royal Aero Club of the Netherlands are to be congratulated on their organisation of this event, which ran very smoothly, and for their care of the visiting team, which spent a most enjoyable weekend as their guests.

The Human Touch

One of the things which are not immediately obvious when viewing models at an exhibition is the human story lying behind them—the many difficulties of execution which may arise from limited means, physical shortcomings, or difficulties of environment. This point was emphasised by Mr. Percival Marshall at the opening of *The Model Engineer* Exhibition, but it was one of the aircraft models which was perhaps responsible for introducing the most poignant human story of the exhibition.

A visitor approached those on duty on the S.M.A.E. stand with an enquiry if it was at all possible to have one of the models on exhibition taken out of the glass show case and handled. Now such a procedure is normally discouraged in no uncertain manner in fairness to those exhibiting, particularly in the case of delicate models requiring a glass case for protection.

In this particular instance, however, the enquirer revealed an exceptional reason for the request. He explained that his wife, who accompanied him, was almost totally blind, and that he was doing his best to explain the models to her with the help of her sense of touch. In the case of the aircraft models he encountered some difficulty in explaining to her the construction of the V.1 Flying Bomb exhibited by pure description and desired to afford her the advantage of correlating his explanation with her sense of touch, since they both had heard and seen these weapons in action during the period of hostilities and had been somewhat unnerved by them like most people.

The model was produced, and by the combined aid of description and touch the wife was able to form a complete mental picture of the appearance and construction of these dastardly but clever weapons, thanks to the cut-away portions of the model which revealed the internal components which had been executed with faithfulness and precision.

They left with truly sincere thanks.

Rocket Propulsion Units

We have received information from Mr. Howard Boys that rocket propulsion units for model aircraft are still available from time to time, and that all enquiries for these should be addressed to him at 89, Catesby Road, Rugby, and not to Messrs. Brock's, who are not prepared to deal with individual users.

The present restricted output of rockets is due to the labour and material conditions which exist at the moment. When the position improves these rocket propulsion units will be offered for general sale, and will then be obtainable through model aircraft dealers. When this happy position is reached, Mr. Howard Boys will be communicating with dealers interested, and we will make an announcement in these pages as soon as these rocket propulsion units are available freely.

Plan Service

We would draw our readers' attention to the fact that full-size plans of the more popular machines which have been described in MODEL AIRCRAFT during the past twelve months, are now available from the publishing offices of Percival Marshall and Co. Ltd. A list of those at present obtainable appears on page 286.

From Aero Engines to Refrigerators

One of the big problems which face us at the moment is the conversion of the huge plants erected during the war for the manufacture of munitions into establishments for the manufacture of peacetime products.

It is therefore of interest to learn that a large portion of the special factory erected during the war at Crewe for the manufacture of Rolls-Royce engines will probably be turned over to the manufacture of refrigerators under the direction of Kelvinator Ltd.

WAKEFIELD MODELS

by R. N. BULLOCK

We come now to a part of model aeroplane work which causes many a good model to fail and be bitterly disappointing. The testing and correct trimming, so that good results are obtained, is the secret of success with any model, and the best can only be obtained from it if this is done correctly.

When the model is completed and constructed more or less correctly, the c.g. should be at about .5 to .55 of the mean chord from the leading edge of the main plane.

The tail, if of aerofoil section, should have minus 1 degree of riggers incidence ; if symmetrical it should be set neutral, or parallel with the centre line of the model.

The propeller shaft line should be set at about 3½ degrees down thrust from the centre line of the model.

The model, for ease of trimming, should have its c.g. adjusted by means of a running trimming weight, carried externally under the fuselage (see sketch, Fig. 9).

The method of setting the 3½ degrees down thrust, is by drilling for the shaft through the nose block at this angle, or by packing out after fitting, and, by the way, the nose block should have a circular locating spigot so that it may be turned bodily in the nose former, thus changing the direction of the 3½ degrees down thrust into down and side thrust automatically as and when required.

The main planes should be set at + 3½ degrees riggers incidence, and the starboard plane, if you are a right-hand winder, should have about half a degree more incidence than the port plane, and if you are a left-hand winder, the port plane should have the greater incidence. The fin should be true and central.

If you have complied with these suggestions your model is now ready for a test flight. Don't take it out on a windy day, be patient until it is quite calm, when you can observe the behaviour of the machine without the disturbing influence of wind effects. Choose a large open space, go well to the windward side, look about for a smooth patch from which to let the model run and rise by itself, as you are now going to teach it to fly.

Don't, for heaven's sake, see if it will glide, as if it is anything like right it will, but this is no guide to its flying trim, and it is certain to

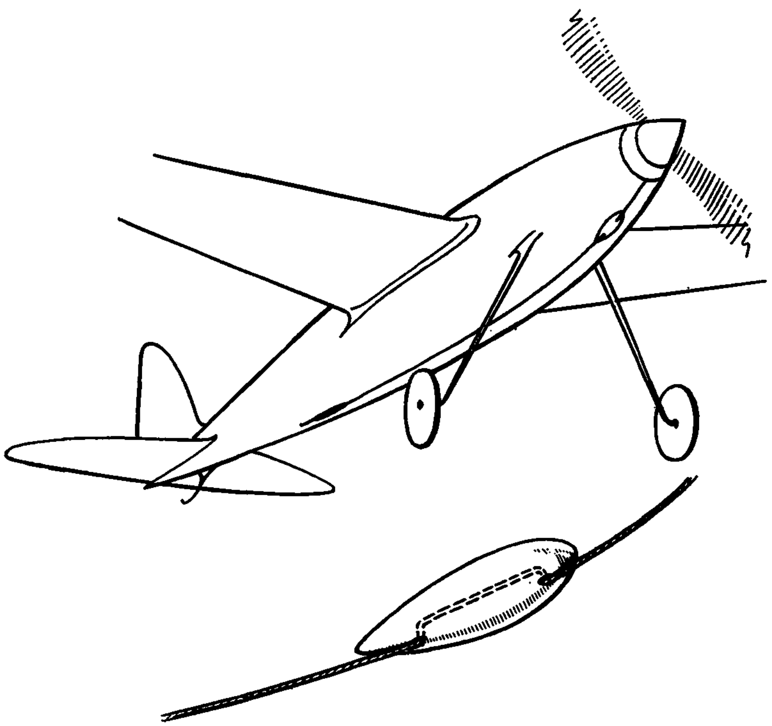


Fig. 9. Trimming weight on tensioned line.

break the under-carriage, and also to do other injurious things to the model if, by any chance, it is not as well rigged as you imagine it to be. The next thing to do is to move the trimming weight (which should weigh about a quarter of an ounce), as far forward as it will go.

Put about 100 turns into the motor, place the model on the ground head, into the wind, release the propeller and push it gently forward, when it should taxi along the ground with its tail up, and may do a short hop or two.

It should run in a straight line, or, at any rate, it should not swing violently round. If it does, you can depend on it that it is not really true.

So look for faults, from a sticking wheel to twisted fin, badly set-up planes, or thrust line set across, as well as down. Having located any faults that are likely to be causing the trouble, cure them before trying again.

Next time do exactly as before, with the same number of turns. Let us say, the model now runs straight, with its tail up and does one or two short hops, but no prolonged flight.

This means that it is nose-heavy, and needs the trimming weight moved back about 1 in. at a time after each attempted flight, until the model takes off and flies 20 or 30 yards.

In the event of the model taking off on the first or second attempts with the trimming weight fully forward, this suggests that the model is tail-heavy, and if given a few more turns would have climbed very steeply and, perhaps, stalled, so be very careful how much you increase the number of turns if it rises on the first flight.

It may be that you can cure this trouble by setting the tail-plane at less negative incidence, or by increasing the weight of the trimming weight, or by decreasing the main plane incidence; this, of course, is a major operation, so, perhaps, only a little more down thrust is necessary, or a combination of elevator setting, trimming weight increase and down thrust will do the trick. Should the model have behaved well, all you need do is to increase the number of turns a bit more after each flight. Should it still continue to behave well, set the nose-block round so that the thrust line points down, and to the right, and try again. This flight may be the quickest take-off you have had so far, and should the model tend to rise and fall during flight, or come near to stalling, it will be necessary to turn the nose-block back a bit, thus decreasing the side thrust and increasing the down thrust. Now try again, when the model should be better, but you may now find it necessary to move the trimming weight forward a bit to counteract the slight loss of down thrust.

These last two flights should have shown a tendency to turn to the right, and this may now be slightly augmented with the most minute rudder tab setting to assist this right-hand turn.

The model by this time should be flying well with about 300 to 400 turns in the motor ; it should climb up sufficiently high to glide when the motor has run out, and if all the settings are correct, the glide should be flat, and continuously turning to the right.

When this stage is reached, more and more power may be applied, and great care taken to observe just how the model behaves on each flight, and any tendency to stall or turn too quickly should instantly be adjusted for, and this process gradually continued until full power is reached, when all the settings should be carefully marked so that you know where to start from on another occasion.

The model can now be hand-launched on quarter or half power, until you are well used to it, and then gradually increase the power until you can hand-launch it on full power.

You will find that the model flies fast and low for a short time until it has attained an excess of speed, when it will put its nose up and climb for about 300 to 400 ft., or more if it is a very good one.

When nearing the end of the motor run it should be flying very slowly, with its nose well up, and during the last 10 to 15 sec. of the motor run its nose will, or rather, should, gradually fall, and the machine go into a glide, turning all the while to the right.

Now for the very best results, this glide should have the slightest rise and fall in it, not so much that a noticeable stall can be seen, but just a gentle undulating flight; this is only to be obtained with great care, for if you over-elevate just a little too much you may have a stall under power, which is dangerous.

(To be continued)

Correct winding technique is essential if maximum performance is to be obtained. Stretch winding is an important feature in obtaining maximum results from your rubber motor, which should be stretched to three times its normal length before winding on any turns, gradually working back towards the machine after half the maximum permissible turns have been applied. In this illustration that veteran model exponent, R. F. L. Gosling, is applying the last few turns at a rally.

THE SECOND NORTHERN RALLY BAILDON MOOR

Photos by D. R. Hughes

The site of the hillside soaring at Baildon Moor, giving a good impression of the terrain with competitors queueing up for their flights.

Below : W/O Booth, with his nicely-constructed petrol model, prepares to make some test flights.

Centre left : "She's off"—a nice clean launch by Al. Molyneux, of Wallasey.
Above : W/O Booth's sailplane well away in the slope-soaring contest.
Right : R. F. L. Gosling, with his "Senior Gull," and B. V. Haisman, with his sailplane, indulge in a little formation flying in the slope-soaring event, and demonstrate Liverpool teamwork.

POWER COMPETITION FLYING

By
C. E. BOWDEN

I NOTICED that there were more cases of weak mixture than rich, with competitors wildly swinging away against valuable time and becoming more and more agitated. There was no hope of a start with no petrol to fire and their labour was obviously in vain.

It should be remembered that some engines like being doped with a few drops (find out the exact amount by practice), whilst others start up better by sucking in with a choked induction pipe and the correct number of smart swings, also found by practice, *but do remember to keep that needle valve opened at the proper running position and see that it is cleaned out before a competition*!

