MODEL AIRCRAFT

1/-

FEBRUARY, 1946
VOL. V. No 2

THE JOURNAL OF THE S.M.A.E.

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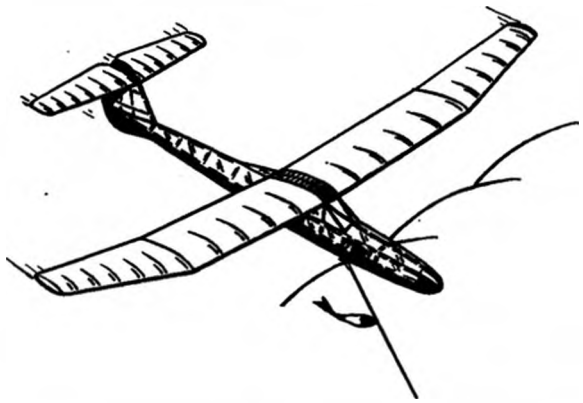

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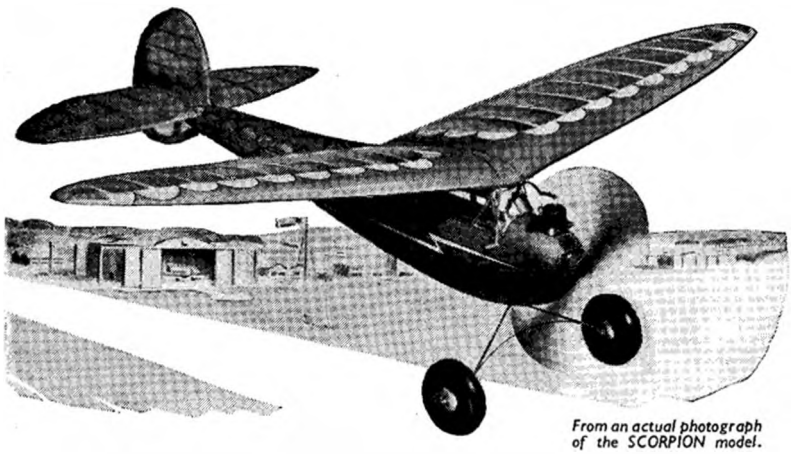

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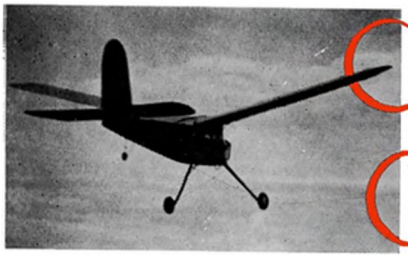

MODEL AIRCRAFT

The Journal of the Society of Model Aeronautical Engineers

FEBRUARY 1946
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Edited by
A. F. HOULBERG, A.F.R.Ae.S.

The Editor invites correspondence, which should be addressed to him at "Crossways," 102, Staunton Road, Headington, Oxford.

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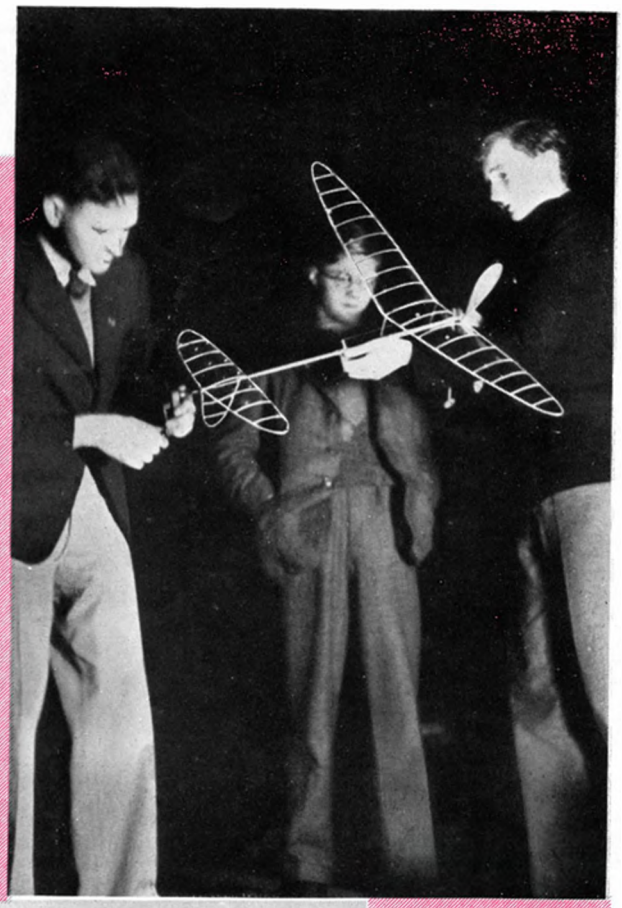


One of the tragedies of war is the number of promising young men who pay the price demanded to enable the nation to survive. One of the greatest losses to the aircraft world was that of R. W. M. Mackenzie, the popular member of the Blackheath Club, who is here shown (on the left) with an indoor model at the Albert Hall.

A fine example of the Wakefield type of model being launched by its owner at one of the Rallies, which are once again becoming popular.

News Review

Cover Story

The cover photograph shows Bill White with his attractive 6-ft. span petrol model, undoubtedly the most photographed model of the 1945 season.

Possessing an unusually pleasing appearance, enhanced by meticulous workmanship, it attracts immediate attention wherever it makes its appearance.

As is often the case, much of the work which has been put into this model is not visible and this applies to the wings in particular, which are a monument to Bill White's patience and constructive skill. The built-up wing ribs and diagonal strutting have resulted in over a thousand separate pieces in the wing structure alone.

Unfortunately, Bill White has been dogged by ill-luck with his motors throughout the past season, but on the occasions in which the machine has taken the air successfully it has demonstrated its stability and an exceptionally flat glide. The builder deserves better luck for 1946.

This photograph was taken by your Editor on Baildon Moor.

"The Model Engineer" Exhibition

We are pleased to announce that arrangements are in hand for the first post-war *Model Engineer* Exhibition, which will be held in the latter part of August at the New Horticultural Hall, Vincent Square, Westminster, and that the Council of the S.M.A.E. has accepted the offer of participation in this exhibition which has been extended to them by Percival Marshall & Co. Ltd.

The exhibition will give model aircraft constructors all over the country the opportunity of displaying their craftsmanship under the best possible conditions and in good company.

We are sure that all clubs will desire to be represented at this exhibition and to enter the various contest sections for which substantial prizes are offered.

Here is your opportunity of showing the general public what model aeronautics really imply and the high degree of skill which you possess. Start on your exhibition models now! Don't leave them to the last minute.

Fairey's Aerodrome

The title of this paragraph will doubtless bring back many happy memories to pre-war enthusiasts who attended S.M.A.E. centralised contests, international contests, and rallies held on this fine airfield.

In its present enlarged form and under its new title "Heath Row," it will be less familiar to modellers, although it will rapidly become more familiar to the general public as it fulfils its new rôle of long-distance terminal aerodrome for London.

The aerodrome in its new form has cost some £20,000,000 to convert and now embraces the whole of the large stretch of land which lies between the original Fairey's aerodrome and the Staines extension of the Great West Road.

It is now undoubtedly the largest aerodrome in the country, with *positively colossal* runways.

As we go to press it is celebrating the inauguration of the first flight on the proposed South American Trans-Atlantic service by the "Lancastrian" air-liner "Starlight," which was piloted by Air Vice-Marshal Donald Bennett.

While model enthusiasts will regret the passing of Fairey's as the scene of model meetings, they will no doubt retain a feeling of pride in their association with this aerodrome in the past and will follow its future development with keen interest.

Jet and Rocket Models

In view of the large number of pitfalls, both legal and technical, into which the experimenter with jet-propelled and rocket-driven models can fall, we have taken the necessary steps to provide modellers who wish to build models of this class with the necessary guiding information in a series of articles in our pages.

The first of these appears in this issue and is well worth careful reading by all who are embarking on the construction of rocket-propelled models.

To be forewarned is to be forearmed, and we commend the elementary truths expounded to the attention of our readers.

The S.M.A.E., in conjunction with Mr. Howard Boys, have been instrumental in clarifying the position from the legal aspect to the extent that there is now no official impediment to the use of rockets *so long as they are made by, and obtained from, a licensed concern* such as Pain's or Brock's, and only the special rockets made for this purpose are used.

So many accidents have occurred of late due to schoolboys acquiring chemistry sets and attempting to produce gunpowder—we know of two such cases within our locality—that the authorities are apt to look upon experiments involving explosives with considerable dis-

favour, and it behoves every modeller to take the utmost care in this direction.

It will take only one serious accident to tie the whole field of experiment in this type of model in impenetrable red tape.

Competitors' Urge

On one or two occasions during power-driven contests it has been noted that competitors become fascinated by the fact that their motor suddenly springs into life and they then seem to lose their normal common sense and caution at the moment of launching the model under the urge of getting it airborne.

On one occasion a competitor was observed to point his model absolutely spot on towards a large notice board displayed for the benefit of the control of spectators. As was inevitable, the model struck the board and was badly damaged.

Had this been a spectator or a member of the public on his lawful journeys, the consequences might have been more serious, and it points to the necessity for flyers of petrol models to pause and have a good look round before they actually release the model.

Captured German Equipment

German aircraft equipment which has reached this country as a result of the activities of the technical units sent to Germany to pry into their wartime secrets reveal the frantic effort which was being made by the Nazis to attain technical superiority over the Allies, and give the Luftwaffe machines and equipment a sufficiently enhanced performance to enable them to cope with the Allied Air Forces.

Ingenuity has always been a feature of the Huns and one is therefore not surprised to find a number of striking developments amongst their experimental projects. In some cases one has to acknowledge their courage and temerity —as, for instance, in the case of their piloted version of the V.1 rocket, which appears to belong to the " suicide " class of weapon. With the pilot located in a cramped cockpit immediately in front of the motor unit, he has little hope of extricating himself should he encounter trouble, particularly as the captured example was not fitted with the " ejector " type seat which is used in other German aircraft, such as the rocket-driven M.E.163 and J.U.263.

The Germans also appear to have decided quite definitely that the tailless machine is the last word in aircraft development, as many of their later designs show a strong leaning in this direction. For instance, the Horten glider seems to have been an actual flying test-bed for one of their more ambitious projects —a tailless bomber with a span of 30 meters (98 ft.), four large jet power units, an eight-wheeled partially retractable undercarriage and a cabin almost entirely sunk into the wing.

Dorland Hall

It is noted that the *Aeromodeller* in its issue for December, 1945, has returned to a general attack on the S.M.A.E., born of the fact that the Society has seen fit to decline to take part in the exhibition sponsored by our contemporary.

We cannot think that such displays of bad temper are in the best interests of the model aircraft movement. Some of us may feel that these attacks constitute in themselves ample justification of the Society's attitude towards a display which must cease to be primarily an occasion for personal advertisement before it can command respect.

As we announce elsewhere, the S.M.A.E. will be taking part in *The Model Engineer* Exhibition to be held in August, and Club members and aeromodellers everywhere will be grateful to learn that participation in this event is taking place on terms most beneficial to the Society and the movement it represents.

Facts about Radlett

Our contemporary also indulges in some unfriendly remarks about the meeting at Radlett. Its main accusation is to the effect that admission to the meeting was restricted to members of S.M.A.E. clubs. *This is not true.* Admission was open to members of all model aero clubs—any model aero club—affiliated to the S.M.A.E. or not, and, be it noted, *A.B.A. members were not excluded.*

What our contemporary seems to have overlooked is the fact that Radlett aerodrome is a *private aerodrome*, still under Air Ministry control, and that it could not in consequence be opened to the *general public.*

Sir Frederick Handley-Page made a very generous gesture to the model aeroplane movement in permitting its use on this occasion and allowed admission on the widest terms short of making admission open to all and sundry.

We would also emphasise that *admission was free* to all aeromodellers on presentation of the membership card of their club or an S.M.A.E. admission ticket.

R. V. BENTLEY
this month deals with some of the problems which beset the beginner.

WHY *must* some people who have their interests riveted on some particular phase of model aeronautics decry the activities of those deriving their pleasure from a different approach to the hobby?

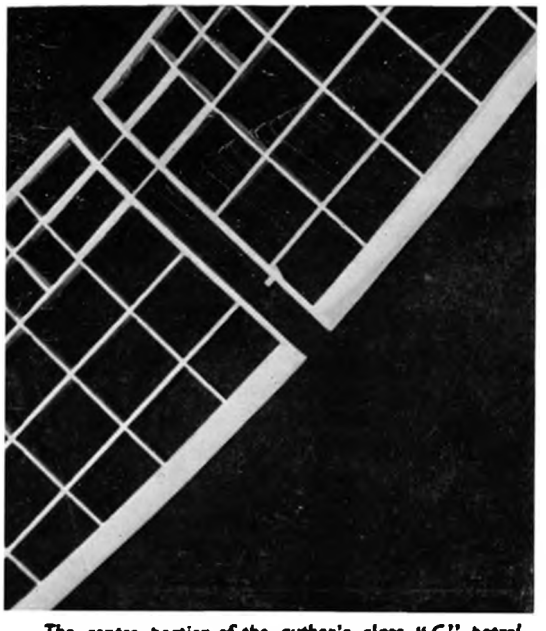
Quite recently, one writer has condemned control-line flyers as having admitted their own failure by the very fact that they have taken to tethering their models in flight. Nothing is further from the truth—these people find the same satisfaction and thrill from flying their speedsters under their own control as another person might find in building and flying model flying-boats or seaplanes.

