

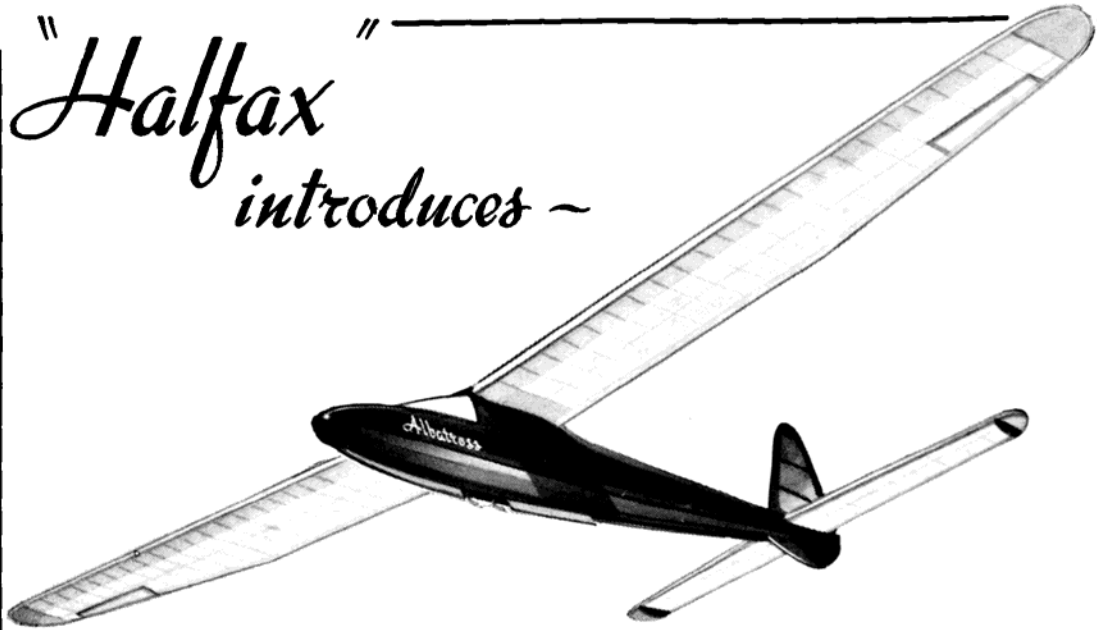
MODEL AIRCRAFT ^{1/}



OCTOBER, 1946
Vol. V No. 10.

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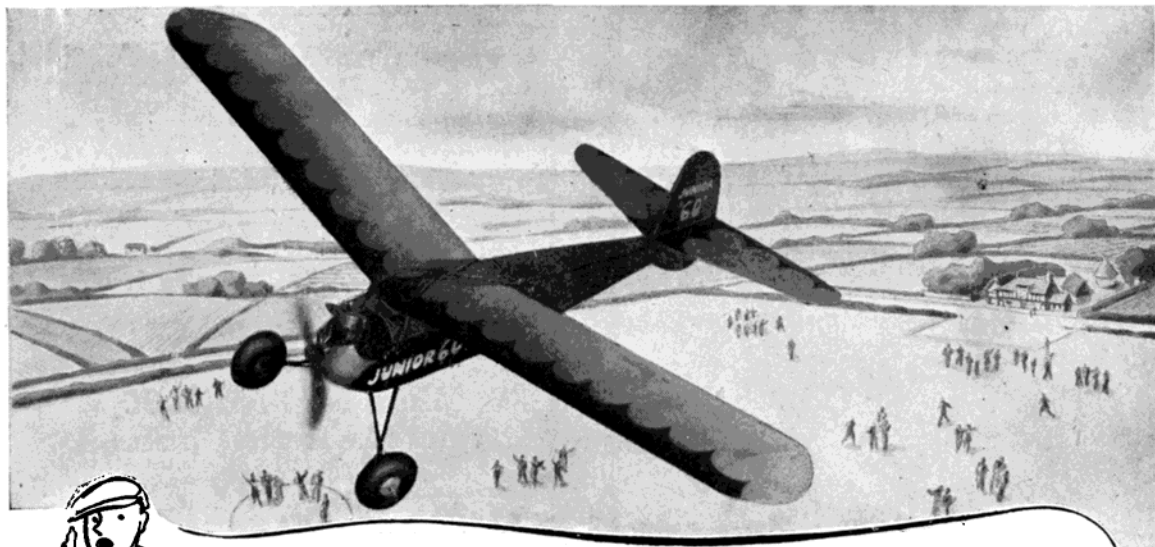
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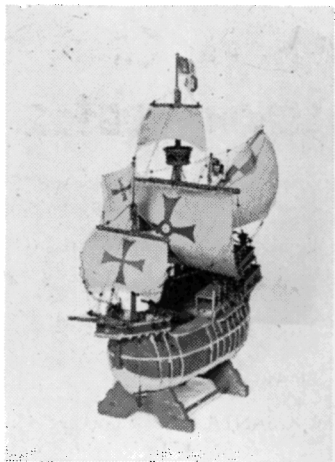
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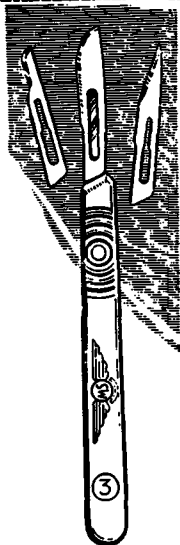


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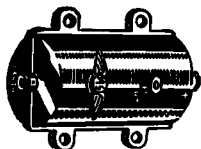
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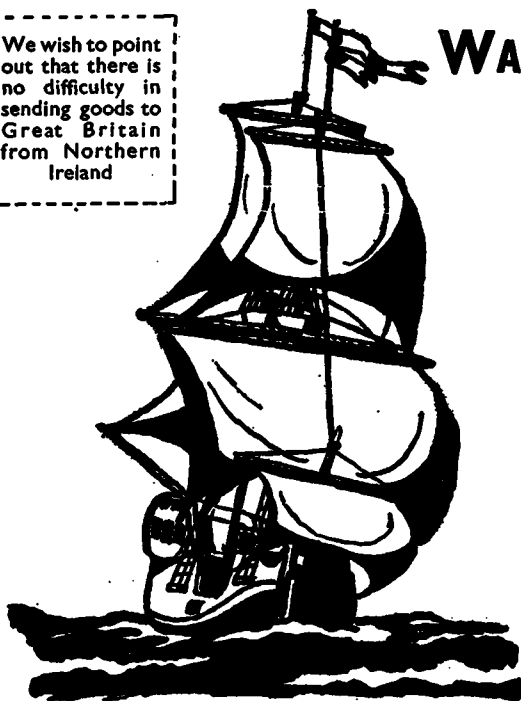
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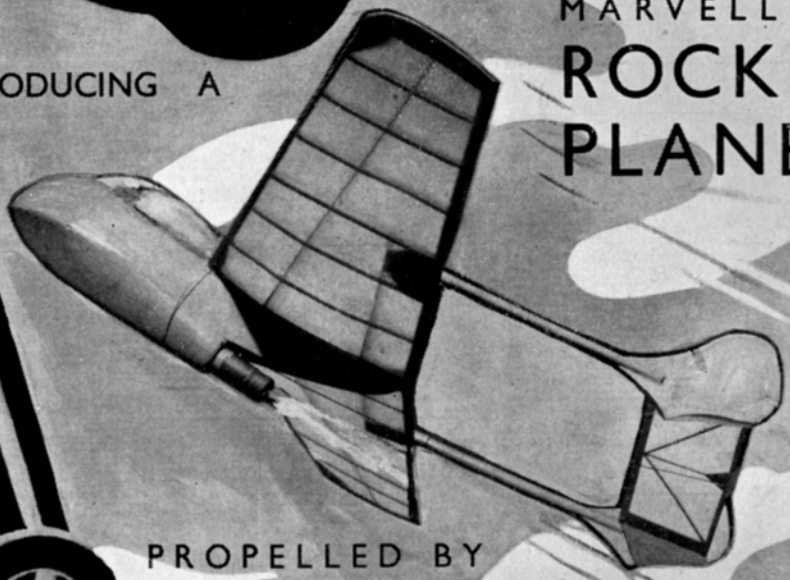
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MODEL AIRCRAFT

The Journal of the Society of Model Aeronautical Engineers

OCTOBER 1946
Volume 5. No. 10

★

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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A PERCIVAL MARSHALL PUBLICATION

"M.E." EXHIBITION

SOME OF THE
MODEL AIRCRAFT
ON SHOW



Prominent on the S.M.A.E. stand was the machine with which R. Copland won the Irish National Cup, and the machine with which he won the "Model Engineer" Cup. Also displayed were Ken Tansley's Shelley Cup-winning machine, A. Wilson's Bowden Trophy winner, George Temple's "Celestial Horseman," and Marshall's well-known glider.

The remaining pictures show some of the competition model stands and the Chairman of the S.M.A.E., Mr. A. F. Houlberg, examining the winning entry in the "Original Flying Exhibits" class, the helicopter built by R. A. Foster, of Bristol.



NEWS Review

Cover Story

Our cover picture this month shows one of the many tail-less models which are now making their appearance in open competitions throughout the country. Diverse designs have been produced indicating the wide field of experiment opened to the model aircraft enthusiast by this type of model and the fluid state of our present knowledge of the basic requirements for successful performance with this class of model.

The particular example shown in our picture made its appearance at the first Northern Area Rally of the S.M.A.E., held at Rochdale, in June of this year, and it possesses a number of features which are popular in this type of model, either individually or in combination. Amongst these will be observed wing-tip fins, elevons with a pronounced negative angle, central fin, and the usual "arrow" plan form.

This particular model performed well during this Rally, and the photograph was taken by that well known northern enthusiast of both aircraft modelling and camera craft, W. Titterington, who is also the popular secretary of the Manchester and District Council of Model Aero Clubs.

"The Model Engineer" Exhibition

The Model Engineer Exhibition celebrated its twenty-first birthday in glorious success, opening its doors daily to record crowds and

providing the thousands who are interested in one phase of modelling or another with much to see and admire.

As might be expected after seven years of enforced closure many were eager to exhibit, and the models were of a high standard.

This applied particularly to the model aircraft exhibits, which were of consistently high quality although not so plentiful in quantity as one would have wished.

Considerable apathy is evident in the model aircraft movement as a whole and the majority appear to be quite willing to let a few enthusiasts do all the work while they sit back and reap the benefits.

This is not conducive to the development of the model aeroplane movement on satisfactory lines, and it is to be hoped that future exhibitions will receive more practical support from the rank and file of aeromodellers. The aero-modelling enthusiast is now firmly established at this exhibition on equal terms with the heavier engineering, and it is up to the aero-model enthusiasts to justify its continued inclusion in future years.

Since both the S.M.A.E. and the S.M.E.E. are now interested financially in the exhibition in the ratio of their contributions to its organisation and success it is in the interest of every aeromodeller that it should develop into an even greater exhibition next year and in the years to come.

Diffidence

In conversation with a number of modellers who are known to have machines which stood a sporting chance of

carrying off a prize at any exhibition, but who did not exhibit, it was revealed that in many instances a certain amount of "inferiority complex" was responsible for not entering the competition section of the exhibition. The invariable answer was:—"Oh! my machine is not good enough for an exhibition!" or else "Oh! I thought there would be plenty of entries without mine!"

Both of these arguments are fallacious and dangerous, and if everyone adopts this outlook a really representative exhibition is an impossibility.

It is to be hoped that the exhibition will be given more consideration by the average aeromodellers in future so that it will continue the premier yearly exhibition of model aircraft in the country.

Remember it is now *your* exhibition and its future is entirely in your hands.

Valuable Help

We would take this opportunity of thanking all the helpers who contributed towards the success of the show; the stewards who gave of their valuable time to man the S.M.A.E. stand or keep the public from fingering the models; the competitors who went to great trouble to deliver their models to the hall; the ladies who graced the stand with their presence and gave valuable assistance selling programmes; the enthusiasts who demonstrated in the flying arena; the constructors of the electric R.T.P. models, particularly Mr. J. S. Evans; and all those who undertook one or other of the many minor tasks which are so necessary to the successful organisation of a national exhibition of this nature.

All those who rendered assistance will doubtless derive some measure of satisfaction from the fact that the show was such an outstanding success.

