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DECEMBER,
1946
Vol V No. 12

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

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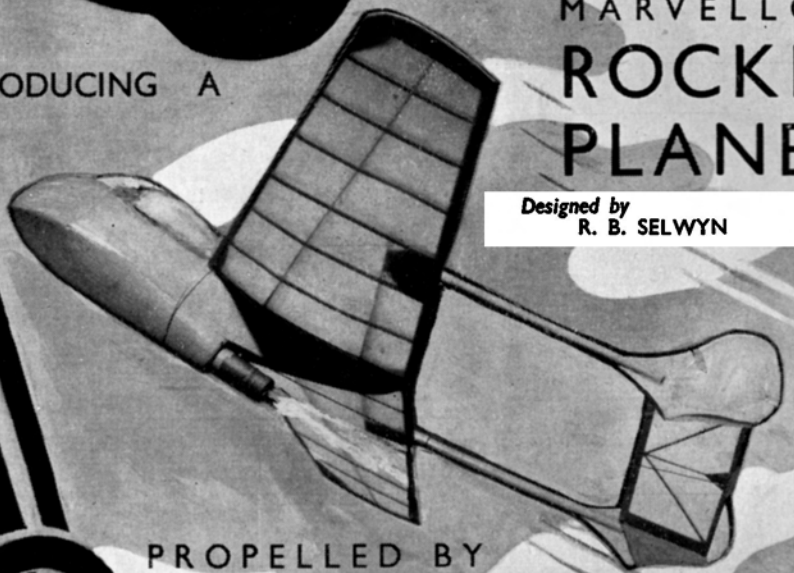

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MODEL AIRCRAFT

The Journal of the Society of Model Aeronautical Engineers

DECEMBER 1946

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The Editor presents

A PERCIVAL MARSHALL PUBLICATION

The MODEL ENGINEER EXHIBITION

A high quality of workmanship was discernible even amongst the winners of third prizes at the recent Model Engineer Exhibition, as evidenced in the machines illustrated on this page, all of which would be good enough to win a first place in the majority of Concours d'Elegance.

The top illustration shows J. Worden's 6-ft. span low-wing monoplane with polished mahogany turtle deck, which gained third place in the class for power models.

Above is F. E. Deudney's well-designed and equally well-constructed F.A.I. sailplane, which earned him third place in the sailplane class. The fuselage was a very fine example of planking and paper covering.

Left : A fine example of solid modelling entered by G. D. Barnes, of Woodheys. This 1/24-in. scale model of the Fairey "Firefly" was very accurately reproduced and included a sliding cockpit-cover. It gained third prize in Class 22.

Above is the large high-performance sailplane, with controllable surfaces, entered by G. E. Dunmore, of Leicester. This model showed evidence of considerable thought in its design and care in its construction, which brought it into second place in its class.

On the left is a Wakefield-type model entered by T. Whalley, of Whitefield, which gained third place in the class for Wakefield models.

News Review

Cover Story

Our cover picture this month is of Ray Monks and his petrol model taken at Stoughton Aerodrome, Leicester, immediately after he had been announced the winner of the S.M.A.E. Petrol Duration Contest on September 15th. Ray Monks's performance in winning this contest is a particularly meritorious one, as he designed the machine specially for the event and actually built it in a few days' leave which he enjoyed just before the date of the contest.

The model was therefore a "straight off the drawing-board" effort and the fact that it performed so excellently in the bad weather which prevailed on the day of the contest, reflects great credit on its designer and constructor.

As will be seen, the model follows the general layout which has developed in America as a result of contests judged on the basis of duration achieved with a limited motor run, and points to note are: the almost completely-cowled motor tucked under the leading edge of the wing and polyhedral wings with deep undercamber. The photograph was taken by your Editor.

Greetings

The Editor would like to take this opportunity of wishing all readers of MODEL AIRCRAFT a very happy Xmas, with as much good cheer as the present austerity conditions will allow.

Although post-war progress has been relatively slow, there are signs that the coming season will be a little easier and that essential materials will be less difficult to obtain ; rubber and model aircraft engines, in particular.

It is hoped that the improving material position and the rationalised competition programme prepared by the S.M.A.E. will produce more pleasant aeromodelling conditions for the forthcoming season and that all model aircraft enthusiasts will have an enjoyable Xmas and good building during the winter months.

The Editor would like to extend his special greetings and thanks to all those who have sent him letters of appreciation and criticism indicating that they are taking a special interest in the journal.

The 1947 Competition Programme

A delegate meeting of the S.M.A.E. was held on October 20th to discuss and decide on the competition programme for the coming season, which has resulted in some important changes, which, it is hoped, will lead to a more logical programme and one which will be more suited to the requirements of both competitors and officials.

The experience of this season's very full programme has indicated the need for greater spacing between contest days and a reduction of the travelling entailed, since during the past year the leading aeromodellers of some clubs have been so busy attending away events that they have not been seen on their home grounds and their clubs have suffered severely in consequence.

Briefly, the proposals agreed to by the delegate meeting are as follows :—

The Gamage Cup will remain a decentralised contest open to all types of machines and will be held on April 6th.

The Flight Cup and *Model Engineer* No. 1 Cup will be held as area centralised contests on April 13th.

A decentralised contest for Wakefield-type machines will be held on May 4th.

A national meeting will be held over the Whitsun weekend, May 25th and 26th, during which the Sir John Shelley Cup, Bowden Trophy, *Model Engineer* No. 2 Cup, Weston Cup, Pilcher Cup, Thurston Cup, Women's Cup and the individual championships will be contested, giving most model flyers the opportunity of indulging in an attractive weekend of flying, as there will be one rubber, one glider, and one power contest on each day. This will reduce the number of contest days and travelling days very considerably and should produce a very interesting event, as it is a scheme which appears to be very popular with the majority of aeromodellers. Since the Bowden International Trophy is included in this national meeting, it was decided further to encourage the international aspect of modelling by permitting foreign entries in the Bowden to enter any of the events held during the meeting.

The K. & M.A.A. Cup for an open glider contest will be held as a decentralised event on June 15th.

A centralised petrol or power-driven meeting will be held on July 13th, in which the remaining power contests, including the Taplin Cup and Hamley Trophy, will be run, thus completing the grouping of the power contests.

The seaplane and flying-boat contests have been grouped and the Lady Shelley Cup, Short Cup, and White Cup will be held as decentralised contests on July 27th.

It was agreed to hold a tail-less contest in 1947 and in view of the poor support given to the arrangements made this year it was decided

to make it a *centralised* contest and hold it on August 17th.

The Civil Service Cup for open gliders and the National Cup for a team contest with rubber-driven models will be held as area centralised events on September 14th.

The S.M.A.E. Cup open contest for rubber and gliders will be held as a decentralised contest on September 28th.

In the programme for 1947, twenty-four contests have therefore been condensed into ten actual flying meetings, giving the clubs more scope with their own events and giving the enthusiastic aeromodeller a better chance to cope with his growing list of fixtures.

Rallies

The improvement which is effected by the S.M.A.E. programme will, however, be nullified if the clubs do not take in hand the question of rallies seriously.

There has been a tendency of late for every club to want to run a rally of its own, and apart from the clashing of dates which has occurred, and is bound to occur, it is not a sound scheme to have a large number of small rallies for the reason that the best flyers of each club are chasing around the country entering rallies to the neglect of their own club and a number of clubs are on the point of breaking up as a result.

It is time for the areas to get together and rationalise the rally question in their localities, limiting their number to one or two good rallies run jointly by the clubs in the area. A smaller number of really good rallies or gala days would lead to better sport and better prizes, thus making the running of them really worth while and reducing the overlapping of effort.

Taplin Cup Rules

This competition is for controlled manoeuvres, for any fuselage or nacelle type of machine (" stick models " barred) in free flight. Radio control barred.

Machines may use any type of power, but are limited to the equivalent of 10 c.c. I.C.E. If machines are hand-launched they do not qualify for take-off marks.

Up to three flights are optional to the competitor (the best to count). There is no limit to the length of flight, but points are awarded only during the first 90 sec. of flight. Order of flight is by ballot, one flight to be taken in each round. Three minutes is allowed, from the calling of the competitor's name, for engine starting ; failure loses the flight. Engines may be warmed up before going to the take-off point.

Only one of each manoeuvre to count, with the exception of the figure 8, two of which are permissible, one to count as individual right- and left-hand turns.

Points are awarded for :—

Unaided take-off	10	points
Left-hand circle	10	,,
Right-hand circle	10	,,
Figure 8	20	,,
Straight out and back—not less than 150 yards	20	,,
Loop	20	,,
Roll	20	,,
Half loop and half roll	30	,,
Landing within 50 ft. of the starting point	20	,,
	160	,,

The Taplin Cup has been presented to the S.M.A.E. for annual competition by Mr. H. J. Taplin, and the first contest for it will take place at the National Petrol Contests to be held by the S.M.A.E. on July 13th, 1947.

South Coast Exhibition

The Southern Cross Aero Club advise us that they are organising an Exhibition to be held from January 6th to Saturday, January 11th, 1947, at the Robertson Hall, Ship Street, Brighton, in which all Model Aircraft Clubs from Portsmouth to Hastings will take part.

A fine trophy has been donated for award to the best model in the exhibition, and a number of prizes have also been given by various model aircraft manufacturers

Aeronautical Education

Sound and correct education is a primary essential to the maintenance of British aeronautical supremacy and it is with considerable satisfaction that we learn from the Royal Aeronautical Society that the College of Aeronautics, which is being established at Cranfield, in Bedfordshire has now been opened.

The present capacity is for fifty students and the course scheduled is a two-year one. The courses are open to students hailing from any part of the British Empire.

The college will possess three main departments devoted to aerodynamics, aircraft design and propulsion, and its object is to train students who have attained a post-graduate level to take up leading positions in the aircraft world.

The Brentford & Chiswick Rally

Inset is Tansley's T.9 demonstrating that it is still capable of a good get-away : while below is a view of the competitors lined up for the Concours d'Elegance.

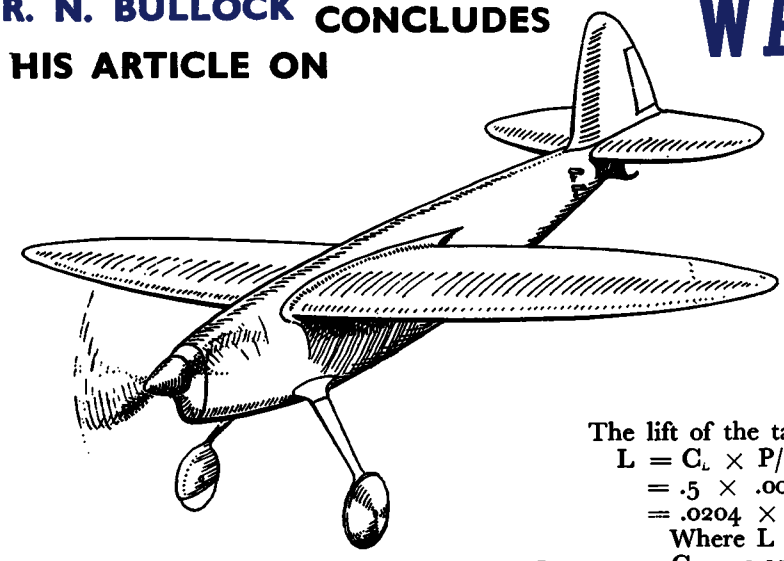
Above is E. J. Buxton, of the St. Alban's "Cement Squeezers," sporting their American-style zephyrs.

Left : Mrs. Tansley puts in the last few turns that won her the ladies' prize, while Ken hangs on.