I have found that C.I. engines, or diesels to use the more popular term, like plenty of fuel to start. They are not as critical to rich mixture as petrol engines. Good diesels are very easy starters and showed up well at the competition we are discussing, except in one case, where the tank was empty or about empty due to the agitation of the entrant, who also forgot to bring his spare bottle of fuel! These things sound so stupid—actually they are so easy to do, and that is why I emphasise the necessity to make a drill of one's movements. After all is said and done, full sized racing car firms always organise their pit teams to the minutest details of a drill.

So simple is the diesel without its booster accumulator, its spare batteries, its plugs and spanners, etc., that there is a tendency to forget to take anything. All it requires is a bottle of carefully filtered and *well corked* fuel and a suitable filling funnel, and one must not fill the tank until just prior to the start or the ether in the fuel will evaporate.

(3) Time Switches

For competition work a really reliable clock type switch is most necessary. Far too many models flew under or over the generous time allowance given which had a tolerance between 40 and 60 secs. Very light models, of course, cannot afford the weight of a clock mechanism, and have to have a dash-pot timer and so suffer from inexact time of motor run. An alternative is a metered fuel tank which has the advantage of light weight and the model cannot fly away due to a sticking timer.

(4) Cowling and Position of Controls

One of the main reasons for bad starting and poor control was due to (*a*) awkwardly placed engine controls, and (*b*) cowlings that interfered with controls and easy access for choking of the induction pipe. It is essential where a quick start is required for competition work to locate the engine on its mounting so that all controls are readily accessible and so that the end of the induction pipe is easily covered by a finger to choke and half choke if necessary when the engine is warming up. I noticed one model take off well on its first flight but fail on its second due to lack of engine revolutions. I found that a bulkhead placed very close to the induction pipe opening had come forward and was partially masking the orifice. It is advisable to cut away the end of the induction pipe at an angle on engines fitted with extended pipes to the rear. (See sketch Fig. 1.) The pipe cannot then be restricted except by a finger when it is desired to choke for a start or for warming up.

(5) Swinging During the Take-off

It was the exception rather than the rule to see models take off straight. The two Dutch competitors made really clean straight take-offs that were a joy to behold. Competition models require a long fuselage with sufficient leverage fin area to prevent swinging whilst the model is gaining speed before the mainplane becomes airborne.

The engine should have the correct amount of offset to its thrust to absorb the turning effort of the torque, and the undercarriage must be set square and true, and also in the correct position. Plenty of revs. from the engine are required for the take off, and the propeller *must be a low pitch one* to get the model moving without excessive torque reaction. A small high revving low pitch propeller is the answer, allied to a long fuselage with adequate weather cocking properties. Too many petrol models are fitted with short fuselages. Competitors in many cases failed to point their models slightly across wind to absorb the initial torque. A number actually headed their models the wrong way so that the wind accentuated the desire to turn. Many of the turns were awe-inspiring and some broke props. by hitting the edge of the take-off board, thus being forced to retire as no spares were allowed to be fitted. This rule was introduced with the object of penalising people who could not control their models because the whole idea of the competition is to improve model petrol flying.

Just one word on the illegal push start. Do not ever " follow through " with your hand in your eagerness to see the model off. You may not actually push or touch the model, but the judges *cannot be sure* and naturally have to disqualify you for pushing. It is just as simple to open your hand and release the model, taking the hand away upwards or to the rear. There is then *no doubt* in anyone's mind. There is so much tendency to push during practice flying that one must control this tendency by competition practice starts.

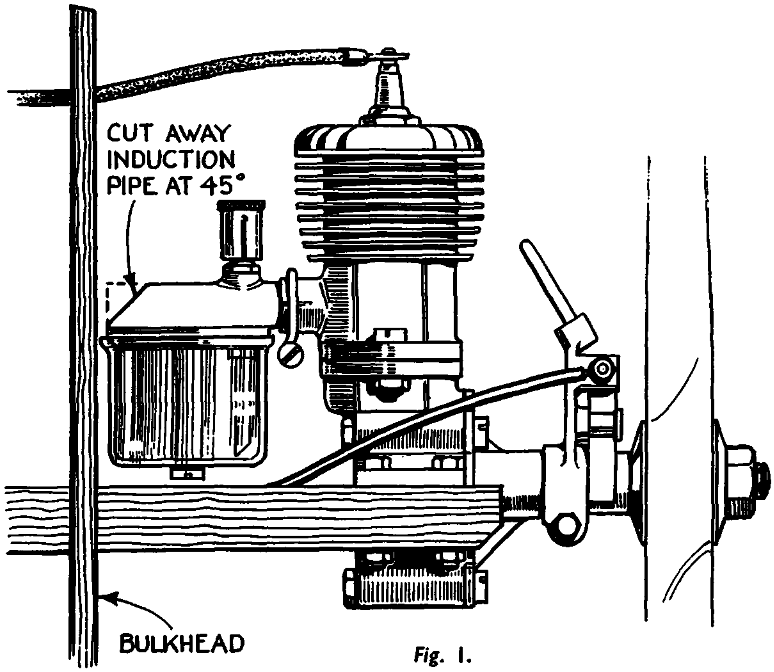


Fig. 1.

Induction pipes which are fitted with their intake opening close to a bulkhead should always be cut-away at an angle of 45 deg. to prevent choking, or restriction of the air supply, if movement between the engine and bulkhead should take place. It should also be done to facilitate partial choking of the intake with the finger for starting up.

An example of exemplary starting technique is to be found in the photograph at the bottom of page 230 of the September issue showing Bob Copland just releasing his machine—no shadow of doubt about a clean release here, and it is worth a few moments' study.

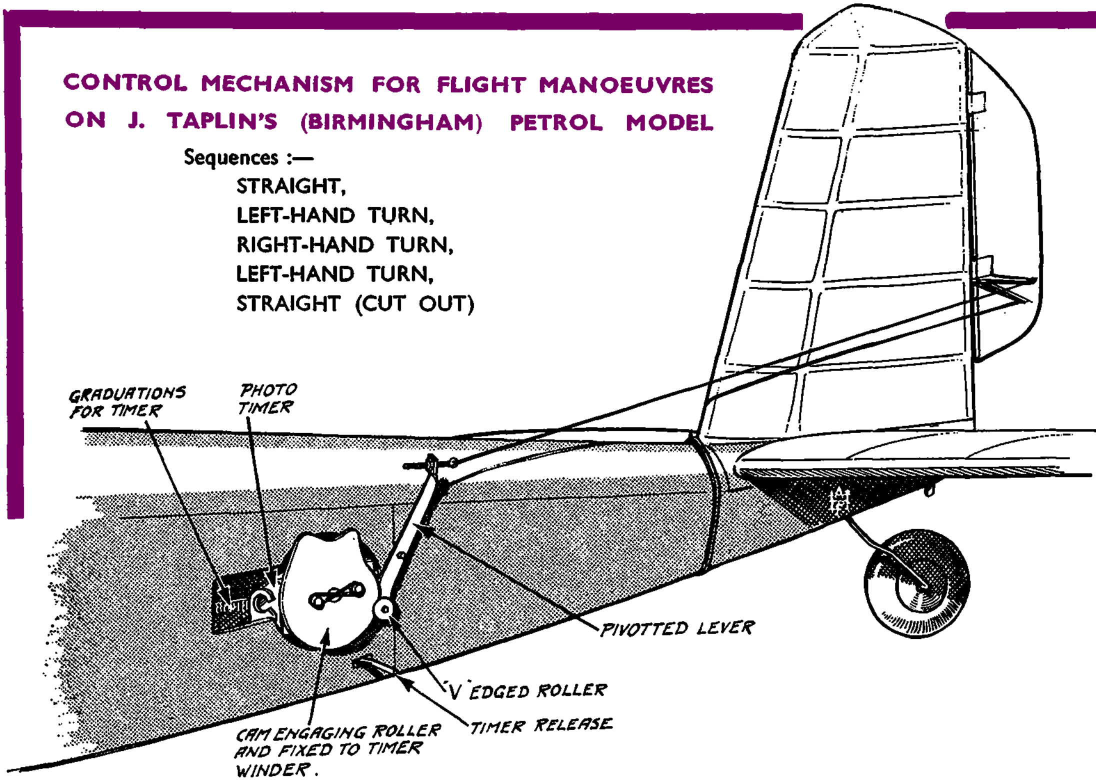
If your machine is in correct trim and your engine running properly, there should be no need whatever to give your model a helping hand when taking off, and it is an extremely bad habit to get into, as you are almost sure to indulge in this habit unconsciously during contests and receive disqualification at the hands of the judges in consequence.

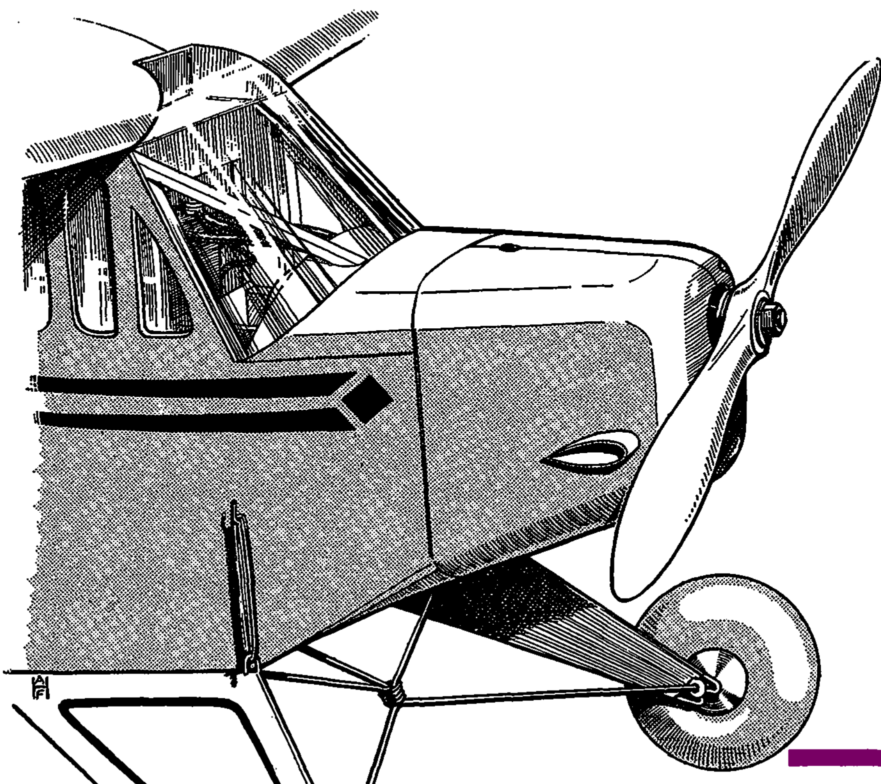
(To be continued)

CONTROL MECHANISM FOR FLIGHT MANOEUVRES ON J. TAPLIN'S (BIRMINGHAM) PETROL MODEL

Sequences :—

STRAIGHT,
LEFT-HAND TURN,
RIGHT-HAND TURN,
LEFT-HAND TURN,
STRAIGHT (CUT OUT)





THE NEAT AND WELL-COWELLED NOSE OF LESLIE PRIBYL'S PETROL MODEL

(BUSHY PARK CLUB).