In the model engineering world, if this term may be used to distinguish other branches of model work from model aeronautics, such an attitude is not usually found; let us try to eliminate it from our own branch, let us learn to appreciate all phases of modelling and look upon each enthusiast as just another chap obtaining his enjoyment from model aircraft whatever the manner in which he obtains it.

Periodically, in this section, I hope to be able to devote attention to the little but very important details about which the beginner always finds himself lost, especially if he is a lone hand, or is a member of one of the newer clubs wherein no other member has yet turned to power. Hints and tips and notes on various methods will be given from practical experience gained not only by myself but by other experienced builders, who have expressed their willingness to assist by telling of their own difficulties and the way in which they have been overcome. It is only by such mutual exchange of ideas and experience that we can hope to reach the standard of development all over the country which will be required in the event of regular participation in International contests. Just as new rubber-power enthusiasts are schooled up to the standard of the rubber-powered classic, the Wakefield contest, and the sailplane beginner is trained up to King Peter Cup standard, so it will be my policy to deal first with the type of model which we can expect to be required in an International contest for motor-powered models. This type of model very fortunately happens to be one very well suited to the beginner, as if it is reasonably well constructed and trimmed in accordance with the "Book of Rules" for its particular type, it offers the least difficulty in flying successfully and leaves one able to attend more to the running of the motor, reassured in the knowledge that once the motor is running steadily the model can always be relied upon to do its stuff well. It carries its own "push" for take-off as the motor is comparatively powerful for the model's relatively small size and weight. The trimming rules are very simple, much simpler than those for a rubber-powered model or a towline sailplane, and it will give excellent performance even on the reduced power output which is advised for first tests.

A Structural Detail

The photograph this month shows the joint at the centre of my 6-ft. span elliptical wing for the Class C model mentioned earlier in this article. Two more nose ribs are yet to be fitted. The joining spars are each built up of two laminations of $\frac{1}{16}$-in. hard balsa sheet, and are held in boxes with the hard balsa main spar for one wall and 1-mm. ply for the other wall, top and bottom of the boxes being strips of



The centre portion of the author's class "C" petrol model plane showing the box and tongue fitting for connecting the two halves.

⅛-in. square hard wood. Each box is cemented with Durofix and is bound with silk.

A New Transparent Fuel Tank for Your Motor

Here is the fuel tank promised last month. The two which I have made for myself are intended for Ohlsson Gold Seal, 9 c.c. motors, but it will be found that the same tank can be fitted to almost any other motor of the same size, whilst it is only necessary to vary the dimensions to make it suitable for other sizes. The reason for discarding the existing tanks and using these new ones is simply because the manufacturers' tank is too deep to ensure a steady run from full to empty, without adjusting the needle valve during the run to compensate for the changing fuel level. Since the motor, with the maker's tank, will run without adjustment from the full to just below half-full level, the new tank depth was made about half the depth of the original, and the diameter was increased to maintain the same full capacity. In fact, the capacity was slightly increased.

Preliminaries

Now, this is how to go about making a new tank for your motor. First of all you will require a sheet of clear cellulose acetate, 0.04 of an inch thick, a 6-B.A. brass nut, a small quantity of glacial acetic acid (which you can obtain at the chemists), some lead, and a box to hold the lead, preferably a metal box, as the lead is to be heated until it is plastic.

For the punch, it would be best if you could get a friend with a lathe to turn the shape on the end of a piece of brass bar, or any other metal available. If this cannot be done, you will be able to manage quite nicely with a punch shaped from hard wood. Having obtained a satisfactory punch, the lead must be melted in the box until the surface is level and then allowed to cool until it assumes the plastic state, when the end of the punch should be pressed in until the full diameter is just level with the surface. This will leave the impression of the punch end in the lead and the lead can be left to cool.

Moulding the Ends

There are two ways of moulding the acetate sheet ; in each case, the sheet being placed on the surface of the lead and pressed into the conical impression with the punch, but the methods differ in the manner of heating. The acetate must be made plastic by heat before it can be formed, but care must be taken not to get it *too* hot.

The first way is to dip the sheet into boiling water (or very nearly boiling), immediately transfer it to the lead impression and quickly bring the punch down on it squarely over the impression, pressing hard. On release, the sheet will be found to have a neat conical shape moulded in it and it will be buckled all around the shape.

Another way of heating is to place the acetate on the lead surface and heat the whole lot in an oven very slowly and with the punch near at hand. Keep trying the punch on the sheet to test whether it is plastic, and as soon as it appears to "give" under the pressure and feel softish, take it out of the oven and bring the punch down hard as before. See Fig. 1 for sketches of this operation.

Cutting out the Cones

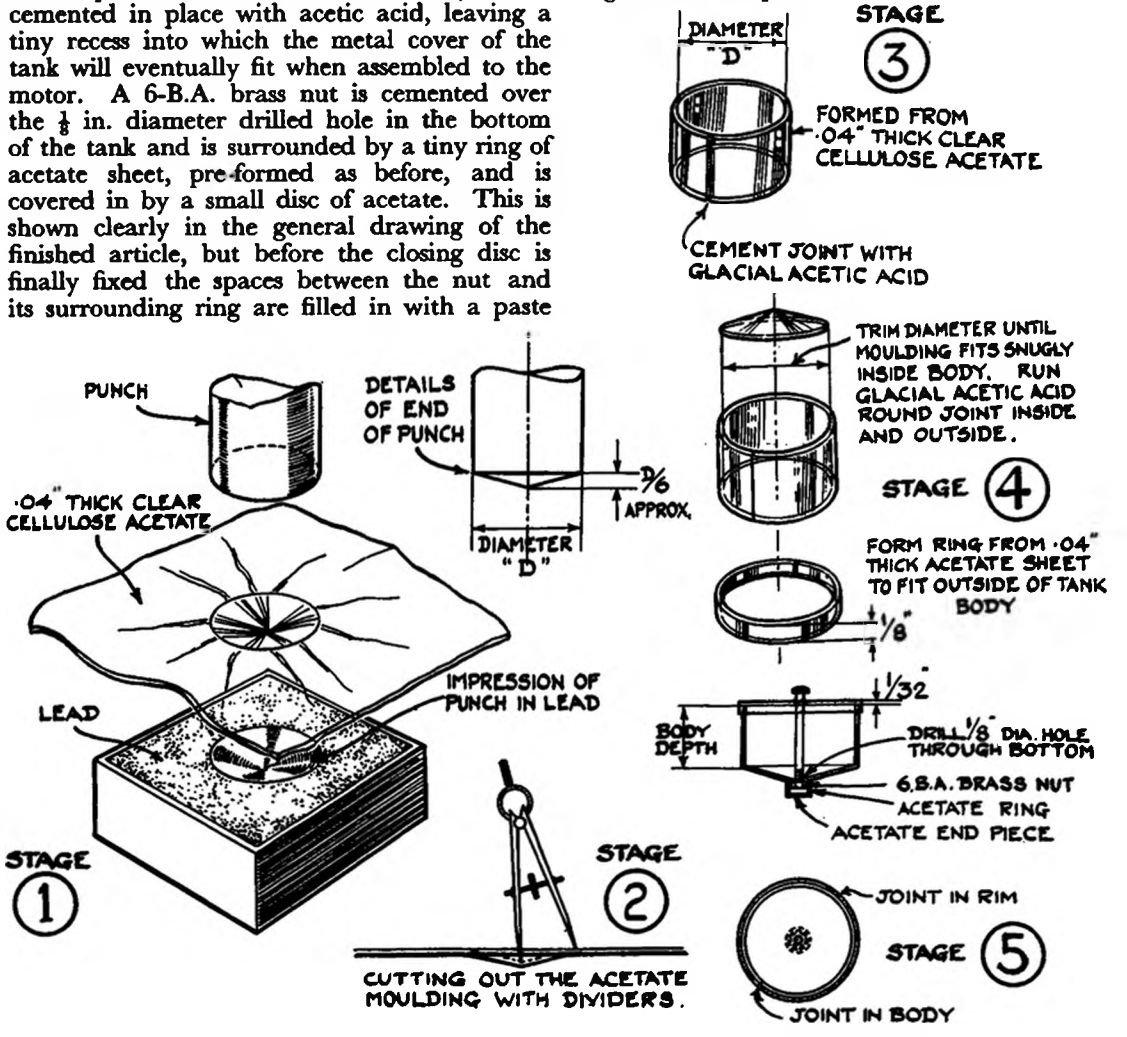
The best way of cutting shapes out of cellulose acetate sheet is to scratch along the outline fairly deeply with a scriber, followed by breaking the sheet by bending at the scratch. To cut out the conical shape, therefore, an ideal method is to use a pair of dividers, using one point at the centre and scratching round with the other point. (See diagrams.) Put this conical bottom aside, and form the main body of the tank from a strip of acetate sheet by wrapping the sheet round a circular rod of the correct diameter, taping it up well all over to preserve the correct shape, and immersing it

in boiling water for a second or two. When the tape is stripped off, the acetate will be found to be permanently formed to the exact diameter of the rod, from which it can be removed and the two ends of the strip joined together to complete the ring by running glacial acetic acid into the joint, using a glass rod or a knitting needle as a "dropper." When the joint is fairly firm—i.e. in about an hour, the conical bottom can be trimmed over its diameter and fitted snugly inside the ring, running acetic acid in to make the joint as before. You can follow all this easily by reference to the diagrams showing the stage by stage construction.

Final Assembly

The re-inforcing ring around the top of the tank is pre-formed, as was the tank body, and is cemented in place with acetic acid, leaving a tiny recess into which the metal cover of the tank will eventually fit when assembled to the motor. A 6-B.A. brass nut is cemented over the $\frac{1}{8}$ in. diameter drilled hole in the bottom of the tank and is surrounded by a tiny ring of acetate sheet, pre-formed as before, and is covered in by a small disc of acetate. This is shown clearly in the general drawing of the finished article, but before the closing disc is finally fixed the spaces between the nut and its surrounding ring are filled in with a paste made by dissolving acetate shavings in some acetic acid. All cementing is done with glacial acetic acid and, on completion, the tank should be left for at least 72 hours for the acid and the acetate paste to harden thoroughly.

The joints can be finally cleaned up with a fine file and glass paper, and any scratches left on the acetate can be removed by rubbing smartly with a rag moistened with acetic acid. Wash your hands thoroughly after using the acid, otherwise it will irritate and dry the skin. The tank is held in place under its lid or cover on the motor intake tube, by a 6-B.A. screw passing through a central hole in the cover and screwing into the 6-B.A. nut in the bottom. The photograph shows my two Ohlsson Gold Seal motors fitted with tanks as described and serves to show at a glance that which requires a great deal of space to describe.



ORIGINAL DESIGNING

By Gordon Allen

PART. 2.

BEFORE dealing with the general layout of cabin fuselages let us see how ordinary slabside components (the layout of which was dealt with in Part 1) can be utilised in conjunction with parasol wing mounts.

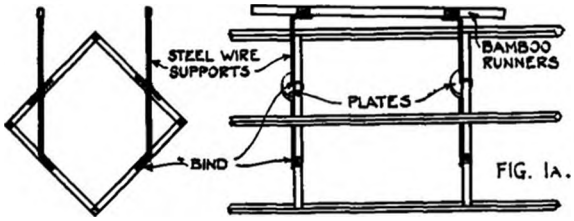


FIG. 1A.

Fig. 1A shows a typical parasol wing mount used in conjunction with a " diamond " type slabside fuselage. The latter is quite easy to design, being a simple *square* box structure, which, to give it its diamond shape in front view, is merely turned on edge. Thus with each side of the fuselage being similar, no plan view is required upon which to assemble the two side frames, which, as seen in the last article, was required of a rectangular sectioned unit because the width of the fuselage as seen in plan view differed from the depth (side view).

All that is needed is a side view drawing of the box structure as it would appear when placed *on one of its sides*. The outside edges of the unit can be continuous curves, for no provision need be made for the direct seating of a wing, and must be drawn *equidistant from the datum line drawn across the paper*. That is, the top and bottom curves representing the outside extremities of the box structure will be exactly similar and will be drawn in similar positions in relation to the datum line.

Longerons, spacers and any diagonal braces are drawn in. This drawing then serves the purpose of *both* the side view and plan over which may be constructed the entire fuselage. Two side frames are constructed to the drawing, complete with rear motor-pin plates and are then erected on edge over the same drawing to add the cross members. When the fuselage is complete and turned on one of its edges the motor-pin passing through the rear plates of the original side-frames will be in a diagonal position when viewed from the nose.

The location of uprights and cross members in the fuselage will be governed to some degree by the position of the parasol cradle designed to take the wing.

Fig. 1A shows light gauge wire members bound to cross members, which in turn support the bamboo runners upon which the wing sits. Now these runners, which, by the way, can incorporate the wing incidence if desired, must be the wing chord (at the centre section) plus 1 in. in length. They must also be in such a position in relation to the fuselage that when the wing is placed in position with $\frac{1}{2}$ in. of the bamboo rails extending fore *and* aft of the wing (to allow for adjustment) a line drawn vertically through a point one-third the distance from the LE of the wing centre-section corresponds with a line drawn vertically through a point at one-third the overall length of the machine from

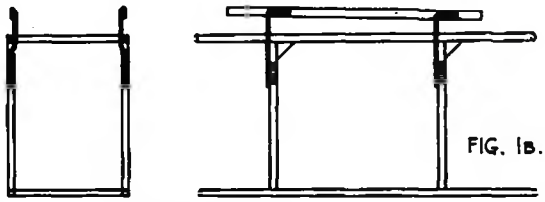


FIG. 1B.