THE 21st

"MODEL ENGINEER" EXHIBITION

IT is fitting that the occasion of the 21st *Model Engineer* Exhibition should be marked by four important developments in the history of this well established and popular exhibition.

In the first place its staging in the *New Horticultural Hall* provided a more spacious and more pleasant home; secondly, the general quality of the exhibits was well above the average, and indeed the best-ever; thirdly, the exhibition was run as a joint effort on the part of Messrs. Percival Marshall & Co. Ltd., The Society of Model and Experimental Engineers, and the Society of Model Aeronautical Engineers, for the first time; and fourthly, it opened its doors to record crowds every day, and in spite of the increased size of the new hall, such was its popularity that overcrowding was in evidence on most days, and many had to queue-up for three-quarters of an hour to gain admission.

To the provincial visitors who were forced to add a lengthy wait to their tedious train journey to London we extend our sympathy, and trust that the inconvenience occasioned was found worth while when they were at last in the hall and able to examine the many outstanding examples of craftsmanship on display.

Wakefield Models, Class 18

In the aircraft classes that for Wakefield models proved as popular as ever and produced some outstanding examples of craftsmanship, particularly in the winning model, which was entered by P. T. Capon, of Burgh Heath. His "Krusader" was shown in twin form, one in skeleton without covering and the other in its finished form in flying condition. Apart from the faultless workmanship displayed the model is a fine example of the shoulder wing streamlined design, and it proved its worth by winning the Gutteridge Trophy on the day following the close of the exhibition.

The second prize winner, entered by D. F. Proctor, of Pratts Bottom, Kent, was also a very fine effort of construction and design, and only just perceptibly behind the winner. Its constructor favoured a fuselage of circular cross section, fully elliptic surfaces, folding single leg undercarriage, and folding propeller. Like the winning machine, construction details were clearly displayed, but in this case by the

expedient of leaving one-half of the machine uncovered.

The winner of the third prize was T. Whalley of Whitefield, Manchester, with a slab-sided, model which was very cleanly constructed.

Flying Scale Models, Class 19

This class was won by a large petrol driven model of the Miles Kestrel Trainer, built by C. Houthuensen, of West Hampstead. The adherence of this model to scale proportions was exceptionally good, as was the quality of workmanship displayed.

Second place in this class was gained by H. C. Baines, of New Cross, with a $1\frac{1}{2}$ in. to 1 ft. scale model of a "Leopard Moth" in skeleton form, which attracted much attention.

Power Driven Models, Class 20

This class was won by a fine free-lance design near-scale model of a light-aircraft of the type popular with the private owner. Powered with a well cowled Forster "29" engine, it has beautiful lines and is extremely well made. It is an excellent example of the combination of good appearance with practical construction.

Following closely on his heels was G. E. Dunmore, of Leicester, with his well-known high-wing cabin model "Captain Kid," which also displays fine workmanship and considerable thought in design; while third place was taken by that old enthusiast, J. Worden, of North London, with his 6 ft. span low-wing monoplane with turtle deck attractively finished in polished wood planking.

Sailplanes, Class 21

The winner of this class, G. A. Millar, of Luton, entered an "Ivory Gull," which was by far the best finished flying model on exhibition. The fuselage, planked in "Obechi," was finished with deep maroon cellulose paint, perfectly applied, and so perfectly polished that nearly all visitors pronounced it to be a "plastic" fuselage. Apart from the superb finish of the fuselage the remainder of the model was practically faultless, both covering and construction being without reproach. It was an outstanding example of how a model should be made and nothing on it was skimmed—not



Winners

1.—The superb "Ivory Gull" of S. A. Miller, winner of Class 21. 2.—The twin "Krusaders," of P. T. Capon which won Class 18. 3.—C. Houthuesen's Kestrel Trainer which won Class 19. 4.—The best Model in Class 28, the high-wing glider entered by R. J. Ludbrook. 5.—The beautiful 1/72 Lancaster, entered by S. G. Allard, which won Class 22, and carried off the Championship Cup. 6.—The winning Junior Wakefield, built by P. Snodin. 7.—P. T. Capon's "Kadre" biplane, winner of Class 22.

even the cockpit details. A thoroughly deserved win.

Second place in this class was again taken by G. E. Dunmore, of Leicester, with an ambitious sailplane of the "pod" type, on which provision has been made for full controls and their trimming. In addition to the not unusual hinged trimming tab on the rudder, both movable ailerons and elevators are fitted which can be preset; the ailerons from a central control screw, revealed by moving aside the fuselage fairing over the wing, which is located by rubber bands and two "snap" fasteners, and a system of spring loaded push rods; while the elevators are fitted with control levers whose screwed connecting-rods provide an ample degree of adjustment.

Third place was taken by a well designed and constructed streamlined sailplane of the F.A.I. type, entered by F. E. Dudeney, of South Woodford. This machine was also of a very high standard and the planking and subsequent covering of the fuselage with tissue was extremely well carried out.

Solid Models, Class 22

This class produced two outstanding examples of the model maker's art. The winning model, entered by J. G. Allard, of South East London, was 1/72 scale Lancaster, constructed entirely from mahogany, copper and perspex in a faultless manner. It was the best piece of craftsmanship on exhibition, and it gained the Championship Cup given by the Royal Aero Club for the best model in the aircraft section.

The other outstanding exhibit in this class was the very fine entry of six miniature models fashioned from match-sticks glued together, the work of P. T. Capon, of Burgh Heath.

Apart from the originality of conception of this exhibit, the quality of workmanship and patience displayed are to be commended.

The third prize went to a neatly finished 1/24 in. scale model of the Fairy "Firefly," constructed by C. D. Barnes, of Woodheys, which showed close adherence to the prototype.

Original Flying Exhibits, Class 23

The outstanding entry in this class was the framework of an experimental helicopter, made by R. A. Foster, of Bristol, which showed both enterprise and good workmanship. A "Canard" monoplane of attractive appearance entered by A. D. Trollope, of Ruislip Manor, was deserving in gaining a diploma.

Rubber Driven Models, Class 24

Mr. P. T. Capon, of Burgh Heath, demonstrated his versatility by winning this class with

his beautifully built biplane "Kadre," possessing clean lines, and finished in his favourite yellow, red and black colour scheme.

Wakefield Models (Junior), Class 25

The winner of this class, P. J. Snodin, displayed a quality of craftsmanship which would not disgrace many seniors. His entry was a shoulder wing streamlined model of more or less orthodox design which revealed some interesting novel features and sound thought.

Sailplanes (Junior), Class 28

The best model in this class was a triangular fuselage sailplane designed and made by R. H. Dexter, of Winchmore Hill, which was "highly commended." A diploma was also gained by R. J. Ludbrook with a high wing glider.

Solid Type Models (Junior), Class 29

A Mark II "Gloster Gladiator" entered by W. A. Doughty, of Gravesend, proved to be the winner of this class. With more practice and more thought in mounting his models for presentation this entry should produce some attractive models.

A model of the De Havilland flying wing jet machine gained a well deserved diploma for 7 year old C. H. Lincoln, of North Weald.

Trade

While it is impossible to deal in detail with all the trade exhibits in this issue, they are, nevertheless, an important part of the exhibition which would not be the same if one could not examine the latest products of our favourite suppliers.

Outstanding amongst the firms dealing specifically with model aircraft and their accessories were to be found E. Keil and Son, who displayed an amazing range of material covering all phases of the hobby; the Astral Aero Model Co., with an equally wide range; the Mills Bros. Ltd., who were displaying their promising 1.2-c.c. compression ignition engine; Majesco Miniature Motors, who were showing examples of their miniature motors and kits of parts for making them; Model Aero Supplies, whose "Flying minutes" is still as popular as ever and whose range of kits and material is even more comprehensive than before; Caton Ltd., whose rubber and wheels are now again in supply; Hi-Fly, of Bradford, with their Wakefield model and simple box kites; "Ten-Sixty-Six" Products, with their Falcon engines and castings; and Flight and Fleet, with their kits of parts and building material.

READING RALLY

AT
THEALE

1946

Top right : G.W.W. Harris with the model which gained him first place in the contest for rubber-powered models.



Centre : The winner of the glider contests was E. Moody, of the Eastleigh club, who is here shown with the scaled-up "Tern" which brought him success.

Bottom right : The petrol contest provided a further triumph for the Harris family, Mr. Harris, senior, shown with his Mills-engined model, gaining first place, and G. W. W. Harris second place.



AEROMODELLING IN A GERMAN P.O.W. CAMP

By S. A. C. SMITH



The author.

THE following account of events which occurred in Germany as a sequel to the last of 35 operational raids (14 to Berlin) will, we feel sure, be of interest to all aeromodellers.

The story begins when the author arrives in Germany by parachute on one very dark and windy night after being forced to leave an extremely unserviceable "Pathfinder" Lancaster in the March of 1944. It is an excellent example of the spirit displayed by members of our Air Force in adversity, and in assessing this it must be remembered that the apparent early inactivity was occasioned by recovery from wounds sustained by the author when his aircraft was shot down over Nurnburg.—Editor, MODEL AIRCRAFT.

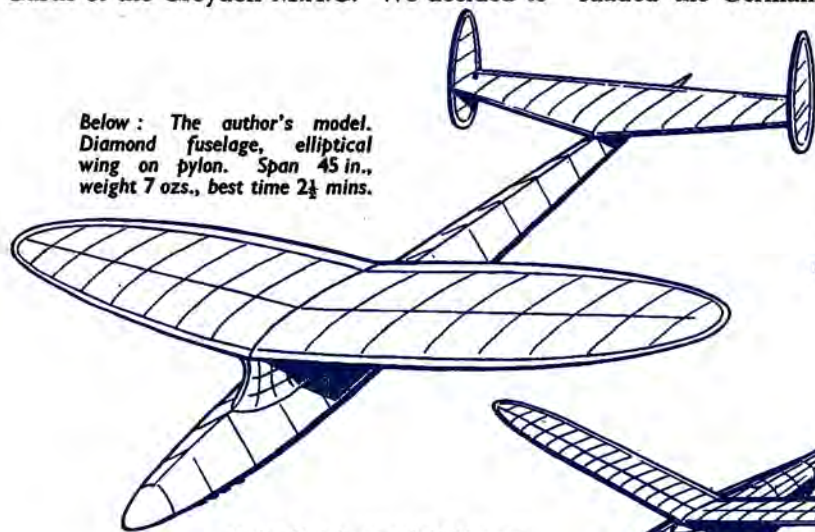
AFTER landing by parachute and a rather hectic journey across Germany, I eventually arrived at Stalag Luft. VI Heydekrug, East Prussia, and very quickly settled down to the problems of life in a P.o.W. Camp. After spending about two months just kicking around doing nothing, I began to think about finding something to occupy my mind and, being an extremely keen "aero-modeller," my thoughts naturally drifted in this direction.

It was about this time that I bumped into a fellow P.o.W. who turned out to be Maurice Curtis of the Croydon M.A.C. We decided to

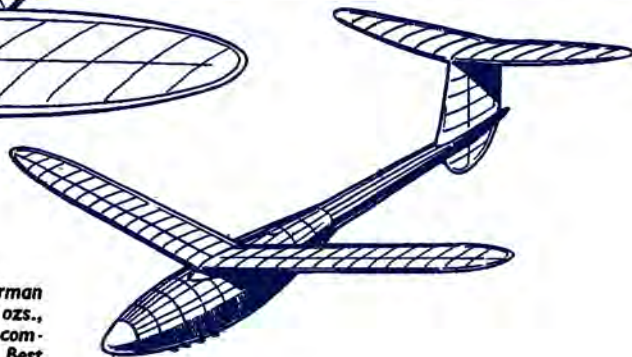
find out if there was anyone else interested in aeromodelling, etc., and with this in view, put a notice up on the Camp notice board. Much to our surprise about twenty "bods" turned up, and after a discussion we decided to form the Heydekrug Model Aero Club.

After about a month of weekly meetings, lectures on theory, etc., by Mr. Curtis and the author, we began to toy with the idea of trying to build a flying model. We had to choose a glider as rubber was entirely out of the question. After quite a lot of scrounging we finally persuaded the Germans to part with a three-ply wooden crate. This wood was extremely heavy and very poor quality, but by careful splitting and scraping with glass, we managed to get several fairly decent pieces out of it, about 1 mm. thick.

Below: The author's model. Diamond fuselage, elliptical wing on pylon. Span 45 in., weight 7 ozs., best time 2½ mins.