Below: G. W. W. Harris makes a release in classic style when winning the rubber class.

R. N. BULLOCK CONCLUDES HIS ARTICLE ON

WAKEFIELD



POWER-PLUS WAKEFIELD

I OFTEN wonder just how fast and how slow good Wakefields will fly ; and it appears that the speed range is from 16 m.p.h. top to 5.66 m.p.h. low speed under power, with a gliding speed of about 12 to 14 m.p.h.

Doubtless you will consider the low speed lower than you would have expected, but, if the model is rigged with 3½ degrees riggers incidence on the main plane, and the c.g. is 50 to 55 per cent. back from the leading edge as the power dies off, the whole machine will gradually assume a more and more nose-up attitude until the main plane is flying at about 8 degrees, when the tail-plane will have reached 3½ degrees + incidence at these angles, the total lift of the main plane and tail-plane together will support the model at the low speed suggested.

Let us assume that the wing section is R.A.F. 32, at 8 degrees incidence, the C_L is 1.15, so using the old formula

$$L = C_L \; P/2 \; SV^2$$

Re-written to find V,

$$V = \sqrt{\frac{L}{P/2 \; C_L \; S}}$$

$$V = \sqrt{\frac{.5}{.001185 \times 1.15 \times 1.45}}$$

$$V = \sqrt{\frac{.5}{.00716}}$$

V = 8.31 F.P.S. or 5.66 m.p.h.

The lift of the tail-plane will be

$$L = C_L \times P/2 \times .5 \times 8.31^2$$
$$= .5 \times .00185 \times 69.0561$$
$$= .0204 \times 16 = .326 \text{ oz.}$$

Where L = Lift
$C_L = 1.15$.
$P/2 = .001185$.
$S^2 = 1.45$ sq. ft.

Assume a moment arm of 3¼ mean chords from C.P. main plane to C.P. tail-plane, when mean chord = 4 in., this separation will be 13 in.

Thus, 13 × .326

= 42.38 oz./inches tail-plane connecting moment, which is negative or anti-clockwise. The C.P. position on the main plane at 8 degrees incidence will be .43 per cent. from the leading edge.

Thus, .43 × 4 in. = 1.72 in.

The c.g. is set at .55 of the chord, thus there is a tendency for the main plane to have an unstable C.P., c.g. of .55 in. × 4 in. = 2.20 in. − 1.72 in. = .48. Thus .48 × 8 oz. or weight of model will give us a moment of 3.84 oz./inches.

This moment of 3.84 oz./inches is just a little less than the tail-plane correcting moment, i.e. 4.238 oz./inches, the difference being 4.238 − 3.84 = .398 oz./inches, and yet the model was in equilibrium. This difference can just be accounted for by the thrust/drag couple which is positive or clockwise, and a careful estimate will show that the centre of resistance is about 1 in. above the thrust line, and has a value very near .398 oz., so our equilibrium is restored and the model can fly as slow as calculated.

So it would appear that for good results and a big speed range to match the gradually dwindling power, we must place our c.g. well aft, and hold the nose down at the beginning of the flight with down thrust, and towards the end of the flight hold the tail up

with an aerofoil section tail-plane flying at a safe incidence. The speed at the low end of the scale can also be checked from the revolutions of the propeller, which at about 18 or 20 sec. before it stops have dropped to round about 400 r.p.m., or 6.66 r.p.s.

At this low speed of revolution the indicated speed of the model will be 9.62 f.p.s., or 6.5 m.p.h., 25 per cent. slip allowance having been assumed ; this figure is a bit in excess of the 5.66 m.p.h. found the other way, but it may be that the slip is a little greater, or that the C_L of the wing and the C_L of the tail-plane is a little less than expected ; at any rate it shows some similarity of speed, sufficient to satisfy most people

The representation of the model shown dotted on the plan and side elevation on Fig. 10 is an idea, or rather the revival of an idea. It is supposed to represent a Wakefield model of smaller overall dimensions, thus possessing less structural weight, less frontal area, and less drag when gliding due to the shorter undercarriage and smaller diameter propeller by comparison with those used on a normal Wakefield model.

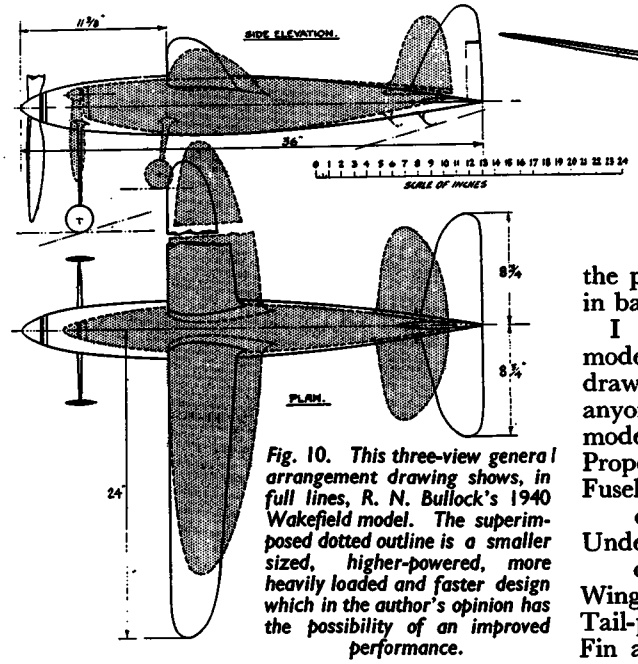
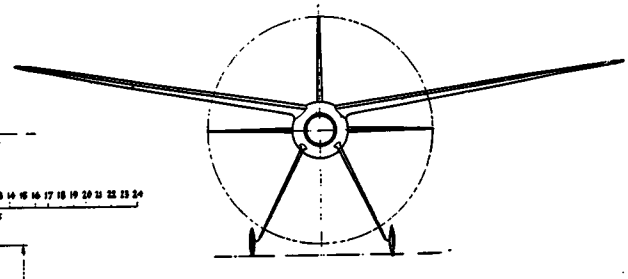


Fig. 10. This three-view general arrangement drawing shows, in full lines, R. N. Bullock's 1940 Wakefield model. The superimposed dotted outline is a smaller sized, higher-powered, more heavily loaded and faster design which in the author's opinion has the possibility of an improved performance.

The idea is to gear a very heavy elastic motor to a fairly high ratio, 3 to 4½ or so, and release the huge amount of stored energy at such a rate, that the model will fly faster, as will be necessary, and thus improve its aerodynamic efficiency, as it is well known that most Wakefield models are much too slow to be as good as they could be.

Mr. Allman won the Wakefield Cup with a geared model years ago, when the weight limit was 4 oz. He built quite a large model, geared up the motor to a very high ratio (4 to 1, if I remember rightly). This model was very efficient, and at that time could easily outfly any direct-drive model on a bad day.

Now that the weight limit is 8 oz., and designers have much more experience, I believe that a smallish model, with its weight increased by the motor alone, if built with a 200-sq. in. wing, smaller fuselage cross-section, and shorter undercarriage, and a propeller of smaller diameter, would fly so much faster, still retain a good enough climb, and a long enough motor run to be a winner, even against



the present-day high-class models, particularly in bad flying weather.

I include a list of weights of the 1939 model shown in the photograph and the drawing, in the hope that they may help anyone in his first attempt to design a Wakefield model.

Propeller, 18 in. dia., 24½ in. pitch ...	¾ oz.
Fuselage (covered, 36 in. long, circular)	1¾ ,,
Undercarriage, two cane legs, two 2¼ in. dia. wheels	7/16 ,,
Wings (2) to plug in, covered ...	1⅜ ,,
Tail-plane ,, ...	¼ oz.
Fin and tab ,, ...	3/32 ,,
Nose-block and propeller shaft ...	⅛ ,,
Rear elastic peg	1/16 ,,
Trimming weight	¼ ,,
Elastic motor	2⅞ ,,

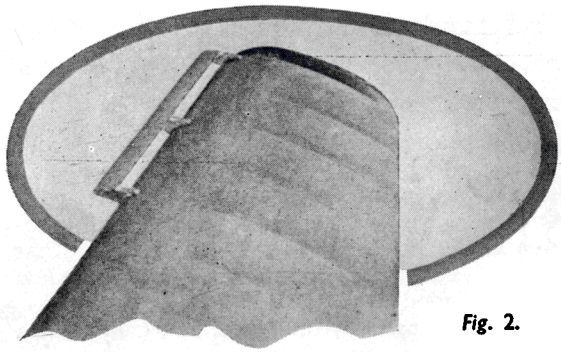


Fig. 2.

POWER COMPETITION FLYING

Concluding article by C. E. Bowden

(6) Stalling and Unstable Flight

We in this country have a great deal of leeway to make up over stable and steady flight—this was forcibly demonstrated on the day of the competition under discussion, and needless to say everyone who enters the competition world and hopes to win a major competition should concentrate on steady and stable flight. All the wild zooming about the sky in semi-controlled climbs and dives and acute turns that we see the majority of models indulge in, should be overcome by the year 1947, whether it be at a competition or ordinary general purpose sport flying. Full sized aeroplanes do not fly in this uncontrolled manner, and yet in practically every instance at the Bowden International contest we saw demonstrations of unsteady flight, when competitors did get off the ground.

There were a few noteworthy exceptions, but out of the seventy odd competitors the cases of steady climb followed by a nice controlled glide to earth with nose up and wings horizontal were lamentably few. In America the rules for gas contest flying demand a terrific climb of a corkscrew nature by absurdly overpowered models on a limited motor run of a few seconds followed by a soaring glide. Hence we see those ugly high pylon machines with polyhedral wings produced for this unrealistic stunt performance. We in this country generally frame our petrol rules to encourage more realistic and steady flight, which I think is a good thing and helps towards producing more useful general purpose models not of a freakish order. So let us try to master stable steady flight. How can we do it?

Obviously I cannot weigh up all the details of the subject in a subheading to an article of this limited length. I must therefore content myself to a few general suggestions of major importance.

(*a*) Relate the power carefully to the weight and drag of the model. The drag is closely related to the size and cleanliness of design of the model.

We have sufficient revs. to get the model cleanly off the take-off board. But provided we have a fairly low wing loading of around 8 to 14 ozs. per square foot it does not require a great power output to take a model off the smooth take-off boards that are in vogue, if we use wheels that do not cause too much resistance (some of the very fat rubber wheels do), and if we have a low pitched small diameter propeller to cut out excessive torque reaction during the initial speeding up of the model. Competitors of today should not forget that the early power competitions demanded a rise off grass, which really was a problem worth solving.

If we require steady and controlled flight in the air, it is hopeless to fit a huge engine for the size of the model and then to give it the gun. It makes a small model fly so fast and become touchy on its controls. If you must use too large an engine, then throttle it down to just the necessary r.p.m. to take off. Better still, use a reliable engine of medium size and then design a model that requires ¾ full r.p.m. to take off. You then have a few spare r.p.m. up your sleeve if the engine is a trifle off colour on the great competition day. An engine flat out is not good practice and should not normally be run in this manner in a competition.

A good 4.5 c.c. to 6 c.c. engine makes an excellent power unit today. A slightly smaller c.c. diesel is suitable, as these engines produce their power at slightly lower r.p.m. and smaller c.c.

Above all do not fit an over powered engine for the plane with a high pitched propeller. Torque reaction will play the devil with your model during the take-off and subsequently in the air.

If you are flying a slow speed model with light wing loading, you can get better slow speed results with coarser angles between wing and tail. If a high wing loading and fast model is used, then the angles must be smaller or difficulties at high speed will result.