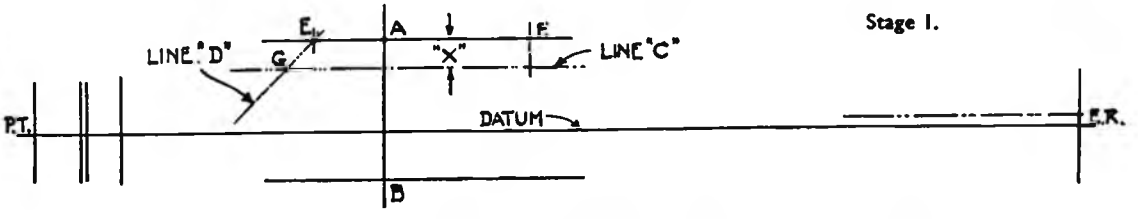
PT (point of thrust). The position of the rails will govern the location of the wire supports, and this decides the position of the cross members and uprights in the box structure. As the system of runners proposed allows considerable latitude in the location of these members, no difficulty should be encountered in finding a suitable location.

The distance apart of the runners will depend of course upon the width of the wing centre section. Semi-circular plates, shown in the drawing, are required to form small platforms,

where the wire supports leave the fuselage, upon which the tissue covering may be fixed.

The height of the runners above the fuselage should not be great for normal purposes, and can quite conveniently be as close to the top of the fuselage as shown in the Fig. 1A.

Fig. 1B shows a parasol wing mount as applied to an orthodox slabsider. The rules regarding its position are the same.



Layout of Cabin Fuselages

Only the main points of procedure are to be dealt with here, as the spade work was done in the last article. The thin horizontal lines drawn through A and B (Stage 1) represent, as in the case of an ordinary slabsider, the top and bottom boundaries of the fuselage. However, because of the " step " above the datum line, in the form of the cabin, it is impossible to keep the thrust line nearly so close to the top longerons as was the case before. Therefore the distance of point A from the datum must be increased (in this case from 1 in. to 2 in., as we are still dealing with a similar type of fuselage.

Point B will be then 1 in. *below* the datum to give the desired maximum depth of 3 in.

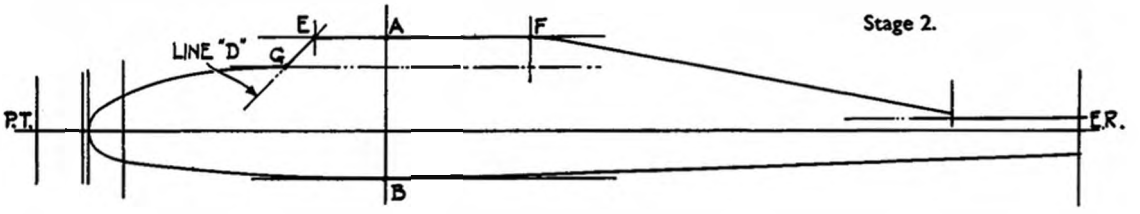
Points E and F fix the amount of " flat " on the fuselage top. This flat top must allow for ½ in. of forward and aft movement of the wing when the latter is in its correct position in relation to the vertical line drawn through A and B.

The next thing to decide is a convenient depth for the cabin windows measured from the fuselage top. The depth is represented by X in Stage 1. The bottom of the cabin must not be too close to the datum line to prevent the drawing of a reasonable curve from the top of the fuselage nose to the forward part of the cabin. On the other hand, the windows must be in proportion to the rest of the fuselage. X has been made ¾ in. in this example.

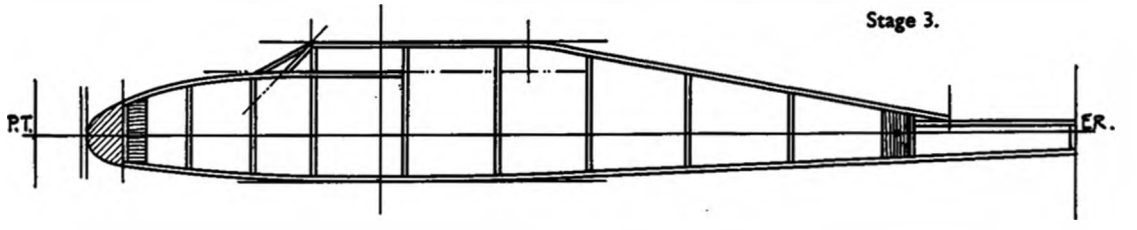
From E, a sloping line (line D) is drawn, which intersects the horizontal line representing the depth of the cabin windows at point G. Line D represents the desired maximum slope of the wind screen.

After having denoted the tailplane datum, as described in Part I, we can pass to Stage 2.

From F, the fuselage top is carried aft to the tailplane datum either by a gentle curve or a straight line. The latter makes for simplicity.



A gentle curve is then drawn from the bottom of the fuselage nose to merge with the horizontal line drawn through B, so that the latter is a tangent to the curve *at* point B. It is then carried aft in an even less acute curve or as a straight line (as per Stage 2).



All that remains to be done in order to complete Stage 2 is to draw a smooth curve from the top of the fuselage nose to point G. On no account must this line be severe. If the top of the front of the fuselage is intended to be conventional, having no curved contour *in front view*, then the curved line is carried through point G, after which it becomes a straight line

(line C) and is terminated at a spacer position (see Stage 3). In this case, line D represents the main forward cabin member ; therefore point G must be on a cross-brace to take the sloping member.

Stage 3 completes the fuselage in side view which will show the complete structure.

The Use of Formers

Instead of a conventional fuselage nose the designer may wish to partly streamline it by means of part formers and stringers.

Here, the curve from H to G will not represent a main fuselage member, but the outside of the stringers that will fit on the part formers (see Fig. 2). It will be necessary in Stages 2 and 3 to indicate the member upon which the part formers are fixed. This is horizontal and, as shown in Fig. 2, is drawn from a point below the start of the stringer curve at H, to the location of a fuselage upright.

The distance below H from which the former member commences will be governed by the clearance required for the free running of a rubber motor ; the clearance being measured vertically from the datum line.

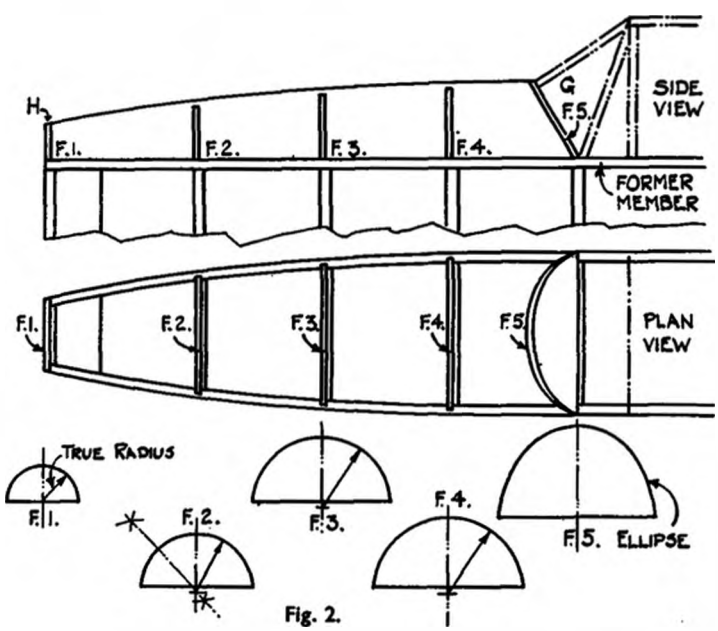


Fig. 2.

As shown in Fig. 2, the part formers carrying the stringers should be located at fuselage upright positions.

The part formers should be pitched at no more than 1¾ in., so this will determine the distance between the fuselage uprights and cross members *at the nose*. F1 to F5 (see Fig. 2) represent the part formers and are drawn vertically in side view from the horizontal former member to within 1/16 in. of the curve from H to G. The thickness of the formers is governed by the thickness of the material to be used when making them. The clearance of 1/16 in. at the top is to allow for 1/16 in. square stringers which will be fixed to the former rims. If smaller section stringers are to be employed, then this clearance will vary accordingly.

Before the actual shape of F1 to F5 can be drawn out, it is necessary to show the part formers in plan view. The latter is, of course, drawn out directly below the side view, as described in the last article.

Fig. 2 shows F1 to F5 in position on the forward edges of the nose cross-braces. As in the case of the side view, 1/16 in. of clearance must be allowed at *each side* of the former supports to allow for stringers.

To draw the shape of the part formers, horizontal lines must, for a start, be drawn, intersected by vertical centre lines, as shown at the bottom of Fig. 2. On the horizontal lines the widths of the formers, as obtained in plan view, are plotted, the extremities being equidistant about the centre line. Heights of the part formers, obtained from the side view, are then measured off on the vertical centre line, at the various distances from the base lines.

It should be noted here that F1 and F5, being the nose former and the rearmost former, run right into the line from H to G, because the ends of the stringers which they carry are not positioned on their rims but are terminated on their rear and forward *faces* respectively.

To ascertain the correct shape of the formers, arcs, the centres of which must be on the vertical centre lines, are drawn with compasses so that the resulting lines (which will be true radii) pass through the points already plotted.

The slope of F5 can suit the designer, but the rearmost of the lines representing it must finish at point G to pick up with the sloping cabin member from E to G.

The original designer will no doubt be able to embody his own ideas and shapes. If the drawing procedure is adhered to, then he need not be tied down to any particular structural methods.

THE TANSLEY T.9.

A GO" SPAN PETROL MODEL DESIGNED BY K.M.TANSLEY.

THE intention of this model, which is the fourth of its particular line, was to produce an aircraft which would be strong enough for general purpose flying, and yet be capable of acquitting itself satisfactorily in the duration field. Flying tests have proved that some measure of success has been attained, and, whilst the designer considers that the machine is not suitable for a beginner to attempt, the average modeller should not have any great difficulty either in building or flying it.

The disposition of the heavy ignition components as shown on the plan is suitable when one of the heavier 5 or 6 c.c. motors is used—which makes it ideal for the average British engine. If the lighter American engines are contemplated, it would be necessary to mount the coil and battery even further forward to achieve a correct balance. Before commencing construction look well into the plans and, in particular, decide how your own motor is to be mounted if the method shown on the plan does not apply.

Fuselage

First cut out the plywood plates to which all the stresses are transmitted, and which form the forward part of the fuselage. Pin one of these down to the plan, and construct the basic fuselage side around this in the normal way, using hard $\frac{1}{16}$-in. square balsa for longerons and spacers. The diagonal bracing is $\frac{1}{8}$ in. square medium.

Build the second side on top of the first, and while they are drying cut out the formers, taking care to select a suitable grade of material. When the sides are picked up reinforce the aft end of each on the inside with 1/32-in. sheet. Assemble by first cementing the rear ends together and, working from the rear, proceed to mount the formers in pairs (top and bottom), using rubber binding at each station to hold the job firm until dry. Take care to keep the structure square. Temporary card formers will help here.

When the front plywood former is reached take care to fix it well, using a good strong internal fillet of plastic wood on the "ply to ply" joints.

The front cabin support and the cabin roofing claim attention next. The main top and bottom stringer along the tops of the formers is then fixed and sighted for straightness. When all is well the remaining stringers are added and the underneath of the forward end planked between the stringers with soft $\frac{1}{8}$-in. sheet.

The ignition equipment (with the exception of the battery box) is now located and wired up. The battery box is positioned last of all when the machine is finished by cutting away the appropriate portion of the bottom planking and butting the box against the lower longerons. The various "accessories," such as pegs, tubes, undercarriage fixings, etc., may now be fitted.