Illustrations by A. F. HOULBERG

LIGHTWEIGHT DURATION MODEL

BY J. P. BUCKERIDGE

THIS model was originally designed for an attempt on the "Forces Trophy," but army duties prevented the designer from completing it. It was, however, built by another club member, who has obtained average flights of 3 min. 50 sec. from it, and it can be recommended, to those who favour the lightweight type of model, as a reliable machine which is simple to construct and economical in material.

Fuselage

The "Warren" girder construction provides considerable strength and, above all, absence of distortion in the vertical plane if it is properly constructed, thus ensuring reliability of performance.

It is essential to make sure that the "Warren" girder spacers are a good fit between the longerons, and accurately mitred to each other at their apexes. The "double gluing" method must be used on all joints, the single gluing method being unsatisfactory.

When building up the two sides special care must be taken to see that they are both exactly alike, as they cannot be sprung on final assembly to correct errors, in the way the usual open-girder construction can. Care in making the two sides accurately and alike will be amply repaid on the flying field.

When the two sides have been made, and the cement is thoroughly set, the fuselage can be completed by inserting the horizontal spacers, starting with the centre ones and working outwards.

When the fuselage box structure is complete a $\frac{1}{16}$-in. sheet balsa platform, 1 in. wide is cemented at the tail end of top longerons, to provide a suitable attachment for the tail and fin assembly.

The wing mount consists of two $\frac{1}{16}$-in. round bamboo struts, $6\frac{1}{4}$ in. long, attached to the top of piano-wire struts, the front being 18 s.w.g., and the rear 20 s.w.g. The piano-wire struts should be both glued and bound to the longerons where shown.

The tail skid, or lower fin, is built up from two sheets of 1/32-in. balsa glued round their outer shaped edges, and separated along their upper straight edge to give a streamline section and a sufficiently wide base for efficient attachment to the fuselage.

The undercarriage is also permanently attached to the fuselage and consists of a single strut of 18 s.w.g. piano wire, bent at its upper end to follow along half the horizontal spacer, and approximately $\frac{3}{4}$ in. along the fuselage longerons. It should be bound and cemented to both the spacer and the longeron.

The Mainplane

The wing is of straightforward design and should present no difficulty in construction, particularly if a dihedral board is used for its final assembly.

The rib section is the designer's own J.P.5, and all the ribs are cut from $\frac{1}{16}$-in. balsa sheet.

Note that the centre of the wing is reinforced with 1/32-in. balsa sheet on the underside only.

The Tailplane Assembly

The tailplane is also of straightforward design, all ribs being cut from $\frac{1}{8}$-in. × $\frac{1}{16}$-in. balsa strip. There is no camber except the slight amount given by bevelling the leading and trailing edges on their upper sides.

The fin is cut from 3/32-in. sheet balsa to the contour shown and permanently cemented to the centre of the tailplane. The tailplane assembly is attached to the fuselage platforms by rubber bands embracing the two.

The two-bladed folding propeller is made from two balsa blocks measuring 6.3 in. × 2 in. × $1\frac{1}{2}$ in., which are first cut to the straight outline indicated. The working faces are then carved from edge to edge on these blocks and finished before cutting them to the curved contour. The back face (or forward face on the aircraft) can then be finished to an aerofoil section and the blocks accurately balanced.

The hub is formed from a piece of hard balsa, $1\frac{3}{4}$ in. × $\frac{1}{2}$ in. × $1\frac{3}{8}$ in., faced on three sides with ply. Note that the sides are faced with 1-mm. ply, but that the forward face has $\frac{1}{16}$-in. ply reinforcing. The propeller blades are hinged to the ply facings on $\frac{1}{8}$-in. dia. bamboo dowels and an orthodox tensioner is employed. A ply washer is cemented to the rear face of the hub to take the pressure of the rubber motor when wound.

The details of construction and assembly are clearly shown in the sketch on the drawing.

LIGHTWEIGHT DURATION MODEL

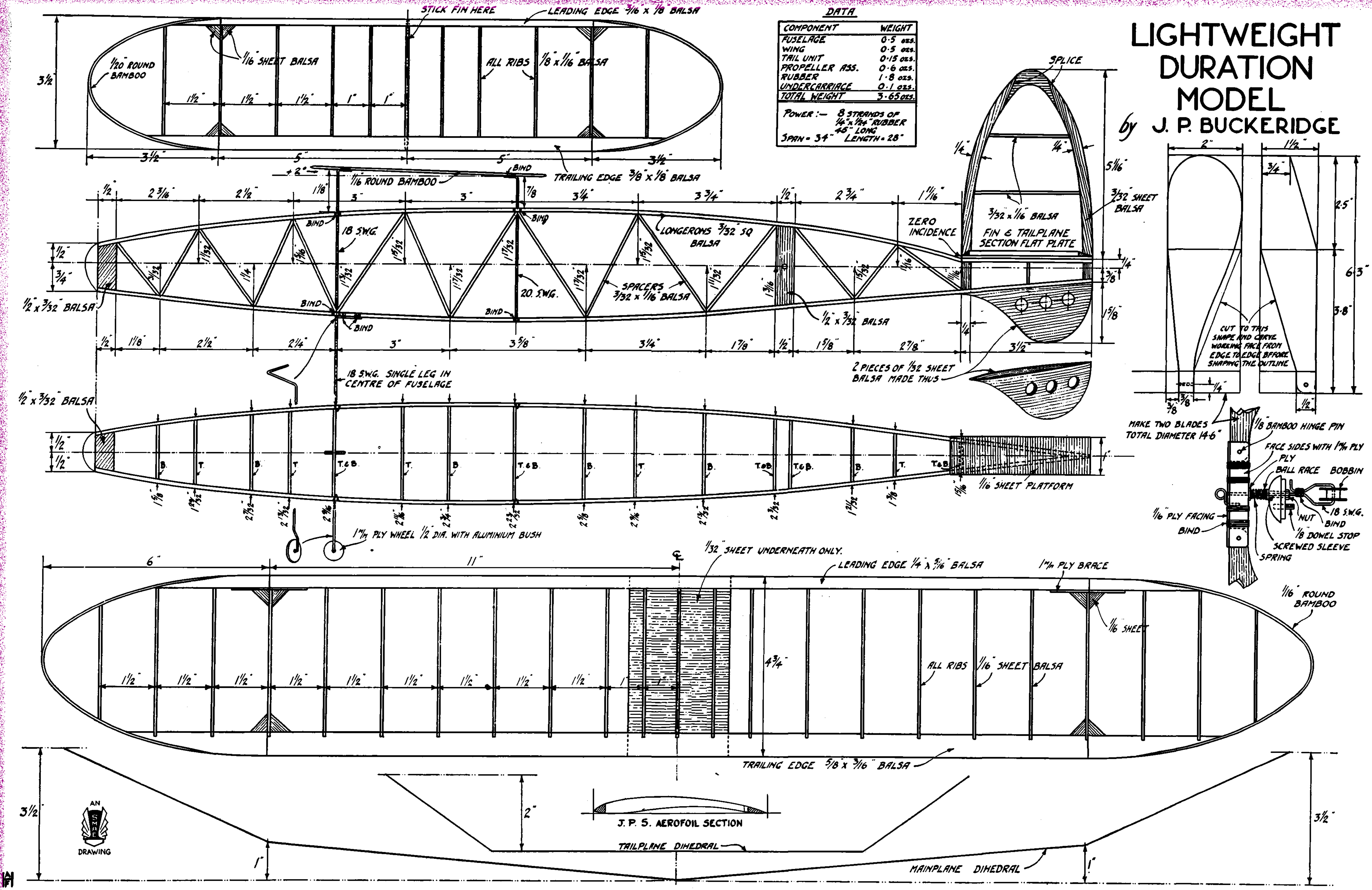
by J. P. BUCKERIDGE

DATA

COMPONENT	WEIGHT
FUSELAGE	0·5 ozs.
WING	0·5 ozs.
TAIL UNIT	0·15 ozs.
PROPELLER ASS.	0·6 ozs.
RUBBER	1·8 ozs.
UNDERCARRIAGE	0·1 ozs.
TOTAL WEIGHT	3·65 ozs.

POWER :— 8 STRANDS OF 1/4" x 1/24" RUBBER 45" LONG

SPAN = 34" LENGTH = 28"



ORIGINAL DESIGNING

by
Gordon Allen

TAIL surfaces comprise fin and rudder, both of which require great care in aerodynamic and structural design.

The fin is mainly responsible for the directional stability of a model and should, roughly, have an area equal to approximately 13 per cent. of the total wing area, when the tail moment arm of the model is equal to 3/5th (0.6) of the overall length of the model (see Fig. 1).

If a model is designed with a larger moment arm it means that the pressure on the surfaces of the fin when the model yaws or turns is acting at a greater distance from the centre of gravity (a point on or near to the vertical line drawn 1/3rd O/L. from P.T.) and, due to a consequent bigger leverage will have a more pronounced effect. In this case the fin area can be less than 13 per cent. A tail moment arm *smaller* than 0.6 will require a *larger* fin area. For the sake of simplicity a sound rule is to change the fin area (to more or less than 13 per cent. of wing area) by 1 per cent. for every one inch of increase or decrease in the moment arm (above or below 0.6 O/L.).

Let us see how this affects our "test case" model.

As we are dealing with a model possessing a wing span of 30 in. and an even chord of 4 in., the wing area, *considering tip losses*, will be 110 sq. in.

The point to decide now is whether we can take 13 per cent. of this area for the fin or whether we will have to increase or decrease it.

From the foregoing we know that this depends upon the tail moment arm of the model. This can be found by reference to Fig. 1. From the vertical line, drawn through

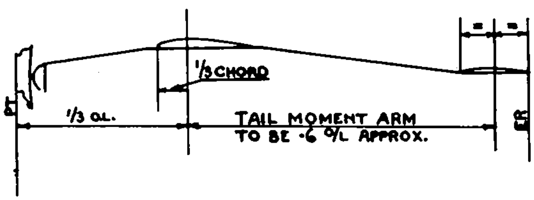


Fig. 1.

a point 1/3rd of O/L. from P.T. to E.R. (extreme rear), is obviously 2/3rd of O/L. As the overall length is 22½ in. this results in an answer of 15 in. From this we have to subtract *half* the chord of the tailplane (chord previously arranged to be 3 in.), which gives us 13½ in. for the length of the tail moment arm. This expressed as a fraction of O/L. results in :

$$\frac{13\frac{1}{2}}{22\frac{1}{2}} = \frac{27}{2} \times \frac{2}{45} = \frac{3}{5} = 0.6$$

Thus we see that our moment arm conforms exactly to requirements and our fin area can be 13 per cent. of 110 sq. in., which equals :

$$\frac{13}{100} \times 110 = 14.3 \text{ sq. in.}$$

Had the moment arm been, say 14½ in., then the area of the fin would have to be 13 per cent. – 1 per cent. = 12 per cent. of 110 sq. in.