A very light wing loading is not good for precision competition work, as it is so often

difficult to get the model down within the time limit. We saw several instances of this the other day. The Dutch team took-off beautifully and flew well except for a few spare stalls and recoveries in one case, but they spoilt their chances, which were otherwise very high, by gliding with too long a float. It was difficult to calculate when they would come down. Here I would recommend that competitors try fitting long wing-tip slots. These enable a slow-speed model to have a larger angle of incidence of the wing which helps a quick take-off and also means that the model loses height more quickly on the glide with nose well up. It also helps the landing and therefore prevents damage.

I noticed one model with these slots and it did a nice first flight, but was undertimed by its owner. The second flight failed to obtain the necessary r.p.m. to take-off, because a bulkhead had come forward and was masking and so throttling the induction pipe of the engine. I have already explained how to prevent such a state of affairs in Fig. 1. People probably say, " But how difficult this slot business is ; I cannot be bothered." Actually it is enormously simple, and I will briefly explain it at the end of this subheading. (See Fig. 3.)

I think it is worth mentioning the importance of using the correct down-thrust, if a high-wing layout is used, coupled with the correct offset of thrust line, so that the chosen r.p.m. of the engine *which we must adhere to*, will not overclimb the model after take-off, and will not overbank the model when in the air. *You should practise until you have these correct.* A detachable engine mount makes this easy as packings can be inserted until the desired offsets are obtained. They are then permanently secured by silk and dope. Remember it is a dangerous thing to turn by offset fin or rudder. When the power ceases, this offset fin or rudder takes charge and causes banking on the glide which in turn drops one wing, and this often causes a cart-wheel on landing. It is far safer to turn under power gently on the correct offset of the engine thrust line, and glide more or less straight with the wings level and a straight fin setting. Better landings with no damage will be the result.

Slots :—I have from time to time described my letterbox type of inbuilt slots fitted to model wing tips. These are specified in a published plan of mine of a petrol model called the " Contest." They are very efficacious, but require a little workmanship of a minor order. Now if the reader wishes to try out my suggestion to fit slots and slightly greater angles of incidence to obtain quick take-off and controlled nose up landings for competition work, and yet does not want to build a special wing with my type of inbuilt slots, I would suggest he first tries outboard slots, as shown in Fig. 2 and Fig. 3. These are very simple and can be made and fitted in an evening to any existing wing. They work well, too. The only thing that is essential is to see that the gaps of both wing-tip slots are the same and that the L.E. of the slot is fitted in the same position in relation to the L.E. of the wing, on both wings. You will also find that the best position for a *model* slot is with the L.E. of the slot placed directly in front of the L.E. of the wing. (See my sketch, Fig. 3.)

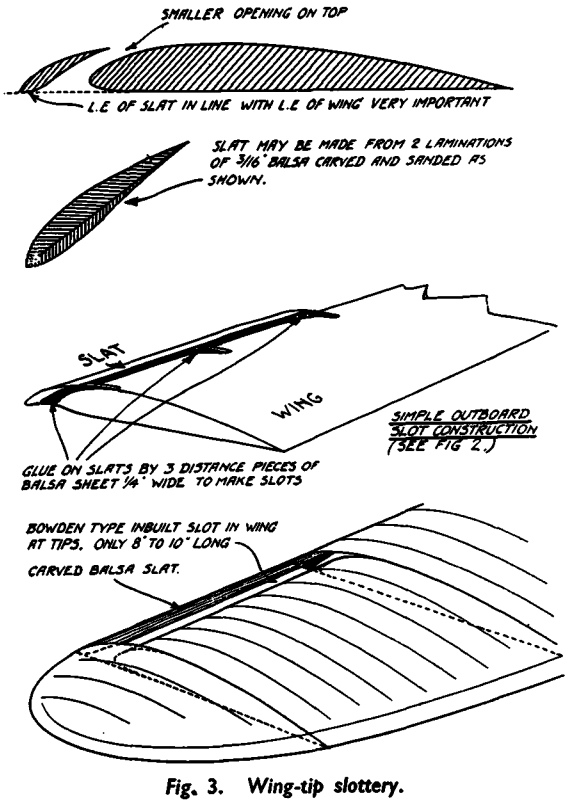


Fig. 3. Wing-tip slottery.

If you fit these slots correctly I know that you will find that you can use a slightly greater angle of incidence to the mainplane and assist your take-offs and landings, and also cut out some of that too lengthy and uncontrolled float that loses you many competitions. You will then probably later want to fit the other type of inbuilt wing slots which are neat and unobtrusive and yet do their work well, *provided both slots have equal openings.*

IT'S IN THE AIR

FOR some time the S.M.A.E. has been collaborating with the Norman Film Studios in the preparation of a film, the main theme of which is the popularising of model aircraft building and flying as an introduction to aeronautics in general.

As is usual with this type of propaganda material, many shots have to be taken before a final selection can be made and the film is ready for the superimposing of the sound track. It is therefore not surprising that it has taken some ten months to compile this film, which is now ready to go on circuit.

The film combines models with natural flight and full-size machines to give a balanced portrayal of aviation in general with a strong backbone of model aircraft which cannot fail to give impetus and support to the movement in which we are all interested.

Commencing with nature, in the form of a seagull, as an introduction to the mysteries of flight, it quickly switches over to the simplest of man-made devices to ride the air—the simple kite—with the commentary that "Every modern schoolboy has the freedom of the air, one of the freedoms we *have* got back."

But the fact that freedom of the air has not always been with us is forcibly recalled when we see a flashback to some of the efforts of the pioneers of aviation, such as Paulhan, including several abortive attempts to take the air with flapping wing and rotating wing aircraft which have long been forgotten and force a smile even from the hardened aeronautical enthusiast.

The Wickens family give an example of rubber winding.

A microfilm model is shown performing sedately round the pole.

All these fantastic devices created by the fertile brains of the pioneers fade beside the prophetic abilities of M. Poirer, who is shown with his R.T.P. radio-controlled model constructed in the early nineteen hundreds which was the prototype, in model form, of a rocket-propelled machine from which he hoped to achieve the then unheard of speed of 1,000 miles per hour.

This "before its time" project is used to indicate that the times have changed in other directions and that nowadays no one takes any risks "until the modellers have had their say."

Attention is drawn to the importance of the solid model and its special value for recognition training in time of war. Solid models are shown produced on a repetition basis by some of the girls who came to the rescue of the industrial plants who were suffering from a shortage of labour.

An ambitious model of a Stirling bomber indicates the value placed upon models by the Royal Air Force. This particular model has electrically-driven airscrews, articulated gun turrets, and is a very faithful reproduction of the prototype. It was built to make an instructional film for the R.A.F.

The value of the S.M.A.E. comprehensive insurance scheme is brought to the attention of the public, together with other aspects of model flying, such as the correct way to wind rubber motors and the capabilities of models in the way of duration, etc., with an emphasis on the patience and perseverance displayed by modellers when a model flies away on its first flight.

A humorous and instructive touch is given by a shot of ants parachuting themselves off a branch, using dried leaves to delay their fall, as an introduction to the real thing in the form of a mass drop by paratroopers in the attack on

One of the flying-boat shots shows A. D. Hall's twin-fuselage, twin-screw model.

the Rhine. A model is shown in flight-dropping miniature parachutes.

The flying boat, both model and full-size, is given due prominence, and Mr. Sayers is shown flying his record-holding model.

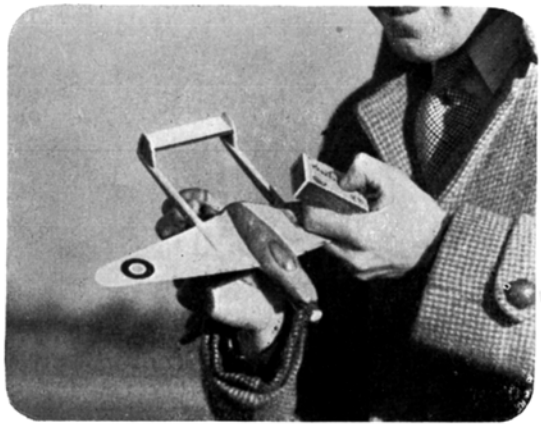
The public is also introduced to the mysteries of thermals by an animated cartoon which shows how the up currents are generated and their downdraught counterparts.

The incidence of balsa in model construction is shown, and Ron Rock demonstrates how microfilm is prepared and applied to the airframe. Finally, a microfilm model is shown flying round the pole in stately style, to demonstrate this aspect of aeromodelling.

Power-driven models are naturally featured, ranging from compressed air models to up-to-date petrol models, and engines are shown in the course of construction in the workshops of R. Trevithick and A. Court, two of our best exponents of the small engine.

The compression-ignition engine is, of course, given its fair share of publicity.

To wind up, the film shows some of the latest British transport planes, which by contrast with the pioneer machines shown in the early stages of the film, give a good indication of the advance made in the last third of the century.



Even rocket propulsion in miniature is demonstrated by this model of the de Havilland "Vampire."

As the commentary points out, "Today is the crucial period of the flying era. The peacetime conquest of the air is now as important as the freedom gained in war. Model makers are the guarantee that everyday interest in flying will be maintained by the younger generation as well as by the business man."

The commentator is that well-known radio voice, Lionel Gamlin, while acknowledgment to the help given by the S.M.A.E. is given in the title and also to the main technical advisers, A. F. Houlberg, A. R. Parker and R. Trevithick.

The S.M.A.E. is in touch with Fox Films, who have bought the circuit rights, and clubs will be informed when the film will be on show in their district as soon as the bookings are arranged. A 16-mm. talkie version is also under preparation, which we hope will be available shortly for hire by clubs wishing to give a private view in their clubrooms, and enquiries for this, with preferred dates, should be addressed to the Sec. of the S.M.A.E.

For the first time a really sound piece of aeromodelling propaganda has been produced which places the hobby before the public in the correct form to make it become interested, and it is hoped that this will be followed by others in due course.

A. Court demonstrates on the making of model diesel engines.

VAMPIRE

By W. A. Dean

HAVE you ever built a pusher? If not, then this little stick model will help you to understand a few of the advantages and problems that are encountered with this unorthodox type. The parts are all drawn full size and should be traced or pin-pricked through on to sheet balsa.

FLYING SURFACES

The wing panels, fins and elevator are made from medium strength sheet sanded down to the typical section indicated on the drawing. Note that the wing only tapers in thickness outboard of the booms—also that the elevator and fins are sanded down to about 1/48 in.

FUSELAGE AND BOOMS

The fuselage stick is slightly rounded and tapered at each end, with the corners sanded away.

The twin booms are hard balsa; the corners being left square.

PROPELLER AND FITTINGS

Cut the 4-in. diameter propeller blank from medium sheet balsa and steam to the pitch shown. A coat of banana oil is given for strength. The shaft is bent from a piece of 24-gauge wire; a small bead being threaded on before forming the hook.

For the bearing, first bend the "L"-shaped portion, then clip off at about 1 in. from the bend. Insert the short end in a vice and wind the long end round another piece of wire.

ASSEMBLY

Prop up the two wing panels in the usual way and cement them together to give a dihedral of ¾ in. under each tip.

