AERO MODELLER

FEBRUARY, 1940
VOL. 5 No. 51

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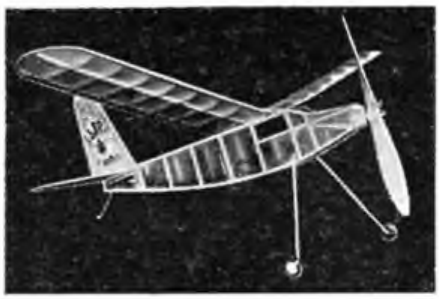

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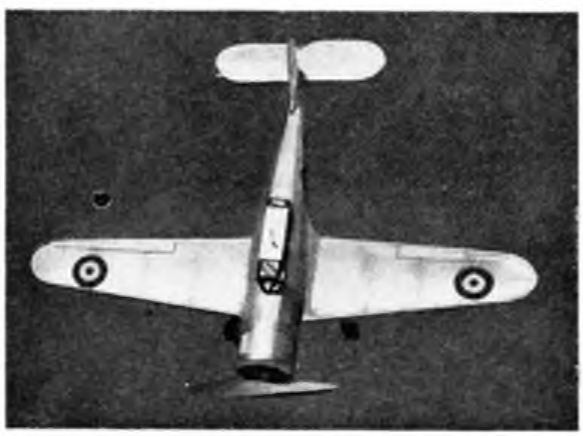

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VOL. V. No. 51 FEBRUARY, 1940

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This flying boat was built by Dr. Forster, of Devon. A fully illustrated article by the Doctor, describing his experiences with craft of this type, will be published in our next issue.

IMPORTANT NOTICE TO MEMBERS OF THE NATIONAL GUILD OF AEROMODELLISTS

The first year's Insurance expires on January 31st 1940. All members must use the form printed on the back inside cover page of this issue so as to re-register for the next twelve months. The Insurance is being carried on exactly as before. Will all Members fill in and send off their renewal form and subscription as soon as possible ?

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FEBRUARY - 1940
Vol. V. - No. 51

Tel. Leicester 65322

The AERO MODELLER

INCORPORATING THE "MODEL AEROPLANE CONSTRUCTOR"

EDITORIAL

COMMENCING with this issue the price of THE AERO-MODELLER will be 7d. per copy. The decision to make this small increase in price has been made only after a very careful consideration of all the factors affecting the position. Had it not been made, THE AERO-MODELLER would have continued with a reduced number of pages and no free plan; an inevitable consequence of the very considerable increase in price that has occurred in the cost of paper, the somewhat lower advertising revenue, and the incidence of other war-time charges.

We have felt that readers would prefer that we kept THE AERO-MODELLER the same size as hitherto, and so maintained the variety of features and as large a number of photographs and drawings as before. This increase in price does not by any means represent the full amount of the increased costs incurred in producing the journal under war-time conditions, but we feel sure that aero-modellers will be willing to bear a proportion of them. Readers will, of course, realise that we have not the slightest intention of suspending publication on account of the war, and we look forward to their continued support in the same way, that they may feel confident that we shall be constantly striving, as always, to improve the standard of quality of the journal.

Which Articles are Best Liked?

Some time ago the Editor of *Popular Flying* included with each copy of a certain issue a prepaid postcard on which was tabulated a list of features appearing in his magazine. Readers were invited to place them in order of merit, and as a result of some thousands of replies being received, the Editor was able to form a very good idea as to what type of article appealed to the greatest number of readers.

Now, in the case of *Popular Flying* this could be done because articles could be grouped into headings, such as: "War-time Flying," "Commercial Flying," "Present-day Flying," technical articles, air stories, etc., but in the case of THE AERO-MODELLER it is not quite so easy to separate into groups the articles which appear, because whilst they cover a wide range, they are all written round the same subject—model aircraft. We do not, therefore, feel that we should obtain a very reliable result from sending out prepaid postcards, as was done in the case of *Popular Flying*. We would, however, like to have as good an idea as is possible from our readers as to how we should make up THE AERO-MODELLER to please the greatest number of them. This month, therefore, we issue a special invitation to readers to write and give us their views, which we suggest might take the form of two lists, each of some dozen features.