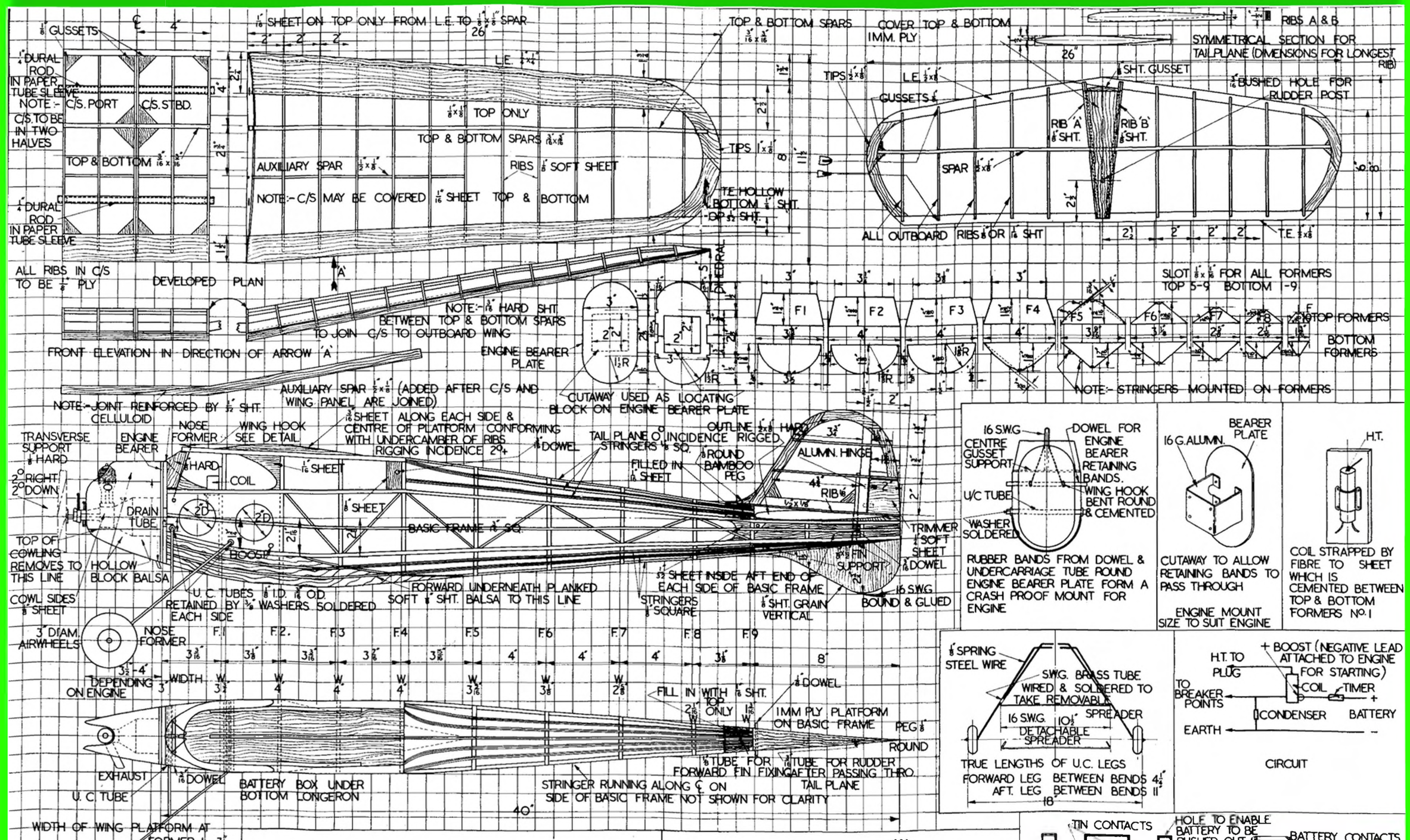
Undercarriage

This type is very effective and even if inflated wheels are not obtainable the single wire lower leg gives ample resiliency without being "floppy." It is made in two parts for easy transport and is retained by the detachable spreader bar which locates in the brass tubes. All soldered joints should first be bound with 15 amp. fuse wire or thin florists' wire.

Tail Unit

The outline is built first. Whilst this is drying rectangles of $\frac{1}{16}$-in. balsa are cut $\frac{1}{8}$ in. wide of varying lengths to suit the chord of the tailplane at the various rib locations. In these, notches

(Turn to page 41)



T-9 PETROL MODEL BY K.M. TANSLEY

FOR ENGINES FROM 5 TO 7·5 CC

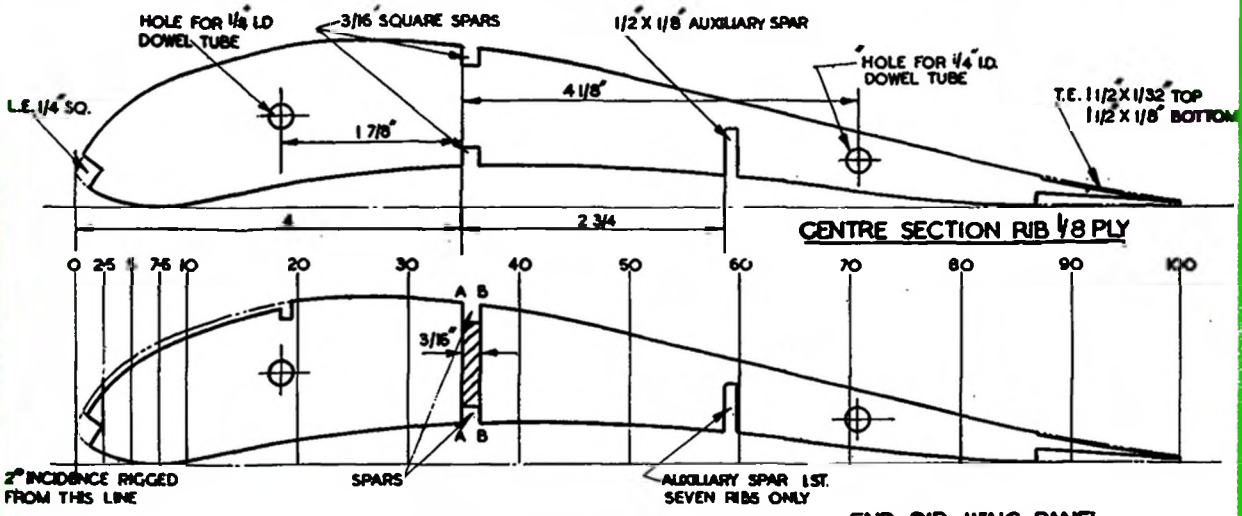
WEIGHT 3 LBS. 3 OZS.

AN SMAE DRAWING

For the purpose of scaling, each square is equal to half an inch.

WING RIBS - GRANT M-6 MODIFIED

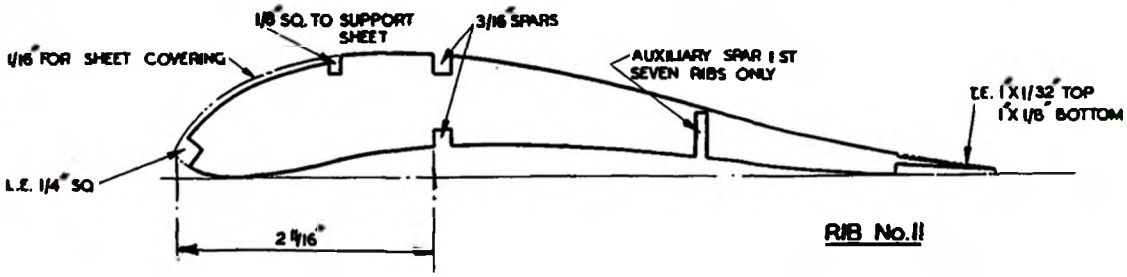
PERCENTAGE OF CHORD		0	2·5	5	7·5	10	20	30	40	50	60	70	80	90	100
UPPER CURVE	% OF TOTAL CHORD FROM BASE LINE	3·04	6·94	9·54	10·87	12·15	14·72	14·72	13·63	11·70	9·54	6·94	4·35	2·17	0·435
LOWER CURVE	% OF TOTAL CHORD FROM BASE LINE	3·04	0·868	0·347	0	0·260	2·17	3·46	3·65	3·30	2·60	1·47	0·608	0	0



CENTRE SECTION RIB 1/8 PLY

RIB MADE IN TWO PIECES BROKEN AT A-A, B-B. TO ALLOW JOINTING PIECE TO PASS THRO. SPARS

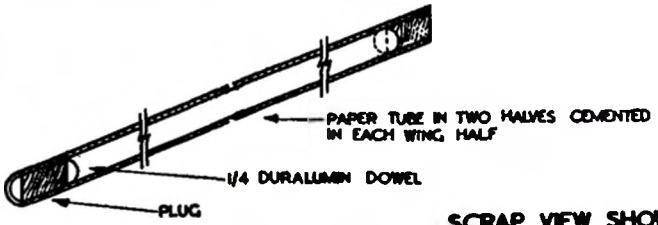
END RIB WING PANEL MATING RIB C/SECTION 1/8 BALSA AND 1/8 PLY



RIB No. 11

SYMMETRICAL SECTION FOR TAIL PLANE RIBS

TAIL PLANE RIB 1/16 BALSA



SCRAP VIEW SHOWING CONSTRUCTION OF C/SECTION DOWELS

SCALE. - HALF FULL SIZE

THE TANSLEY T.9

(Continued from page 37)

are cut to house the spar and leading and trailing edges. The framework is now chocked up with scrap balsa and the rectangular ribs located, flat on the board. This ensures a true structure. When dry the ribs can be sanded down to a streamline section. The lower edge of the two centre ribs is left flat to provide a good base for mounting. The various gussets and fittings complete this structure.

The fin and rudder are built on similar lines. Care must be taken that the tube in the rear end of the fuselage and the tube in the tailplane register correctly so that the dowel in the fin will locate snugly. The rudder hinges are of thin sheet tin.

Wings

The ribs are cut out in the following manner. Plywood templates of the largest and smallest ribs are made complete with cut-outs for the spars, trailing edge, etc. The requisite number of slats of $\frac{1}{8}$-in. balsa for one wing panel is sandwiched between them, and the resulting block shaped with knife and sandpaper. The spar holes are cut using a fine hacksaw blade. (Note : At this juncture the locating holes for the rear auxiliary spar are omitted.) The first step is to pin down the lower member of the built-up trailing edge of the outer panel to the plan. The ribs are then set up on this, and the top spar and leading edge cemented to them. The $\frac{1}{8}$-in. sheet tips are then added, and, *whilst still pinned to the board*, the $\frac{1}{16}$-in. sheet is cemented between the leading edge and the $\frac{1}{8}$ in. square spar. Note that the inner rib is set at an angle to conform with the dihedral.

Leave the wing pinned to the board overnight to ensure that the cement has set. This obviates a lot of warping which usually sets in with leading edge sheeting. The top member of the trailing edge can how be added, the wing turned over and the bottom spar well cemented in. Note that the rear auxiliary spar is not added until almost the last operation. The centre section is built in the same way as the wing proper, but with ply ribs, each drilled to take $\frac{1}{4}$-in. dowel tubes. It is by far the best to build this in one piece with continuous leading edge, spars, etc., with the dowel tubes in position. When it is dry the dowel tubes are removed and the two halves cut apart with a thin knife. This ensures that the dowel tube holes will be in alignment.

The outer panels are now joined to the centre section in the following manner. On both the centre section and the wing panel the portion of the junction ribs which falls between the top and bottom mainspars is cut away to allow the $\frac{1}{16}$-in. hard sheet dihedral block to be located between the spars. Use plenty of cement here and bind with silk or thread. Gussets at the leading and trailing edges and spars are next fitted. It is at this juncture that the rear auxiliary spar is let into the underside of the ribs. This spar, of course, has a long joint incorporated to conform with the dihedral and this joint is reinforced with sheet celluloid. The top and bottom of the centre section are now covered with $\frac{1}{16}$-in. sheet.

Engine Mount Notes

The method of mounting will vary with different engines, but in any case the whole engine and bearers will be fixed to the knock-off bulkhead which is retained in the nose former by strong rubber bands, stretched ; one from the forward undercarriage tube around the engine bulkhead and back to the tube on the other side, and the other from the dowel just under the cabin in a similar way. (This dowel also carries the wire fitting which is the forward peg for the wing retaining bands.) The ignition wires must, of course, be provided with plug and socket joints to allow a break away. With the thrust line in the position shown 2 deg. right and 2 deg. downthrust should take care of matters. On no account should the thrust-line be positioned any lower than that shown on the plan, since this will inevitably result in instability, particularly under high power.

The model is now covered and doped, with the exception of the two side bays of the fuselage just aft of the cabin on one side. This is to allow for the subsequent wiring of the battery box. The model may now be assembled and tested for balance with the battery and box held temporarily underneath by elastic bands. The model should balance at the mainspar of the centre section, and the battery can be adjusted until this state of affairs exists. The battery box can now be installed permanently by cutting away the planking under the nose at the appropriate place and the wiring installed. When the two bays have been covered and doped your model is complete.

The model flies best in large circles to the left, and gentle use of the trimmer can be made to achieve this—but don't overdo it.

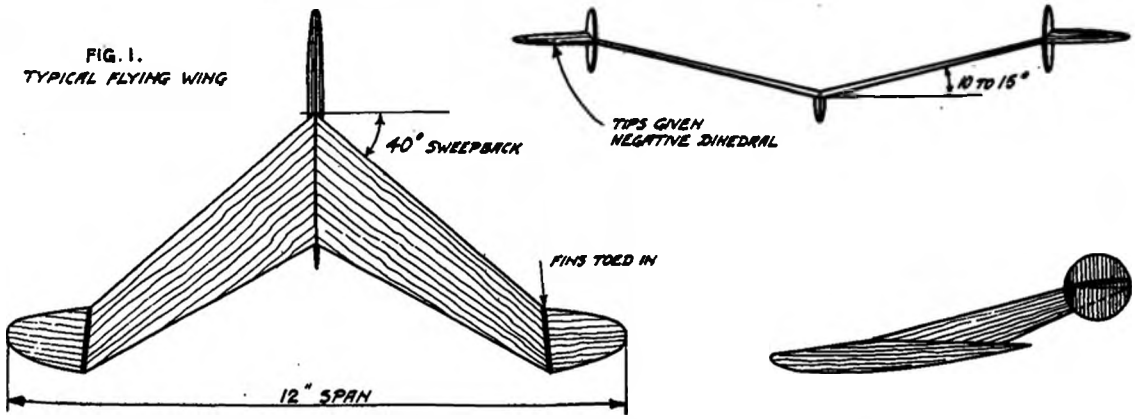
The total weight of the original in flying trim is 3 lb. 5 ozs.