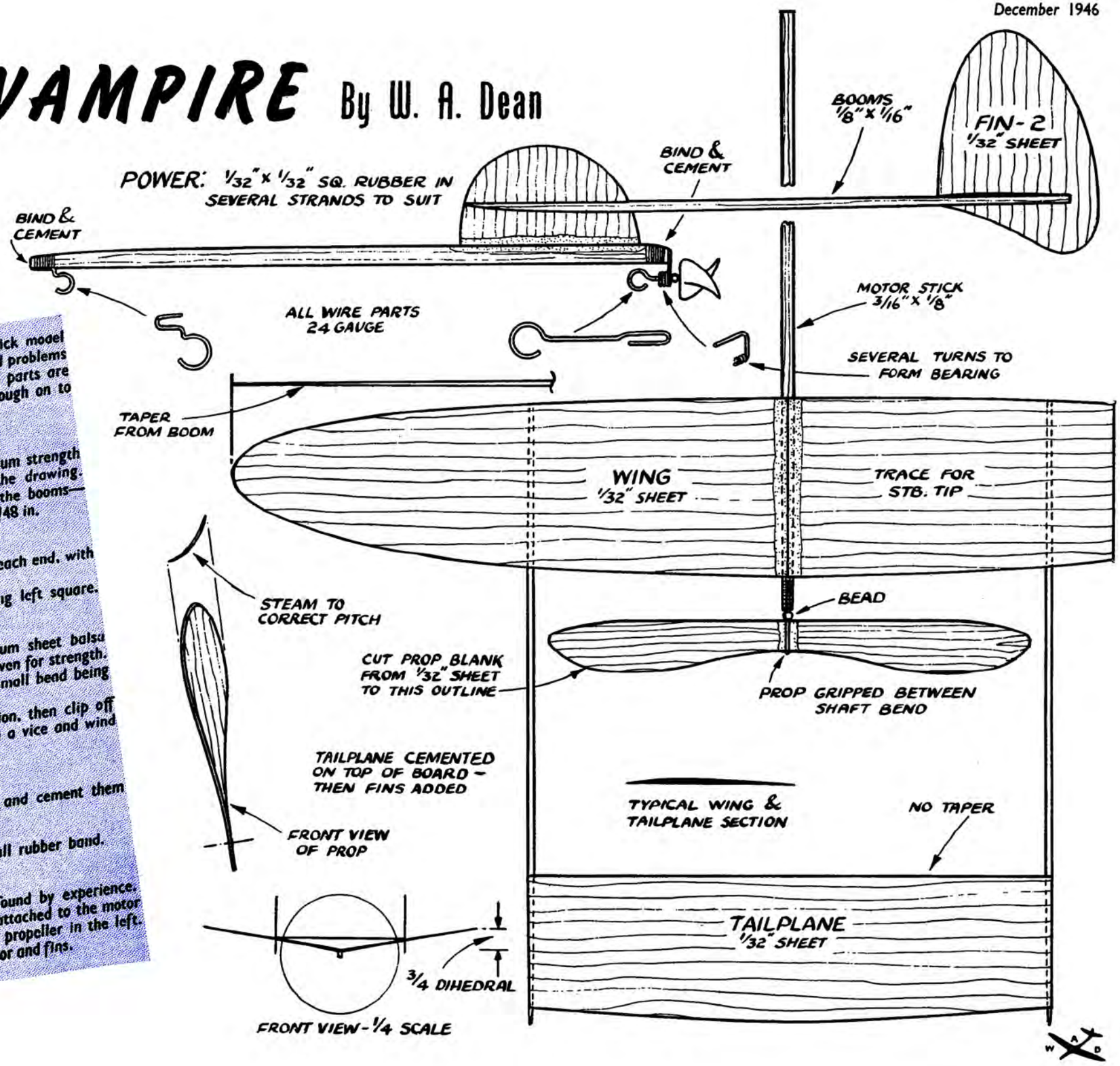
Cement the tailplane on top of the twin booms.

Attach the wings to the fuselage stick by a small rubber band.

FLYING

The number of strands of rubber is best found by experience. Wind up from the front by means of a wire ring attached to the motor and launch with the right hand, holding the propeller in the left.

Trimming is obtained by warping the tips, elevator and fins.



TIMERS

SOME OBSERVATIONS ON THE DESIGN OF TIME SWITCHES

A TIMESWITCH is, of course, an essential on a petrol model, to stop the motor after a given time, and with the development of dethermalisers a similar timeswitch has now become necessary for all types of duration models.

There is no doubt that the best design practice is, obviously, to employ the lightest type of timeswitch available—provided it will adequately perform its function.

The first petrol model timeswitches were invariably converted clock mechanisms. Later lightweight clockwork timers were developed

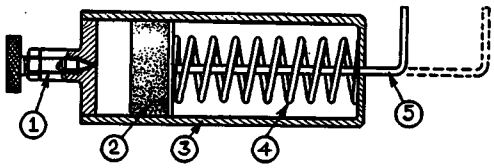


Fig. 1. A typical pneumatic timeswitch : (1) Adjustable air leak ; (2) cup washer ; (3) barrel ; (4) return spring ; (5) actuating plunger rod.

and marketed which were admirable for the job. The lighest of these weight about 1¼ oz., although the average is somewhat heavier.

The main advantage of a clockwork timeswitch is its accuracy—as accurate as a clock, in fact. The main disadvantage of the clockwork timer is its weight.

The pneumatic principle has been known for many years and is admirably suited to the construction of a lightweight timeswitch.

This principle also has the advantage of being delightfully simple. A typical pneumatic timeswitch is shown in Fig. 1, and before the war at least two proprietary types of pneumatic petrol model timers were produced in the United States. The standard models weighed ⅝ oz. and the lightest ⅜ oz.

With the introduction of dethermalisers in this country a number of our leading model fliers set about making their own lightweight timers and one or two extremely successful units have been evolved.

But to make just one or two prototype timeswitches is quite a different matter from making them on a mass-production basis.

The petrol model timeswitch is, by comparison, a straightforward problem, the normal range of time called for seldom exceeding 30 sec. Size is of no great importance and, provided that the diameter is not less than ½ in. and the working length not less than 1 in., a reliable, accurate unit can be made.

With determaliser timers there are many added complications. The ideal timer must be very light, so that it can easily be carried by any model ; it must be reasonably small and it must be capable of reasonably consistent times of up to 10 min. or more.

It is generally accepted that the maximum weight of a dethermaliser timer should not

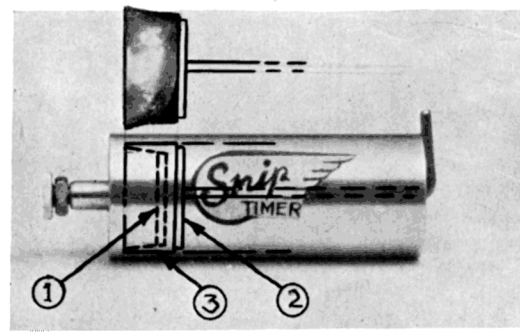


Fig. 2. Some features essential to success : (1 and 2) Discs supporting the cup washer well up to the barrel bore ; (3) bevelled-edge cup washer of barrel shape.

exceed ¼ oz. This represents a figure suited to almost any flying model over about 2 ft. span.

Repeated experiments were made on different sizes of timers (with no regard for weight at first) and it was eventually found that a short, fat barrel gave the best results.

Whilst the proportions of a pneumatic time-

switch are of great importance, there are many other factors contributing to success. These can be summarised as follows :

(i) *Air seal.* Since the rate or air escapage is so small, even the tinest additional air leak will ruin the timer. This applies to the blank end, and also to the washer assembly. Unless care is taken, air can quite easily leak back through the centre of the washer where it is joined to the plunger arm. Also the washer must provide a perfect air seal against the bore of the barrel during the whole of its travel. This entails careful design of the washer and its assembly and an accurate barrel bore.

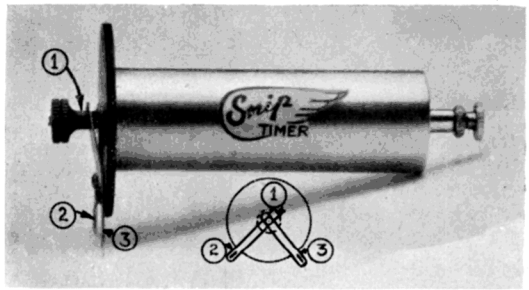


Fig. 3. A petrol model timeswitch, showing : (1) The actuating plunger ; (2) the fixed contact blade ; (3) the spring contact blade.

(ii) *Valve design* (air leak). The American models feature a hollow plunger arm, through which the air escapes when under pressure, with the rate of escape controlled by a blind or elementary needle valve fitted to the open end of the plunger. The air leak is actually past the threads of the nut. This method is satisfactory for comparatively short runs, but difficult to adjust for long runs.

Ideally, some elementary mechanical valve should be used, preferably on the blank end of the barrel where it is not handled. A form of needle valve controlling the rate of air escape through a very tiny hole was found to give excellent results. To avoid the necessity of air leak past a screw thread (with possibility of variation), a definite escape hole is incorporated immediately behind the needle valve.

(iii) *Spring design.* Spring design was also found to have a great bearing on the ultimate success of a pneumatic timer. For positive action and consistency, a powerful spring is necessary, but this is only possible if the unit is correctly sealed. When the plunger is withdrawn to its fullest extent, the spring is compressed. Here it is desirable that it should occupy a minimum length, so that the actual stroke of the timer is a maximum. The best compromise can be found by experiment.

A taper spring will, of course, pack up into a much smaller length when compressed, but has a number of slight disadvantages, not the least of which is manufacture.

(iv) *Washer design.* Soft chrome leather or synthetic rubber is best, preferably with the rough surface outwards in the case of leather. This rough surface is more open and thus retains lubricant more readily. These washers

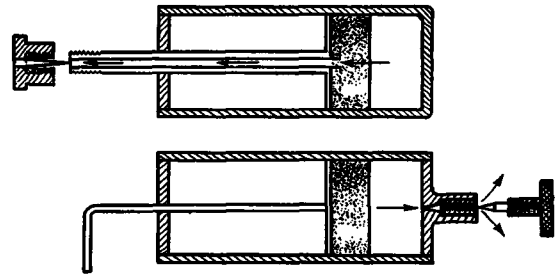


Fig. 4. Above is a section through a timeswitch with a leak-valve in the barrel-end, while the lower illustration shows the type favoured in America with the air leak taking place through the hollow plunger-rod.

must, in any case, be saturated thoroughly with lubricant before assembly.

A definite barrel-shape washer is necessary, with a tapered lead on the inside of the walls. The diameter of the washer should be backed up each side to almost the full bore of the tube.

Three very useful timers of the pneumatic type have recently been placed on the market bearing the trade name of " Snip Timers," having the following specifications :—

De Luxe lightweight (petrol model timer)
Length of barrel, 1⅝ in. Diameter, ⅝ in.
Diameter of mounting face, 1⅛ in.
Total weight, less than ⅜ oz.
Adjustment range, 1 sec. to 3 min. for maximum accuracy.
Actuating pressure of 16 oz. breaking switch.

Standard Lightweight (petrol model timer)
Length of barrel, 2 in. Diameter, ⅝ in.
Diameter of mounting face, 1⅛ in.
Total weight, less than ⅜ oz.
Adjustment range, 1 sec. to 3 min. for maximum accuracy.
Actuating pressure of 16 oz. breaking switch.

De Luxe Baby lightweight (dethermaliser timer)
Length of barrel, 1⅝ in. Diameter, ⅝ in.
Valve projects 3/16 in. Total weight, 0.242 oz.
Adjustment range, 1 sec. to 10 min.
Operating pull available, 12 oz.

Snip Timers are manufactured by Shaw's Model Aircraft Supplies, 10, Windsor Street, Chertsey, Surrey.

The Gutteridge Trophy 1946

Although the Gutteridge trophy day started off with promise, the good conditions which prevailed in the early part of the contest were not maintained and heavy rain was experienced towards the end.

The winner was P. T. Capon, of Burgh Heath, with the "Krusader" model, which he exhibited at the Model Engineer *Exhibition, and which is illustrated on page 239 of the October issue. This model was unfortunately lost on its second flight.*

Our top picture shows Bob Copland taking-off with his Irish National's winner, demonstrating his supreme confidence in the machine by disdaining the take-off board and rising from the path.