Right: Sailplane made by Norman Caban (England). Weight 15 ozs., span 50 in. Fuselage completely planked with ply. Best time 3½ mins.

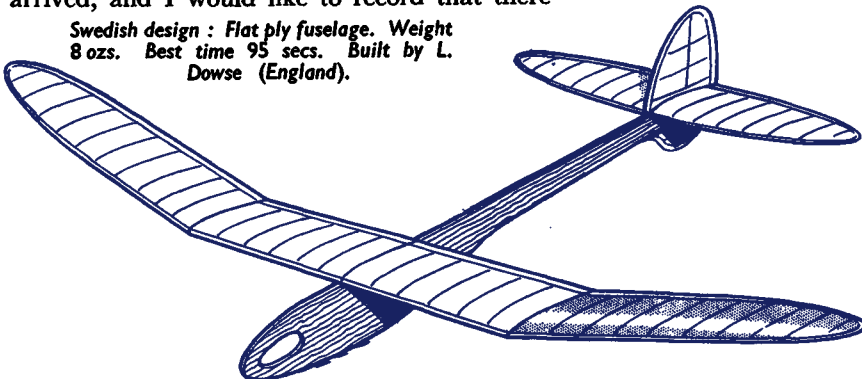


From this we built our first model, size approximately three feet span, weight about 14 ozs., based on a design from a book by Warring on Gliders, that one of the chaps was lucky enough to get sent out. The whole model was built entirely from ply, and covered with paper from Red Cross cigarette packets. This paper was in pieces 2 by 3 ins., and there were about 300 pieces of paper on the model. The glue used was some we managed to pinch from the German stores. Its chief drawback was that in warm weather the model was likely to fall to pieces. This nearly always happened on the way up on the tow-line. This model and several others of similar design were flown for several months on the Camp football pitch, durations being in the neighbourhood of 45-75 secs.

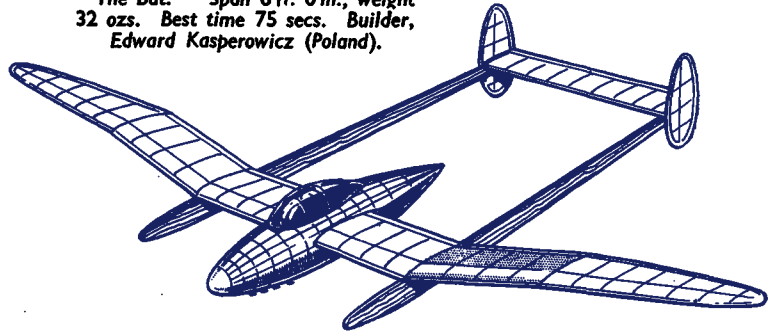
About this time we began to talk of things like formulas, etc., and rumours began to float about that there were several very interesting models under construction, and the author decided that something should be done to stage a competition.

After consultation with the other chaps it was decided upon. Also the club elected a Chairman, Secretary, and Comp. Secretary. This latter office was filled by the author, who would at this point like to tender his apologies to "The Moving Finger." I quite shamelessly put myself in his shoes and ran a weekly "M.F." column in our weekly Club Magazine. I hope this will bring him out of retirement for a few minutes. This caused quite a bit of harmless amusement amongst the chaps and helped to keep our minds off more serious things. The long awaited competition day eventually arrived, and I would like to record that there

Swedish design : Flat ply fuselage. Weight 8 ozs. Best time 95 secs. Built by L. Dowse (England).



"The Bat." Span 6 ft. 0 in., weight 32 ozs. Best time 75 secs. Builder, Edward Kasperowicz (Poland).



were 14 models entered for this event all of them being to an extremely high standard of workmanship, the finish on most being quite comparable with models built under entirely different surroundings.

You can imagine our amazement when one of the models, after coming off the tow-line (we had progressed to winch launch now, made from an old gramophone motor), hit a riser at about 200 feet and was eventually timed 20.5 minutes, *out of sight*. This performance deserves all possible credit to its builder, Mr. K. Trott, and also the designer—Warring. Unfortunately, the Germans really sat up and took notice after this performance, and even suggested that we were sending messages, etc. This fact and, happily, the prospects of the war finishing in the near future prevented further activity.

During my stay in this camp I saw many extremely interesting examples of the aeromodellers' art in various parts of the camp. They consisted of solid and built-up scale models of all types, including a 1 in. to 1 ft. Sunderland, several highly streamlined gliders constructed from plywood. These were even planked with thin sheets of ply, and we also did a spot of stunt flying, pick-a-back launch and Drogue towing.

Finally I would like to add that the finger stall which the "Moving Finger" lost at a Blackheath social night is one of my most treasured possessions, as it accompanied me on all my operational flights hanging from the cockpit of my Lancaster Bomber. "Happy Landings," to all and may balsa be forever plentiful.

ORIGINAL DESIGNING

by GORDON ALLEN

A METHOD whereby an undercarriage can be fitted to the wings of a low-wing lightweight is suggested in Fig. 5. Each leg is carried by an outboard centre section rib which must be reinforced for the purpose. The location of the unit must be as near to the leading edge as possible.

The leg itself is made from 18-gauge steel wire. It is bent to the saddle shape as indicated, at the same time adding the short bearing tubes. Item "X" is made from $\frac{1}{4}$ in. \times $\frac{1}{8}$ in. hard stock and is fixed firmly between the

bottom of the leg is bent to take the wheel, which is secured by soldering a small cup washer at each side of the hub.

The undercarriage shown in Fig. 6 can be used on a small petrol-engined machine, being light yet sturdy. The main legs are $\frac{1}{4}$ in. outside diameter hard brass tubes. Each tube is trapped at one end and bent over after having drilled the flats to take the wire struts, item 1. Small end fittings, made from either steel or brass, are sweated into the other ends of the undercart tubes as shown.

The clips are made from thin sheet steel and are drilled to take countersunk screws which pass into the reinforced longeron. Small split-pins hold the legs to the clips, allowing the legs to swivel.

The rear struts (item 2) are made from spring steel wire, and are bound to the fuselage longerons. The other ends are coiled twice round the undercart tubes and either soldered or brazed. Item 1 passes through a brass tube located centrally in the fuselage, while its ends fit through the trapped ends of the undercarriage legs and into the wheel hubs. For details of the wheel fitting, the sketch should be referred to.

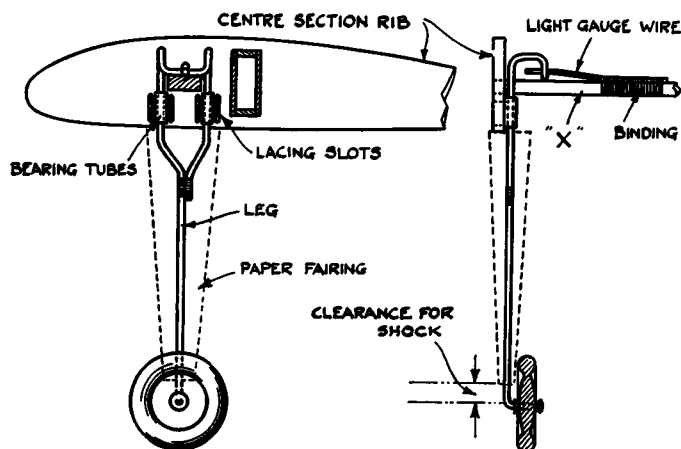


Fig. 5. An undercarriage suitable for low-wing machines, incorporating springing and fairings for the leg.

outer centre section rib and the next outboard wing rib (this may produce a slight slope in the member) after the saddle of the undercarriage leg has been passed over it. Next, the undercarriage bearing tubes are cemented in place on the face of the rib and can be secured by binding passed through lacing slots cut near the sides of the tubes. A length of 20 or 22 s.w.g. steel wire is then bound to item "X" to form a spring over the crooked undercart saddle. A paper fairing made by rolling gummed paper round a pre-formed wooden template is then fitted over the unit and cemented to the centre section rib. Finally, the

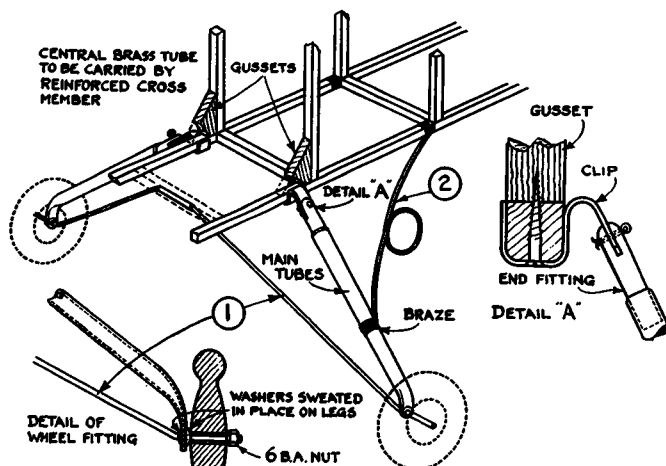


Fig. 6. A sturdy undercarriage suitable for large or power-driven machines.

THE "NOMAD" SAILPLANE

By
W. H. PORTER

*A 46-in. span
F.A.I. type
Sailplane of
simple design*



W. H. Porter's "Nomad" contrasted with F. J. Johnson's variation of this design.

"NOMAD" is a successful attempt to combine good appearance, consistent performance and simplicity in a model. It is also of a handy size and economical to build.

No incredible averages are claimed in still air, but on a normal day's flying flights from two to three minutes can be obtained easily, the best flight to date being $4\frac{1}{2}$ mins. o.o.s.

"Nomad" is also popular among club members, and nearly a dozen have been built and flown with satisfaction. The construction is quite normal and mostly of balsa.

Fuselage

Build the two sides together on the plan in the usual manner and fit formers 4 and 5. When set fit formers 1 and 7 into place, and follow with the rest of the formers; the cross-braces are then fitted.

Don't leave out former 6, as this prevents the assembly from flexing. All formers are of $\frac{1}{8}$ -in. balsa, medium sheet, as this makes a better job when using balsa-cement. Nose-block is $\frac{1}{8}$ -in. hard sheet, laminated.

The tongue and skid are of $\frac{3}{32}$ -in. ply.

The fin is built flat as a complete unit from $\frac{3}{32}$ -in. medium sheet, and after being fixed in the fuselage the ribs are built up with $\frac{1}{8}$ -in. sheet. The upper fin is of $\frac{3}{32}$ -in. medium sheet, and the direction of the grain must be noted. The rear portion of fin is used as a trim tab.

Wings

These are also built in the usual manner. The boxes are of $\frac{3}{32}$ in. very hard sheet, cemented well and bound with silk-thread. Fit the $\frac{1}{8}$ sq. in. stiffeners to the root ribs.

The spars are of $\frac{1}{8}$ in. sq. hard balsa with $\frac{1}{32}$ -in. sheet webbing on both sides to the dihedral break then on the front only out to the tip. The dihedral keepers should be made of $\frac{1}{8}$ -in. hard sheet as shown on the plan. The leading-edge is of $\frac{1}{4}$ -in. hard balsa.