FLYING WING GLIDERS

By W.A. DEAN

IN full size design circles nowadays there is much talk of the "Flying Wing," which has come to be regarded as the ultimate peak of aerodynamic economy. But apart from the Northrop machine and the M.E.163, very little seems to have been done with the pure Flying Wing. The Miles X and the new American McDonnel XP-67 both approach the Wing design insomuch that the wings are thickened up where they meet the fuselage—but they still rely on the normal type of tail assembly for longitudinal stability. No doubt the slow progress in real aircraft Wing design is partly responsible for the present lack of interest amongst modellers. Apart from a few successful German glider designs of 1936-38, which appeared in Frank Zaio's 1938 Year Book, there seems to be very little data to go on, for anyone contemplating the construction of a Wing-type of model.

Faced with these drawbacks and yet determined to make an attempt at a fairly large Flying Wing glider, I decided to experiment with solid chuck gliders until I had collected some practical data on which to base a big job. After a week of building various types of "Wings" and incidentally getting through several sheets of valuable balsa—I began to get results comparable with the conventional wing and tail solid gliders. The data I picked up



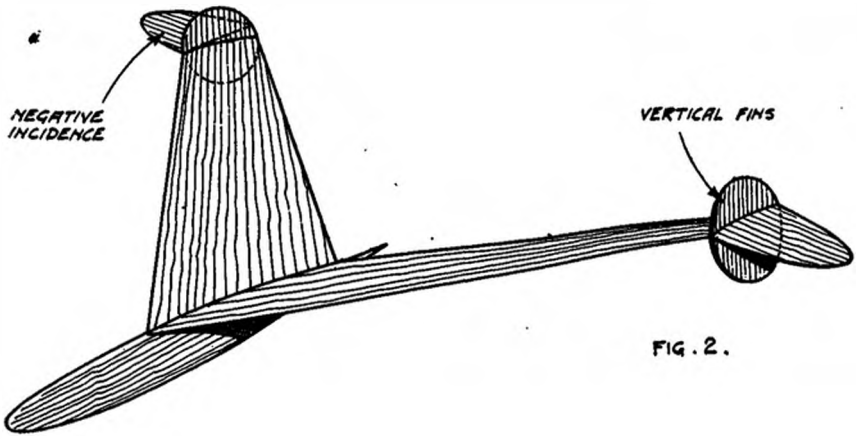


FIG. 2.

from these experiments, although very elementary (the factor of built-up aerofoil sections being ignored completely), should help you to avoid a few of the difficulties and snags I myself encountered. All the models were built to a span of approximately 12 in. —the wings being cut from $\frac{1}{16}$-in. sheet with spruce pods in each case. (Fig. 1).

Somehow I had the idea that dihedral would have to be pretty sharp—but this did not prove to be the case. Actually very little is needed, it being far better to depend on the pendulum stability provided by a fairly heavy pod. Ten to fifteen degrees proved ample on these 12-in. models. That is about 1 in. and 1½ in. respectively, under each tip, about two-thirds of that normally employed on solid gliders. Any increase in dihedral was found to make the models extremely sensitive with tendencies to hunt from side to side.

For longitudinal stability, it is necessary to have the tips set at a different angle to the wing root, as they have to supply the correcting forces normally taken care of by the tailplane. This can either be steamed in to give washout at the tips, or trimmers may be cemented on at a negative angle of attack. This angle should be at least 4 deg., otherwise the stall recovery is very slow.

Directional Stability

For directional stability, we find that very little fin area is needed. This is partly due to the effect of sweepback and partly to the fact that there is little side area or keel surface forward of the C.G. to balance out. It follows, of course, that fin area is proportional to the sweepback. Keep the sweepback to 30-40 deg. (on the L.E.) and very little fin area will be needed. Setting the fins vertically and the tips at right angles to them improves the directional stability a lot. (Fig. 1.)

When trimmed correctly, wings should balance at about 20-25 per cent. forward of the root T.E. (Fig. 3). The ideal place for rudders is at the tips at approximately four-fifths of the span out. It is then easy to set the tip at a negative angle of attack as mentioned, simply by cutting it off and then cementing it back to the fin at the required angle. (Fig. 4.) The rudders need never be bigger than those shown in the sketches—in fact, they could probably be eliminated altogether, but it is hardly worth the trouble of the sensitive trimming which would result. Lastly, don't attempt to achieve directional stability by fitting a very large central rudder to overcome the short moment arm. This will make the model spirally unstable, the fin acting as a tailplane and pushing the nose round and down as soon as the model is banked. In the solids I built, even with the fins at the tips, the areas were placed above and below the horizontal surfaces to prevent any tendency to spin.

Wing taper is a matter of choice—I used a 3-in. root chord tapering to 2 in. at the tip in most cases. This helps to keep the tips light, which is again a good thing from the spiral stability point of view. Always aim to have the wings tapering in thickness towards the tips. If you use, say, ⅛-in. sheet, get the wings down to 1/32 in. at the tip or a tendency for wing dropping at low speeds will be noticeable.

Pod length should be nearly twice the root wing chord. If made of hardwood, no more ballast is usually needed.

Flying these solid Wings is much simpler than the normal type of chuck glider. However you throw them they always seem to fly. Stall recovery is remarkable. Dropped from 6 feet, they get out of the dive before they reach the ground. For towline or catapult the hook should be placed one-third of the chord back.

Trimming is not critical. Good flights usually result even if the model is trimmed in a stalling condition—recovery being good, with little loss of height. Trim into a left turn and launch with a right bank to achieve a roll off the top. Duration varies from 20-30 seconds, from hand-launches in still air—as good as any tailplane type.

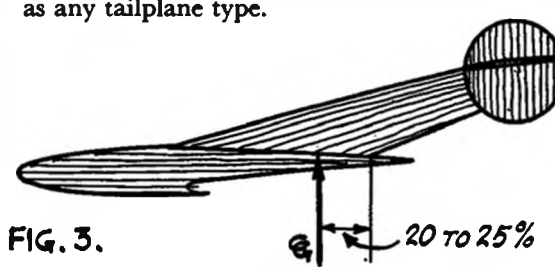


FIG. 3.

These tailless models show promise of being ideal for slope soaring—they always try to turn and keep into wind. In quite windy weather my models often finished quite a long way up wind from the launching point. That is a good tendency in competition work—so many good flights being spoilt by the models drifting away down wind and out of sight of the timekeeper.

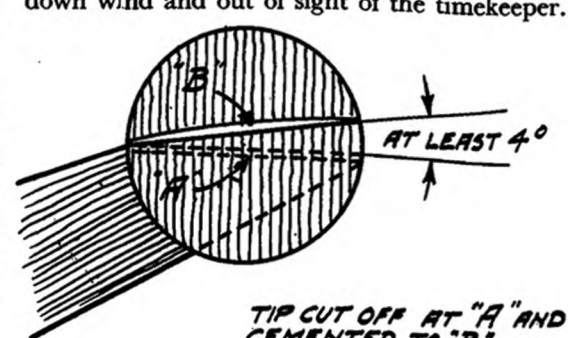


FIG. 4.

JET & ROCKET PROPULSION FOR MODEL AIRCRAFT

By KENNETH.W.GATLAND.

The first of a series of articles on miniature reaction systems—jet and rocket. This contribution deals with models developed for aerodynamical research; and also with the Explosives Act, which materially affects amateurs who are building rocket units

THE achievements in jet and rocket engineering during the war have undoubtably been responsible for the widespread interest which the subject of reaction propulsion now enjoys among aeromodellists. Let it not be thought, however, that this type of model is entirely the outcome of full-scale development. The first piloted rocket aircraft took the air in 1928, while similarly powered models were flying many years before this. It is, in fact, true to say that models have often played a large part in providing the data for the design and building of the actual prototype aircraft. This is particularly true of German aeronautical progress, whose development provides a story of especial interest to the model engineer.

Unorthodox German Developments

Much attention has been given by the Germans to the development of ultra high-speed fighters and winged missiles, and it is now well known that several of these types were emerging for active operation towards the close of hostilities. At this time, however, the majority were still very much in the experimental stage.

Apart from several unique air to air, ground to air, and air to ship winged projectiles, there was one in particular that seems to have had a greater significance than the rest. It bore the ominous designation, "V-3."

This was the "Schmetterling," a reasonably orthodox mid-wing machine with a crucifix tail, designed by Professor Wagner, of Junkers Flugzeug und Motoren Werke. It had an asymmetrical nosing; the one side housed the warhead, while a small air-stream propeller was fitted at the other as power for the electrical services. Propulsion was by two rocket motors contained within slender nacelles; one fixed at the top of the fuselage, the other below. These power units gave a high initial acceleration and when their propellants became exhausted, they automatically disengaged and dropped away.

Perhaps the most significant fact about the "Schmetterling" is that it was intended to be directed by radio-acoustic devices into bombers. So sensitive did Professor Wagner believe his brain-child that he predicted the destruction of one bomber for every missile launched.

The production model had a wing-span of 6 ft. 2 in., and a tail-span of 3 ft. 3 in.; its total length was 13 ft. 1¼ in. The all-up weight was 350 lb.; ceiling, 50,000 ft.; range, 20 miles, with a maximum speed of 620 miles per hour.

Another interesting project was a jet machine, the Jaegar P-13. A flying-wing in the very essence of the word, its design was based on the phenomenal top speed of 1,500 m.p.h., "g" effects being reduced by the pilot occupying a prone position.

It should be noted that the air does not undergo any process of mechanical compression, being fed merely by the ram effect of the 'plane's high speed—similarly, in fact, to the function of the "impulse-duct engine" of the V-1.

The method of heating the air was perhaps the most unique feature of all. Whereas most jet systems employ a liquid hydrocarbon to effect the air expansion, this was to have been accomplished in the Jaegar P-13 by using carbon blocks, preheated to incandescence and rapidly loaded into the expansion chamber just prior to flight.

The machine would then immediately have been catapulted into the air, rockets causing it to accelerate rapidly in order to raise sufficient speed for the ram compression to take over. The air draught would ensure that the heat of the carbon was maintained, and the air was thereby expanded until it had completely burned away.

This system is said to be capable of maintaining an effective thrust for three-quarters of an hour, and it appears that attempts had been

made to prolong the life of the heating substances by directing fine sprays of liquid hydrocarbons on to them. This method is held to have been capable of virtually *doubling* the power duration.

Model for Aerodynamical Research

As might be expected, the evolution of machines of such high performance entailed a very great amount of aerodynamic research. This was largely due to the increased speeds at which they were to operate, and, consequently, their design was often a complete departure from orthodox standards.

Thus it became increasingly necessary to prove certain features in actual flight before commencing upon the prototype—and there was found no easier means of securing the desired data than by the building of flying models. In many cases, such information was unobtainable from the more usual static wind-tunnel tests.

This was especially true of the near ballistic aircraft, and although the Germans possessed the most completely equipped laboratories and high-speed wind-tunnels, little was known of flight phenomenon in the vicinity of the speed of sound until actual tests were made in free flight. Difficulties experienced in the testing of wind-tunnel models at Mach numbers of between 0.8 and 1.2 made the development of flying models increasingly more necessary and, in consequence, a number of types were produced for test within this speed range; some purely to prove new high-speed wing and tail sections—others, of diverse plan-forms and wing settings, to test flight behaviour.

Rocket-Propelled Experimental Models

In this work the rocket-propelled model came into its own more completely than ever before, and with the aid of such miniature types as the "Feuerlilie" 25, a product of the Hermann Göring Research Institute, many of the problems relating to the stability and control of ultra high-speed winged 'craft were quickly ironed out.

The "Feuerlilie" 25, which the writer had the opportunity of examining recently at the R.A.E., Farnborough, was of a type having a mid-cantilever wing situated towards the rear of a long, finely shaped, body. The wings swept back to the line of the rear fuselage, and the tips were finished off by small stabilising fins.

Fins were also attached above and below the end of the fuselage and each supported a cantilever tailplane. The machine was controlled by an elevator fitted to the upper tailplane and small ailerons placed near the wing tips.

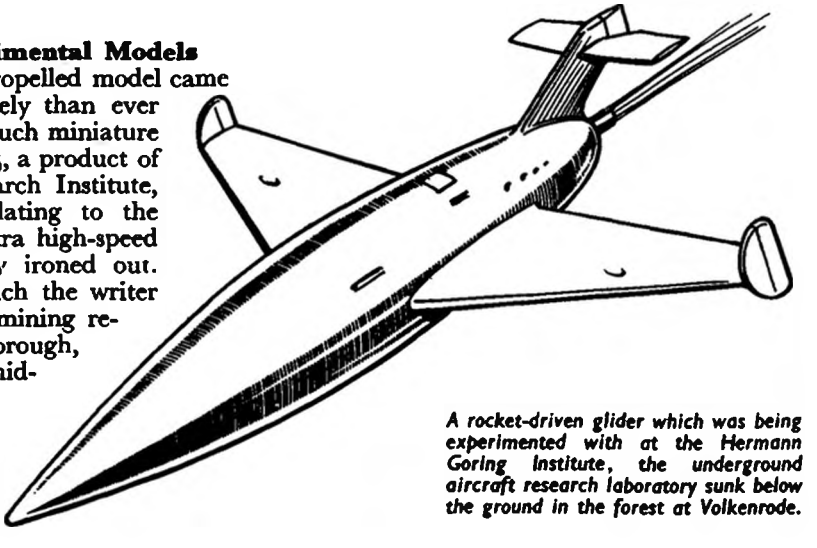
A gyroscopic stabiliser was also embodied, and immediately the 'craft deviated from course, the gyro' would cause the movement of electro-magnetic contacts which, in turn, worked the aerofoil controls.