The first list to contain those features which appeal most: the second to contain those found to be the least interesting. To ensure that, broadly speaking, the same range is covered, we suggest that readers review only the last eight or nine issues of THE AERO-MODELLER. All letters sent in in response to this appeal should be marked "Review" on the outside of the envelope, and will be individually acknowledged by the Editor. We feel sure that readers will co-operate with us in sending their views, so that we can improve THE AERO-MODELLER even further.

How Young to Start Aero-modelling?

On the cover of the November issue we published a photograph of a young boy at work on a small flying scale model. The photograph appeared to arouse considerable interest, and from several readers we received the suggestion that a boy so young as the one shown in the photograph was incapable of building such a model. We, therefore, wrote to the reader who had sent us the photograph, Mr. Edwards, of Halifax, who replied as follows:—"My father, together with my brothers and I, made model aeroplanes in 1912, which would beat the average club machine nowadays, with consistent average flights of 1½ to 2 minutes. They were, of course, the 'pusher' type stick models. This drilling I received in the art of model aeroplane making I have passed on to my sons. I bring kits home and my boys watch eagerly, and soon pick up the method and inclination to make one themselves. In 1937, when my eldest boy was 6 (he is the one shown in the photograph) he made his first solo effort with a stick model. He is now 8½ years old, and has made up a well-known scale model almost by himself. He takes it out on fine Sundays to a nearby field himself, and often stays a couple of hours

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The Bedfordshire Model Aero Challenge Cup, presented by Sir Richard Wells, M.P., 1939.

winding it by hand and flying and running after it."

Mr. Edwards goes on to say that he made his boy practice building fuselages by making 6 in. ladders with ⅛ in. square balsa with 1 in. rungs, insisting that each rung was a perfect length and fit. Well now, have we *really* found the youngest aero-modeller in the country, or are there any more claims to this title?

The S.M.A.E. Journal

In our last published reports of the S.M.A.E. it was announced that the Emergency Council would be publishing a bulletin which would be circulated to all affiliated clubs that are carrying on; " so that they might receive greater details than it was possible to give them in the ordinary Press reports." Although, at the time of writing, we have not been privileged to receive a copy, we understand that the bulletin is now available, and we hope that this should be of considerable use to club members. The pages of THE AERO-MODELLER, of course, have always been available, and will continue to be available, for publication of such reports of the S.M.A.E. Council Meetings as we receive, and we do endeavour to publish them as soon after receipt as possible. Unfortunately, it has not always been possible to do this, as sometimes the reports have not arrived until 10 or 14 days after a meeting was held, and have, therefore, missed the next possible issue.

We have before now stressed the importance of all clubs becoming affiliated to the governing body, and we feel that at a time such as we are now passing through it is even more important than ever that the unity of the movement should be preserved, and this can best be done by all aero-modellers throughout the country " getting together," so as to provide as much cohesion throughout the movement as possible. At the meeting held on November 12th last, Mr. Cosh, the hon. secretary, said that he had sent out questionnaire postcards to 133 club secretaries, asking whether they were carrying on during the war, but had only received 72 replies. Nearly half of the secretaries had not replied! This does not seem fair at all. If the hon. sec. of the S.M.A.E. (who devotes hours of his time in an honorary capacity for the benefit of the society) can address and send out well over 100 postcards, surely each recipient could have sent him an acknowledgment. We hope that by now most of the clubs will have replied to Mr. Cosh, and that those that are not yet affiliated to the Society will seriously consider doing so at the earliest possible moment—particularly as we understand that it has been decided to recommend at the annual general meeting, to be held at the middle of this month that a nominal fee of one guinea, for the duration of hostilities, should become payable.

South versus North

From our good friend, Mr. C. A. Rippon, Hon. Chairman of the Northern Heights M.F.C., we have received a letter, in which he says:—

" I notice in the current issue of THE AERO-MODELLER that our friend Clubman complains that the London clubs are remiss in sending in news of their activities; well, at least with this letter, the Northern Heights will make amends and perhaps give a lead to other southern clubs."

Mr. Rippon goes on to say that the Northern Heights Club is holding two indoor meetings every *week* for discussion on interesting topics and an occasional indoor flying meeting, the average attendance for these being 30.