G. W. W. Harris also disdains the take-off board, but shows considerable anxiety as to whether his model will clear the photographer—fortunately, it did !

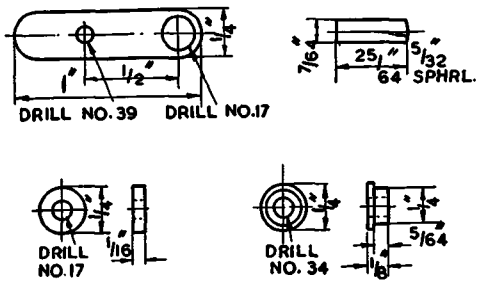
R. Jeffreys pins his faith on the take-off boards and achieves a clean get-away, to show that both methods are satisfactory.

"ATOM MINOR" MARK III

6 c.c. Engine

Edgar T. Westbury

THE rest of the work on the contact-breaker is mostly drilling and tapping. If a drilling machine is available, the casting may be mounted in a small vice or clamped against the side of an angle plate by a bolt through the centre. The hole for the push rod should have the bore left as smooth as possible, and the use of a small reamer or D-bit is recommended for this purpose. Drill the hole for the clamping screw before splitting the bottom lug ; it will be seen that one side of the hole is tapped and the other opened out to clearing size. The tapped hole in the side lug is intended to take the screwed end of the rod, also shown in the same drawing, which



Contact-breaker spring, insulating bushes and push-rod.

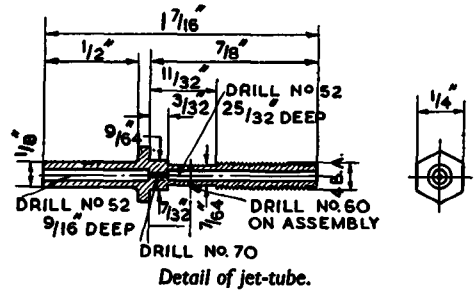
serves as the control lever for advancing or retarding the ignition timing. This may either be fitted to screw in stiffly or have a lock nut for tightening it ; the form of the control rod is optional, and may be varied to suit requirements.

A contact screw and rivet, with tungsten tips, will be available, and it is probable that the spring blade with rivet fitted will also be supplied ; however, it may be mentioned that the spring is a fairly stiff one, about 0.020 in. thick, which may be made from a clock or gramophone spring. The insulating bushes may be turned from hard vulcanised fibre or bakelite, and the push rod made from the same material. Note that the terminal tag for the attachment of the L.T. lead should be placed between the spring and the top insulating bush, as it must be insulated from the bracket and the holding-down screw.

The spring should be given a slight downward " set " so that it makes firm contact between the points when free. On assembly, the contact screw should be adjusted so that the clearance between the points is about 0.005 in the open position. The clamp screw of the bracket should be adjusted so that it will move fairly stiffly on the bearing housing ; as the bracket can move right round the full circle, it may be timed to work in any position, but it is best to keep the control rod more or less horizontal and the spring blade uppermost, whether the engine is run upright or inverted.

Carburettor

The component which calls for most skill, or at least most care in machining, is the jet tube, which should be made of tough brass—not the soft " screw rod " which is so often used for mass production of small components. Hexagonal material is preferred, but if this is not available, round rod will serve, if flats are afterwards filed on the collar to enable it to be held while screwing up the top nut. Hold the rod in the chuck for turning the top end,



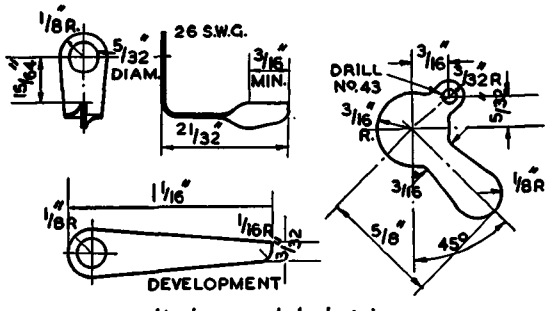
Detail of jet-tube.

including the drilling of the central hole with a No. 52 drill to a depth of 25/32 in. Great care should be taken to start this hole dead truly, with the aid of a centre-drill, and the lathe

should be run at high speed for efficient action of the drill, the feed of which should not be forced. In deep drilling, frequent backing-out of the drill is advisable to avoid choking with swarf.

The thread on the outside of the tube (No. 4 B.A.) should be cut with a tailstock die-holder to ensure that it is truly axial and concentric, after which the component is removed from the chuck, and a simple chucking fixture is made to hold it in the reverse position, by drilling and tapping a 4-B.A. hole concentrically in a short piece of odd material held in the chuck. It is advisable to counterbore this hole 9/64 in. dia. to allow the tube to screw right home to the base collar, thus providing the maximum rigidity for turning the lower extension and drilling the centre. Taking the same precautions as with the hole at the other end, it is centred and drilled to a depth of $\frac{9}{16}$ in. with a No. 52 drill, after which the jet orifice is drilled with a No. 70 drill, held in a small pin chuck and applied *by hand*, with the lathe running at the highest possible speed. If a No. 70 drill is not available, a small spear-point drill, made from a sewing needle by flattening the two sides on an oilstone and producing cutting edges at about 90 degrees on the end in the same manner, will serve this purpose. The exact size of the hole is not highly important, as the jet orifice is adjusted by means of the needle. A cross hole, which also is not critical in size, is drilled in such a position that it comes in the centre of the air passage when assembled.

It will be observed that the cross hole for the jet tube in the extension of the rear endplate is

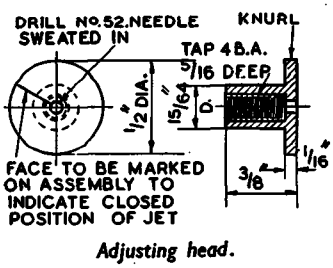


Air shutter and check spring.

drilled to clearance size for the tube, and this is necessary if it is desired to be able to insert the tube from either side, in order to adapt the engine for either upright or inverted running. But if it is to be permanently used in one or the other position, it is a good policy to tap one side of the hole, so that the jet tube can then be screwed in, and the top nut is then only required to lock it in position. The tension stress is then taken on the threaded part of the tube, and not on the reduced neck below the thread.

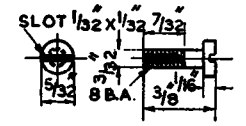
It may be observed that the base of the jet tube, which is shown plain, for the attachment of a fuel pipe by soldering, or by the use of a sleeve of petrol-resisting synthetic rubber, may be modified to take a screwed union, or one of the "banjo" type, if desired. The original engine of this type has a banjo union, which fits over the outside of the extension, which is cross drilled to form a passage way, and the end is screwed to take a blind nut, which holds the banjo in place and also forms a closure at the lower end. Removal of this nut allows the jet tube to be cleared or sediment to be readily drained away.

The adjusting head for the jet needle is a simple job which calls only for normal care in drilling and tapping concentrically, and turning



Adjusting head.

Jet needle.



Air-shutter retaining screw.

the outside and the upper rim at the same setting. It is made in brass, and the edge is knurled or serrated to provide a hold for the check spring. After temporarily assembling the jet tube in place, the adjusting head is screwed on to within about one thread of its full depth, and the jet needle, made from a piece of 16-gauge steel or nickel silver wire, with a fine point turned on the end, is pushed into the jet tube as far as it will go, and sweated into the adjusting head.

The check spring, made from spring steel or phosphor bronze, and the air shutter, from steel, bronze or duralumin sheet, are simple jobs which call for no special comment. An 8-B.A. steel screw, with a plain portion under the head, forms the pivot of the air shutter, and a spring washer or a short, stiff steel spring, is interposed under the head to form a friction check.

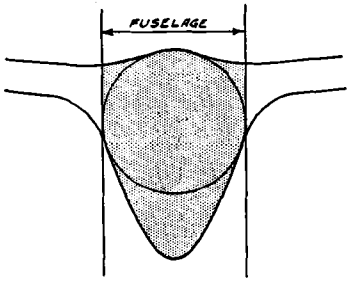
(To be continued)

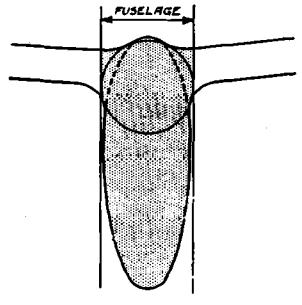
The F.A.I Conference, 1946

Meeting of the Commission des Modèles Réduit held at the Royal Aeronautical Society

AFTER a lapse of six years the Model Commission of the F.A.I. met on September 10th to review the rules concerning models and to consider a number of propositions tabled by several National Aero Clubs.

In the absence of the President, Mr. J. van Hattum, of Holland, was elected to occupy the chair and Mr. A. F. Houlberg agreed to act as temporary secretary to the commission until the election of a new permanent secretary.





It was pointed out by several members that the existing definition of a model aeroplane needed revision, as the flying bombs used during the war came within this definition—an obviously undesirable condition.

It was finally decided to revise the definition of a model aircraft to read :—

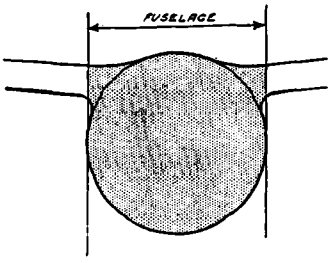
> "By Model Aeroplanes one understands all aircraft of reduced size not capable of carrying a human being, constructed solely for sporting purposes and having a span between 0.70 metre (27.56 in.) minimum and 3.50 metres maximum (137.789 in.)."

On a proposition from Sweden, it was agreed to extend the list of recognised records to include Indoor Models, Special Aircraft (such as helicopters) and Models using Special Propulsion (such as rockets, jets, etc.). The record list will therefore be extended accordingly.

The restrictive nature of the method of defining the area of models was discussed at some length on the argument that fixing the loading on the wing area only and then restricting the area of the tail surface to one-third of this area prevented freedom of design, penalising unorthodox machines, particularly those of the tail-less type.

It was eventually decided by a majority vote that the total horizonal area of wings and empennage should form the basis of the area calculation to give the utmost freedom of design and bring tail-less machines on the same footing as the orthodox model. This, of course, eliminates the rule that the tail area must not exceed one-third the area of the main plane and complete freedom of proportion is now left to the designer.

This ruling naturally has a repercussion on the existing loading rule, and in order to bring the minimum permissible loading to approximately the same figure as before, now that the tail plane is included in the area, it was agreed that the minimum permissible loading should in future be 12 g/dm^2, using all horizontal surfaces in the calculation of the area for purposes of calculating the loading.



These diagrams give a clear indication of the manner in which the "inscribed circle and vertical plane" rule defines the junction between the wings and fuselage.

On a proposition from Switzerland, it was decided further to rationalise the technical rules by fixing the cross-sectional area on the basis of the total area and, subject to further investigation regarding the actual factors, it was decided to adopt the following formulas defining the

(*Continued on page 308*)

HOLLAND VERSUS ENGLAND

INTERNATIONAL SAILPLANE CONTEST

OCT. 6th 1946

The Dutch team : F. van der Kreek, W. Hammersteen, H. Hekking, P. Vriend.

The British team : G. W. W. Harris, L. M. Walker, A. H. Taylor, D. C. Butler.

The first Anglo-Dutch glider contest was not blessed with the best of weather and although the day was mainly fine, the wind was decidedly boisterous, making the performance of the machines extremely uncertain.