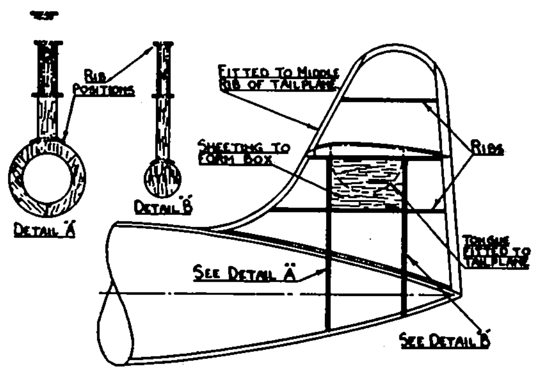


Fig. 2.

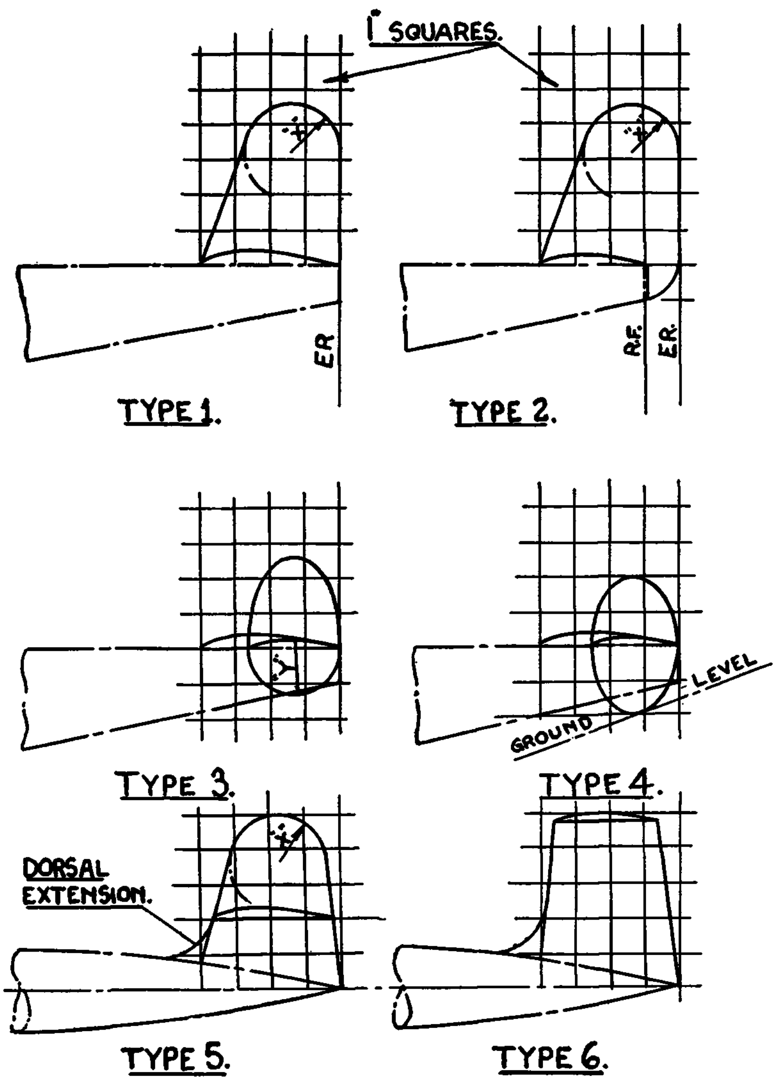
Note the reduced area because of a longer moment arm. We have spent this time considering the tail moment arm because this factor is vital in the design of efficient tail surfaces, especially with respect to tailplanes.

There are various methods whereby the fin area can be distributed at the rear of the fuselage, resulting in various shapes and layouts. The sketches indicate some of the main types.

Type 1 is the most simple form whereby the fin is positioned directly above the middle of the tailplane. The trailing edge can, therefore, be coincidental with the vertical line through E.R. or, if preferred, can start on the line through E.R. and slope slightly forward to meet the curved tip. The latter should be, for ease of layout, a true radius ("X"). The leading edge of the fin is made tangential to this, and meets the leading edge of the tailplane.

Provided that the overall height of the fin is no less than the maximum chord, the actual aspect ratio of the unit is not of vital importance.

The easiest way to check the correct area of a fin is to place a piece of squared paper (one inch squares) beneath the paper upon which the model is being drawn or, alternatively, to draw the unit on the squared paper itself. All *full* squares, enclosed by the fin shape, together with those whose area is *more than half* a full square are counted. The sum should equal the required fin area. All portions *less* than *half* a full square are neglected. This gives a very close approximation. For a true result the fin is divided into a number of sections and the area of each calculated geometrically.



Type 2 is a similar arrangement which can be used to advantage in conjunction with a small chord tailplane. In this case the trailing edge of the fin is located aft of a vertical line drawn through the sternpost of the fuselage (marked "R.F.").

Whereas, in type 1, the extreme rear of the model (E.R.) was represented by a line drawn through the sternpost of the fuselage, E.R. is now represented by the fin trailing edge. This must be borne in mind when calculating the tail moment arm and the overall length of the machine. The extension can be a true radius described by compasses and should blend with the underside of the fuselage and the trailing edge of the fin.

Fin types 1 and 2 can be made independent of the tailplane (i.e. detachable), but the base ribs in each case must be constructed to fit snugly on the cambered upper surface of the tailplane.

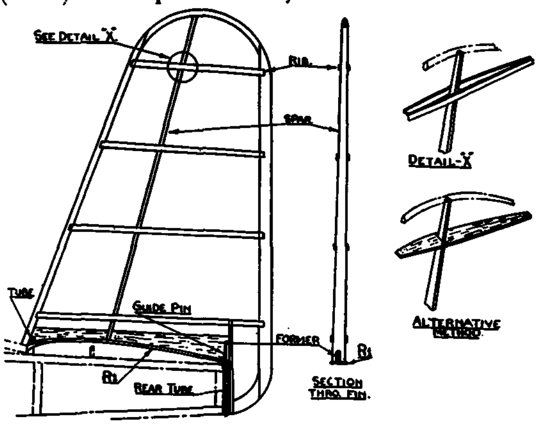


Fig. 3.

(*Continued on page 280*)

W. A. DEAN on

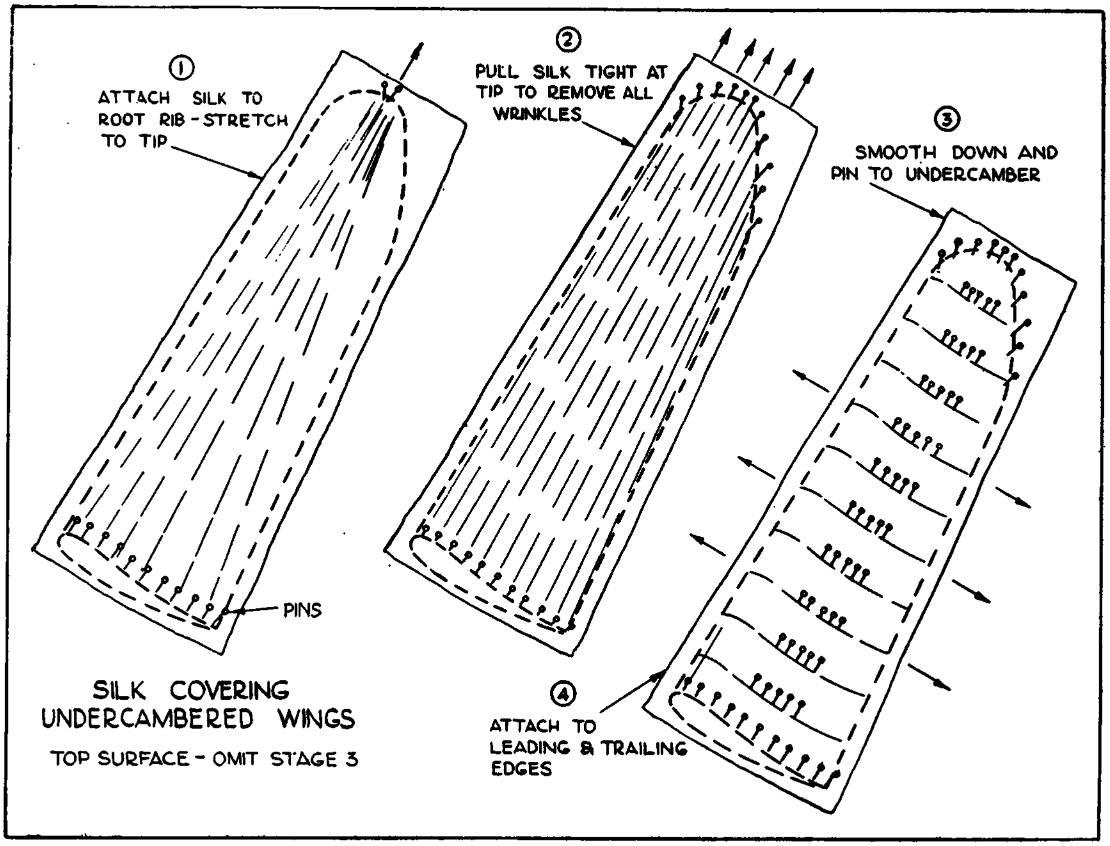
Silk Covering

ALTHOUGH favourable results with Nylon, as a covering for large radio-controlled models, have been reported from America recently—lightweight silk is still the ideal material for the average size petrol model. Model silk disappeared from the shops long ago, yet most of the petrol models we see nowadays still appear to be silk covered. If you are lucky enough to have a yard or two stored away, the following notes will enable you to avoid wastage when you reach the covering stage on that new petrol job.

First of all, you need a tub of "Grip-Fix" (or similar photographic paste), about 200 ordinary household pins and a bowl of clean water. At this point it should be noted that undercambered wings *must* be cap-stripped to ensure that the covering will not pull away from the ribs when doped.

However complicated the shape, only one piece of silk will be needed for each surface, so lay the component on top of the silk and cut out a panel, allowing ¾ in. to 1 in. overlap all round. Remember that the undersurface of the wings and tailplanes should always be covered first and that the grain must run along the longest length of the part to be covered.

Commence operations by dipping the silk in the water and then squeezing out the surplus. In the case of wings, smear paste over the root rib (or centre-section sheeting), attach the silk and hold in place with pins spaced at ½ in. to ¾ in. apart. Allow to set for a few minutes, then apply paste to the undercambered portion of each rib. Apply plenty of paste to the tip, then pull the silk taut towards it and fold the surplus over the end—using a couple of pins to anchor it really firmly. Next proceed to pull the silk



taut at the rest of the tip, until no hollows are left anywhere. A few small ripples may still be apparent, but these should disappear when the leading and trailing edges are pasted down. Now smooth down the silk on to the under-cambered parts of the ribs and keep in place with pins spaced 1 in. apart. Apply paste to the leading and trailing edges and gently pull out the silk until any remaining small wrinkles entirely disappear.