Mr. Rippon also enclosed copies of the annual report for 1939, together with a balance sheet, which shows the club to be in a remarkably strong position. Despite substantial donations to the Wakefield and Dray Memorial Funds; entertaining of the King Peter Cup teams, and a considerable sum spent on prizes, the club has paid its way throughout the year and finished up with some £20 more in the bank than it had at the beginning of the year. Mr. Rippon adds that of this increased balance the sum of £10 has already been spent on the purchase of wool for a " knitting compaign " for the supply of woollen garments to members of the club serving with H.M. Forces—said garments being devotedly knitted by the lady members of the club under the active organisation of the lady treasurer, Mrs. C. A. Rippon. The club has made very satisfactory showing throughout the year, and we feel it should be congratulated on the good work that it has done in the large area in which it serves. We have attended several of this club's meetings, and we can assure any of our readers who live in the north-west London district of a very hearty welcome if they will get in touch with the hon. secretary.

The Bedfordshire Model Aero Challenge Cup

This cup was presented by Sir Richard Wells, M.P. for Bedford, and originally was to be competed for at an Area Championship Contest arranged to be held on September 10th last, but owing to the outbreak of war the contest was, of course, cancelled. Now we are pleased

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to hear from the hon. sec. of the Igranic Social and Sports Club, Bedford, Mr. R. B. Hill, that the contest is to be held this year under the rules as originally intended. The cup is of solid silver, surmounted by a solid silver model of the Hawker " Hurricane," with a gold propeller. The wing span of the model is $4\frac{3}{4}$ in., which will give readers some idea of the size of this magnificent trophy.

We understand that the organisers are preparing to hold the contest on either Whit Sunday or Whit Monday, or on a Saturday or Sunday in mid-June or mid-July. Mr. Hill particularly asks that club secretaries will note that the contest is open to all model aircraft clubs, whether affiliated to the S.M.A.E. or not. We give herewith the rules for the contest, and trust that interested club secretaries will get in touch with Mr. Hill as soon as possible, so that the day most convenient to the majority of clubs can be fixed as soon as possible.

Rules

1. The contest shall be promoted each year by the " Igranic " Club, on a ground to be arranged by this club.
2. The contest to be for teams of four, to consist of Duration Contest R.O.G., for fuselage models complying with the S.M.A.E. formula. The average of all four members of the team to be taken, each member making three flights.
3. Only rubber motive power may be used, but no restrictions are imposed on loading wing area or total weight.
4. The contest to be open to all model aero clubs, whether affiliated to the S.M.A.E. or not.
5. The entry fee for each team shall be not less than 4s. *per team*, payable 14 days in advance, to the Igranic Club.
6. There is no limit to the number of clubs participating in this contest, or to the number of teams that may be entered from any one club.
7. The winning team must meet the cost of insurance of the trophy against all risks, to the sum of £25.
8. The winning team will hold the trophy for a period of 11 months. The trophy to be returned to the Hon. Sec., Model Aero Section, Igranic Social and Sports Club, Elstow Road, Bedford, not less than one month before the date of the next contest.
9. The Committee of the Igranic Model Aero Section are empowered to make any modifications to the above rules and conditions if found necessary; also to postpone contests if necessary.
10. The date of contest shall be fixed so as to avoid " clashing " with S.M.A.E. contest dates.

With this contest, and that for the cup so kindly offered by Warrant Officer Gutteridge, of Cranwell, to be competed for under Wakefield rules (and in effect to be a contest trophy, open to all England only), in addition to the eight decentralised competitions to be organised by the S.M.A.E. throughout 1940; there will definitely be a considerable amount of activity amongst aero-modellers.

Enlistment in the R.A.F.

On page 171 we publish some information regarding enlistment of aero-modellers in the R.A.F. This information was supplied by the Air Ministry in reply to a letter from Dr. Thurston, who wrote pointing out the special aeronautical qualifications of many of the members of the various clubs affiliated to the S.M.A.E., and will, we trust, be of interest.

"Prisoner's Air Fleet"

We cull this news item from a recent issue of one of the Sunday papers :—

> " A prisoner of South Michigan prison has his own fleet of nine model airplanes," says British United Press. " They are self-built petrol models. And one of them nearly equalled the model endurance record by flying for 24 minutes ! "

Well, now, isn't that nice?

One wonders what *is* the endurance record to which he refers !

And does our worthy prisoner fly his 'planes strictly in accordance with the S.M.A.E. petrol rules?

And is he registered with the N.G.A. ?

THE EDITOR.