The Dutch machines were, on the average, larger than the British machines and their basic design made use of as little ballast weight as possible, employing a somewhat longer nose than is customary in this country and making use of its structural weight to reduce the "dead weight" carried to a minimum.

Greater variety of design was evident on the Dutch machines and their most unorthodox machine, the "gull"-wing sailplane flown by P. Vriend, was at the same time their best performer and the most stable machine "on" and "off" the line.

The picture at the top of this page shows F. van der Kreek's "Emoe" sailplane at the moment of release. This machine is the standard model of the Gooische Luchtwaart Club, Bussum, and it was the winner of the Dutch National standard class in 1946.

The bottom picture shows the victorious team after taking wayside refreshment on the journey to Arnhem.

P. Vriend's remarkable "gull"-wing machine, the tail of which has a sufficiently pronounced dihedral angle to enable a fin to be dispensed with. This machine made the best performance for Holland and is one of the best "gull"-wing designs seen so far.

G. W. W. Harris's streamlined parasol glider, which has proved itself a consistent flyer, gets well away on the tow-line. Harris's agility in manipulating the tow-line in the heavy wind caused some amusement and not a little envy amongst the Dutch competitors.

The machine flown by H. Hekking was a good performer and nicely built. It makes use of sheet-celluloid covering for the leading edge up to the main spar—a form of construction which finds considerable favour in Holland.

The cause of all the trouble!—D. C. Butler's huge sailplane, which succumbed to the force of the wind in the end and shed a wing, only to be resuscitated finally to win the contest literally "at the post."

THE FIRST ANGLO-DUTCH GLIDER CONTEST

THE first Anglo-Dutch Model Glider Contest took place in Holland on October 6th at the invitation of the Royal Aero Club of Holland between teams of four using gliders to F.A.I. regulations.

The British team was met on the morning of the 5th at the Hook of Holland by our old friend, J. van Hattum, and our more recent Dutch acquaintance, H. L. F. de Kat, of Rotterdam, who recently competed in the Bowden Trophy.

The arrangements made by the Royal Aero Club of Holland were extremely comprehensive, pleasant and well carried out, each member of the team being the guest of a Dutch aero-modeller for the period of the stay, an arrangement which not only reduced the cost of the visit but ensured that both sides obtained the closest contact and exchange of ideas.

From the Hook of Holland the team was taken direct to the Royal Aero Club building in the Hague, where the models were deposited while the British team partook of their first Dutch lunch at a prominent Hague restaurant.

Suitably refreshed, the team returned to the Royal Aero Club to meet the Dutch team and exchange technical information while the checking of the machines was in progress. Both sides were able to examine their opponents' machines in detail, and there is no doubt that both teams benefited as a result.

On the whole, the Dutch machines were larger and more ambitious than the British machines, although subsequent performances indicated that there was little to choose between them under the conditions which existed during the contest.

The contest was held on the moors just north of Arnhem in a very high wind which effectively prevented either team from making their customary performance—it was anybody's day!

After A. H. Taylor had smashed his first line machine on its first trial flight in the high wind, it was decided to abandon any further trial flights and enter straight into the contest, a decision which proved to be wise in the end, as all the contest flights were taken to maintain the total points registered at a good average.

The rules of the contest were relatively simple, stipulating that :—

1. Each country may enter a team of no less than three and no more than four competitors, each using one/two models (one spare).
2. The models used shall be F.A.I. gliders.
3. Each competitor to make three flights.
4. The methods of starting permitted one (*a*) running launch, (*b*) winch launch. In either case the tow line in the extended condition may not exceed 50 metres.
5. The duration of the flights to be measured by stop-watch to the nearest one-fifth sec.
6. The sum of the durations of the flights made by each competitor will be taken as the individual score.
7. The sum of the scores of the competitors of each team will be taken as the team score.

The best flying of the day was achieved by L. M. Walker, the S.M.A.E. secretary, who totalled 359.7 for his three flights, while the next best performance was by P. Vriend, of Holland, who totalled 295.3 sec. for his three attempts, flying a finless model with pronounced "gull" wings and tail, which was very stable.

The event was punctuated with a number of crashes, the worst of which occurred to D. C. Butler's machine, which tore off one wing and part of the fuselage side on his first attempt on the third round, thus becoming a total casualty.

The British team hoped to just win without this flight, but it was found on reckoning the scores that they required 11 seconds to equal the Dutch score. It was immediately decided that this sporting chance justified an attempt at a rapid repair, and Mr. Houlberg brought his extensive past experience to bear on the problem, with the result that Butler's machine was glued together, reinforced with copious bindings of tow line, and also braced with tow line as a further precaution.

With considerable trepidations, but high hopes, the machine was put on the tow line to achieve a first-class take-off and make its best flight of the day—47.4 sec.—to give Britain a winning lead of 37 sec. A thrilling ending to a day of good sport.

Teams and officials climbed back into the transport vehicles in the failing light to make their way to Velp, a suburb of Arnhem, where, according to programme, a meal had been arranged at the Bordelaise Restaurant.

The meal over and the results announced, the party faced the 85-mile journey by road back to the Hague, G. W. W. Harris helping to keep the driver (Van Hattum) awake by tuneful renderings of songs from the more popular musical shows of the last quarter-century at appropriate intervals.

A visit to Delft on the Monday terminated a very pleasant week-end and we look forward to the return visit by the Dutch team next year.

The results are given in detail on page 309.

The F.A.I. Conference, 1946

(*Continued from page 305*)

minimum permissible sectional area of the fuselage at its maximum cross section :—

For rubber-driven and power-driven models $Q = \frac{F}{25}$

For gliders and sailplanes $Q = \frac{F}{50}$

Where Q = Cross section of fuselage
and F = Total area of all horizontal surfaces.

The question as to whether or not tail-less machines should comply to the fuselage formula brought forth a strong argument against the imposition of the fuselage formula on this type of model, as it was against the ultimate object of the present developments taking place with this type of machine.

On a majority vote, it was carried that tail-less machines would not be subject to the fuselage formula, thus permitting the development of the true flying wing, but that it would be subject to the same loading restrictions as orthodox machines.

Since the area of the machine now defines all its main characteristics, it becomes essential to be able to define the area accurately ; a matter which has caused trouble in the past in those designs where the wings are freely faired into the fuselage. In many such designs it has been found extremely difficult to define exactly where the wings start and the fuselage finishes.

This problem was by far the most difficult one facing the commission, and after trying a large number of schemes it was finally decided that the most equitable method was to inscribe the largest possible circle in the maximum cross-section of the machine in the region of the supporting surfaces and to take vertical planes touching each side of this circle as the boundary between the fuselage and wings.

The diagrams herewith demonstrate how this works in practice and, while in some cases a slight advantage will lie with the wings and in others with the fuselage, on the average it gives a fair result and eliminates any possible argument when it comes to actually checking a model.

In the light of the experience gained with the manipulation of gliders and sailplanes during the war period, a review of the rules regarding their launching appeared necessary, and the following amendments were unanimously agreed upon.

The catapult launch to be eliminated from the rules on the ground that it is obsolete and not used.

The length of the launching cable be limited to 100 metres with full freedom of movement to the operator.

This perforce eliminates the 75-metre limit in the running launch and the modeller may now move for any required distance and employ a combination of winch launch and running launch if he so desires. The point of departure of the model for the measurement of distance records will be taken as the point where the modeller *starts* the launch. Hand-launched glider records were eliminated and only elevated launches are now given cognisance.

A lengthy discussion took place on the proposition by Great Britain that judges and timekeepers should remain stationary and not follow the models, also that optical aids should be barred. All the other nations represented were unanimous in their opinion that for record purposes the timekeepers and observers *should* be permitted to follow the model, although they were equally unanimous that where contests were concerned they should remain stationary and not make use of optical aids.

The conditions are therefore now different for contest flying and record breaking and this will doubtless have its repercussions in due course.

The difficulties of recording the height in the case of height records was discussed and, in view of the non-availability of suitable instruments which can be carried in models, it was agreed to admit the use of rangefinders for determining the altitude and also the use of standard barographs and an official observer carried in the following aircraft.

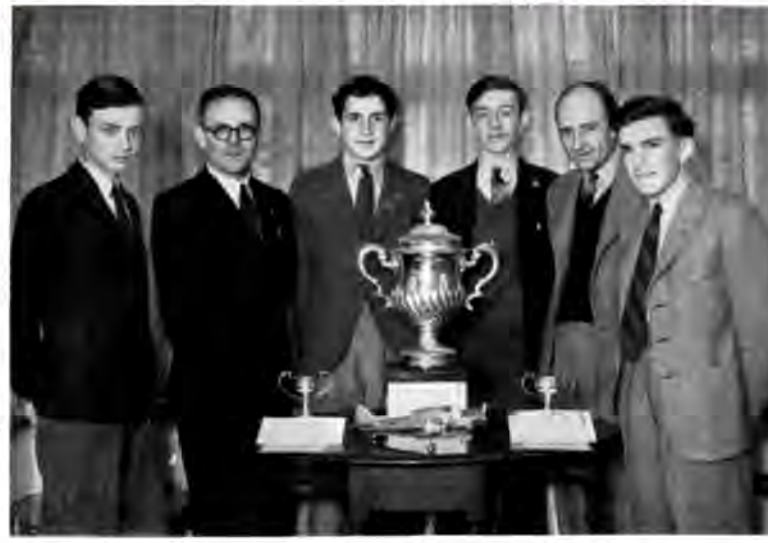
It was agreed that height records must be bettered by at least 10 per cent. above the height of the previous record in view of the fact that this is the limit of accuracy of the Standard Atmospheric tables used for the correction of barograph readings.

The timing of speed records also came under review, and it was unanimously agreed that only suitable electrical devices or photographic devices eliminating the human element were satisfactory and admissible for this purpose.

The commission unanimously elected the following officials for the Commission for 1947.

President : A. F. Houlberg (Great Britain).
Vice-President : Juste van Hattum (Holland).
Secretary : Commandant R. Eyraud (France).

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



A group of the winners at the Langwern Horticultural and Model Aircraft Show, with the trophies. In the foreground is Mr. Trevor Cross's 1/36-in. "Bristol Beaufort" with which he won the Silver Cup for the "solid" class.

COMPETITION RESULTS

THE ANGLO-DUTCH CONTEST RESULTS

England	1st	2nd	3rd	Individual total
L. M. Walker ...	86.1	189.1	84.5	359.7
A. H. Taylor ...	48.9	36.2	54.3	139.4
G. W. W. Harris ...	34.3	25.0	89.0	148.3
D. C. Butler	34.1	16.4	47.4	97.9
Totals ...	203.4	266.7	275.2	745.3

Holland	1st	2nd	3rd	Individual totals
W. Hammersteen ...	23.5	39.3	82.2	145.0
H. Hekking ...	64.2	99.0	41.0	204.2
F. Van Der Kreek ...	0	41.0	22.8	63.8
P. Vriend	73.2	188.0	34.1	295.3
Totals ...	160.9	367.3	180.1	708.3

INDOOR CONTESTS. 1945/6

November, 1945—
1.—Northern Heights 633.0
2.—Merseyside 324.6
3.—Coventry 265.8
4.—Cardiff 188.5
5.—Chelmsford 121.0

December, 1945—
1.—Northern Heights 594.5
2.—Merseyside 343.3
3.—Coventry 285.65
4.—Cardiff 208.5
5.—Chelmsford 148.5

January, 1946—
1.—Northern Heights 663.2
2.—E. Birmingham 443.9
3.—Coventry 327.1
4.—Merseyside 203.1

February, 1946—
1.—Northern Heights 754.9
2.—Coventry 542.0
3.—E. Birmingham 439.0
4.—Merseyside 367.5

INDOOR INDIVIDUAL CHAMPIONSHIP

1.—R. Copland ...	Northern Heights ...	1,959.9
2.—B. Toms ...	Coventry	714.95
3.—A. J. Barr ...	Coventry	712.9
4.—K. W. Thomas ...	E. Birmingham ...	622.0
5.—A. O. Sutcliffe ...	Merseyside	595.4
6.—P. H. Winter ...	E. Birmingham ...	384.9
7.—L. Vanderbeek ...	Northern Heights ...	382.5
8.—D. R. Hughes ...	Merseyside ...	299.5
9.—J. Phillips ...	Cardiff	279.5
10.—T. Comber ...	Merseyside ...	269.0
11.—R. White ...	Northern Heights ...	263.0
12.—G. Foden ...	Chelmsford ...	223.5
13.—P. Errington ...	Cardiff	220.5
14.—J. Evenett ...	Northern Heights ...	137.2
15.— Persen ...	Cardiff	107.0
16.—A. Samuel ...	Chelmsford ...	89.3
17.—R. F. L. Gosling...	Merseyside	76.5
18.—W. J. Jackson ...	Merseyside	66.1
19.—R. Clarke ...	Coventry	61.2

21 entries. 6 clubs.