Tailplane

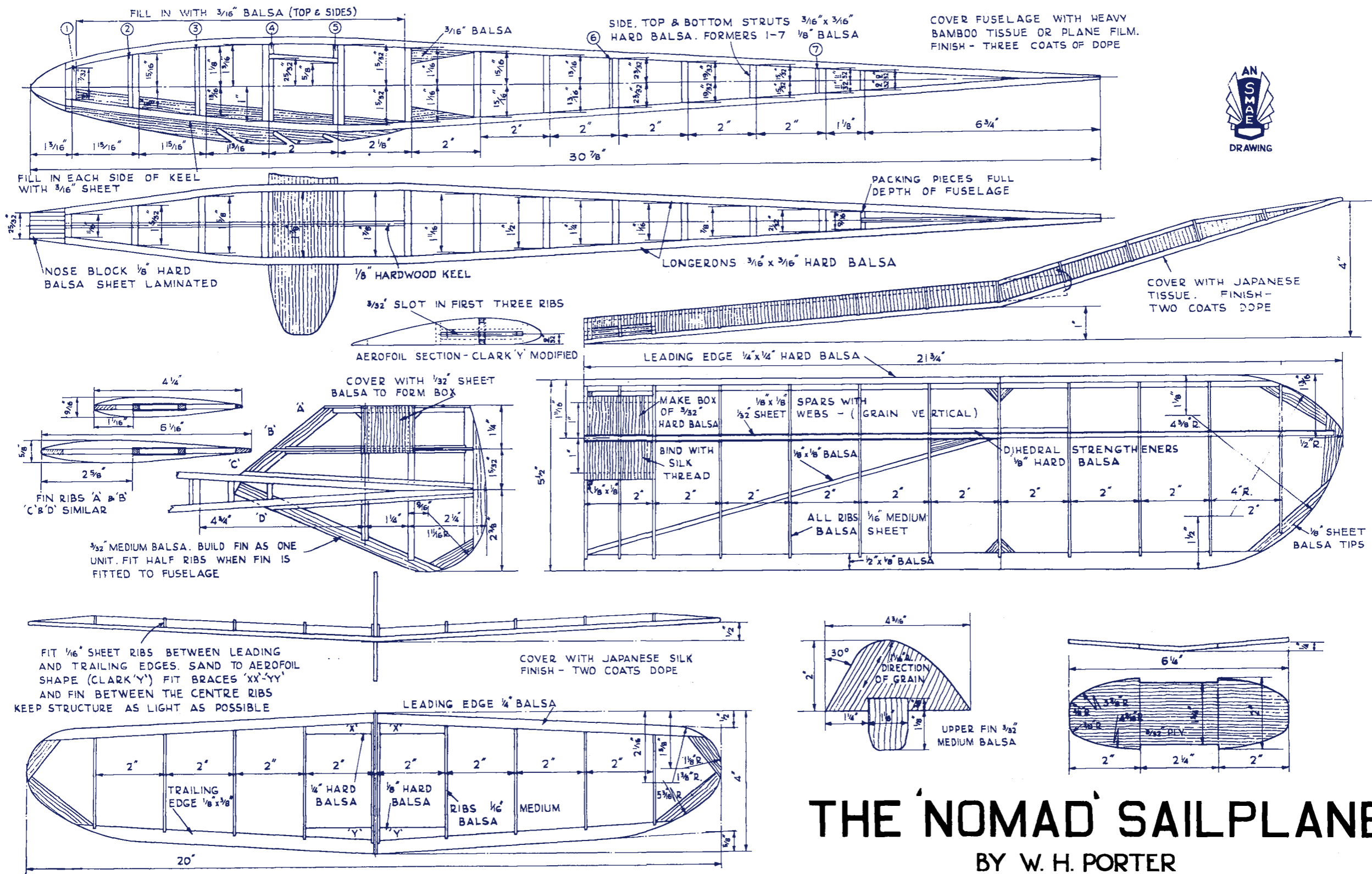
Fit $\frac{1}{8}$ -in. sheet ribs between the leading and trailing edges and sand them to aerofoil shape (Clark Y). When they are set, fit braces X and Y and the fin between the centre-ribs. Keep the structure as light as possible.

Covering

On the original the fuselage and fin were covered with heavy bamboo tissue. Plane-film would be very suitable.

The wings and tail-plane were covered with Jap-tissue. Dope the fuselage three times and the flying surfaces twice. The fuselage and wings will resist warps very well, as the structure is very strong.

Span, 45.75 in.; chord, 5.5 in.; length, 31.25 in.; wing area, 230 sq. in. approx.; weight, 9 ozs.; tailplane span, 20 in.; tailplane area, 70 sq. in.



THE 'NOMAD' SAILPLANE

BY W. H. PORTER



WAKEFIELD MODELS

by
R.N. BULLOCK

TAIL surfaces nearly always need to be well up to the maximum area allowance of 33 per cent. of the main plane area, and as far as one can see are best for our job if of thin aerofoil section with the curved surface uppermost; a very great favourite for this is the Clark "Y" aerofoil section with its vertical ordinates halved.

The tail surface is generally set at a small negative incidence of approximately 1 degree.

The aspect ratio of tail surfaces is usually about $3\frac{1}{2}$ to 4, and either slightly tapered or parallel chorded, with tips to match the main plane.

It is usual, however, to make the trailing edge straight, and the leading edge sweep back, though this is not a golden rule, as it means a rather heavy member at the trailing edge, a disadvantage when trying all one knows to get the c.g. of our model as far forward as possible, so if you do not mind breaking the usual appearance rule, build a tail plane with a straight leading edge and the trailing edge swept forward, when it will not only help to improve matters with regard to c.g. position, but will actually be more efficient, as a swept forward trailing edge is anti-stalling.

Tail surfaces need ribs at about every $1\frac{1}{2}$ in. The mounting should be such that the incidence can readily be altered by packing; this will help in the final trimming of your model. It is very important to make tail surfaces as light as possible, but not, of course, forgetting strength.

The fin should be of sufficient area to set the centre of side area of the completed machine on or about the trailing edge of the main plane, and slightly above it, if possible, without having a noticeably high fin, as this would weaken it, and it is essential that it should be as strong as the tail-plane. The main reason for this

strength is that models frequently land on rough surfaces and turn over very violently, also, in the event of flying on a windy day, a model is often blown over and over, before you can reach it, and in the process the whole weight of the model can, and frequently is, carried momentarily on the fin, or tail-plane end, which will, undoubtedly, fail unless built to stand this situation. The fin or rudder should have a small inset tab of about one-eighth to one-quarter of its total area. This tab should be carried on stiff hinges, so that it may be pre-set; this is a very necessary adjunct to final trimming, and is a refinement that is well worth while, as you will see later.

Another important point about fins, is that they should not be very much over size, as too large a fin and rudder will frequently wreck an aeroplane, since the effect is to make the nose fall on turns and this starts a dive. The shape of fins and rudders is generally about half the tail-plane area, or, perhaps, a little more, but this will depend on the length of the nose forward of the wings (long nose, big fin; short nose, small fin).

The section of fins and rudders should be bi-curved, but not very thick, or the model will hunt directionally. The ribs should be about $1\frac{1}{2}$ in. apart, made as light as possible, but don't forget about the strength. The tail-skid should always be as small and light as possible, 22-gauge wire, and about $2\frac{1}{2}$ in. long outside the fuselage is ample, so long as it keeps the tail end off the take-off board. Do not put the tail-skid too far aft, about 4 in. from the rear end of the fuselage, as it has been known for the rear ends of fuselages to be badly damaged when the model has landed with a lot of drift or turn on it, causing a violent swing, which gives the skid a nasty sideways swipe.

The motor and propeller are next on the list for consideration. As the propeller appears to cause many people a lot of worry, I have given a comprehensive drawing of a good one (see Fig. 7).

To carve a propeller is really quite easy, and I will just run over the manner in which I do it.

First get a sound block of balsa big enough to carve the propeller from. Next see that it is parallel and square, and that its annular rings run across the width of the block, or at right-angles to this direction, never at an angle to the faces, because if it is like this you can never hope to balance the propeller and

you are drilling square by sighting against the edge of a square or set-square. Work on a level surface. Now drill half-way through from the other side. If you have done your marking and drilling well, the holes should meet in the middle of the block.

Next mark out the plan view shape on both sides, and square lines all round at the positions given, to lay out the plan form.

Cut out to the plan form, square to both front and rear faces of the block. Next scribe a line all around the block on the sides, this is the datum line ; next square the blade width ordinates down the side, and measure the appropriate distance fore and aft of this line,

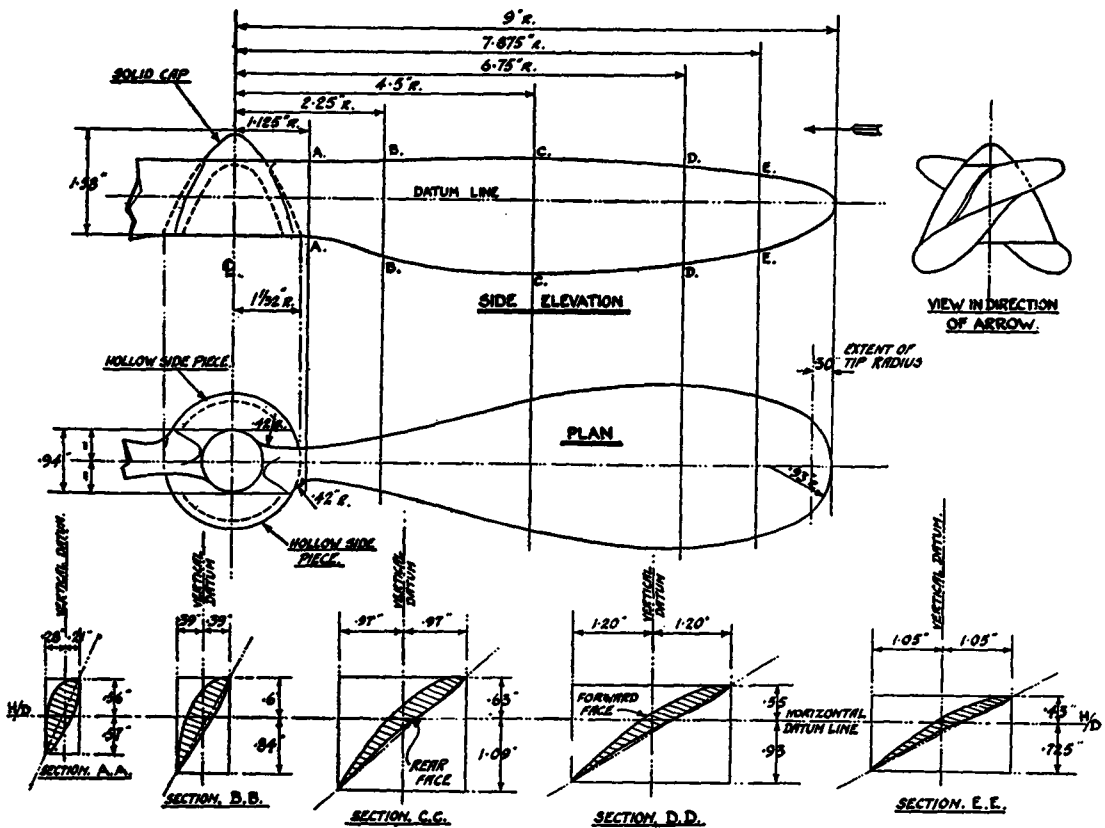


Fig. 7. Details and sections of the propeller.

keep the blades of equal thickness at the same time. Mark the centre on both sides, taking very great care with your measurements; see that you find the centre from side to side as well as from end to end.

Drill half-way through with a fine drill, getting assistance from someone to check that

join these points and two lines will appear right round the propeller from root to tip on both blades.

Now cut the wood away from the front and rear faces, square to the sides, until the side lines have been reached ; see that front and rear faces remain square to the sides.

The block should now appear like the side elevation in the drawing, except that it will have no spinner; when this stage has been reached you can start to carve for blade sections and angles. Make templates from stiff card, or $\frac{1}{8}$ -in. three-ply. These templates should fit the curved working faces of the blades at the quarter, half, and three-quarter diameter positions, make other templates to fit the under side, or back faces of the propeller, at similar positions. These templates should be small right-angle triangles with the curved template face on the hypotenuse, the earlier ones should be squares or rectangles with a corner cut off and the curved template face cut on it. Leave sufficient flat to be able to set the templates on the work-board.

The Test Board

Take a perfectly level straight piece of wood, such as a drawing board, and set into it a stiff straight piece of wire, sticking out about 2 in. See that it is square with the surface of the board

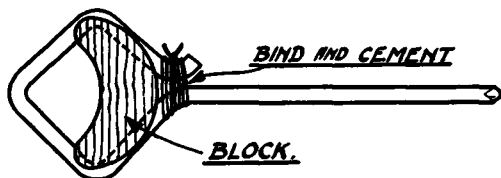


Fig. 8. Rubber centralising block made from balsa.

in all directions. When using templates, put the block on to this wire each time you want to try your templates, press the block firmly down on to the board. You can now begin to carve the blades, starting on the working or hollow faces first, cutting and trying the proper templates at each station, and finally getting the correct shape with glass-paper. Next carve the convex or front face of the blades, again working accurately to the templates, and attaining the final shape with glass-paper.

Take a great deal of care with these operations, and be sure to get a good aerofoil section along the blades at all the positions, finally fitting to the templates with fine glass-paper.

The spinner may be carved with the propeller, or cemented on in two halves afterwards, but, in any case, it should be very accurate, and hollowed out; a small solid cap, cemented on, finishes it off.