For the benefit of readers interested in the "Feuerlilie" 25, leading particulars are as follow: Wing span, 3 ft. 8½ in.; wing root chord, 25¼ in. decreasing to 7½ in. at the tips; tailplane span, 13¾ in., and the fuselage length, 6 ft. 6 in., with a maximum diameter of 9 in. Of all-metal construction, its all-up weight was 26¼ lb.

Launching was by means of a ramp which could be inclined at any desired angle between 60 and 80 degrees.

Several of the research models were fitted for radio-control, being piloted from the ground by the technicians who created them. Using such aids as this, the results of a variety of flight speeds and controlled manoeuvres were readily obtained which materially assisted in the development of the full-scale air weapons in whose success the Nazis placed their last hopes for survival.

So much, for the moment, of models produced for aerodynamical research. Credit for the development of reaction powered models outside the Government research establishments



A rocket-driven glider which was being experimented with at the Hermann Goring Institute, the underground aircraft research laboratory sunk below the ground in the forest at Volkenrode.

is largely due to Germany also, although the U.S.A., and to a lesser degree, Gt. Britain, have made notable contributions.

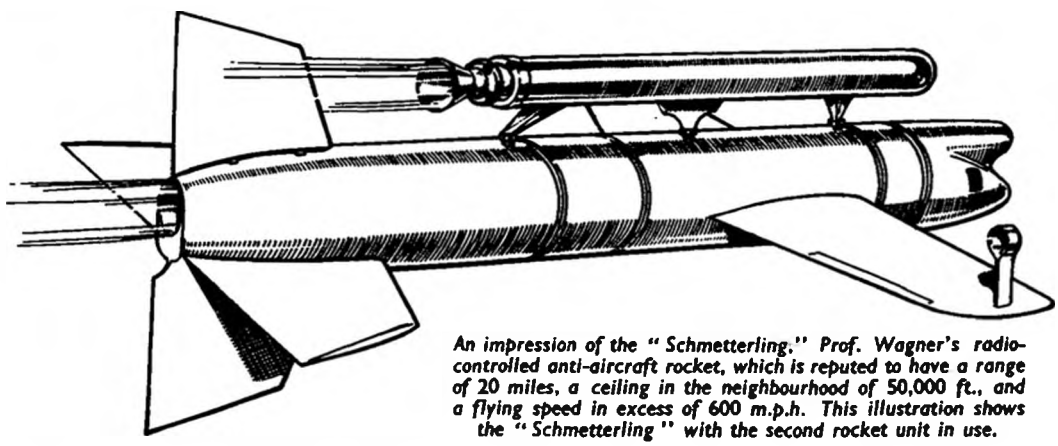
The Explosives Act

Our own country is unfortunate in this respect because of restrictions on such research under the Explosives Act, which prohibits the use by private experimenters of all propellants other than orthodox gunpowder.

A short while ago, even the use of gunpowder was questioned, but it has finally been established through the efforts of Mr. Howard Boys and the S.M.A.E. that it can be employed in models, but only so long as the special charges are used which are manufactured by a firm holding a licence under this Act.

continually of the inexperienced performing the most illogical of "experiments." The most common is undoubtably the admixture of potassium chlorate with gunpowder ; a process that does nothing but render the mixture unstable and liable to instantaneous detonation. The cause is simply that sulphur (an ingredient of gunpowder) reacts with chlorate to form an explosive. Again, no-one who understands the nature of chemicals would dream of using both potassium nitrate (the oxygen bearing agent in gunpowder) and potassium chlorate, because one would act to annul the other.

Not only is this a dangerous practice but it is prohibited by law, and the authorities have the power to deal drastically with offenders.



An impression of the "Schmetterling." Prof. Wagner's radio-controlled anti-aircraft rocket, which is reputed to have a range of 20 miles, a ceiling in the neighbourhood of 50,000 ft., and a flying speed in excess of 600 m.p.h. This illustration shows the "Schmetterling" with the second rocket unit in use.

These restrictions, of course, apply only to *rocket*-propelled models, but no doubt when the model jet-motor emerges from the experimental stage, it too will come under the critical official eye. Although it is fairly safe to say that the model jet engine will not be banned, it is likely that there will be some form of restriction ; perhaps a limitation of the power loading.

Offences Under the Explosives Act

The authorities view the present high accident rate among amateurs who mix their own gunpowders with concern, and it is for this reason that all chlorates, nitrates, aluminium and magnesium powders, etc., are being withdrawn from chemistry sets supplied to young experimenters. Furthermore, the sale of such compounds will in future be restricted to responsible persons over the age of sixteen.

These steps, which at first sight may appear drastic, are really not unreasonable. One hears

There are cases, too, in which cordite obtained from ammunition has been employed in rocket models, and here again is another source of danger, and prosecution.

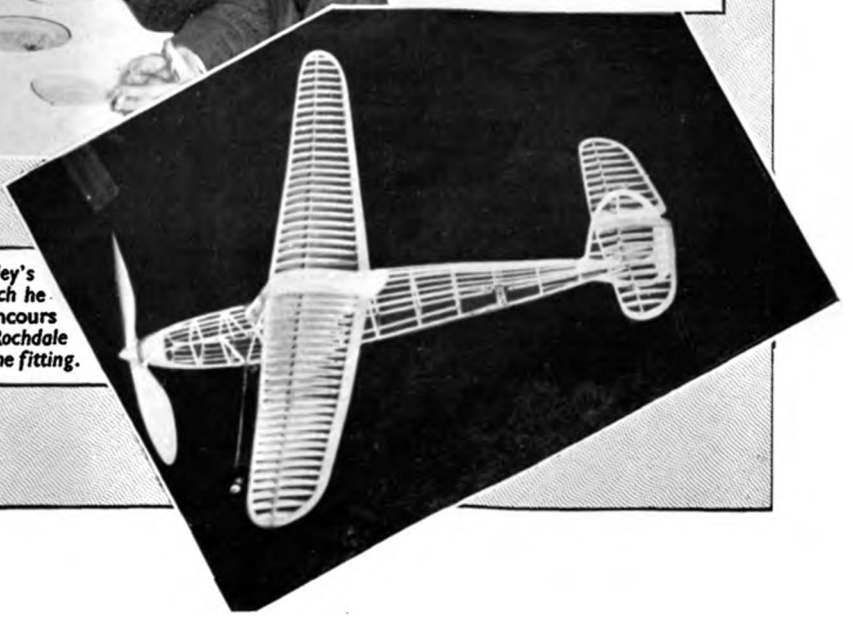
The use of metal charge containers is yet another case for care, owing to the possibility of flying fragments in the event of an explosion.

Commercial Rocket Charges

Those readers desiring to build rocket-powered models will, no doubt, be feeling somewhat downcast after the previous remarks. Let it be said, therefore, that both Mr. Howard Boys and the writer have recently been in touch with well-known pyrotechnical firms with the aim of getting something started along the lines previously suggested, and that there is every hope that a number of firms will shortly be placing suitable rocket units on the market ; indeed, one firm has already done so.

Assistance in windy weather. Two helpers make sure that the model is given every chance of a good start, but the man that really counts is the one at the other end. It is his skill which eventually determines the performance of the model on the line. It was decided at a recent S.M.A.E. meeting that the entrant should always operate the winch or towing end.

A group of petrol enthusiasts exchange experiences after dinner at Bradford. Amongst the group are W. White, Norman Lees, K. Tansley and Mr. Hempsall.



The framework of R. V. Bentley's Wakefield model with which he won his class in the Concours d'Elegance, at the Rochdale Rally. Note the high tail-plane fitting.

The Editor welcomes letters for publication, but accepts no responsibility for the views of correspondents.

ON THE QUESTION OF WEIGHT

Much has been written, and even more spoken, in the past concerning the relative advantages of light and heavy-weight models under the present-day contest rules, which essentially means their relative abilities to stay in the air for the longest possible time.

It appears, to judge from the type of machine winning present-day contests, that the light-weight machine has proved itself superior in this direction.

It also appears that a stagnation point has been reached in the design of this type of model, since their average performance does not appear to have increased materially during the past two or three years. Accordingly, more go-ahead modellers have recently been trying to find some other things to do with their models than merely keep them floating around like over-grown dust particles for the maximum possible length of time. One obvious thing to do is to try to obtain some degree of control over the flight of their models, and to try to be able to say what is likely to happen when they are launched.

From this point of view the light-weight does not show up so well. Firstly, it cannot carry any extra weight, and so it cannot carry any apparatus to control its flight. Secondly, even if it could carry any apparatus to operate its controls, these controls would have but little effect upon the model. A heavy-weight can, however, carry the apparatus to operate its controls, and these controls will have some effect on its flight.

It thus seems that there is a future after all for the heavy-weight, which looks something like an aeroplane, and which will perform as desired when desired.

D. E. CHANDLER,
Brentwood School M.A.C.

THE CASE FOR THE SEMI-SCALE

When describing the trial flights of one of my models to another enthusiast he asked me for performance figures. The confession that such figures were not recorded due to the fact that I failed to take a stop watch to the flying field was greeted by the exclamation "Ah, now that's what I like to hear; someone flying for the love of the game."

I certainly claim no honour for neglecting to carry the usual apparatus, but that illuminating remark of a fellow modeller deserves careful consideration, for it reveals a refreshing point of view which should be fostered among aeromodellers in general; so that the science of model aeronautics may be looked upon as an attractive pastime and healthy sport and not merely as a means whereby certain model aircraft constructors can equip their sideboards with silverware.

Recently, in the Editorial of *The Model Engineer*, the view was expressed that "pot-hunting" was to be deprecated in any field of small engineering. I heartily endorse that view from an aeromodeller's standpoint. Not that any contempt attends a contrary view; far from it. Indeed, a certain amount of healthy competition is vitally necessary in any club to create and sustain enthusiasm, but the "pot-hunting" technique, although developing "gadget" ingenuity (in the form of single-bladed folding airscrews, single-leg undercarts, etc.), tends to breed a class of model quite remote from full-sized principles. Ready identification with some prototype, smart lines, and a reasonably strong structure are all sacrificed in such machines for super lightness and split-hair drag reduction.

Let us consider for a moment the work of the well-known scale modellers. They have not won renown because of their consistency in winning cups, but because their aim is to reproduce models closely allied to full-size machines; models designed for their beauty and for the sheer thrill obtained when flying them. That, indeed, should be adequate reward for any discerning aeromodeller.

I am not necessarily advocating the practice of scale modelling, but suggest that, if aeromodelling is to develop into a science that can be of real assistance to the aircraft designer, we must overcome the style-cramping "silver-cup complex" and lift ourselves from the rut of conventional contest model designs.

To combine good flying qualities with good looks the semi-scale model is the target to aim at.

Semi-scale models can give great satisfaction both with respect to appearance and performance. Designed, as they are, with some full-sized machine in the mind's eye or embodying principles that could be used on full-sized machines if modified and scaled up, they represent the "middle course" of model aeronautics. I cannot do justice to this type of model in the space of this letter, but it would certainly seem to be a step in the right direction if we were to develop this class of machine.

If competitions are required to create the right kind of enthusiasm, then it is suggested that the S.M.A.E. should organise one or two national contests for this class of model.

[It has, but they receive poor support.—ED.]

Competitors could be awarded points under the following headings:—

(1) *Design Efficiency.* Identification of model with some full-sized machine or, conversely, a design that could be used as a "yard-stick" from which a full-size machine could be produced.

(2) *Structural Ingenuity*, general finish and layout.

(3) *Flying Performance.*

The last heading can be divided into (*a*) Type of take-off (to be smooth, with tail coming up before machine "unsticks"); (*b*) climb (to be steady; no leaping off and rocketing up); (*c*) General performance.

GORDON ALLEN

CORRECTION

A typographical error has occurred on page 7 of the January issue referring to the scale of the De Havilland "Vampire." The drawing is reproduced at 1/72nd scale so that those desiring to build a solid model to this popular scale can obtain their dimensions direct from the drawing. The actual scale value of each square of the plan is equal to 1 foot and these squares are given for guidance when it is desired to enlarge the plan to some other scale.

TO CLUB SECRETARIES

Will club secretaries and correspondents please note that reports and letters for publication should reach us by the 7th of the month preceding the month of issue.

LONDON AREA COUNCIL

Notes on a meeting of the London Area Council held on Saturday, Jan. 5th.

The Secretary informed the meeting that he had received a cheque from Mr. A. Hunt for use as a prize in R.T.P. Contest. Mr. E. Keil has also offered to present a suitable trophy for an Area Petrol-engine Competition. The Council expressed their sincere appreciation of the donors' generosity.

Notice was given of an invitation to compete in a R.T.P. Contest to be held at Manchester on March 17th under the auspices of Northern Area Council. This was accepted and the Competition Secretary was instructed to select a team of four from the best results submitted in the present Area Contest.

The S.M.A.E. are co-operating with a film studio in making a short film including indoor and outdoor flying sequences ; Club members are requested to hold themselves and models in readiness for "shooting."

There was a preliminary discussion on forthcoming competitions, but final details of programme will be settled after announcements by S.M.A.E. of competition dates.

S.M.A.E. NORTHERN AREA COUNCIL

The Fairey Trophy has been presented to the Northern Area Council by the Fairey Aviation Co. Ltd., and the rules covering it are given below :—

(1) The contest is for models of any Fleet Air Arm type of aircraft in the British Royal Navy, excluding seaplanes or flying boats.