Be prepared to use all your pins on one panel, if you desire a perfect covering. To avoid covering sag between wing and tailplane ribs, 80 per cent. of the tension applied should be spanwise, the silk being stretched only very lightly chordwise.

When all the under flying surfaces have been covered, trim the surplus silk off to leave ⅛ in. all round and paste over the edges. The upper surfaces of wings are tackled similarly, except that in this case it is unnecessary to apply paste to the intermediate ribs. The surplus silk should be trimmed off flush with the outline by means of a sharp razor-blade. Stray threads can be doped down or carefully cut away. Even a polyhedral wing can be covered in four pieces, but you'll find it easier to handle eight pieces (covering the inner panels first). Tailplanes and fins are covered in two pieces—the fin being attached to the tailplane after both components are covered and doped.

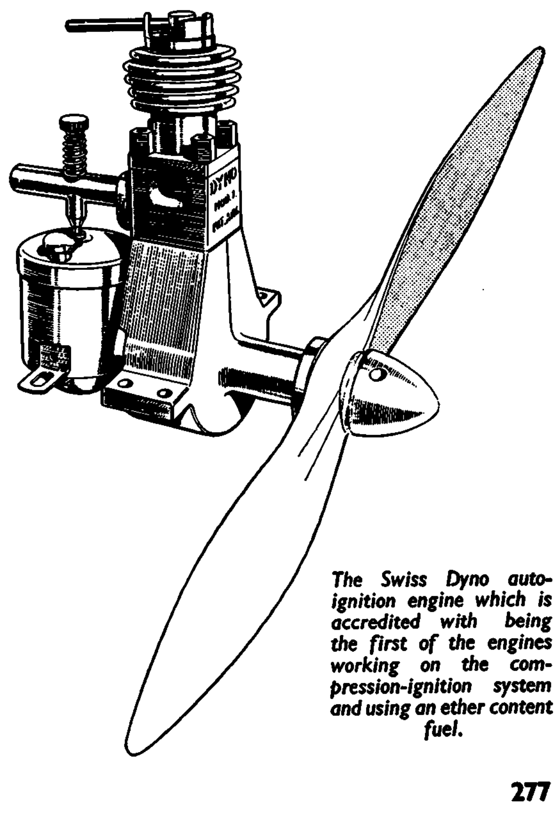
Slabsided fuselages are covered in four pieces, starting from the nose and stretching to the tail—using plenty of pins, as with the wing. Trim the overlap to ⅛ in. and paste over to give a clean edge. Streamlined and circular fuselages can be tackled with two pieces of silk—again working from nose to tail. The edges should overlap on the centre line in the top view.

The beauty of covering with silk is that if you get into difficulties at any stage you can always pull away part of the silk, redampen it, and have another try at attaching it. As long as you keep the silk really wet—there is hardly any limit to the complex curves that can be tackled. The explanation for this is simple. The wet threads slide over each other as tension is applied and the shape of the material alters to fit the component exactly. Some modellers prefer thick dope for adhesive, but this naturally causes blushes—which is just too bad unless you intend to colour dope afterwards. "Grip-Fix" is better, because moisture has the effect of keeping it sticky for longer periods. So with wet silk there's really no need to rush to get it attached before the paste dries up. Wet silk will dry out in ten to fifteen minutes, so be prepared to soak it several times during the course of covering. Fairings at tailplane and fin junctions are simple with silk. Always continue covering over planked and solid parts, as this greatly increases the crash-resisting properties.

To avoid blushing, allow the silk to dry out thoroughly and carry out doping operations in a well-ventilated, warm, dry room. Sometimes inferior dope will blush even when applied under ideal conditions. This can be remedied by adding 25 per cent. of thinners to the dope, which will then remove the blush marks as subsequent coats are brushed on.

Pin down all flying surfaces after doping, to avoid any warps developing. Three to four coats of clear dope are sufficient for wings and two or three coats for tail surfaces. We recommend that you always colour dope the fuselage or, at least, that part of it in the vicinity of the engine. Apply light colours first if a two-colour scheme is used. Start with a base of two coats of clear dope, then give about three of coloured, sanding down in between with wet carborundum paper. Apply a final coat of coloured dope and finish off by applying metal polish and rubbing down with a duster.

If you decide to paint numerals, striping or any other decorations on your model, use diluted dope in a ruling pen.



The Swiss Dyno auto-ignition engine which is accredited with being the first of the engines working on the compression-ignition system and using an ether content fuel.

R. H. WARRING

Tests on RUBBER MOTORS

AT all times, but particularly at the present time, it is difficult to have full confidence in a rubber motor until that motor has been thoroughly torque-tested—and even then, it can let you down! The first experiments detailed this month were made on different skeins of the same brand of rubber. That is to say, I was lucky enough to find a shop with plenty of rubber in stock (not in this country), a whole sackful of ¼ strip, in fact, it was all of the same brand and identical in size.

Figure 1 gives the results of testing specimens from two different skeins. In all outward appearance these skeins appeared similar—and yet one specimen is quite useless whilst the other is up to, or slightly better than, present day average values. Hence the advisability, for serious competition work, of testing every new batch of rubber before use.

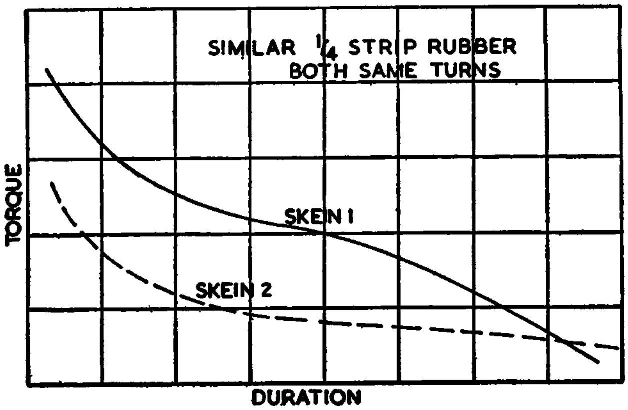


Fig. I.

This need not be an expensive business. All my sample tests are made with a 10 in. loop, broken in, torque tested and finally wound to destruction. The results obtained are invaluable but take quite a bit of time. A group of modellers, however, or a club, could well get together over this and thus reduce the time factor.

The more you experiment with rubber, the more you begin to realise how difficult it is to get consistent results; for not only do different skeins of the same brand sometimes have different power curves, but torque output may vary throughout the length of a single skein.

Fig. 2 illustrates the results of tests on three 10 in. loop specimens taken from each end and the middle of a 35 yard skein. One end specimen gives a fair curve, although with poor output for the cross-section of rubber concerned. But the other end specimen gives a greatly inferior curve, whilst the middle specimen is worse—roughly only half the power output of the best end.

This fault, however, should not be common and is due to imperfect curing, where, owing to the thickness of the rubber, one end only has been completely treated. This is borne out by the fact that the two poorer specimens fatigued more readily than the best specimen.

This particular rubber, incidentally, was purely an experimental batch and it is doubtful if similar differences will be found in the commercial product.

Thirdly, we have a rather obvious experiment—but something I found to my cost in the Weston Cup this year by using a motor *before* I had torque tested it, or a specimen length of it. After two flights in this contest of around the two minute mark my Wakefield was thoroughly wet through—wind and rain predominated throughout that day—so I thought it best to change the motor for the last flight.

This I did, using a motor of identical weight, same cross section and same number of strands, but different rubber. Winding up gave the clue—the motor appeared to lack " guts "—

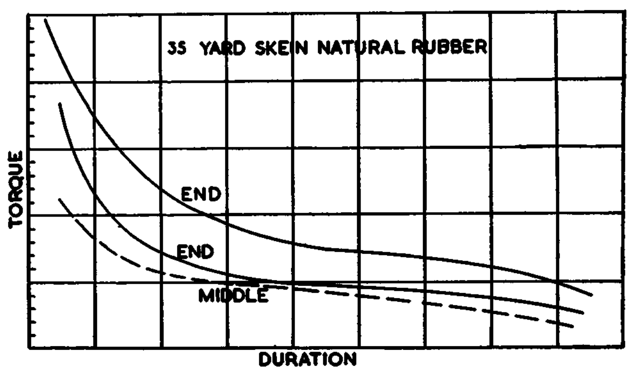


Fig. 2.

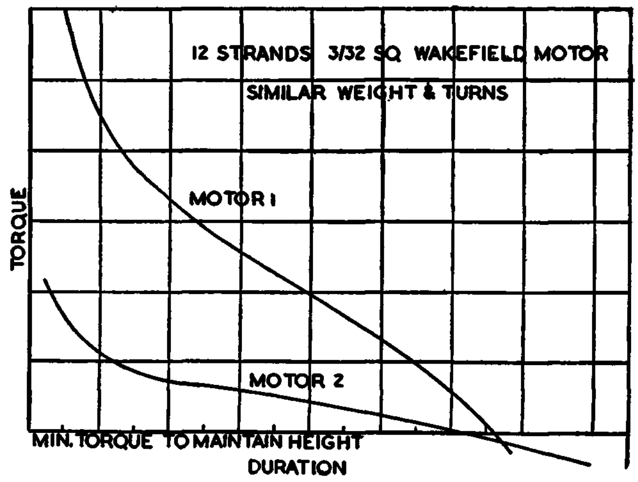


Fig. 3.

but it was near the closing time for the comp. and I chanced it.

The actual flight result was most conclusive—maximum altitude about 30 feet and duration a similar number of seconds! Confirming this on test some days after, the results were as in Fig. 3. Obviously, then, one can never rely on rubber of similar cross section having similar performance!

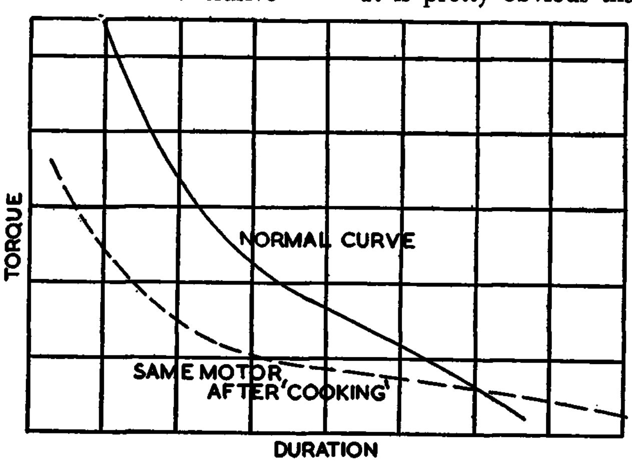


Fig 4.

Not all this is the fault of the rubber manufacturers. At the present time they have difficulties enough in getting permission to make rubber of *any* sort for the model aircraft trade. A lot of it is still in the experimental stage, which is one of the reasons why different brands give such widely differing results. In time some standardisation will be found and quality will be more reliable. The torque tester will then come into its own for finding the very best rubber for competition work—or the type of rubber best suited to any particular model. At the moment it is being used to find what rubber can be used at all to keep a model airborne.