The propeller should now be balanced by sanding the heavy blade, which is found by

spinning it on a fine wire, until it will come to rest in any position without any preference or tendency to one particular position indicating a lack of balance.

The propeller, when finally sanded and balanced, needs a few coats of dope or banana oil, and rubbing down with extra fine glass-paper after each coat is thoroughly dry.

Cover the blades with tissue paper, give another coat of dope or banana oil, and balance finally by applying banana oil.

Bush and fit the free wheel. The weight should be $\frac{3}{4}$ oz. For a good, single-skein Wakefield model motor you will need between $2\frac{1}{2}$ oz. and 3 oz. of rubber. This motor should be arranged in a skein from 44 in. to 48 in. in length.

Preparing the Rubber Motor for Use

This motor should be well lubricated and braided by the White method so that it just takes up the distance between the hooks, or, rather, between the front hook and back peg.

This motor needs careful working into condition, but need not be quite fully wound until the third flight; of course you can only really know how many turns a certain motor will take by breaking a few similar ones beforehand.

At any rate, a motor made as I have described should take 1,000 turns, or even more, up to 1,250 if of very good quality.

Stretch winding is, of course, essential to obtain these high numbers of turns.

The motor should be carried on a cane peg at the rear end of the fuselage, and this peg should be about $\frac{1}{8}$ in. diameter; it should stick out of the fuselage about $\frac{1}{2}$ in. to $\frac{3}{4}$ in. each side, so that the holder can take the tension of the motor on his right-hand thumb and upper portion of his first finger; this relieves the fuselage of the very heavy stresses set up in it during stretch winding. If it were not for this rear peg and this method of holding, it is doubtful whether the model would stand up to the strain of continual winding.

The elastic should be arranged in the hook at the forward end so that it cannot climb. A diamond-shaped hook with a small tail and a balsa centralising block bound in and cemented does the job well and is light (see Fig. 8).

The propeller shaft should be 14 gauge; on this gauge of wire it does not appear necessary to fit valve tubing to protect rubber. Bobbins may, of course, be used, if preferred.

(To be continued)

POWER COMPETITION FLYING

by C. E. Bowden

THE trophy that I presented to the S.M.A.E. a few years before the war for International competitions, to be held in England each year, was flown off on August 4th at Heston Airport. It produced a record entry of about 70 machines, which augurs well for the future of petrol flying when we remember that engines are still very difficult to obtain in this country; very many people have not yet finished building their first post-war petrol model as they have only just returned to civil life after their war services, and also that owing to difficulties of obtaining an aerodrome, details of the flying field and rules were not published in the Press well ahead.

In spite of all these difficulties a large crowd of spectators and many interesting models turned out for the event. Many old friends had reunions and the S.M.A.E. officials, headed by Mr. Houlberg, ran the show with a swing.

It was evident that the rules will have to be stiffened up for next year in order to prevent waste of time due to so many competitors making false starts—so much time was wasted by practically all competitors that only two flights could be allowed out of the three that were originally intended. Even then the competition took the whole day. I heard some people grouching because the competition did not commence before 11 a.m., and others complained because it ended as soon as 7 p.m.

People are rather inclined to look at these large central competitions from their own personal angle of convenience. They forget that many competitors come from a distance, in fact, from all ends of

the country, and also have to travel home the same day in a number of cases.

Rules and regulations for the large centralised competitions have to be framed to suit the majority and not the favoured few. The same applies to the enforcement of rules that have been published, such as the prohibition on fitting of spare parts and the no push rule.

Some competitors felt audibly aggrieved because they broke propellers and were therefore out of the competition. But surely that is the sport of entering a major competition—to win it should be a matter of great merit and a difficult accomplishment.

The model that wins should be one that is so well designed and operated that it does not break vital parts, it flies and lands with stability, the undercarriage wheels and propeller size and position are such that propellers do not get broken, that the model does not swing off the board during the take off and, most important, the engine starts up easily and runs with



An example of bad take-off. The model has turned violently to the right and is already at right angles to the take-off board.

reliability, and finally the model flies with steady rock-like stability.

I was immensely interested in watching the different troubles that beset competitors and in analysing the cause of their failures, because the failures were far too numerous and in most cases need not have occurred.

The general standard of model petrol flying in this country after the war requires raising for next year, and I have no doubt that it will be raised when people get more practice. It is evident that there are a number of points that newcomers to competitions should make a note of. I am therefore enumerating some of the more obvious faults with suggestions and remarks so that those entering for petrol events may improve their technique and have a plan to work upon.

(1) The Three Minute Starting Rule

Competitors' models have to become airborne within 3 minutes of their names being called out. They were allowed up to three attempts for each flight within the three minutes if their models made flights of under 5 seconds. *The majority of people had to use these three attempts! Why? Chiefly because they became panicky and obviously rattled at the thought of a time limit on starting. A few of the older competition men could be picked out because of their calm deliberate orderly movements. One must practice starts and take-offs before these competitions until one has obtained a suitable sequence of movements that are known and create a feeling of confidence. This practice will show one that three minutes is a very long time and no cause for hustle provided one has method in starting. It is vital to have this feeling of confidence through practice and method. It gets rid of those clumsy panic stricken actions and fingers that over-twiddle fine and delicate adjustments of needle valve and ignition.*

(2) Easy Starting

There were a few people who started easily and got their motors running well with a minimum of tap twiddling, but the bulk of competitors put up a really poor show. They twiddled needle valves whole turns at a time until they did not know where their settings were—they moved their ignition levers by great leaps and bounds, thus upsetting the mixture strength. A wise man tries his engine out days before a major event and finds the exact setting of the fuel needle valve. He then runs up his engine on the morning of the event, tests the time switch and makes sure that there is no dirt in the needle valve. He notes the exact position of the valve, then takes it out, blows through it, replaces it at this exact spot. He fits a new but previously tested sparking plug, *fits a brand new battery*, cleans his points, fills up his tank, covers up his engine with a rag, and waits with confidence for the start, *remembering that he will not be allowed any more practice running once he goes into the competitors' paddock at the advertised time.* He will not then have to worry the judges to relax rules in his favour, which would obviously be unfair to the rest of the field. In fact, he will only prejudice his chances if he fiddles around with his engine as he may introduce dirt, run down fuel and batteries, etc.

When the time to start takes place this "PERFECT COMPETITOR" can quickly and with reasonable confidence either dope with a couple or so drops of fuel in the intake, or suck in by blocking the induction pipe with the finger, whichever method suits the particular engine fitted. The engine will then start a trifle rich and will clear itself whilst it is warming up. *Only a very small final movement of the needle valve, which he knows is clear,* will then be required before the take-off, so that the mixture is just a trifle rich to allow for the increased revs. that will take place when the model becomes airborne.

The above simple method saves all that wild movement and tap twiddling that throws even a knowledgeable engine man off the scent of the correct mixture. It ensures that the starter knows how much extra fuel he has introduced to start. That is why I prefer to dope with a given number of fuel drops from a fountain pen filler.

(To be continued)



K. Tansley's "Premier Lion" taking off at Hounslow Heath, June, 1945.

St Albans Rally

RADLETT 1946

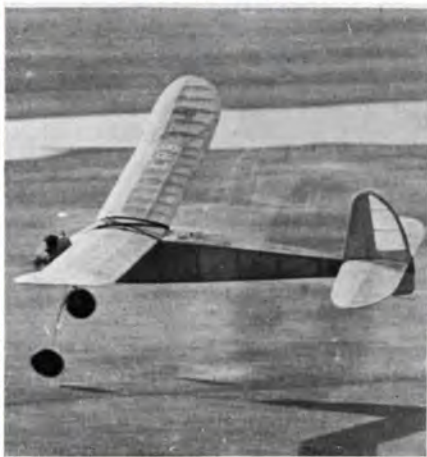


Above : Mick Farthing and E. J. Buxton give a demonstration on the launching of a lightweight.



Top : A general view of the meeting while the petrol contest was in session.

Above : Leslie Prybyl's beautifully constructed petrol model makes a perfect get-away.



Above : Anxious moments ! A competitor lets his machine off in somewhat close proximity to some other competitors.
Left : One of the high performance petrol models makes a spectacular get-away.

Edgar T. Westbury

"ATOM MINOR" MARK III

6 c.c. Engine

THE most essential point about the machining of the crankshaft is that the main journal and the crank-pin should be truly parallel all ways. Accuracy of dimensions is also important, particularly in the throw of the crankpin, and the diameter of both shafts ; but errors in these respects are capable of being compensated by suitable treatment of other parts. If, however, the crankpin is out of true parallel alignment with the main shaft, there is no cure, and the engine can only be made to run by allowing an abnormal amount of clearance in the crankpin bearing, which results in poor mechanical efficiency, with hammering and rapid wear of the working parts involved.

A series of articles dealing with the methods of constructing crankshafts has been published in the *Model Engineer* within the last few months, and it is recommended that these articles should be studied by anyone approaching work of this nature for the first time. Some appalling mistakes in method have been made by inexperienced constructors, but if the job is tackled properly, there is nothing formidable about making a crankshaft.

It may be noted that the crankshaft of this engine is very robust in design, including a rather thick web ; and the object of this is to cope with eventualities in the methods of construction or materials which may be employed. The shaft may be made either by machining from the solid, or fabricated by brazing ; the former method is recommended as most suitable for the average constructor. Not that there is anything unsound about a properly brazed-up shaft, but it is liable to entail more time and trouble, and involve more risk of error than a shaft made from the solid ; moreover, there is some danger that if carbon or alloy steels are used in construction, the heating may affect their strength and render them inferior to the commonest mild steel.

Successful crankshafts have been made by screwing the main journal and crankpin into the web, and preventing them from moving afterwards by riveting over or sweating with soft solder. This method, however, is not recommended, because of the risk of inaccuracy in producing both the internal and external

threads ; and assuming even the slightest error in this respect, there are obviously no less than four potential sources of inaccuracy in a simple overhung crankshaft of this type. Taking all things into consideration, it is just as easy, and much safer, to machine the shaft from the solid ; it enables one to use either a high-tensile steel (which can be used in the untreated condition, to provide maximum strength and toughness, or quenched to provide hardness), or a low-tensile mild steel, which can be surface hardened if desired. All these variations have been successfully tried out in the "Atom Minor" Mark III engine.

For the benefit of those readers who cannot obtain access to the articles referred to, it may be briefly mentioned that of the various ways of machining crankshafts, one may choose between methods which need no special fixtures or appliances, but call for special care in setting out, and methods which dispense with marking out, but rely upon the use of eccentric chucking fixtures such as a Keats vee angle plate. Of the two courses, I prefer the latter, because when once made, it ensures positive accuracy every time ; but for dealing with only one crankshaft, the former method may be considered quicker and less troublesome.

To mark out a bar for machining a crankshaft, it should be laid in a pair of vee blocks on a surface plate, and a scribing block, with the scriber point adjusted to the centre height of the bar, used to mark off a centre line on each end of it. The bar is now turned 90 degrees, so that the centre line is vertical, as verified by checking against a square on the surface plate. Another centre line is marked in this position, and then, after checking the height of the scriber point from the surface plate, it is raised by an amount equal to the crank throw, and another line scribed on each end of the bar. Care must, of course, be taken in all cases to see that the bar does not shift while marking off these lines ; if a clamp is fitted to the vee blocks, it should be used to prevent this eventuality.