(2) The contest shall be held in alternate years for "static" (non-flying scale models) and flying scale models. The first year shall be for static models.

(3) Free-lance or original design models shall *not* be eligible.

(4) There shall be three judges appointed for the contest, one of whom shall be appointed by the Fairey Aviation Co. Ltd. and two by the Northern Area Council.

(5) Static models shall be to a minimum scale of $\frac{1}{4}$ in. to 1 ft., maximum scale $\frac{1}{2}$ in. to 1 ft.

(6) Flying scale models shall be to a minimum scale of $\frac{1}{2}$ in. to 1 ft., maximum scale 1 in. to 1 ft., and shall be powered by rubber motor(s). They shall be shown to be capable of full flight to the judges' satisfaction.

(7) The drawings from which each model has been built must be submitted at the time of entry.

(8) The closing date for the contest shall be published each year by the Northern Area Council and will normally be in March or April.

(9) The contest shall be open to all model aircraft makers in the S.M.A.E. Northern Area sphere, as defined from time to time by the Northern Area Council.

(10) The winner shall hold the Fairey Aviation Co.'s trophy for one year and receive a cash prize of £5 os. od. and a certificate. The runner-up shall receive a cash prize of £3 os. od. and a certificate.

NORTHERN AREA CLUB NEWS

By "Northerner"

Well, Northerners, here is the first edition of Northern Club News, a section which, with your co-operation, will become a permanent part of this new enlarged MODEL AIRCRAFT. This first article, will, I am afraid, be rather a "thin" one, because most of you were not aware that this new section was to be started and so you have not hurried your reports in. However, I promise you a good edition next month, but remember that you must send me your reports regularly, otherwise I shall not be responsible for the publication of any part of them. All reports from Northern clubs should reach me not later than the 20th of each month, i.e. matter for inclusion in the April issue should reach me by February 20th.

The entries in the recent Northern Area Winter Outdoor Competitions have been very disappointing and it seems possible that these may not be held next winter. Some critics are blaming the clubs, but the weather is usually fairly tough in the North in winter (and in the South for that matter), and I feel that this, along with the increase in R.T.P. Contests, is mainly the cause of the failure of these outdoor events. The winners of the November Open Rubber Contest were : 1st, Mr. R. F. L. Gosling (Merseyside), 222.2 sec. ; 2nd, Mr. C. J. Davy (Blackpool), 188.5 sec. ; 3rd, Mr. J. Webber (Lancaster and Morecambe), 169 sec. An interesting discussion took place at the last meeting of the Northern Area Council on the poor quality-type of certificate given to winners of National Trophies. It was decided that a recommendation be sent to the S.M.A.E. Council asking that special badges be prepared for distribution to members placed 1st, 2nd and 3rd in National Trophy contests in addition to the certificate which the Council hoped would be improved and made more in keeping with a National Trophy Certificate.

The Manchester and district clubs are still working in close co-operation with one another and at their last meeting discussed plans for an "Aeromodellers' Week-end" to be held in Manchester on March 16th and 17th. On the 16th there is to be a lecture in the afternoon at the Central Library, St. Peter's Square, Manchester, by Mr. C. S. Rushbrooke, followed in the evening by a dinner and dance (the venue for this particular event is not yet definitely fixed). The following day (Sunday, March 17th), there is to be a grand Indoor R.T.P. Rally in the Houldsworth Hall, Deansgate, Manchester. This is the first event of its kind in the North on a large scale and should be interesting. In addition to the various classes of indoor flying there is to be a *Concours* and also in the afternoon a special Area Team Contest. The *Daily Dispatch*, which has been taking quite a lot of interest in the Northern portion of the model-aircraft movement, has sponsored this Sunday event and the Manchester and District Council is making every effort to make it a great success. I hope to have full details of the programme next month.

A grand Christmas party seems to be the main news from the Bury and District M.A.C. ; it was held on Christmas Eve and there was a good attendance (I should just think so). The members' mothers provided a goodly supply of eatables, including an iced-cake complete with model sailplane in the centre. (Did it fly, mister ?) After the eats, a member, Mr. C. Wood, gave a cinema show to a very satisfied audience. The club has now obtained permission to use a school hall for indoor flying and the members appear to be concentrating on speed models, and there is a report on one model covering nine laps at quite a fair speed.

R.T.P. speed models also seem to be well to the fore in the minds of members of the Sale Aeronautical Society, where there seems to be some interest centred around a

modified version of "Scram Gravy," which has been built by the club's secretary, Mr. G. D. Barnes. A junior, P. Whitt, holds the club's speed record at 18 m.p.h., with an unorthodox model. The best time for R.T.P. duration so far is 58.5 sec. The club does not claim exceptional outdoor duration, except for the glider record held by Mr. C. Christianson, with a time of 9 min. 40 sec. o.o.s., with the lightweight "Go-Hi.V." (It evidently did.) He intends sending plans for this and another model glider, "Goblin," to the S.M.A.E. Mr. R. Astley, of "Cracow" fame, is rebuilding new wings and tail for this exceptional model, to reduce its 37½ ozs. to 26 (if possible).

An excellent report of best flights and brief details of models making them comes from the Wallasey M.A.C., and I propose to publish as much as space will permit. D. Hill appears to have the best flight with an "Albatross" tow-launch glider, time 9 min. 45 sec. o.o.s. The model is described as of original design, circular-section fuselage, parasol wing, parallel-chord polyhedral wing, tailplane set medium high on fin. N. Harrison, with a "Judy," comes next with a flight of 7 min. 30 sec. o.o.s, and then B. J. S. Foster, with "Shoofly," with a flight of 7 min. 29 sec. o.o.s.; model of original design—diamond fuselage, parasol wing faired into fuselage, parallel-chord wing, designer's own airfoil section, dihedral tailplane. A. Molyneux follows closely with "A.B.M.I.," timed 7 min. 25 sec. o.o.s.; original design, oval-section fuselage (planked), tapered-chord wing incorporating tongue-and-box fittings, Eiffel 400 aerofoil section, dihedral tailplane. I hear that a plan of this model will appear soon in MODEL AIRCRAFT. All the above were gliders. In the hand-launched rubber section B. J. S. Foster appears to be well up the list with a "Fledgeling" timed for 2 min. 30 sec; original design, high wing, parallel-chord, polyhedral wing, designer's own airfoil section. This model has a consistent flight of 100 sec. in still air. Indoor flying commenced at this club in October and the best flight to date is 1 min. 8 sec. by A. Molyneux's "Flying Pancake." Mr. Elmer obtained a new record for the club for free flying with a time of 15 sec.

The remainder of the club's competitions for 1945 were as follows:—

Open Glider—D. Hill, 645.4 sec. agg.; two flights.

Glider (24 in.-49 in. span)—D. Hill, 265 sec. agg.; three flights.

Glider (50 in.-59 in. span)—D. Hill, 130 sec. agg.; three flights.

Open Rubber and Glider—A. Molyneux, 121 sec. agg.; two flights.

Glider (60 in.-120 in. span)—D. Hill, 90 sec. agg.; two flights.

Open Rubber—A. Molyneux, 110 sec. agg.; two flights.

D. Hill also won the "Points Cup" for the best all-round performance for the year.

The report of a very successful exhibition comes from the Whitefield Youth Movement M.A.C. This was held in the main hall of the Stand Grammar School, Whitefield, and there were over 150 models on view, nearly three-quarters of them being flying models. E. G. Bartle and his younger brother won the static model Senior and Junior Trophies respectively. All visitors to the exhibition were impressed with the work displayed. Over 500 persons visited the exhibition from Friday evening to Saturday evening. (Good going, chaps, for a one-club show). This club holds meetings every Monday evening in the Stand Grammar School for Girls. Higher Lane, Whitefield, and indoor flying takes place every other Friday in the same school. Newcomers will be welcomed.

Don't forget that all Northern Club reports should be sent in before the 30th of each month, and they should be addressed to—Mr. R. Lawton, 10, Dalton Avenue, Whitefield, near Manchester.

MINUTES OF THE DELEGATE MEETING OF THE MIDLAND AREA COUNCIL

(Moseley Institute, Birmingham, December 1st, 1945, Mr. Hassall in the chair)

Minutes

The minutes of the last meeting, on October 13th, were read by Mr. G. Bradwell, proposed taken as read by Mr. Cook, seconded by Mr. Dunmore, and carried.

Communication from Northern Area

A copy of a proposed re-constitution of the Society was read by the Chairman, and met with the approval of every delegate. Mr. Doughty proposed that the Midland Area supported the proposal in essence, seconded by Mr. Ward, and carried unanimously.

Trophies

Since the delegate requested to enquire after the manufacture of Area trophies, Mr. Ginns, of Coventry, was not present, this matter was referred to the next meeting.

Flying Ground

Another matter brought forward from the previous meeting, this was discussed at some length. Mr. Cook, Area Competition Secretary, stated that if we accepted the Northern Area's constitution, a new, larger ground would be vital. The Coventry delegates requested to enquire about the field near their town were, again, not present, but the Chairman gave news of negotiations with the authorities of the Air Training Corps, for the joint use of the Hockley Heath aerodrome of 146 acres, by the A.T.C. gliding school, and the Midland Area. The Area might possibly affiliate to the A.T.C. for this purpose. Negotiations had begun on behalf of the Birmingham M.A.C., but Mr. Hassall stated that this would mean, in effect, that the Area would be able to make use of it, provided that the standing orders of the A.T.C. were respected. Buses ran past the aerodrome every twenty minutes.

Area Bulletin

Replies to the circular-letter sent to all Midland and surrounding clubs by Mr. R. H. Greaves, Bulletin Editor, were read by the Chairman. The Aylestone, Northampton, Hednesford, Derby and Witney Clubs replied enclosing a year's subscription, but the Sheffield Club felt that they were more properly concerned with the Northern Area. Further replies had been conveyed verbally.

Bowden Trophy Procedure

A reply to the minutes of the October 13th meeting sent to Mr. F. Wilkes, Press Secretary of the Area, by Mr. A. F. Houlberg, was read to the assembly. Opinions were put forward by the delegates expressing disagreement with all Mr. Houlberg's statements, and it was intended to bring it up at the Extraordinary General Meeting on the following day.

Indoor Meeting, December 8th

The Chairman pointed out that we had not yet decided what prizes were to be offered at the Indoor Rally at Moseley on December 8th. Mr. Doughty proposed that they be left the same as last time—10s., 6s., and 4s.—and that if entry fees were sufficient, to increase them proportionately on the day. Mr. Nokes seconded this.

Mr. Sawyer proposed that the prizes should be the same as those given at the Outdoor Rallies—15s., 10s. and 5s.—and that possible deficit be made up by a levy upon clubs taking part. He was seconded in this motion by Mr. Phillips, and a vote resulted in Mr. Doughty's motion being carried with a majority.

Mr. G. Bradwell, said the Chairman, had offered an extra prize in the Speed Contest, for the highest speed over five laps.

It was decided to run this contest to the former S.M.A.E. rules, as the new ones as published in the S.M.A.E. news-sheet presented certain difficulties.

Nomination of Officers

Mr. Hassall stated that the Midland Area would like all clubs to co-operate in this matter, in order to get a " bloc " vote, and that we should keep in touch with the Northern Area about this.

The Chairman expressed dissatisfaction that his club, the Birmingham M.A.C., had not received a nomination form, and could not, therefore, send one in before the time limit expired. He believed that other clubs were in a similar position. In fact, insufficient time had been allowed, even without the delay in receiving forms.

Future Midland Area Meeting

Mr. Gunn, of the West Coventry M.A.C., had written, proposing that the next Delegate Meeting be held at the Youth Centre, Holyhead Road, Coventry, and it was decided that his invitation be accepted, to take place on February 9th, 1946, at 3 p.m.

BLACKPOOL AND FYLDE M.A.S. REPORT

Although the weather was quite good for the time of year, only three members entered for the Northern Area November Contest for rubber-driven models. All flew lightweights and the results were :—

C. Davey, 188.5 sec. agg. J. Owen, 157.8 sec. (two flights only). R. Ellis, 111.3 sec. agg.

Our new club-room is now completely fitted out with benches, etc., and we are hoping that members will make good use of the facilities provided. During the winter months we intend to hold meetings on Thursday and Friday of each week, when senior members will be in attendance to help the juniors where possible.

It is with regret that I announce the resignation of our secretary, Mr. C. Hedges. During the past few years Mr. Hedges has spent a great deal of his spare time managing the affairs of the club, and we owe him thanks for all the hard work he has done.

BRENTFORD AND CHISWICK MODEL FLYING CLUB

At Hogarth School, the B. & C.M.F.C. held their annual social and prize giving. It was an enormous success. In spite of rationing, quite a substantial repast was provided—and disposed of!

Trophies and cups were presented to the season's winners in the club competitions by Mrs. Hoyle, wife of our President, Mr. Hoyle.

The " Halifax Trophy " went to Mr. W. Porter, together with a certificate. Mr. W. Close received a certificate for gaining second place.

Mr. W. Snow received the " Ford Challenge Cup " and certificate. Mr. E. Brisley, runner up, gained a certificate.

The " Junior Trophy," for members under 16 years, was won by K. Bates. Sidney Cook received a certificate for reaching second place.

Certificates were also presented to Mr. A. Young, Mr. E. Brisley, Mr. R. Tate, Mrs. L. Close, Mr. W. Snow, Mr. S. Ford, and Mr. R. Conner, for gaining highest times among club members in the national competitions.