RESULT OF FINALS IN L.D.I.C.C.C.

Streatham versus Northern Heights

Glider ... 751.4 sec. 614.25 sec.
Rubber ... 547.3 „ 770.6 „
Totals ... 1,298.7 „ 1,384.85 „
Northern Heights won by 86.15 sec.

LUTON AND DISTRICT M.A.S. INDOOR PROGRAMME 1946-47 S.M.A.E. RULES

Dec. 5th—Flying Scale Contest. Duration.
Dec. 19th—Speed Contest (S.M.A.E. Rules).
1947
Jan. 2nd—S.M.A.E. R.T.P. Flights. Free flying.
Jan. 16th—Open Contest. Max. span 30 in.

LONDON AREA COUNCIL REPORT

At the E.G.M. of the London Area Council, held on October 5th, 1946, Mr. A. G. Bell occupied the chair. St. Alban's M.A.C.'s application for affiliation was granted.

The Secretary gave an interim report and attributed the lack of progress in the London area to the absence of foresight in the programme relating to competitions and the poor attendance of some Council members.

He urged the Council to rectify the position.

A revision in the constitution was discussed and a notice of motion was carried to place this matter on the agenda for the L.A. E.G.M.

The following officers were elected to fill vacancies in the Council :—

Vice-Chairman : S. Mayo, Streatham.

News Editor : D. A. Gordon, Brentford and Chiswick.

Press Secretary : W. Snow, Brentford and Chiswick.

Council Members : R. Rock, Streatham ; E. F. H. Cosh, Blackheath.

There was a lengthy discussion on competition matters, Messrs. Cosh and Copland voicing proposals from their respective clubs advocating the limitation of the number of galas and the arrangement of four well-organised centralised contests in 1947.

At the Council meeting held on October 17th, 1946, Messrs. A. G. Bell and E. F. H. Cosh were elected as delegates to the area meeting in Leeds on November 3rd, and were instructed to press for one-half of the S.M.A.E. affiliation fees to be passed to the Area Councils, the refund to be retrospective from the date of increase in the fees. The winter R.T.P. programme was arranged and details have been promulgated to all clubs in the area.

NORTHERN NEWS

By " NORTHERNER "

Sorry there were no notes last month, but I was on duty at *The Model Engineer* Exhibition at the time when I should have been writing these notes, so for once I was not able to prepare the article. Much has already been said about the exhibition, so I will confine my remarks in that direction to saying how pleased I was to see so many Northern faces visiting the exhibition. I am sure that they all felt that the journey was worth while. Congratulations also to the Northern chaps who were " placed" in the various contest sections of the exhibition. (G. D. Barnes, Sale, and T. Whalley, Whitefield.)

I hear that the Area Scheme is to be very fully discussed at a meeting of representatives of the present and prospective Area Councils, to be held on November 3rd. It seems that at last things are really going to get under way. The North have now put their house in order by splitting the area into two parts, and the original Northern Area Council, which meets in Manchester, will in future become the North-western Area Council ; this council has also adopted, with two or three slight modifications, the constitution recently introduced by the Midland Area. It is hoped as a result of this that Yorkshire will take over the title of Northern Area, with headquarters in Bradford, Leeds or Doncaster, or some similar convenient centre. It is also interesting to note that the North-western Council has arranged a series of decentralised indoor contests for the area for November and December. There seems to be a fair amount of interest being shown in the prospects of an Area Indoor Team Event being held again this year, similar to the North, Midlands and South event, held in Manchester last March. I hope that the original organisers have this in mind for their future programme arrangements.

The radio control of model aircraft is being fairly widely discussed at the moment, and I hear that several persons interested in the radio control of models in the North are to meet shortly to compare notes, etc. I hope to be at that meeting.

There are only three club reports again this month, the largest being from the *Whitefield Youth Movement Model Aircraft Club*, who appear to have been holding two or three local contests. The report opens with details of a local contest for the Whitefield, Prestwich, Radcliffe, Bury and district Glider Cup, held on September 29th. In spite of a very strong wind, many entrants came from Farnworth, Prestwich, Bury and Whitefield. The trophy was won by K. Bennett, of Whitefield, with a total aggregate time of 210.5 sec. ; E. Cordwell, of Bury, came second with 159.7 sec., and C. Holden, Farnworth, third with 155.2 sec. Members of the Whitefield club recently competed for the Currington Cup for rubber-powered models. The cup was won by the club's oldest flying member, Mr. H. Gilbert, whose total aggregate time was 291 sec. A. Vircoe was second with 156 sec. Several members of this club are now working on petrol models and two have obtained C.I. engines. *The Doncaster and District Model Flying Club* has also sent in a report on a recent contest held on its flying ground. The contest was attended by members from nine different clubs. There were three main events, and the winners of them were as follow :—

Open Glider T.L. 200 ft. (two flights).—Senior 1st, S. Lanfranchi, Bradford, 598 sec. Junior 1st, W. B. Hetherington, Doncaster, 243.5 sec.

Open Rubber (two flights).—Senior 1st, D. Hellewell, Doncaster, 236.5 sec. Junior 1st, A. Davy, Sheffield, 126.2 sec.

Petrol Event (20 sec. engine run, 5 sec. off for every second over. Two flights).—1st, N. Lees, Bradford, 111.5 sec.

In a recently held glider contest with three other local clubs, this club secured the first two places in both the senior and junior sections. Senior 1st, D. Hellewell (172 sec.) Senior 2nd, B. Fox (155.5 sec.). Junior 1st, T. Beer, (150.5 sec.). Junior 2nd, J. Hobbs, (139.2 sec.)

The last report this month comes from the *Cheadle Hulme Model Aircraft Club*. The report opens with the news that the club duration record has been broken with a flight by G. Whitehead with his " Firefly " sailplane.

In conclusion, I would like to wish the Merseyside and District clubs every success in their venture at forming a local district council similar to that at present in operation in the Manchester area. If this new district council does as much good work as the Manchester area has done, it is certain that the North will be in for some well organised events next season, providing, of course, that both bodies co-operate, which I think they will.

On Sunday, October 27th, the Manchester and District Council of Model Aero Clubs Team Contest for the " Mrs. Lawton Trophy " was held, nine teams taking part. Each team consisted of four members (two rubber-powered models and two gliders). The trophy was won by the local team, Whitefield, and the contest was run under the direction of Mr. B. N. Holmes (Sale) and Mr. R. Lawton (Whitefield), with the able assistance of Mr. G. D. Barnes (Sale) and Mr. H. Gilbert (Prestwich). The best rubber-powered flight of the day was made by T. Dobson, of Salford (158.30 sec.) and the best glider flight by K. Bennett, Whitefield (138 sec.). There was definitely no thermal flying on this day. The final aggregate times were as follow :—1st, Whitefield M.A.C., 701.30 sec. ; 2nd, Oldham M.A.C., 618.50 sec. ; 3rd, Salford M.A.C., 609.30 sec. ; 4th, Ashton and Dist. M.A.C., 542 sec. ; 5th, Cheadle and Dist. M.A.C., 488 sec. ; 6th, Farnworth Aero Engineers, 395.20 sec. ; 7th, Rochdale M.A.C., 329 sec. ; 8th, Bury and Dist. M.A.C., 317 sec. ; 9th, South Manchester, 147.30 sec.

NEWS FROM THE CLUBS

BUSHY PARK M.F.C.

As part of our winter programme, we are trying out a series of what we hope to be popular impromptu competitions on Hounslow Heath most Sundays, numbers and weather permitting. Our idea is to gather together all petroleers who are around, tabulate some rules by mutual agreement, and charge, say, 1s. entrance fee, with the winner taking the "Kitty."

By these means we hope to foster the competitive spirit amongst those youngsters who are apt to get stage-fright in real competitions and at the same time have an enjoyable afternoon's flying.

In any case, a chap might as well enter such a competition and have a chance of winning a few shillings as fly on his own and take the risk of cracking up his job for nothing!.

As far as the flying side of the club goes, the only matter of importance was the winning of the Brentford and Chiswick Gala Day petrol competition by Mr. Guest.

Mr. Gunter has lately tried his hand at making folding props. When he does a job, he really does it well, and this time he set to and made a press tool for pressing out his central hubs which he now produces in quantities.

COVENTRY M.A.C.

An exhibition by the club, held at Bedworth on September 7th and 8th, in conjunction with the Bedworth and District Produce Association's Annual Show, was a great success. Over 100 models were on show, including L. Watts' recently modified tail-less glider, of free-lance design. The cabin is now fully detailed with movable controls, instrument panels, upholstered seats and carpets on the floor. Mr. Ginns had several petrol engines on show, including an auto-ignition 1.2 c.c., which was shown running. Geoff. Dunmore came over from Leicester to judge the models, and he said it was no easy task. The final winners were :—

Best Model in Show—L. Watts (Tail-less Glider).

Open Glider—1st, L. Watts (Tail-less Glider) ; 2nd, L. Watts (Sailplane) ; 3rd, B. Roberts (Elite No. 2).

Open Rubber—1st, B. Roberts (Deodalus Biplane) ; 2nd, A. J. Barr (own design G.U.T.S. II) ; 3rd, R. Toms (own design Oberon).

Solid Scale—1st, "Meteor" ; 2nd, "Messerschmidt" ; 3rd, "Tempest"—all by G. Rose.

Full and Semi-Flying Scale—L. Watts (L. G. Biplane).

Several of our members attended the Rally at Leicester on September 15th, R. Toms putting up the best time of the day—4 min. 10 sec. o.o.s.—with his own design lightweight rubber model.

On September 29th, an inter-club contest was held with West Coventry M.A.C. on their ground, resulting in victory for the Coventry M.A.C. Contests for open rubber, glider and petrol were held and the three highest aggregates in either class made up the teams.

Results

W.C.M.A.C.—K. Beesley 1st, aggregate 165.0 ; E. Pinder 2nd, 165.0 ; L. Lengden 3rd, 157.6 ; total, 487.6.

C.M.A.C.—R. Toms 1st, aggregate 255.8 ; G. Toms 2nd, 228.9 ; A. J. Barr 3rd, 193.5 ; total, 678.2.

Individual prizewinners : *Open Glider*—R. Toms (C.M.A.C.), aggregate 255.8 sec. *Open Rubber*—G. Toms (C.M.A.C.), aggregate 228.9 sec. *Petrol*—G. Ginns (C.M.A.C.), 37 sec. Next highest aggregate in either class—A. J. Barr (C.M.A.C., rubber), aggregate 193.5 sec.