INCLUDED IN NEXT ISSUE

★ **Wind Tunnel Tests on Model Airfoils.**	*By E. J. Powdrill and A. H. W. McBean*
★ **More About Petrol Flying Boats.**	*By Dr. J. F. R. Forster*
★ **The Design of Tapered Wings.**	*By N. H. Warren*
★ **An Adjustable Wing for Streamlined Models.**	*By G. Allen*
★ **Gadget Review.**	*By C. A. H. Pollitt*
★ **How to get the most out of your Rubber Motors.**	*By J. H. Maxwell*
★ **"Indoor Antics."**	*By C. S. Rushbrooke*
★ **Solid Model Making.**	*By J. Ewell*
★ **A Simple Retractable Tricycle Undercarriage.**	*By D. Ross*

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BUILD THE MESSERSCHMITT—19½ in. SPAN M.E. 109

Designed by C. A. H. POLLITT

ABOVE all else a successful single-seat fighter should be as manœuvrable as it is fast. Until quite recently the German Messerschmitt M.E. (or B.F.) 109, was generally regarded as a classic example of the type.

Rather smaller than our own " Spitfire " or " Hurricane," it combines an outstandingly good all-round performance with a not too clean an aerodynamic form. The speed is favourably comparable with that of contemporary British fighters; in fact, not very long ago, a specially prepared racing version of the Messerschmitt attained a speed of over 460 m.p.h., an achievement which must have contributed in no small way to the reputation of the less speedy production version.

In the light of recent experience it is safe to say that the Messerschmitt is outclassed by our own fighters, and there can be little doubt that the root of the trouble is the result of sacrificing most other qualities, certainly manœuvrability amongst them, for speed.

Current reports are as conflicting as they are illuminating. One school of opinion firmly maintains that the Messerschmitt fighter is a difficult machine to fly, and that it is possessed of certain vicious tendencies. On the other hand, it is considered by many to be a very fine aeroplane, with few or no vices. All of which, so far as we ourselves are concerned, is by the way.

It is an obviously difficult matter to try and establish the relative merits of foreign military aircraft. The sources of information are, at times such as the present, not too reliable, and a certain amount of the information we do receive is mainly hearsay. Of one thing, at least, we may be certain. The Messerschmitt M.E.109 does represent the latest German conception of the single-engined fighter, and, as a model, is in striking contrast to our previous model of the " Spitfire."

With the Messerschmitt I have resorted to a larger scale, resulting in an improved performance and, if anything, a slight gain in constructional simplicity.

Basically, the general construction is pretty much the same as that of the " Spitfire." The wing trailing edge fillet has been eliminated, and the trailing edge itself carried straight into the centre of the model, picking up with the bottom keel piece. Also, the main side members of the fuselage have given place to two $\frac{1}{16}$ in. square stringers, which in itself is all to the good, and will at least help to keep down the weight a little, though personally I feel it is a rather more exacting job, and perhaps not so simple a method.

The fuselage formers are best dealt with first, and unless carefully handled they will be found to split along the grain very easily. I have, in consequence, made provision for the entire fuselage to be made by either of two alternative methods.

The first method involves cutting out the fuselage formers exactly as they are shown in the drawing, that is, all in one piece. The procedure then is to add the main top and bottom fuselage members and, after inserting the elastic motor, add the $\frac{1}{16}$ in. square stringers to the fuselage, starting with the two alaready shown in position on the drawing.

It is hardly to be expected that the fuselage formers will remain perfectly flat after having been cemented to the main top and bottom fuselage members. On the contrary, they will, in the majority of cases, be found to warp a little in reacting to the cement, and the object of attaching the two stringers in question at this stage is for the purpose of re-aligning any distorted formers. This should be carefully born in mind.

The second method of dealing with the fuselage is to build it in two separate halves, by first marking out the formers, as drawn, and then cutting them in halves from top to bottom, the grain of wood to run in the same direction. This obviates all possibility of the wood splitting along the grain, and facilitates an easier, and possibly more accurate, assembly of the fuselage, since it is possible to stand the formers, during assembly, on the edge along which they have been cut in half.

For those of my readers who choose to adopt this method, I would advise them to tightly pin the drawing to a drawing board, or any other suitably flat surface, and to assemble the fuselage on top of the drawing. The formers can be located with drawing pins, or even ordinary household pins. It should be remembered that what we require is one port and one starboard fuselage half, and not two port and no starboard halves! Or even vice-versa! This does sound elementary, I agree, but it really is surprising how easily this sort of thing happens. After having completed the two halves of the fuselage, they should be carefully and firmly cemented together.