After the prize giving a dance was arranged, this was to enable the younger members to get acquainted with other members' sisters! The evening ended all too quickly, and revellers were loth to depart. We are all looking forward to next year's " Do," which we hope to make a bigger function altogether.

This season, from the point of indoor flying, has not been much of a success up to the present. Yes—it's the usual story—lack of rubber. Still, from the many stories circulating at the moment, there should be a supply of it before very long.

The club is rapidly becoming mechanised, members, since petrol has become available, turn up at club meetings on all manner of weird and wonderful mounts. Midland clubs may be visited by some of our motor-cycling members when the outdoor season commences.

We have received a challenge from the Glasgow M.F.C. More details will be available later.

BRISTOL AND WEST M.A.C.

The Bristol and West Club wound up the outdoor season with the twin- and three-float contests. In the former K. W. Moon, placed first, with M. Garnett second, being the only members to take off.

The three-float event was won by R. T. Howse, K. W. Moon placing second, D. Jones third.

We still lack a good flying ground, but live in the hope of obtaining the use of an aerdrome.

Mr. Middleton, our Press Secretary, has joined up under the R.A.F.V.R. and we all wish him the very best of luck in his new surroundings.

We have obtained the use of the Drill Hall for our indoor contests, and expect good attendance, as a number of super lightweights await trials.

The Model Exhibition has taken up a great deal of time, and was without doubt the finest collection of models ever on show in Bristol. It was opened on Saturday, January 5th, by the Lord Mayor of Bristol.

Petrol models have been constructed and a very fine model by M. Garnett is waiting for test.

R. T. Howse has produced a very interesting tailless model " Push Pull " and won the Handley-Page Area event with it ; he demonstrated perfect control over the model, and obtains consistent flights of over 1 minute.

The B.A.C. Aces Club has joined forces with the Bristol and West, and we look forward to able support in club events, etc.

In a challenge match with the Aces, the Bristol Club won by over 300 sec., the weather being unkind to the lightweights. D. Jones made best times in a high wind.

K. W. Moon produced a Flight Cup model on the lines of his Wakefield model, using a 2-1 gearbox and plug-in shoulder wings. The Wakefield-type has turned in a flight of 130 sec. on 350 turns out of a possible 800 ; it looks full of promise.

Our A.G.M. will be held very shortly and a press secretary will be elected. In the meantime K. W. Moon has consented to carry out this duty.

Mr. Butler has constructed an electric motor for his Spitfire, weight approximately 1 oz., but he hopes to improve on the revs. with a finer clearance between armature and field.

HALSTEAD (ESSEX) AND DISTRICT MODEL FLYING CLUB

A/C Eric Bult home on a " 48 " made what must surely be an unusual flight on November 18th. Flying his " Korlummie " sailplane in cold damp conditions the model flew away and was only recovered after an appeal in the local Press. Since nobody present was optimistic enough to take a stop-watch with them, the time was estimated at 5 min. o.o.s.—3 min. was recorded on a wrist-watch after the members had woken up to the fact that something was on. The quite flat topography of N. Essex makes the flight more remarkable.

The H.M.F.C. put up a large stand at the local

Thanksgiving Week Exhibition. An experiment consisting of showing several flying models in various stages of construction came off. and the public, we believe, were at last convinced that model aircraft are not just toys necessarily built from kits. A " Raw Materials " section added further interest in this direction. We were complimented on our efforts by the Rt. Hon. R. A. Butler, M.P., the late Minister of Education, who was apparently much impressed with aeromodelling as a hobby.

The club still grows in strength and with returning members soon, we hope, with us we look forward to a promising New Year.

MERSEYSIDE MODEL AIRCRAFT SOCIETY

The largest gathering of members seen for a long time appeared at the club's first indoor meeting of the winter season at the Common Hall, Hackins Hey, Liverpool. About a dozen R.T.P. models of various types from diamond fuselage parasol jobs to Buckeridge " Flat-Fishes " and Warring designs were flown, and two poles were in almost continuous use until by an unfortunate chance a collision damaged a wing of D. R. Hughes's model. But for this his times would undoubtedly have been improved upon. The best times were :—

D. R. Hughes	...	68.0,	65.0 & 94.5 secs.
W. A. Jackson	...	59.0	68.8 & 46.2 secs.
T. Comber ...	...	52.7,	62.5 & 67.6 secs.
A. O. Sutcliffe	...	75.1,	108.0 & 122.1 secs.

Mr. Jackson turned up with a suitcase full of small free-flight models ranging in span from 4 in. to 10 in., and these provided much amusement. These models ably demonstrate what remarkable flights can be made with really small designs.

SOUTH BIRMINGHAM M.F.C.

The South Birmingham M.F.C. are hoping to gain a position nearer the top at the forthcoming Moseley meeting, which rumour says will be the biggest ever. They are holding an indoor flying meeting every fortnight, though our hall is a smaller one than last year.

The first indoor meeting, held on November 30th, was not very well supported, but there were a variety of models present, a flying scale Moth Minor. a Warring pusher cabin monoplane belonging to Phil. Dash, and F. Wilkes's tailless " Lance-Corporal," which performed quite well, its best flight being only two seconds under the best flight of the evening.

At the Club meeting on December 7th, the last contest of the year, a solid contest was held. The prizes of a Mosquito and 5s. for the winner were donated by George Lucas, who gained the first three places in the last contest, but remained out of this one, to make it more exciting ! Results were :—

Position	*Entrant*	*Finish*	*Detail*	*Total*	*Model*
1st	P. Dash	9	9	18	D.H. Dragonfly
2nd	F. Wilkes	9	8	17	Vicker's Vampire
3rd	F. Wilkes	8	8	16	P.Z.L. p24
4th	R. Greaves	7	8	15	Thunderbolt

At the last meeting of the year, devoted to indoor flying, on December 14th, a few more people were flying, and with greater success. Probably the reason for this was the meeting at Moseley on December 8th, at which eight South Birminghamites flew.

Reg. Joines, the Treasurer, put up the best flight, 53 sec., I believe, and this will probably win the Cook Cup for the best indoor flight before Christmas, 1945.

The annual general meeting of the Club will be held early in January.

The agenda will include the award of trophies, report and resignation of the 1945 committee, the election of the 1946 committee and officers, and discussion of topics constitutionally notified to the chairman of the meeting.

SURBITON AND DISTRICT MODEL FLYING CLUB

The Surbiton and District Model Flying Club wish to announce that their Annual Glider Gala will be held on Epsom Downs on March 24th, 1946. All clubs are invited to enter a team of four gliders, the only restriction being a maximum tow-line length of 300 ft. Only one team per club, each member of the team to make three flights. Flying will c mmence at 2 p.m. sharp. Assistance with timekeeping will b: greatly appreciated, and will those offering such assistance please contact Mr. N. David on the field. There is no entrance fee, so come on, lads. Make it a record entry and keep the wind sock flying.

CHANGE OF TITLE

The Torquay Model Aero Club. Hon. Secretary : Mr. E. J. Taylor, 4, Mount Pleasant, Ellacombe, Torquay. (Previously The Torquay and District Model Aeroplane Club.)

CHANGES OF ADDRESS AND NEW CLUBS

Aylestone M.F.C. The new Secretary's address is :— D. Chapman, 72, Rancliffe Crescent, Braunstone, Leicester.

Brentwood School M.A.C. : Hon. Sec., A. R. de Pury, Etton Lodge, Station Lane, Hornchurch.

Bushy Park M.F.C. : Hon. Sec., L. M. Walker, 16, Conifers Close, Kingston Road, Teddington, Middx.

Wythenshaw M.A.C. : Hon. Sec. : A. Timms, 152, Rosberry Street, Moss Side, Manchester.

Mexborough and District Aeromodellers' Club : Hon. Sec., G. L. Beal, 6, Regent Street, Dolcliffe Road, Mexborough, Yorks.

Carshalton M.A.C. : Hon. Sec., K. D. Prior, 68, Carshalton Park Road, Carshalton, Surrey.

Bargoed M.F.C. : Hon. Sec., A. G. Taswell, 36, McDonnell Road, Bargoed, Glam.

Zombies : Hon. Sec., R. H. Warring, 10a, Hayne Road, Beckenham, Kent.

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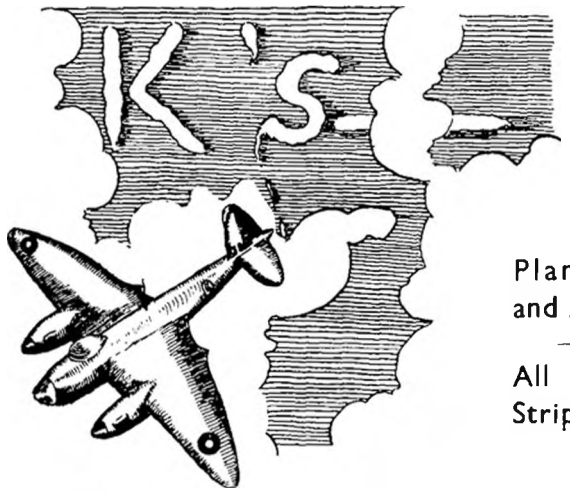

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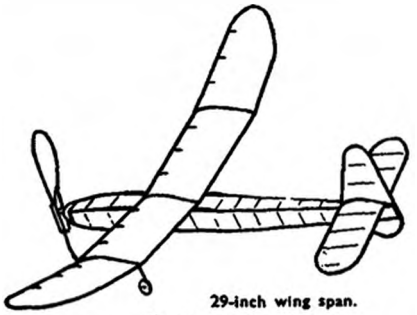

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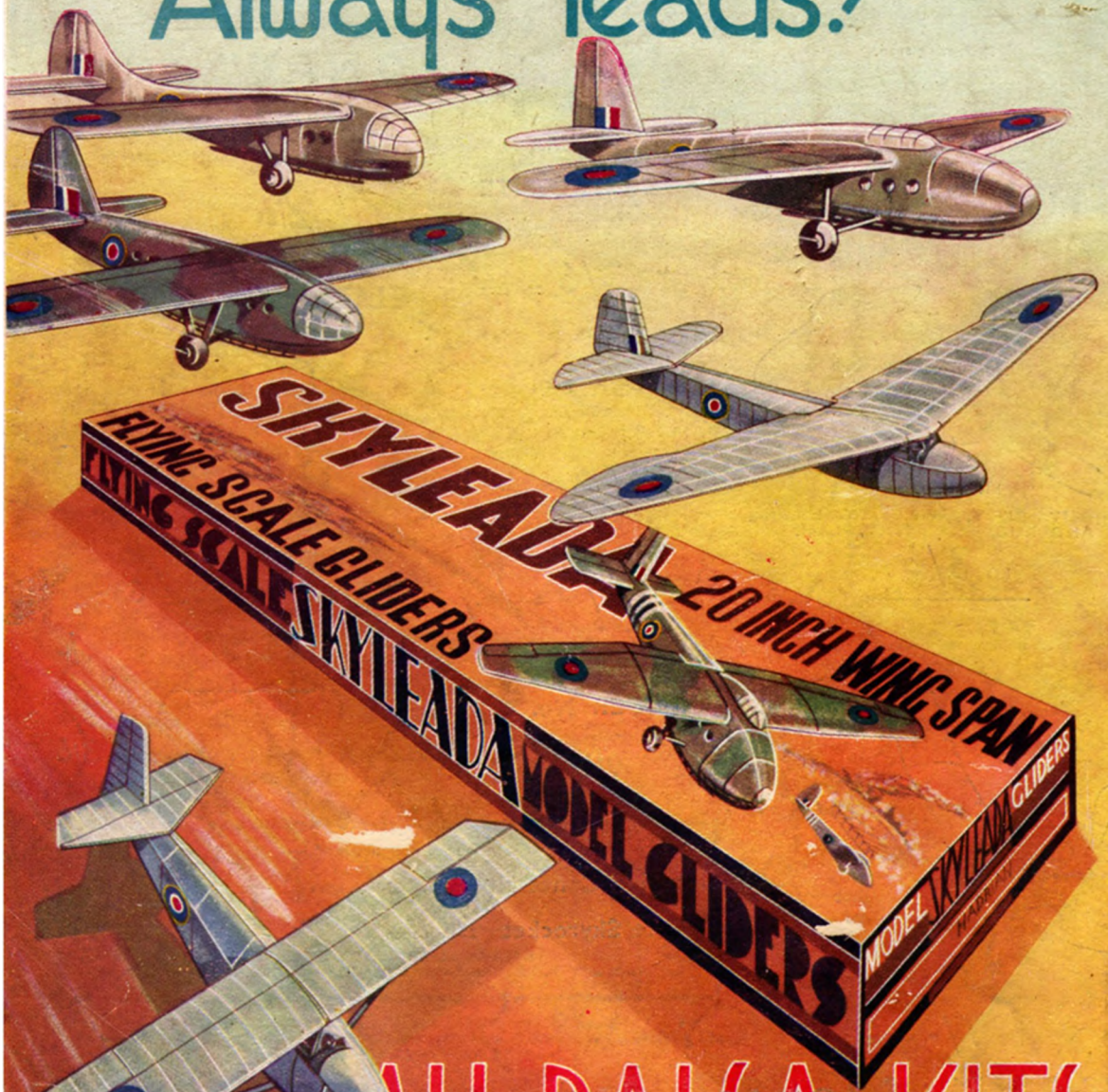

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