DONCASTER AND DISTRICT M.F.C.

The close of the outdoor flying season was marked by the final contest for the club championship cup. There are three such contests held during the season for the best three flights of the day, the winner of the cup being the one who scores most points in the three contests. For the second time in succession D. Hellewell won the cup, after a close finish with M. Hetherington.

Our exhibition, which started on October 28th and remained open until November 2nd, was a great success, as a result of much hard work by members. Among the highlights of the show were the electrically-driven "Tiger Moth" built by M. Hetherington and the semi-scale electric model built by F. Gearing, both of which flew continuously throughout the exhibition. Mr. Bassett's petrol-driven race car provided plenty of excitement round the pole, while the electric models cooled off. The 8-ft. span radio-controlled petrol model from the same stable dominated the petrol section, while M. Hetherington's half-covered 7½-ft. span "Airspeed Horsa" swung gracefully on its moorings overhead. Two *junior* club members did great work throughout the week, by demonstrating how to build a glider and a rubber model. Raffle tickets were sold during the week for these two models, which were completed by the last day. We are grateful to Mr. Cuttriss for his magnificent film show, which lasted 45 minutes, with two shows each night and three on Saturday afternoon. The films were made up of shots from different rallies, our own gala days, International Week at Eaton Bray, and the Hamley Trophy at Bradford, in technicolour. There was always something on the go ; if there wasn't a model flying round the pole, there was someone starting a petrol engine up or flying a microfilm job round the rafters.

The committee is now busy organising its next project, our annual dance, to be held on Saturday, January 11th.

HORNCHURCH M.E.C.

The glider record is held by A. Shenton with his "King Falcon," timing 12 min. 20 sec. o.o.s.

G. R. Watts, a twelve-year-old member, managed to get 11 min. 30 sec. with a 50-in. glider of his own design.

The rubber duration record is unofficially held by A. Wardell, with his "Percy III," time 1½ min.

On Sunday, Oct. 6th, we witnessed a most spectacular flight by a flying wing designed by B. Basden.

Flying in graceful circles, it was timed 5 min. 3 sec. o.o.s.

This plane has not yet been recovered.

KINGSBURY M.F.C.

We attended the Brentford and Chiswick Gala with the usual Kingsbury luck, J. Bowerman breaking his dethermaliser timer and losing his lightweight glider on its first test flight for 2 min. 35 sec. o.o.s., D. Posner having his line fouled on both his flights in the glider competition, and R. Stoward losing his glider on its first contest flight for 3 min. 9 sec. o.o.s. Some consolation was gained, however, from the fact that this one flight was good enough to place him third. Both Bowerman's and Stoward's models landed later near Feltham, about 4¼ miles away. Stoward's time later proved to be the best flight of the day.

LUTON AND DISTRICT M.A.S.

Highlight of recent flying was the last official competition day of the season, on which the petrol contest of three flights of 40-50-60 sec. was flown, time under or over those to be deducted. This competition was won by Cyril Houghton with 25 sec. error, flying a Buccaneer. R. Hinks' large semi-scale model with compression ignition engine put up a scale performance which has to be seen

to be believed and was a real pleasure to watch after so many " hanging on the prop." flights.

For the winter season the club has obtained a fine hall where tea is served and there is ample room for spectators. Forecasting, it looks as though friend Bob Kinney has taken the two most coveted pots in the club, the Lutonia and Sanderson trophies.

MERSEYSIDE M.A.S.

The Society's first indoor flying meetings have been held (in Liverpool) for the 1946-47 season. Quite a " squadron " of new members has been recruited, some of whom appear to be " going after " club records already.

Officials of the Society recently gave a demonstration of R.T.P. and free-flying to a Liverpool Youth Club.

The third issue of the Club's own magazine is well under way, and this is proving a valuable means of keeping members interested, and informed of club affairs.

NORTHERN HEIGHTS M.F.C.

Now that the outdoor flying season has drawn to a close, the Northern Heights can look back with a sense of achievement. During the course of the season, three major competitions have been " bagged." The Sir John Shelley (K. M. Tansley), *The Model Engineer* No. 2 (Bob Copland), and the Thurston Glider (Ron Teasell), in addition to which Bob Copland was second in the Bowden Trophy, and Tansley second in the Keil Trophy.

In other fields (literally !) the Club has enjoyed happy and successful days at the galas organised by the Brentford and Chiswick, Chingford, Bushy Park and St. Alban's Clubs.

The season was well and truly rounded-off by the winning of the London District Inter-Club Challenge Cup, when after a close and keenly-fought contest, Northern Heights took the honours from Streatham Aeromodellers, whose last flyer's effort deserves commendation, since his model was repaired and flown within an hour of being almost totally wrecked.

On October 20th the Club held its own contests on Hounslow Heath, when the following members took trophies :—N. H. Glider No. 1 Cup, H. R. Turner ; N.H. Glider No. 2 Cup, K. M. Tansley ; Open Rubber, R. Copland ; Biplane Cup, R. White ; Gouge Cup, Mrs. F. E. Wilson ; Ladies' Cup, Mrs. Tansley.

SALE A.C.

During the past few months R. Astles has been giving instruction in aeromodelling to the local branch of the Women's Junior Air Corps. The result is a well-built " Mick Farthing " glider.

Flying this model by proxy at a recent club contest, R. Astles, representing the " J.A.C.s," well and truly licked the lot of us, by winning the high-level glider and tow-line glider events by a wide margin ! We very heartily congratulate the " J.A.C.s " and Mr. Astles on a fine performance. Keep it up !

STOCKTON AND DISTRICT M.F.C.

Club members were present at the last outdoor rally staged by the North-eastern Area Council.

Stockton gained first place in the under 30 in. rubber class, and second place in the over 30 in. rubber class.

Stockton Club are now devoting their efforts to indoor flying, mainly r.t.p.

WALTHAMSTOW M.A.S.

B. E. Lanham won the K. & M.A.A. cup with an aggregate of 689.3 sec., flying a lightweight biplane. E. H. Aylward, flying a 20-in. span model, was placed 3rd. F. E. Deudney gained 3rd place in the *Model Engineer* Exhibition with his well-designed and constructed F.A.I. sailpane.

In the first round of the London Area Challenge we flew against " Pharos," resulting in a win for them.

WARRINGTON M.F.C.

October 6th was one of our best flying days, as J. C. Green lost his 30-in. span glider when it flew o.o.s. (upwards) after 7 min. 25 sec. K. Avery also lost his 50-in. span glider o.o.s. with 7 min. 59 sec., a new club record. On the same day Mr. West set up the club's first biplane record with a flight of 1 min. 9 sec., flying a " Clipper " with an additional wing. This club is still open to receive new members; it has a club-room and good facilities. Anyone in the district interested should contact Mr. J. C. Green, 85, Northway, Orford, Warrington.

CHANGES OF ADDRESS AND NEW SECRETARYSHIPS

Borough of Camberwell M.F.C. hon. secretary is now :—G. Gleave, c/o. J's Model Centre, 6, Blenheim Grove, London, S.E.15.

St. Clement Danes M.F.C.: Hon. Secretary, R. E. Greenslade, 7, Tamarisk Square, Wormholt Estate, London, W.12.

Seaham M.F.C. : Hon. Secretary, G. Smith, 4, Queen Street, Seaham, Co. Durham.

The Willesden and District M.A.C. : Hon. Secretary, A. J. Tinsley, 163, Bentworth Road, Westway, London, W.12.

CHANGE OF TITLE

Basingstoke and District M.A.C. has now had its title changed to the **Basingstoke and District M.F.C.** The hon. secretary remains J. Alexander, 2, Norman Place, Basingstoke, Hants.

Coventry M.A.C. has now changed its title to **Coventry and District M.A.C.,** and the secretary is still A. J. Barr, 29, Foster Road, Radford, Coventry.

East Birmingham M.A.C., Kings Heath M.A.C., and the **Hall Green Club** have now amalgamated and are known as the **South-east Birmingham M.A.C.,** the hon. secretary being John Sawyer, 1836, Coventry Road, Yardley, Birmingham, 26.

Fife M.A.C. has had its name changed to **Kirkcaldy M.A.C.,** and the hon. secretary is now R. Young, 16, Baldwin Crescent, Kirkcaldy, Fife.

NEW CLUBS

Bridgend and District M.A.C.: Hon. Secretary, D. A. Bicknell, 9, Heol Llansantffraid, Sarn, Aberkenfig, Bridgend, Glam., South Wales.

Egham M.F.C.: Hon. Secretary, R. Selfe, 19, Grange Road, Egham, Surrey.

Hastings A.M.C.: Hon. Secretary, T. A. Skinner, 7, Mildenhall Drive, St. Leonards-on-Sea.

Hinckley M. A. C.: Hon. Secretary, M. Green, " Knighton," Ashby Road, Hinckley, Leicestershire.

Pontefract and District M.A.C.: Hon. Secretary, R. Higgins, 16, Poplar Grove, Pontefract, Yorks.

Southampton M.A.C.: Hon. Secretary, M. Coxon, 27, Bond Road, Bitterne Park, Southampton.

Wigan M.A.C.: Hon. Secretary, H. Winnard, 4, Linden Avenue, Orrell, Nr. Wigan, Lancs.

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FROG

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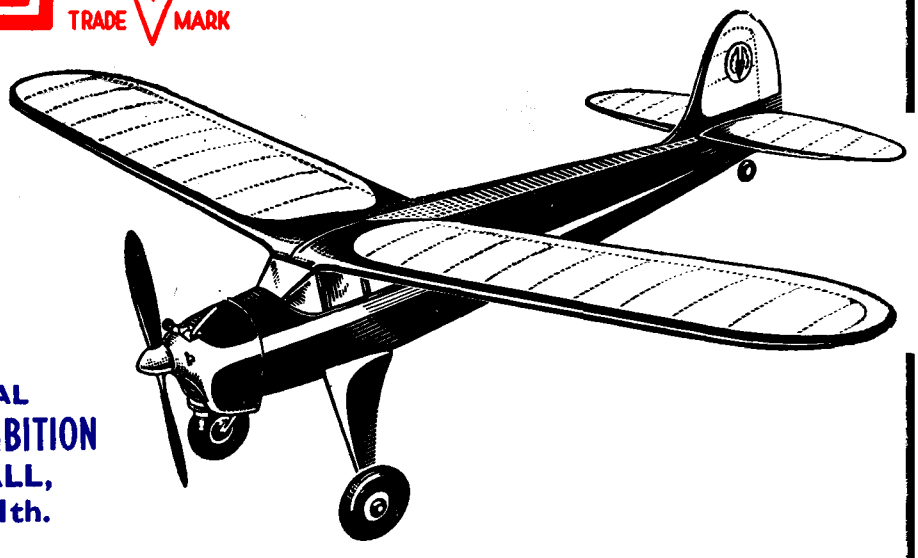

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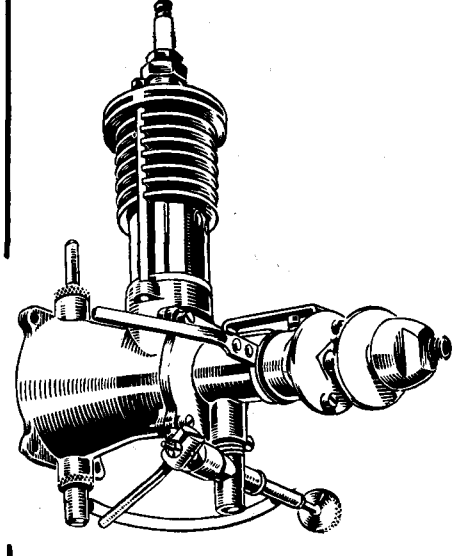

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