But even when a motor has been torque tested and proven it does not necessarily follow that it will continue to give that same torque indefinitely. It is a well-known fact that rubber performance tends to drop off with extreme heat. The effect of extreme cold has yet to be investigated fully.

The tests of Fig. 4 were made on the same specimen of rubber and then after heating under similar conditions to those experienced by a model on the flying field without protection on a hot day. It was actually rested in a black tissue covered " box " and placed in strong sunlight for 40 minutes. As a result of such " cooking " it lost nearly one-half of its power. Close examination also showed signs of breaking up. On a multi-strand motor under similar conditions one, or more, strands would probably have broken on winding, or if attempting near-capacity turns, probably the whole motor would have broken.

It is pretty obvious that one cannot be too careful with a rubber motor, particularly on the flying field. The model should always be shaded when not actually flying. But in the Gamage Cup this year I came up against conditions of " cooking " about which I could do little. I made my three flights one after the other—that is, flew off again as soon as I had retrieved the model

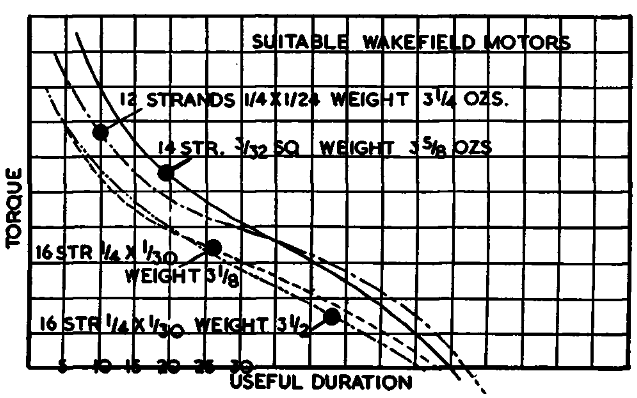


Fig. 5.

and returned to the take-off boards. Total flying time of the first two flights was nearly forty minutes—or well over an hour's exposure to sun, all told. This had its effect on the third flight when the rubber was not delivering the same power and the model did not have the same rate of climb.

One of the most interesting methods of direct comparison of rubber is to correct the torque curves obtained to a standard cross section, when a true picture of relative merit is obtained. For complete comparison the *density* of the rubber should be known, so that torque output per *weight* of rubber can be found. This is an all important factor, for if two motors are very similar in all characteristics with the exception that the weight of an equivalent motor of one is less than that of the other, then the lighter motor is the one to use.

Actually, density does not vary so much as cross section. A nominal $\frac{1}{4} \times 1/30$ may cover anything between $5/32 \times 1/24$ and $3/32 \times 1/48$ *actual* section. Hence torque curves corrected to a standard cross section are of great interest. The validity of directly proportioning cross section and torque has yet to be proven, however, and I am now carrying out experiments in this field which will be described in the third part of this series.

To conclude this second part, Fig. 5 shows how an effort to match up different brands of rubber to give Wakefield motors suitable for competition flying has resulted in a considerable difference in motor *weight*. The difference is, in some cases, sufficiently great to affect the trim of the model. Nevertheless, this is really the *only* way to make up a motor for competition flying.

ORIGINAL DESIGNING

(*Continued from page 275*)

Type 3. This represents a layout for twin fins, each unit being carried at the tips of the tailplane. Each fin must be *half* the area required for the model when a single fin is used.

The actual shape of each unit is not of paramount importance, but the maximum chord is generally limited to the tip chord of the tailplane. Due allowance must be made for this during the design of the tailplane, in order that the ultimate shape of the fins will be in proportion. This applies particularly to tapered tailplanes where the tip chord may be so small that fins limited in width to the rib chord at this location are, of necessity, too tall and slender.

The sketch shows a suggested layout, where that part of the fin below the tailplane can be a true radius (" Y "), while that portion above the tailplane can be part of an ellipse. With this arrangement a tailskid is necessary.

Type 4 is an alternative layout for twin fins, each fin being a true ellipse. In this case, the portions of the fins below the tailplane are made sufficiently big to act as tailskids and are, therefore, reinforced accordingly.

Type 5 is an example of a tailplane mounted partway up the fin so that the former is clear of air disturbances created by the slipstream of the wing ; a sound enough practice provided equally sound structural design methods are utilised.

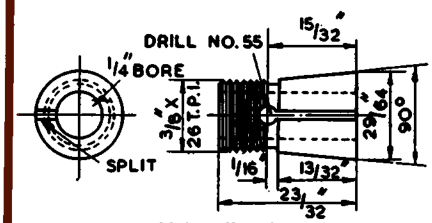
The portion of the fin below the tailplane is made in one with the fuselage tail portion, as shown in Fig. 2, a box being provided in the lower fin into which a tongue, built into the upper fin, fits. Another method of construction which is popular is to extend the top rib of the bottom fin on either side to form a platform on which rests the tailplane with the upper fin built on to it, the tailplane and upper fin being held on the platform by encircling rubber bands.

Type 6 shows a tailplane carried at the top of the fin ; a method usually associated with sailplanes.

A similar procedure is adopted when designing this arrangement. Alternatively the fin can be made detachable, provided its fitting to the fuselage is made rigid, but this usually presents considerable structural difficulty, resulting in loss of rigidity.

A *pronounced* fairing, technically called a dorsal extension and apparent on such full-sized machines as the Avro Tudors and numerous American types, is *not* calculated as effective fin area, but is effective in reducing spinning tendencies.

Fig. 3 indicates two types of fin structure and a method whereby the fin may be fitted to the machine. The latter applies particularly to fin type 2, but can be modified for use in conjunction with other types.



Hub collet detail.

Edgar T. Westbury continues on the

"ATOM MINOR" MARK III

6 c.c. Engine

MILD steel is used for the hub collet, which can also be machined all over at one setting. After facing and centre-drilling the end, it is drilled to ¼ in. reamering size, taking great care to keep the hole truly concentric, and then finished with a reamer or D-bit to a fairly tight push fit on the crankshaft. The end is then turned down to ⅜ in. diameter and screwcut to take the hub nut, which should not be a coarser thread than 24 t.p.i., as the section of metal is somewhat thin to take the tension of the nut at this point; the nearest British Standard thread is ⅜ in. × 26 t.p.i., as indicated on the drawing.

Next the taper is turned on the collet to mate with the internal taper of the hub. It is most important that this should fit the latter all along its length, and if any difficulty is encountered in machining it to the required accuracy of angle, a smooth file may be used for final fitting. Use marking colour to test the fit of the collet in the hub, and adjust the size so that there is about 1/16 in. of "draw" allowed for pulling up the collet when assembling the hub on the shaft.

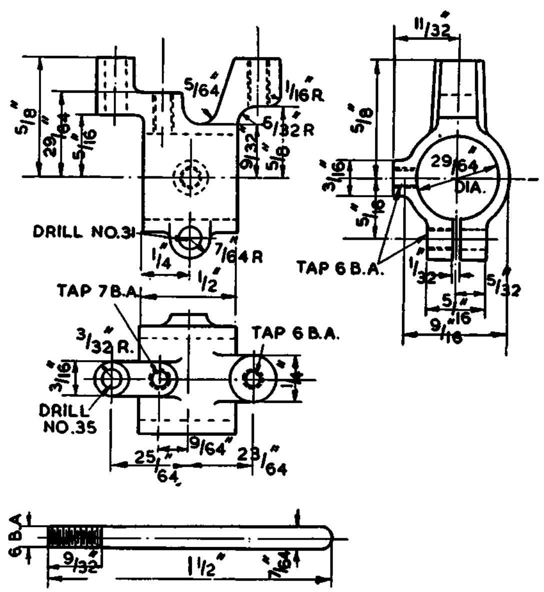
Some constructors find difficulty in obtaining a secure grip with taper fits of this kind, but the fault lies, not with the method, but with their execution of the work. There are many practical advantages in fitting the hub by friction grip, as distinct from a positive drive by a square or flat on the shaft, which is quite common in small engines, but is liable to result in shaft breakage in the result of a crash landing.

Constructors can best assure success with this method of fitting by exercising care and patience in machining, and avoiding "short cuts," such as attempting to machine internal and external tapers at one setting of the lathe slide rest. These methods may appear at first sight to be infallible, but experience soon proves the contrary, and many failures have resulted by blind reliance on them. Another point is that it is impossible to lap or "grind in" taper fittings, as a means of correcting a poor fit, though a mere touch to finish the surfaces is permissible.

The collet is shown split on one side only, but it is permissible to split both sides, and this will be found easier if equipment is limited. By drilling a hole as shown at the end of the saw-cut, the flexibility of the collet is improved. Remove all burrs, both inside and out, before assembling this component, which should not be hardened.

The bracket for the contact-breaker consists of an aluminium casting, the main machining operation on which is the boring of the centre hole and facing front and back. It can be set up in the four-jaw chuck, taking care that the circular portion of the outside runs fairly truly; the front side is then faced and centred, then drilled undersize and opened out with a boring tool to a tight push-fit over the end of the main bearing housing. To face the other end, the bracket may be mounted on a pin mandrel.

(To be continued)



Contact-breaker bracket detail.

Power Duration Contest

William Brazier, of Dublin, lent a pleasing international aspect to the meeting and demonstrated his new "Ardern" .09 engine.

LEICESTER

The first S.M.A.E. contest for power-driven models in which the placings were based on the highest duration achieved on a limited engine run, was held on the Stoughton Aerodrome, Leicester, with the kind co-operation of the Midland Area Council and the Leicester M.A.C., on September 15th, in very windy weather. Top left: A general view of the meeting in progress, with K. Tansley in the foreground, preparing his machine for a take-off, ably assisted by Mrs. Tansley. Top right: G. W. W. Harris displays style when launching his model, which is now powered by a 5 c.c. "Micron" auto-ignition engine. It has proved to be reliable and has effected a considerable improvement in the power-weight ratio of this model.

One of the most consistent performers was E. S. Bassett, of Doncaster, who is here shown getting the last ounce of power out of his new "Bunch" engine.

A WELCOME VISITOR FROM IRELAND

Mrs. Gunter, almost entirely obliterated in this photograph by Mr. Gunter in his efforts to assist, flew well to gain third place.

G. E. Dunmore, gets his engine revving well, while K. Tansley makes sure that the wind plays no tricks.

NEWS *from the* S.M.A.E. *and* CLUBS

A few members of the Bushy Park club with their gliders. Note the universal use of high aspect ratio.

COMPETITION RESULTS

THE FROG SENIOR INTERNATIONAL CUP
September 1st, 1946

		Total Points
1. A. R. Parker	North Kent	110.6
2. N. G. Marcus	Croydon	101.0
3. J. Norman	North Kent	45.0

There were three entries.