The elevator may next be dealt with, and will be found to be quite a straightforward job. A point to watch is to see that, in attaching those elevator ribs which are side by side of the centre of the elevator, they should be no less than a sixteenth of an inch apart, since in between them must fit the main top rear member of the fuselage, which actually picks up with the elevator spar.

The elevator must be fitted before the rudder is built

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FROM THE FULL-SIZE PLANS WITH THIS ISSUE

up, otherwise it will not be possible to fit the elevator once the rudder is in position.

The rudder is the simplest possible, yet it is very rigid. The major component is the rudder post itself, which, it will be noticed, embodies a cut-away on either side. To avoid any possible misunderstaanding I feel I should make it clear that these cut-aways are purely to facilitate assembly, and that they are not intended to pick up, or connect with, any adjacent parts of the structure.

The pilot's cockpit is not quite as simple as was that of the " Spitfire," yet although it looks " busier," there is actually not a great deal to it. From the drawing it will be seen that two shaped pieces of $\frac{1}{16}$ in. flat balsa are incorporated, one fitting behind the pilot's head, as it were, and the other being so positioned as to approximate to the pilot's dash panel. In addition, there are two bamboo hoops, and a short length of $\frac{1}{16}$ in. square balsa, which runs along the top of the cockpit and connects with No. 5 fuselage former. This length of square balsa is in two pieces. The entire cockpit cover is carried on two $\frac{1}{16}$ in. square stringers, specially intended for this purpose, and which only run between No. 4 and No. 5 fuselage formers.

As explained on the drawing, the air intake, which on the full size " Messerschmitt " is for the radiators, is carried by, and attached to, two stringers which I have designated " Stringers A and B." This air intake can be used for adding, and carrying, any necessary ballast in the form of small blocks of wood, should any ballast be found necessary. In the case of the model shown in the photographs, no ballast was required, and this model was built exactly to the design given in this issue.

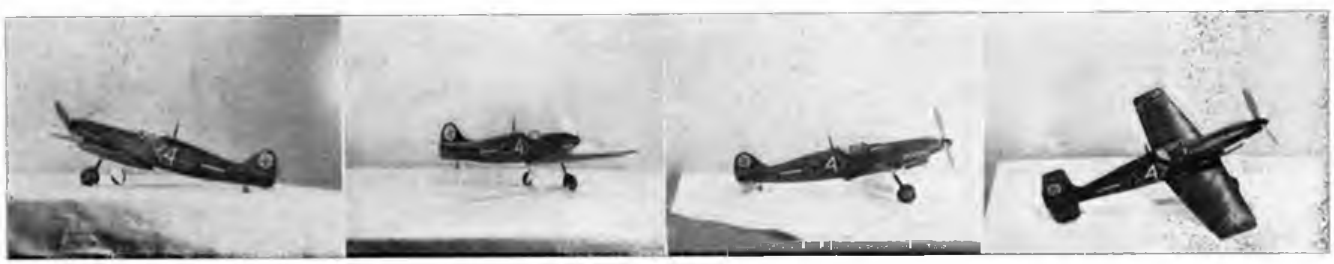
The construction of the wings is simple. This particular wing form is hardly the best arrangement, since the " square " wing tip gives a correspondingly sharp taper to the wing shape in front elevation, which from an aerodynamic standpoint is not too good. Both the leading and trailing edges of the wing are each shaped to their conventional form.

The question of covering the model, and in particular the method of camouflaging, are points which I am sure are likely to arouse a certain amount of controversy. In common with the majority of my readers, I have not had an opportunity of inspecting a " Messerschmitt " at close range, and I accordingly cannot vouch at first hand for the method of camouflaging adopted. Nevertheless, I am informed from a very reliable source that all the upper surfaces of the " Messerschmitt " are black and the lower surfaces white. This is the procedure I have adopted for the model, and which I think will be generally agreed, gives a very smart appearance. It has at least the advantage of eliminating any elaborate camouflage scheme.

When dealing with aircraft, any attempts at camouflaging can, at the most, only be successful so long as the machine is on the ground, or if it is viewed when in flight, from another aircraft flying above it. Under these circumstances there is, no doubt, a great deal to be said for " shadow shading." This is a fact which would appear to have been disregarded by the German authorities, for certain of their aircraft—of the " Heinkel " type, I believe—are reported as having a pastel blue finish, which under certain isolated circumstances, may be satisfactory. No matter what colour an aircraft may be, it will always present itself, when in the air, as a dark silhouette. I mention these different schemes in order that those of my readers who would prefer an alternative to the black and white scheme I have adopted may have some form of basis to work on.