The intersections of the lines should be carefully marked with a fine centre-punch, and followed up by centre-drilling. As the centre of the main journal at the crankpin end will be cut away in facing back the web, a small hole

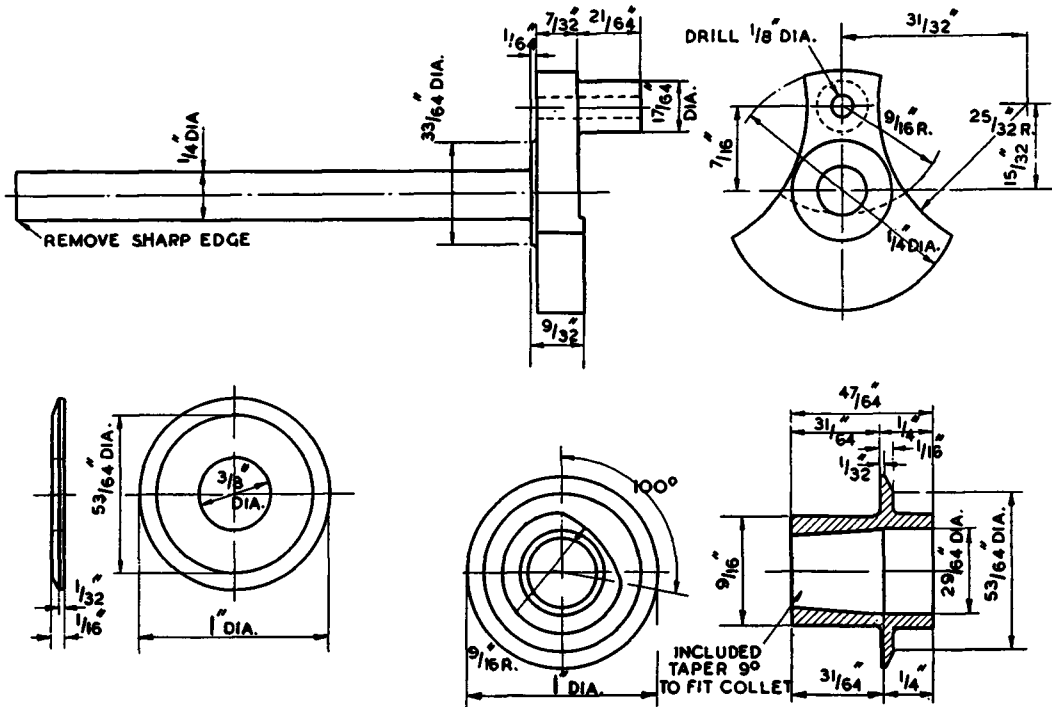
should be drilled sufficiently deeply to ensure that this centre is retained ; but great care should be exercised to see that it runs truly in line with the centre at the other end of the bar.

The crankshaft can now be turned between centres, setting it first on the eccentric centres for turning the crankpin, and then on the main centres for turning the main journal. Both should be finished smooth and parallel, and if any trouble occurs in producing the required finish and accuracy, they may be lapped with a soft metal ring lap while still set up for turning. The use of a file and emery cloth to correct errors in this respect is not highly desirable.

ordinary drilling methods, following on from the drilled centre ; but it is better still if the shaft can be set up in the lathe on the crankpin centre, and this is one of the points which demonstrates the advantage of a fixture for chucking the shaft eccentrically, thereby enabling the turning and drilling of the shaft to be done at one setting.

Propeller Hub

This is machined from solid mild steel at one setting, including the tapered bore, which can be formed either with a taper reamer or a boring tool, but in any case should be left as true and smooth as possible. The exact angle



Crankshaft, propeller hub, and washer.

Sawing and filing may be resorted to in shaping the sides of the crank web, but if the crank is turned with the aid of an eccentric chucking fixture, this may also be utilised to enable these surfaces to be machined with a boring tool, by setting the main journal about 1/8 in. off centre and adjusting it rotationally to cut away the web in the right places. The exact shape of the web is, of course, unimportant, so long as it produces an effective form of balance weight, substantially similar to that shown here.

A 3/8-in. hole should be drilled through the centre of the crankpin to take the driving pin of the rotary valve. With care, this can be done by

of taper is not important, provided that the collet is made to fit properly. Before parting off the hub, the cam surface on the back rim may be formed by setting it up eccentrically (here again, a vee angle plate may be found very useful) and turning away a part of the circumference, as shown. It is desirable, but not absolutely essential, to case-harden the hub when finished.

The hub washer may be parted off from 1-in. steel or duralumin bar, after facing, chamfering and drilling the end, and if a correctly set parting tool is used, it will need little or no machining on the back face.

(To be continued)

Correspondence

MORE ABOUT PETROL
MODEL CONTESTS

DEAR SIR,—After reading Mr. Harris's article on petrol contest rules in the August MODEL AIRCRAFT, I was prompted to jot down my own ideas for contests designed to encourage the duration or "contest" model. First of all, I should like to say that I agree with the main outline of Mr. Harris's observations, and in addition believe that most modellers would prefer real duration contests to the present type, which concentrate on spot times of a minute or under. We can hardly expect to progress very far with petrol modelling until contests are brought more into line with those for rubber and glider models. Nowadays, a model of very poor design will hug the ground and just walk away with this restricted duration type of contest, whilst a really efficient and beautifully streamlined model will simply fly too well and finish up near the bottom of the results list. This does not mean that I favour flimsy paper bags, with clipped wings and an Ohlsson 60 screaming away in front. This type of model is a menace—though perhaps not so dangerous as some of the ultra heavily loaded brutes that just manage to leave the deck.

With regard to rules in general, there must be many modellers who steer clear of contests because of the many pointless restrictions and red tape. Contest rules should surely be aimed at safety in the first place, and secondly, at fostering efficient and original design. And by the way, it's not a bad idea for the competitors to enjoy themselves as well—a point that is often ignored completely.

Although the following is purely a personal opinion of how to run a petrol duration contest—with a minimum of irksome rules and conditions—it was only arrived at after discussion with dozens of other petrol fans.

1. Contest to be for duration—winner to be the competitor with the highest aggregate of three flights. All flights to be r.o.g., but if take off conditions are unreasonable due to long grass or high winds, this rule should be temporarily relaxed. It seems so pointless to ask a competitor to risk writing off his model—quite apart from crashing into spectators—just because of an inflexible rule.

Three minutes to start up engines and get the model airborne is plenty. Unless there are at least six time-keepers and the number of entrants is under sixty, a contest will be too drawn out. To keep down contest times to a reasonable figure—say two hours—the start-up time could be cut down to 1½ minutes or less.

2. Motor run to be 15 or 20 seconds—depending on the type of weather and flying field. Adherence to the lower figure will keep down the number of o.o.s. flights—even a ten-second motor allowing a well designed model to get plenty of altitude.

3. Repairs of ANY nature allowed during the contest provided that the competitor is ready to fly when his turn comes up. Prop. replacements allowed in a case of breakages. Let us beware of rules that disqualify a competitor as soon as he has the misfortune to hit a fence and smash a prop. or knock off a fin. After all, repairs and replacements are always permitted in aeroplane and car races, so why jump on a modeller just because he is unlucky. [This is not universally permitted.—ED.]

4. TYPE OF MODEL. Fuselage to conform to L2/100 formula. Any size of model eligible. No restrictions as to power loading—BUT all models must conform to a minimum wing loading (to be fixed at a figure which will prevent o.o.s. flights under normal conditions). Permissible to carry up to 5 per cent. of model's original weight in the form of ballast to comply.

The minimum wing loading rule mentioned above will automatically rule out the flimsy type of model which is likely to come to pieces in mid air. Loss through o.o.s. flights will also be kept down to a minimum, and designers will have to pay more attention to streamlining, smooth finish and correct prop. design—if they are to be successful in their search for faster rates of climb and lower sinking speeds. From the safety point of view, it may be desirable to impose a maximum loading rule as well. We could do worse than follow the F.A.I. record rules.

If public opinion is against a contest for models without any grouping according to engine size, three classes similar to those recognised by the S.M.A.E. could be drawn up. But it should be remembered that many of the smaller engines available are just as powerful in comparison as the larger ones—so a large model has no appreciable advantage nowadays.

In his article, Mr. Harris puts forward several possible arguments that may be directed against duration contests. They are briefly :—Will the models be dangerous? Will freaks be introduced? Will design benefit? Will engine design improve? All of these points are answered in a very able manner, but surely the obvious way is to refer to the experiences of American modellers in this field. All of these questions were encountered and successfully answered, many years ago, in the U.S.A.

First of all, let us tackle the question of danger to public and property. The relatively lightly loaded duration model has never proved more dangerous than the rather heavily loaded semi-scale British type, even though the former do climb about six times as fast. As Mr. Harris points out, it's the rate of descent that counts.

Regarding freak designs, the worst I have ever come across myself, belonged to the non-duration cabin variety! Just because a model makes no attempt to conform to full size layout and appearance, there is no reason to automatically label it "freak." Carl Goldberg's beautifully proportioned "Sailplane" is the result of many years of extensive experiment—and was not built just to be different to everyone else. The Zipper, an earlier pylon job by the same designer, is probably the most popular petrol model ever brought out—and, freak or not, at least American modellers go for them in a big way. But if you are an incurable semi-scale addict, you can still build an attractive cabin type duration job. A good example is William Winter's—editor of *Air Trails*—"Vagabond," an advanced contest model that compares favourably with any 1946 British design.

Design has benefited tremendously by the interest in duration models—both in the aerodynamic and the structural sense. Crutch construction and "X" construction are two of the most important contributions made to fuselage design since gas models first flew. Other milestones that we can thank duration designers for, are detachable engine and ignition units, the first practical retracting undercarriages, folding airscrews and many other clever gadgets.

Will power plant design improve? A little late this question, considering that our American cousins now have something like 80 different engines to choose from. When we start demanding engines good enough to power ultra-efficient duration models, our own manufacturers may start bringing out a few engines in the Forster 29, Bantam 19, and Arden .09 class!

Yours faithfully,
W. A. DEAN.

The officials of the North Kent Club. Left to right: H. S. Sayers, D. Hye, C. Gibson (Committee); T. H. Newell (Comp. Sec.); C. Hubbard (Committee); P. Newport (Press Sec.); M. Wickens (Asst. Sec.); A. D. Hall (Asst. Comp. Sec.). Seated—G. Bruce (Treas.); H. R. Parker (Chairman); T. Wickens (Sec.).



COMPETITION RESULTS

PLUGGE CUP 1946

Points		Points	
1.—Croydon ...	1,107.280	28.—S. Birmingham	178.516
2.—Zombies ...	929.997	29.—E. Liverpool	164.910
3.—N. Heights	892.968	30.—Worcester...	162.280
4.—Birmingham	847.434	31.—St. George's	160.13
5.—Bristol ...	810.399	Heights ...	152.020
6.—Brentford ...	742.824	32.—Doncaster...	145.96
7.—Bushy Park	631.021	33.—Kingsbury	143.860
8.—Streatham	611.275	34.—St. Helens...	142.870
9.—Merseyside	592.663	35.—Farnworth	141.927
10.—Hayes ...	565.277	36.—Salford ...	136.350
11.—Blackheath	531.741	37.—E. Birmingham	119.290
12.—Pharos ...	503.471	ham ...	119.190
13.—P.M.A.L. ...	496.891	38.—Blackpool ...	116.960
14.—Surbiton ...	404.372	39.—Weybridge	114.290
15.—North Kent	399.346	40.—Coventry ...	109.600
16.—Whitefield	393.839	41.—Luton ...	86.870
17.—Rhyl and	387.860	42.—N. Birmingham	71.160
Prestatyn...	373.130	ham ...	53.030
18.—Ashton ...	373.130	43.—Norwich ...	41.230
19.—Camberwell	363.514	44.—Willesden ...	38.600
20.—Bradford ...	359.367	45.—E. Birmingham	26.770
21.—Bromley ...	290.796	ham ...	9.090
22.—Leeds ...	273.789	46.—Wolverham-	
23.—Cheadle ...	251.650	ton ...	
24.—Sale ...	248.730	47.—Wallasey ...	
25.—Cardiff ...	243.117	48.—Brighton ...	
26.—Walthamstow	219.18	49.—Rogerstone	
27.—Cheam ...	214.797		

CIVIL SERVICE CUP August 25th, 1946

1. B. Lewis	Zombies	463.0
2. J. L. Pitcher	Croydon	342.9
3. A. D. Hall	North Kent	198.9
4. D. A. Brockman	Zombies	178.5
5. C. E. Salt	Birmingham	142.5

6. Mrs. M. Morgan	Cardiff	137.0
7. J. Phillips	Cardiff	128.0
8. A. R. Parker	North Kent	98.1
9. B. Morgan	Cardiff	74.0

There were 10 entries.

KITE AND MODEL AEROPLANE ASSOCIATION CUP

August 25th, 1946

1. B. E. Lanham	Walthamstow	689.3
2. A. R. Parker	North Kent	524.0
3. E. H. Aylward	Walthamstow	520.3
4. B. A. Mulley	Croydon	427.6
5. J. North	Blackheath	397.4
6. J. L. Pitcher	Croydon	352.85
7. R. J. Perry	Birmingham	349.8
8. C. W. Needham	Bristol	341.2
9. J. Hall	Croydon	316.5
10. S. Greenhall	Preston	315.8
11. A. H. Lee	Bristol	291.2
12. R. Ladd	Croydon	283.0

There were 41 entries. 38 seniors, 3 juniors.