THE FROG JUNIOR CUP 1946

1.—R. S. Swalloway	400.0
2.—W. Blanchard	330.0

2 entries

THE LADY SHELLEY CUP
Held on September 8th, 1946

1. J. L. Pitcher	Croydon	299.7
2. A. H. Lee	Bristol	217.55
3. D. Piggott (Proxy)	Blackheath	204.2
4. E. J. Buxton	St. Albans	185.0
5. A. C. Brown	Croydon	149.1
6. K. Moon	Bristol	140.6

There were 19 entries. 15 Seniors, 4 Juniors.

THE SHORT CUP
Held on September 8th, 1946

1. E. J. Buxton	St. Albans	336.3
2. J. L. Pitcher	Croydon	245.0
3. P. Neate	St. Albans	190.6
4. J. Phillips	Cardiff	163.0
5. D. Creed	N. Kent	92.65
6. T. Wickens	N. Kent	92.0

9 entries. 5 Seniors, 4 Juniors.

THE WHITE CUP
Held on September 8th, 1946

1. F. N. Chiffey	N. Kent	27.275
2. D. Creed	N. Kent	22.708
3. A. D Hall	N. Kent	22.25

There were 3 entries. 2 Senior, 1 Junior.

THE PETROL DURATION CONTEST
Held at Leicester on September 16th, 1946

1. R. Monks	Birmingham	258.45
2. A. H. Taylor	Bushy Park	162.8
3. Mrs. Gunter	Bushy Park	147.5
4. T. London	Bradford	142.1
5. M. Guest	Bushy Park	134.4
6. R. Copland	Northern Heights	112.95

28 entries, all Seniors.

THE S.M.A.E. CUP
September 22nd, 1946

		Total Points
1. K. H. Lloyd	Harrow	301.0
2. E. H. Aylward	Walthamstow	296.8
3. A. W. Green	Walthamstow	284.7
4. D. W. E. Harrison	Birmingham	281.3
5. R. Galbraith	Blackheath	269.7
6. J. Hall	Croydon	252.2

81 entries: 22 juniors, 59 seniors

NORTH-EASTERN AREA RALLY

The weather made itself most unpopular at the North-Eastern Area Rally, held at Eston, on a recent Sunday in Oct., making what might have been quite a good rally into a fiasco. The Eston Club, however, made conditions much better by selling refreshments at moderate prices, and succeeded in selling out, in quite a short time, indicating that everybody was pleased with the refreshments.

Winners of the competitions were :—

Rubber—30-in. Span and Over

1. Mr. Graham	Newcastle	Agg. sec. 154
2. Mr. Marshall	Stockton	89
3. Mr. Teasdale	Newcastle	45

Rubber—Under 30-in. Span

1. Mr. Forsythe	Stockton	64
2. Mr. Martin	Eston	58
3. Mr. Mell	Eston	30.5

Open Glider

1. L. V. Brunton	Eston	82
2. Mr. Parker	Stockton	69

The times, of course, were very low, owing to fog.

The North-Eastern Area Committee wishes to thank all who rendered assistance, particularly the Eston Club and its friends who made the refreshments possible.

LONDON AREA COUNCIL
Results of the L.D.I.C.C. Cup

Second Round	*Semi-finals*	*Finalists*
Harrow / Pharos	Harrow	Streatham
Streatham / Hayes	Streatham	
Blackheath / Zombies	Zombies	Nth. Heights
Nth. Heights (Bye)	Nth. Heights	

S.M.A.E. COUNCIL MEETING

Held at Royal Aero Club on September 22nd

Mr. Houlberg, who occupied the chair, informed the meeting that negotiations with the Air Ministry for the use of certain aerodromes were progressing satisfactorily ; the Society stands to benefit considerably.

It will be recalled that a claim for a British helicopter record by Mr. D. A. Brockman, of the Zombies, was deferred to enable Mr. Harris, the Hon. Technical Secretary, to go thoroughly into the matter. Mr. Harris had prepared a precis for future guidance.

Basic Requirements.—(*a*) That only airscrews (horizontal or vertical) should revolve. In other words, there should be, if required, some means of preventing the fuselage from revolving under the influence of torque. This is, of course, an accepted design problem in full-scale practice and has been successfully overcome by divers methods.

It is not suggested that perfection can be necessarily achieved by model aircraft in this respect, thus it would be practical to provide a concession on these lines : That the fuselage does not revolve contrary to the line of flight at a rate in excess of one revolution per 5 sec. for the first 20 ft. of altitude or the first 20 sec. of the flight.

(*b*) That the model can stand on the ground in take-off attitude unaided by any means other than that provided in the structure of the machine, and that the machine is capable of rising without assistance from the ground when released by the operator.

(*c*) That the fuselage formula (L squared over 100) should be incorporated in all classes of model helicopters.

The Council, after discussing the above basic requirements, reconsidered Mr. Brockman's design, and regretted that a record could not be granted in this case.

The Hon. Competition Secretary, Mr. J. C. Smith, informed the Council that a competition entry form from the Worcester M.A.C. had been received by him on Monday, September 16th. The post mark was dated Saturday, September 14th. The form should have been received on Thursday, September 12th. The Council wishes it to be known that late entries cannot be accepted. The Council endorsed Mr. Smith's action in rejecting.

A meeting of area representatives (two from each area) will be held on November 3rd, 1946, most probably at Leeds. The agenda is :—

1. The development and organisation of areas including their constitution.
2. The basis of financial assistance to areas
3. Duties of area officers.

Areas are asked to call a meeting of the clubs in order that area delegates attending the meeting at Leeds may be fully conversant with the requirements of their areas.

Mr. Taplin has presented the Society with a cup for a controlled free flying contest. The Council discussed the proposed rules which Mr. Taplin has designed, and requested the Hon. Technical Secretary to write to Mr. Taplin in order to clarify one or two minor points.

Mr. Houlberg gave a brief resume on the *Model Engineer* Exhibition from which the Society has reaped many benefits. The Council had great pleasure in recording a vote of appreciation to Mr. Houlberg and his helpers.

Mr. Juste van Hattum had sent an invitation for four members of the S.M.A.E. to attend the Hague on October 6th, for a competition with F.A.I. gliders.

Mr. Houlberg gave a report on the recent F.A.I. Conference ; full details will be published later.

Mr. Lawton informed the Council that Mrs. Lawton is busy making S.M.A.E. armbands These may be obtained from Mr. Lawton at 10, Dalton Avenue, Whitefield, Nr. Manchester, the price being 1s. 6d. each, postage extra.

The Council desires to express the thanks of the Society to Mrs. Lawton for her continued work.

Mr. J. C. Smith, Hon. Competition Secretary, was asked to prepare the necessary forms for submission to the F.A.I. claiming a world record on behalf of Mr. Lucus of Brighton.

The Council then considered various claims for British records and had pleasure in granting the following :—

Flying Scale Record : Fokker D.8, N. G. Marcus, Croydon, 5 min. 21.75 sec.

Indoor Free Flying (*stick biplane*) : R. Rock, Streatham, 2 min. 31 sec.

Hand-launched Glider : G. D. Pickett, Bradford, 6 min. 57.5 sec.

A claim by Mr. G. D. Miles, of Kingsbury M.F.C., for a tailless glider class B record with a flight of 6 min. 37 sec. was held over.

The Council ratified the following affiliations : Brighton, Caterham, The Non Coms, The Valkyries, Ilford, Higham Ferrers, Goole, N. Croydon, Stockton, and the Essex Power Club.

This concluded the Council meeting, which finished at 5.50 p.m., having been in session almost six hours.

There are still a few S.M.A.E. Handbooks available from the Hon. Secretary, Mr. L. M. Walker, 16, Conifers Close, Kingston Road, Teddington, Middlesex, the price being 9d. each.

THE LONDON AREA COUNCIL MEETING

Held at the Trade Union Club September 7th, 1946

There was no chairman present and the meeting elected Mr. F. J. Johnson as chairman for the meeting. The minutes of the previous meeting were read and adopted.

Correspondence : A letter was read from the chairman, Mr. A. G. Bell, expressing the view that the London clubs lacked confidence in him as chairman of the L.A.C. and asking the Council to accept his resignaton.

After full discussion on this matter the Council refused to accept the resignation on these grounds. During the discussion, the fact that the Council appeared to have depleted to a bare quorum led the Council to agree to call an E.G.M. to review the position of the chairman and the Council. This would take place on October 5th at the Trade Union Club. It was also agreed that the dates of future meetings be reviewed now that a more central meeting place had been found. A letter from Mr. Parker was read giving details of the terms for the new meeting place, and a vote of thanks was accorded to Mr. Parker for his efforts in this direction.

A letter from the Pharos Club was then read, raising objection to the timing in the Harrow *v.* Pharos match in the L.D.I.C.C. Cup. Representatives of both Harrow and Pharos were present and the matter was fully discussed. At the conclusion the Council decided that the results should stand and that Harrow were the winners.

A letter was read from Mr. Gunter, of Bushy Park, on the question of the award of the Keil Trophy, and on hearing details of the contest, the Council instructed the Secretary to retrieve the cup from Mr. Harris and forward it to Mr. Gunter.

Northern Area Challenge.—A letter from Mr. Titterington, of the Northern Area Council, was read, proposing that this year's Inter-Area Contest should take place at Manchester on October 6th. The L.A.C. were agreeable to meet the North on this date but felt that the match should be held in London, as was originally proposed.

L.A.C. Publicity.—The Council were gravely concerned with the fact that an L.A.C. News Sheet had not appeared for some considerable period, and the Sec. was asked to make enquiries of Mr. E. A. Walker over this matter. In the meantime it was agreed that a News Sheet should be published to bring London Area news up to date, and Miss M. A. Green and Messrs. F. J. Johnson and R. Jeffreys were delegated to this task.

The meeting closed at 5.30 p.m.

NEWS FROM THE CLUBS

BIRMINGHAM M.A.C.

Biplane Cup day turned out bright with a gentle breeze. Our best aggregates were by R. J. Perry, 349.8 sec., B. J. Dennett, 270.5 sec., and G. E. Salt, 232.8 sec.

At the Midland Rally held at Leicester on September 15th, R. J. Perry won the Open Rubber with an aggregate of 408.4 sec. for two flights. B. J. Dennett won the Open Glider with an aggregate of 539.0 sec. for two flights and Wal Dallaway, who was on a 48-hour leave gained third place, flying a " King Falcon " glider.

Several members flew in the Petrol Duration contest and Ray Monks was fortunate enough to take first place with a machine he had built a few days before the contest.

On S.M.A.E. Cup day a handicap contest for gliders was run for the benefit of the juniors, and the results were : R. J. Robinson, 198.2 sec., R. J. Perry, 152.8 sec., and P. Elton, 128.4 sec.

BLACKPOOL AND FYLDE M.A.S.

The Society took its fair share of prizes at the *Daily Dispatch* Rally on September 8th. Vince Bentley, flying his " Cloud Dozer " and Mick Cowburn flying another pylon type duration job, took 1st and 2nd prizes in the Petrol Duration contest. They used only a 7 sec. motor run. Jack Owen, flying his locally well-known " Blackpool Rock " lightweight, took second place in the Open Rubber contest with two flights of 184 and 146 sec. Mrs. Bentley was unlucky to lose her " Yorkshire Pudding" whilst testing before the contest. This was the eighth flyaway recorded by this type of machine.

BRENTFORD AND CHISWICK M.A.C.

About 200 competitors turned up for the rearranged gala, held on Hounslow Heath, on Sunday, September 29th. By request, the petrol models were hand-launched.

The club would like to thank Messrs. Houlberg, Hills, and Walker, for their help in judging the Concours, and also all those who assisted with the timekeeping.

The results were :—

Open Rubber Competition.—1st, G. W. Harris, Croydon, 284.3 sec. ; 2nd, D. Lofts, Northern Heights, 260.2 sec. ; 3rd, A. Clarke, Streatham, 213.3 sec.

Open Glider Competition.—1st, A. Clarke, Streatham, 232.2 sec. ; 2nd, N. Winsley, Brentford and Chiswick, 201.3 sec. ; 3rd, R. Stowark, Kingsbury, 189 sec.

Open Power Competition.—1st, F. Guest, Bushy Park, 2 sec. error ; 2nd, R. Warring, Zombies, 3 sec. error ; 3rd, G. Harris, Croydon, 3.5 sec. error.

Concours d'Elegance.—Best petrol model : H. Turner, Northern Heights. Best rubber model : G. W. Harris, Croydon. Best glider, J. Marshall, Hayes. Best unorthodox model. Harley Auster Aircraft Prize : W. Browell, Hayes.

Best junior time : R. Stoward, Kingsbury, 189 sec.

Best lady's time : Mrs. Tansley, N.H., 176.5 sec.

Best unorthodox time : N. Standing, Croydon, 92 sec.

Team award.—1st, Streatham. A. Clarke and J, Wingate, aggregate 607.3 sec. ; 2nd, Hayes, J. Marshall, F. Brench, W Browell.

THE BRISTOL AND WEST MODEL AERO CLUB

The club " two "- and " three "-float Seaplane contests were run off on the Lady Shelley Cup day, and take-offs were made from the duck pond at Stoke Gifford. A. H. Lee, flying a slab-sider lightweight, made the best aggregate in the " three "-float contest, with 3.36, and he also made the longest flight in the " two "-float event, with 0.56. The latter event was won by M. Garnett, flying a standard flight cup model fitted with floats.

The club Harris Trophy contest was run off together with the S.M.A.E. Cup, on the worst day of the season, with a strong breeze and intermittent heavy rain. J. Bones put up the best aggregate in the S.M.A.E. event with a modified " Firefly " glider, his best flight being 1.46, and his aggregate 3.12. M. Garnett, with his " Wakefield," won the Harris Cup by aggregating 2.57.

CARDIFF M.A.C.

The Cardiff M.A.C. scored a distinct triumph when they won six prizes at the Llangwern Horticultural and Model Aircraft Show on August 31st. Clubs from several parts of the country were expected, but only Cardiff, Newport, Rogerstone and Bromley, Kent, were represented ; the latter club had travelled during the early hours of Saturday morning to be there on time. Captain Peter Thornycroft, M.P. for Monmouth, opened the show. The first prize and silver cup was awarded Mr. Trevor Cross (Cardiff) for his solid 1/36th scale Bristol " Beaufort."

The main event for model aircraft was the R.O.G. open contest for the splendid solid silver Horace Palmer Challenge Cup. This was won by Bud Morgan, J. Phillips, P. Persen and M. Bennett for Cardiff. Cardiff also won the silver cup for gliders (teams of four) presented by E. Thomas, the team being Bud Morgan, P. Persen, J. Phillips and F. Cummings.

Bud Morgan, Cardiff, won first prize for the best R.O.G. flight with 63 sec., and Master E. Burch, Cardiff, took first prize for the best rubber driven model for all under sixteen years of age. The best flight of the day was made by Mr. J. Phillips (Cardiff), who had 78 sec. with his " Dabchick " in the team event.

CHELMSFORD M.A.C.

The real high spot has been the exhibition held, with the co-operation of the Chelmsford Society of Model Engineers, in the Shire Hall, and opened by the Mayor. Over 3,000 of the public saw the exhibits, of which there were 65 in the Aircraft Section alone, and it was very successful in raising the club publicity and finance.

There was a good selection of solids, and photographs by courtesy of *The Aeroplane* made an ideal background.

CHINGFORD M.F.C.

Taking advantage of some fine weather on Sunday, September 15th, a Duration contest was held between Chingford M.F.C. and Walthamstow M.A.S.

Chingford M.F.C. won with a comfortable lead, the best time being put up by F. Glibbery, a junior member of Chingford M.F.C., who lost his fine streamlined silver and blue sailplane, o.o.s, on the first of his allowed three flights which lasted for 4 min. 19 sec.

Below are the aggregates of the three flights :—

Chingford. *Rubber.*—Russell, 176.6 ; Hand, 144.5. *Sailplane.*—Glibbery, 259.2 o.o.s. ; Putnam, 403.0. Club aggregate, 981.3 sec.

Walthamstow. *Rubber.*—Deudney, 160.6 ; Aylward, 112.0. *Sailplane.*—Green, 110.75 ; Lanham, 190.0. Club aggregate, 573.35 sec.

DONCASTER AND DISTRICT M.F.C.

The main event in August at Doncaster was our Annual Gala Day, which was held on the 25th.

Results were as follow :—

Open Glider, T.L. 200 ft. (aggregate 2 flights). Seniors, 1st, S. Lanfranchi, Bradford, 598.0 sec. ; 2nd, G. L. Beal, Mexboro, 581.0 sec. (1 flight only).

Juniors, 1st, W. B. Hetherington, Doncaster, 243.5 sec. ; 2nd, M. Ager, Doncaster, 153.5 sec.

Open Rubber (aggregate 2 flights).—Seniors, 1st, D. Hellewell, Doncaster, 236.5 sec. ; 2nd, M. A. Hetherington, Doncaster, 236.0 sec.

Juniors, 1st, A. Davy, Sheffield, 126.2 sec. ; 2nd, F. Warren, Goole, 106.0 sec.

Petrol Event (20 sec. engine run, 5 sec. off for every second over ; aggregate 2 flights).—1st N. Lees, Bradford, 111.5 sec. ; 2nd, S. Lanfranchi, Bradford, 73.0 sec.

Best flight of the day, G. L. Beal, Mexboro, 9 min. 58 sec.

KINGSBURY M.F.C.

Early August 4th, J. Bowerman's "Tempus Fugit" started the ball rolling with a flight of 10 min. o.o.s. Later, this model again flew o.o.s., after 5 min. 16 sec., landing about 10 miles away. P. Haley's model also flew for 10 min.

R. Mark, who was visiting us from Salisbury, lost his "Hippo" after a flight of 7 min. 12 sec. o.o.s.

D. Posner's "Knight" flew for 7 min. 2 sec.

On the following Sunday, thermals were not so plentiful, but G. D. Miles's tail-less glider managed to catch one, flying o.o.s. after a flight of over 6 min.

MERSEYSIDE M.A.S.

We are "in the news" once more, since, at Blackpool, a member of the Society, Mr. B. V. Haisman, secured the *Daily Dispatch* Glider Trophy. At the same event, Mr. Gosling gave a display of "veteran" flying with his 32-year-old "A" Frame Pusher, which performed well.

Two new flying grounds have been officially sanctioned, these being at Speke, Liverpool, and at Irby, Wirral.

SALE AERO CLUB

On Wednesday, August 22nd, J. M. Holbrook established the club distance record at 25½ miles with his own designed "Vee Jay" F.A.I. sailplane of 42 in. span. The model was flown from Wythenshawe (off 150 ft. of line) and was timed 5.30 o.o.s. and landed at Flagg, near Buxton, in Derbyshire.

STOCKTON AND DISTRICT M.F.C.

The Club attended the Darlington Rally held at Croft Aerodrome on September 1st.

Most of the models present were of the orthodox type. The unorthodox were represented by W. Dent's and D. R. Seaward's rubber driven and glider Canards.

The prizes were presented by Group-Captain G. J. C. Paul, D.F.C., commanding officer Croft Aerodrome.

Mr. Bell, of Newcastle, won the under 30 in. rubber competition with an aggregate of 268 sec.

The open glider competition was won by J. Parker, of Stockton, with an aggregate of 319 sec.

Mr. Lutman, of Newcastle, was the champion petroleer.

THE WILLESDEN AND DISTRICT M.A.C.

Both the Senior and Junior Tail-less Glider records have been raised with models of the same design. The Senior by R. Sacker (the designer) with a flight of 5 min. 10 sec. ; the Junior by J. Cunningham with a flight of 69 sec. Both models clock 60 sec. regularly on a windy day.

WOLVERHAMPTON M.A.C.

On August 25th, the Club held their first meeting at Perton Aerodrome, where two petrol models were flown successfully. These were Mick Smith's "Mercury IV" and Cliff Ray's "Pathfinder," the latter being a 6 ft. span model, powered by an Ohlsson 60 engine.

H. Dolan made a Wakefield record of 2 min. 3 sec.

At the meeting of the Worcester Club on August 18th, J. E. Thompson won the Nomination event.

CHANGES OF ADDRESS AND NEW SECRETARYSHIPS

Blackpool and Fylde M.A.S. R. Ellis, "Loretta," Moss House Road, Marton, Blackpool.

Fleet Vale M.A.C. L. R. Kent, 80, Malden Road, Kentish Town, London, N.W.5.

London Area Council Competition Secretary, R. A. Parker, 3, Eversley Avenue, Barnehurst, Kent.

NEW CLUBS

Brighton and District M.A.C. Secretary : H. J. Tugwell, 5, Montreal Road, Brighton, 7.

Caterham M.F.C. Secretary : G. Coston, 159, Coulsdon Road, Caterham, Surrey.

Essex Power M.A.C. Secretary : J. S. Wreford, "Craigmore," Woodlands Avenue, Hornchurch, Essex.

Higham Ferrers and District M.A.C. Secretary : H. Britten, The Lodge, Newton Road, Rushden, Northants.

Non-Coms M.A.C. Secretary : P. C. Grant, 6, Woburn Road, Bedford.

Valkyries M.A.C. Secretary : P. Johnson, 186, Cressex Road, High Wycombe, Bucks.

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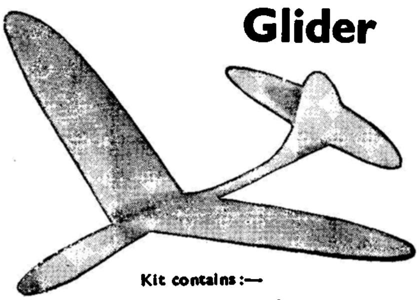

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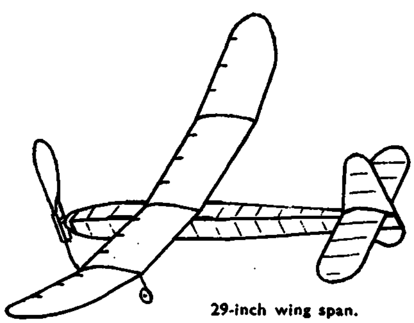

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