THE GUTTERIDGE TROPHY September 1st, 1946

1. P. T. Capon	Unattached	661.2
2. J. L. Pitcher	Croydon	614.0
3. R. H. Warring	Zombies	514.7
4. A. H. Wilson	Hayes	495.0
5. S. Eckersley	Bradford	491.25
6. J. M. Hardman	Rhyl & Prestatyn	491.1
7. Norman Lees	Bradford	485.0
8. R. J. North	Blackheath	480.2
9. R. Copland	Northern Heights	478.7
10. D. Lofts	Northern Heights	459.4
11. A. W. Harris	Croydon	429.2
12. F. E. Wilson	Northern Heights	412.2

There were 52 entries. 48 seniors, 4 juniors.

NEWS FROM THE CLUBS

INTERNATIONAL CONTEST

Held between Pharos M.F.C. and Cleveland Balsa Butchers Club. Flown decentralised on July 14th, 1946

What we believe to be the first contest of its kind, was flown between the Pharos and Cleveland Clubs on July 14th.

Each club was allowed to nominate six members to represent it. Three members were to fly rubber driven models, and three to fly gliders. Models to be flown to usual international rules, and to comply with the rule—3 ozs. per 100 sq. in. wing area.

The official judge in Ohio was Major E. J. Hobbs, the British Consul, and over here Mr. Lawrence A. Weake was the judge appointed by the Cleveland Club.

The American team included such famous names as Korda, Lanzo, and Kolb, together with other well-known United States modellers. The weather in both countries appears to have been similar—fine, hot, but windy.

Photographs have been exchanged between the clubs, and a token gift, in the form of a suitably embroidered windsock,—made by Mrs. Buckridge, has been sent to the Cleveland Club.

Best two flights in the contest were made by Mrs. Buckridge and R. V. Hobbs, both of Pharos.

It is hoped to make this contest a yearly fixture.

Results show that Pharos won by 1,650.3 sec.

Results of Decentralised Contest—Pharos M.F.C. v. Cleveland Balsa Butchers

Pharos				
Rubber Driven				
	1st	2nd	3rd	Total
1. A. C. Armes	82.5	83	220	385.5
2. Mrs. A. M. Buckridge	103	374.8	lost	477.8
3. J. P. Buckridge	193.7	226.5	295	715.2
Gliders				
1. R. V. Hobbs	123	736.8	lost	859.8
2. P. Lee	53.1	90	198	341.1
3. J. Partington	157.3	97	73.2	327.5
			Grand total	3106.9 sec.
Cleveland Rubber				
1. C. Lanzo	76	68	75	219
2. J. Kolb	65	73.5	113.5	252
3. G. Reich	96.6	306	71	473.6
Gliders				
1. Dick Korda	89.5	77	109	275
2. H. Burstein	78	57	88	223
3. J. Trebich	93	42	79	214
			Grand total	1456.6 sec.

READING AND DISTRICT M.A.C. RALLY

A crowd of several hundred enthusiastic modellers descended upon Theale on Sunday, August 18th.

The aerodrome control was excellent, thanks to the loan of "Walkie-Talkie" equipment and operation by the aerodrome authorities. All messages, and a plentiful supply of music, were relayed over loudspeakers.

Amongst the clubs represented were:—Eastleigh, Farnborough, Southampton, Northern Heights, Pharos, Henley, and Oxford. Mr. Moody, of Eastleigh, had a twice-size Tern, which later in the day was lost, after 6.42 o.o.s. This model was returned to main control in just under an hour, and then did 1.25 to win its owner the glider contest. G. G. Harris, of Farnborough, had a 38 in. span job, powered by a Mills 1.3 c.c. diesel. The all-up weight was 13 ozs. G. W. W. Harris, also of Farnborough, had a 6 ft. 6 in. span model with a monocoque fuselage, powered by a 7.5 c.c. Rocket engine.

R. Voles, of Wokingham, flew a very neat tail-less model nicely finished in cream. Mrs. Buckridge, of Pharos, had her "3-piece" out. A 2 oz. all-up weight, rubber driven model, with the fuselage built in three sections—straight taper nose, parallel centre section, and straight taper tail—which later showed its paces by coming in fifth in the rubber contest. A. F. Houlberg, of Oxford, one of the real veterans, brought out his "Isis," and proved that it could still fly by coming in third in the rubber contest.

Results

Glider Contest—Aggregate of two flights:—1st prize, £2, — Moody, Eastleigh. Time, 8 min. 7 sec.; 2nd prize, £1, — Johnstone, Henley, 3 min. 57 sec.; Runners up: P. Mountain, Southampton, 3 min. 40 sec.; E. Beeson, Reading, 3 min. 34 sec.; P. Lee, Pharos, 3 min. 25 sec.; G. W. W. Harris, Farnborough, 3 min. 17 sec.; — Wilkinson, Henley, 3 min. 6.5 sec. 38 entries.

Rubber Duration—Aggregate of two flights:—1st prize, £2, G. W. W. Harris, Farnborough, 4 min. 3.5 sec.; 2nd prize, £1, P. Lee, Pharos, 3 min. 48 sec.; Runners up: A. F. Houlberg, Oxford, 3 min. 26.5 sec.; P. Cox, Southampton, 3 min. 17.4 sec.; Mrs. Buckridge, Pharos, 3 min. 9 sec.; A. Armes, Pharos, 3 min. 4 sec. 33 entries.

Petrol Duration—Points awarded for motor run and glide:—1st prize, £2, G. G. Harris, Farnborough, 226 points; 2nd prize, £1, G. W. W. Harris, Farnborough, 128.5 points; Runner up: — Mountain, Southampton, 93 points. 5 entries.

Special prize (for best aggregate by a junior), — Coxon, Southampton, 2 min. 52 sec. (in the rubber contest).

ST. ALBANS M.A.C.

The All Herts Model Aircraft Rally

Sunday, August 25th, proved to be an excellent day for flying. This and the spacious aerodrome so generously lent to the club by Sir Frederick Handley Page, gave the many modellers and friends who attended the rally a thoroughly enjoyable day's sport.

The first event was the "Concours D'Elegance." This was won by Mr. Revett, of Waltham and Enfield M.F.C., with an extremely well constructed rubber duration model. Second place went to Mr. Prybail, of Bushy Park M.F.C., with his superb petrol driven cabin monoplane. Mr. Firman, of the Cambridge M.F.C., took third prize with his "Evanda" sailplane. This event was very well judged by Miss Scammell.

The Open Rubber Duration Contest proved to be very interesting, the three winners being, without question, far ahead of the other competitors. The winner was Mr. Anastasion, of Croydon M.F.C., with a remarkable flight of 10.9 min. o.o.s. Mr. Lofts, of Northern Heights M.F.C., took second place with 8.7 min. Mr. Davey, of Blackpool, clocked 8.4 min., and gained third prize.

The best times of the day came from the gliders using a 300 ft. towline. The contest was open to all types of model sailplanes, and the entries were both varied and interesting, including pterodactyl types. Bushy Park M.F.C. came into the limelight once more with a flight of 17.2 min. o.o.s. by Mr. S. A. Taylor. Mr. Watkins, of Croydon M.F.C., clocked 9.1 min. o.o.s. for second place, and Mr. Smith of Bushy Park M.F.C., gained third place, his time being 8.2 min.

The Petrol Competition was completed without any spectacular incident: all the entries were fine examples of British aeromodelling, and the winner was Mr. Gunter, of Bushy Park M.F.C., with 2.1 min.; second prize went to Mr. Tickner with 1.6 min., Mr. G. Paul, of Bushy Park M.F.C., taking third place with a time of 1.4 min. The only cup gained by the St. Albans Cement Squeezers, was the cup awarded for the best all-round modeller from Hertfordshire competing in the Rally. This is awarded by

a points system, and was won by Mr. E. J. Buxton, of the St. Albans M.A.C., who gained the highest points.

The prizes were presented by Alderman Baum, Deputy Mayor of St. Albans.

AREA NEWS

THE NORTH EASTERN AREA COUNCIL

Thanks to the hard work of the Secretary of the Eston Area M.A.C., the North Eastern Area Council of the S.M.A.E. is now in being and functioning.

The inaugural meeting of this council took place at Eston on June 16th, when the proposed constitution was discussed and the Area officers elected. These are:—Chairman, T. A. Brewer (Eston); Hon. Area Sec., L. N. Brunton (Eston); Treasurer, C. McCoombe (Newcastle); Competition Sec., T. Holliday (Seaham).

An inaugural rally which was arranged to take place at Eston proved to be a "wash-out" in more senses than one, even the windsock refused to fly, and the event had to be abandoned.

At a meeting held at Seaham on August 4th, a further rally was decided upon. This will take place on September 30th, at Eston. The North Eastern Area Council sincerely hope that all the members and visitors who attended the "wet rally" will be favoured with good weather to make up for the shortcomings of the previous event.

NORTHERN AREA BLACKPOOL RALLY

Nearly 500 entries in the Blackpool rally enjoyed perfect flying conditions at Stanley Park aerodrome.

The main event was the Glider Championship of the North, for which *The Daily Dispatch* Silver Challenge Trophies were awarded. The senior event was won by B. Haisman, of Merseyside, and the junior by E. Tompkinson, of Wythenshawe, Manchester.

The Mayor of Blackpool, Alderman Frank I. Nickson, presented the awards.

The rally was organised, in conjunction with *The Daily Dispatch*, by the Manchester and District Council of Model Aero Clubs and the Northern Area of the S.M.A.E.

The results were:—Northern Glider (for *The Daily Dispatch* Trophies).—Senior: 1, B. Haisman, Merseyside; 2, J. Baguley, Wallasey; 3, A. Mulyneux, Wallasey. Junior: 1, E. Tompkinson, Wythenshawe; 2, P. Oliver, Wallasey; 3, P. Phillips, Wallasey.

Duration, rubber-propelled.—Senior: S. Eckerleys, Bradford. Junior: J. Harrison, Cheadle.

Veterans.—R. F. L. Gosling, Merseyside.

Flying Scale (propelled).—M. A. Hetherington, Doncaster. Glider: D. Barnes, Sale.

Open Petrol.—1, R. V. Bentley, Blackpool; 2, M. Cowburn, Blackpool; 3, S. Lanfranchi, Bradford.

Open Glider.—Senior: J. G. Eifflaender, Merseyside. Junior: W. Warburton, Warrington.

BLACKHEATH M.F.C.

Allan Foreman has been the club's most consistent contest winner this year so far. He is a young senior member who builds and flies lightweight types with a very long tail moment arm. He has lost a number of models. One Sunday he flew his rubber job for two flights of over 10 minutes with 40 seconds' motor run and using a folding prop. He won the club's Gosnell trophy with this model at Epsom, with a final aggregate of just 5 seconds better than Jack North. Four seconds separated George Hinkley and Jesse Wright for third and fourth places. He followed this success by winning the "Secretary's Cup."

In the second round of the London Area Challenge Cup we flew against the Zombies. With 24 flights completed the total aggregates were: Zombies, 1,281.2 seconds; Blackheath, 1,280.3 seconds; just 0.9 sec. to the Zombies' credit. Jesse Wright's last flight of the con-

test was taken 5 mins. before closing the contest, his model going right up and away to pass out of sight of timekeepers after 220 secs. Tail-less types now have great prominence in the club with Sam Crow's "Crow-fly" making flights of over 2 mins. with consistence. Ron Gailbrath well known as "tail-first Gally" has now gone tail-less, and claims the club record for tail-less gliders with 2 min. 11 secs. He is also producing a 9 foot job which is a direct development of his small machine. Sam Crow is also flying a 6 foot tail-less gas job. Our Secretary, Geo. Hinkley, even, now has tail-less shirts, which caused a lot of amusement in the club.

THE BRISTOL AND WEST M.A.C.

For the first time in the club's history, the Packer Cup for Wakefields has been won by a junior—Bob Moon, who aggregated 4 min. 45 sec. with his slab sider. The weather was fine in the morning when his flights were made, but rain set in later, and second and third places were obtained by M. Garnett and A. H. Lee, with 4 min. 35 sec. and 3 min. 58 sec. respectively, both flying streamliners. National Cup day was also wet, with low cloud, so that at one period, models were o.o.s. in the mist after twenty sec. A. H. Lee made the best aggregate with 4 min. 28 sec. with his Wakefield. The club Novices' Cup, run off on the same day, was won by J. Bones with 5 min. 25 sec., flying a modified Firefly glider.

The centralised Bartlett trophy was flown off with a swing on Filton Aerodrome, and attracted entries from Cardiff, Tetbury, as well as the two Bristol clubs. Best flights were 5 min. 16 sec. and 4 min. 30 sec. by M. Garnett and C. S. Wilkins respectively, flying Wakefield and Flight Cup class models, whilst Ken Sergeant in the glider line clocked 2 min. 59.2 sec. and 2 min. 43.7 sec., with his light-weight parasol job. Final results:—

<i>Bristol and West M.A.C.</i>	Total	1340.15
<i>Bristol Aeroplane Co. Aces Club</i>	"	774.5
<i>Cardiff M.A.C.</i>	"	652.15
<i>Tetbury M.A.C.</i>	"	94.7

BUSHY PARK MODEL FLYING CLUB

Individual club members have made a name for themselves again, this time at the St. Albans M.A.C. Gala, at Radlett 'drome. Mr. Pribyl, placed 2nd in the Concours d'Elegance; Messrs. Gunter and Paul, 1st and 3rd respectively in the Open Petrol Duration; Messrs. S. Taylor and Smith, 1st and 3rd respectively in the Open Glider event.

Talking of petrol competitions brings to mind yet more instances of impressive times made by our club petroleers. Mr. Guest made a very good 10 min. 55 sec. flight on a motor run of 40 sec., but this was topped by Mr. Gunter, who clocked 11 min. 50 sec. on a 70 sec. motor run when testing for the Radlett Gala and followed up with 4 min. 5 sec. on 25 sec. motor run.

We have now reached the fifth issue of our club magazine "Slipstream." This is proving quite a success.

Our club now meets at the Co-op Hall, Hampton, for official meetings on the first Friday of each month, and also, during the outdoor flying season, on the middle Friday of each month to discuss current topics and hold debates.

We had the pleasure of hearing one of the outstanding Dutch model flyers, Mr. H. de Kat, giving his opinion on our achievements and shortcomings at a recent club meeting. He stressed the international aspect of modelling and hopes to see a party of British flyers in Holland before the end of the year.

CROYDON and D.M.A.C.

On August 4th we visited Heston for the Bowden Trophy, where G. W. W. Harris, our chief hope unfortu-

nately caught a riser and so did not gain a place. Mr. Pitcher gained our highest aggregate in the Flight Cup, with a total of 263.4 sec. On the same day we flew off our "Franconi Cup," for scale models. N. Marcus was the winner with an aggregate of 506.5 sec., the model being a Fokker D.8. One of his flights of 5 min. 30 sec. has been claimed as a new British record. Second was B. Mulley, with a total of 160.5, flying a "Fairchild." The 25th saw us at Radlett for the "All Herts." Gala, gaining first place in the open rubber and second place in the open glider.

EDINBURGH M.F.C.

There were 141 entries for the three contests held at the Rally which we held on August 11th. Competitors were drawn from all over Scotland, and although we were forced to cancel the last two rubber flights owing to rain, everyone agreed the day was a success. Almost £10 was paid out in prize money—not bad for the canny Scots?

Prize winners were as follow :—

Open Glider. 1st, R. Shields, Glasgow, 140 sec. ; 2nd, Ian Porteus, Stirling, 121.9 sec. ; 3rd, T. Carruthers, Bathgate, 112 sec. Best junior, R. Shields, Glasgow.

Open Rubber. 1st, P. Montgomery, Fife, 98 sec. ; 2nd I. Weddersfool, Fife, 65.5 sec. ; 3rd, T. Carruthers, Bathgate, 54.5 sec. Best junior, Derek Seeds, Glasgow.

The Massed Launch was won by P. Montgomery, of Fife, who also won the prize for the best flight of the day and the prize for the best total in rubber and glider.

ESTON AREA M.A.C.

The most outstanding event of the last month or two has been the very creditable effort of Mr. T. A. Brewer in producing a 5.9 c.c. C.I. engine. Its construction, from castings to the finished job, has been followed with interest, and trials, which proved successful, took place a week ago. We attended a Rally organised by the Darlington M.A.C., where one of our members, Mr. J. Martin, came third in the under 30 in. class, although he was competing against machines of 30 in. span, his model being of 20 in. span.

HAYES AND DISTRICT M.A.C.

The club was reorganised in May this year, and now has over 40 members. It has finished 10th in the Plugge Trophy, which is a great improvement over last year.

Once again we only managed to reach the second round of the London Area Cup. In the first round we beat Kingsbury by 1,171 secs. to 664 secs., and in the second round were beaten by Streatham, 1,103.6 to 928.2 secs. Competition results show that the club is reasonably strong with gliders, but is rather weak with rubber models.

Mr. Wilson has won three petrol contests recently—the Bowden International Trophy, the Bournemouth Reliability Trials and Petrol Competition at Eaton Bray.

LUTON AND DISTRICT M.A.S.

August 11th saw us again attempting to make an ounce of rubber do the job of 2 ozs., although this year there were more original designs than before. Bob Minney did it again with his 8-sided shoulder wing design, his first flight being 274 seconds, although he "killed" his rubber, and his 2nd and 3rd flights were not too good. This design of Minney's has been found to be extremely stable, and his Wakefield model, built on the same lines, has also proved itself.

R. Hinks indulged in a cross country run after his diesel engine American type which achieved a phenomenal height in a short time. Previously he had astonished the glider experts by hand launching off the hill with engine stopped for 2 min. 52 sec.!

SOUTHERN CROSS M.A.C.

Although this club has been in existence since 1942, it is only since last January that we have really seriously gone in for aeromodelling, so that from the modelling viewpoint we are a new club, and have hardly got into our stride. Following a small, but highly successful, exhibition at Easter, membership has risen rapidly, until it is now over the sixty mark. We have been exceptionally fortunate in securing Mr. F. G. Miles as our president, since not only is he a well-known figure in aviation circles, but his first aeroplane was built in the district covered by the club. Incidentally, the club is named after the district of Portslade in which it was founded, but draws its members from Hove, Portslade and Southwick.

On Sunday, August 11th, the club held its first Open Day. We must consider ourselves very fortunate in the weather we had for this, for although there was a very stiff breeze, the weather kept fine. Two events were flown, Open Glider and Open Rubber-driven.

The results were as follow :—

Glider.—1st, T. Rendle, Southern Cross, "Loafer," 7 min. 44.2 sec. ; 2nd, H. N. Pilgrim, Birmingham, "Red Star," 6 min. 1.3 sec. ; 3rd, E. W. Gravett, Southern Cross, E.W.G. 32, 4 min. 37.4 sec.

Rubber.—1st, T. Rendle, Southern Cross, "Atom-Smasher," 5 min. 12.9 sec. ; 2nd, A. Hart, Southern Cross, "Zenith," 3 min. 3.3 sec. ; 3rd, A. Garry, Brighton, "A.C.2," 2 min. 19.5 sec.

All the above aggregates are for three flights, except that of Mr. Gravett, who lost his model on his first flight. His effort is especially creditable since his model was a tail-less of his own design.

SALE AERO CLUB

On August 4th we attended the Wythenshawe M.A.C. Rally, where C. Christianson won the restricted glider contest with his 32 in. span lightweight "Goblin IV." This member also won the heavyweight prize with his 62 in. span "Asp III" (which has a loading of 8 ozs. per sq. ft., and a weight of 18 ozs.).

On August 11th, 8 members attended the Northern Rally at Baildon, where our most active member, P. Whitt won the 3rd prize H.L. glider, and the best junior performance prize in the same event, the model being his 56 in. span lightweight "Caledonia I," which has a weight of 5 ozs. and an area of 330 sq. in.

All the models mentioned above were designed by the owners.

C. Hawke also made a very fine flight of 3 min. 13 sec. in the H.L. duration event at Baildon, with a Northern Star, which constitutes a club record in this class.

WALTHAMSTOW M.A.S.

Recently F. E. Deudney won the "Flight Cup" with a flight of 568.6 sec. o.o.s. ; the model was later recovered some 25 miles from the spot of launching. E. H. Aylward with an aggregate of 266.4 placed 3rd.

We welcome back Ken Marsh, who was recently demobbed from the R.A.F. ; while on the Continent he managed to buy five engines, including a French diesel.

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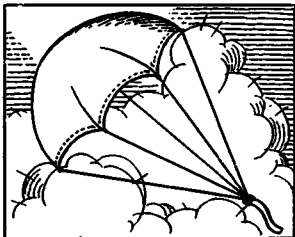
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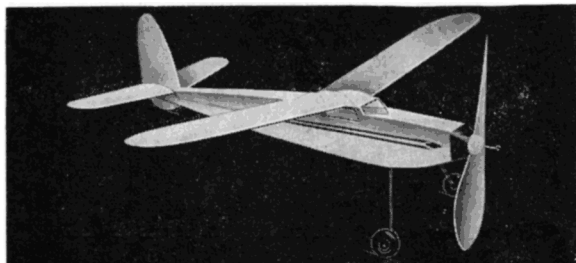
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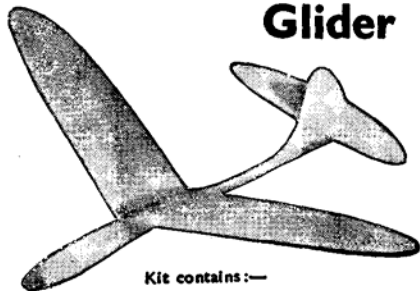


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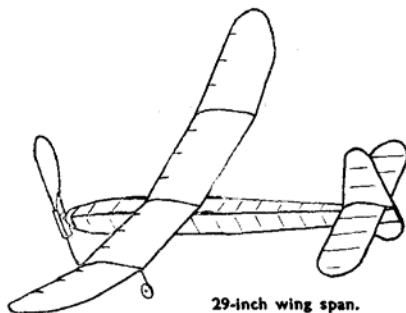


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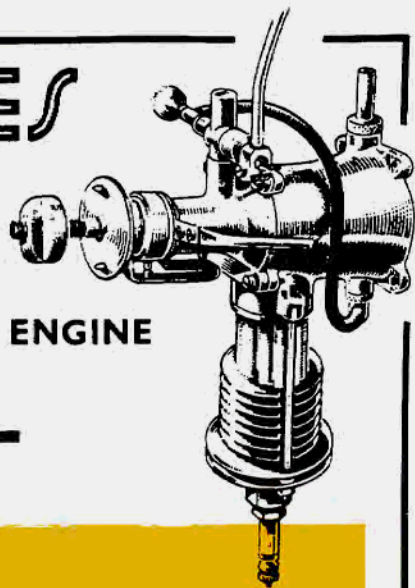
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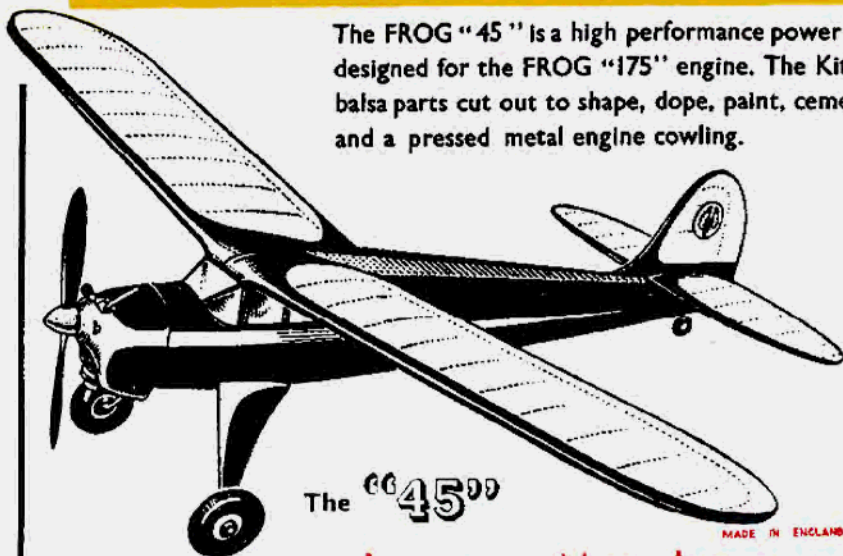
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