The various squadron markings lend a distinctive appearance to the finished model, and they can all be made from plain white paper; not tissue, but a thin paper with a clean, smooth surface. Please do take care in marking out and preparing these insignia, for their appearance will either make or mar that of the model. I find myself that the secret of the entire business of " dressing " a scale model lies in the accuracy of marking out the various numbers and symbols which are to adorn it. If they are drawn out carefully on the drawing board, and to their correct proportions, there can then be no danger of inaccurately cutting them out.

On the rudder of the model is mounted the present German National Emblem, on a white circular ground, the swastika itself being contained within the four sides of a square, stood on one corner. The drawing explains this more clearly than I can myself. On the fuselage, and just forward of the elevators, is a marking which comprises nothing more than a strip of plain white paper. Forward again of this is the cross, which is cut from a similar piece of white paper, covered with Indian ink, with only a narrow white edging on eight of its sides. The figure four is again cut from the white paper and should be quite straightforward. The two "V" stripes adjacent to the figure 4 are best cut from one piece of paper of a triangular shape, and then inked-in so as to leave only the two stripes showing white. The crosses on the top and bottom surfaces of the wing are similar to those on the fuselage side.



All the photographs of Mr. Pollitt's model illustrating this article were taken by Mr. J. Cliff.

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THE MESSERSCHMITT.—*Continued.*

The only "etceteras" now to be added are the two air-intakes under the fuselage, the radio mast and aerial, and finally the exhaust manifold. With particular regard to military aircraft, the exhaust manifold is a really very important part of the machine, and has a direct bearing on the actual performance of the machine. That incorporated in this model is a faithful reproduction of the one fitted to not only the "Messerschmitt" but also certain other German military aircraft, the "Heinkel" included.

After the model has been given one coat of "tightening" dope, a small piece of the tissue should be cut away at the tail end of the fuselage, and the edges of the cut-away reinforced with a small "frame" of tissue, so as to form an edge of double thickness. Over the cut-away should then be attached a piece of celluloid of suitable size, which will now form an "inspection" window, particularly useful when installing, or removing, the elastic motor. The removal of the motor is facilitated by the detachable nose-piece, to accommodate which No. 1 fuselage former has a rectangular cut-out, shown on the drawing.

The usual initial gliding tests should be carried out before flying the model, and any minor corrections to the general trim carried out. After thoroughly running-in the model, flights of sixty seconds and over may be expected. The motor comprises six strands of $\frac{1}{8}$ in. flat rubber.

LIST OF MATERIALS.

Fuselage.

2 sheets of $\frac{1}{16}$ in. × 3 in. × 3 ft. balsa, for fuselage formers, rudder, elevator, wings, air intakes, etc.
10 lengths of $\frac{1}{16}$ in. × $\frac{1}{16}$ in. × 3 ft. balsa, for stringers, etc.
Small piece of block balsa, for prop. spinner.
1 sheet of $\frac{1}{32}$ in. balsa, about 3 in. square, for wheel covers.
Several pieces of Tonkin bamboo $\frac{3}{32}$ in. dia. for under carriage.
Several inches of 18 s.w.g. piano wire for motor-hooks.
One pair of $1\frac{1}{2}$ in. dia. celluloid wheels.
One $\frac{1}{2}$ in. dia. celluloid tail wheel.
One $7\frac{1}{2}$ in. dia. Paulownia or Howood prop., three-bladed.
Cup washers and small hardwood nose-plug.
One small piece of thin 3-ply, for detachable nose-piece.
One piece of $\frac{1}{8}$ in. balsa, 1 in. × 1 in. (approximately), for detachable nose-piece.

Wings.

Ribs cut from $\frac{1}{16}$ in. sheet balsa used for fuselage former, leading and trailing edges, cut from $\frac{1}{8}$ in. × $\frac{3}{16}$ in. sheet balsa.

Tail-plane and Rudder.

See Fuselage.

Sundries.

Tube of cement.
One sheet of white tissue.
One sheet of black tissue.
Tissue paste.
One bottle of clear shrinking dope.
Cellophane for cabin and tail inspection window.
6 strands of $\frac{1}{8}$ in. flat rubber, 3 inches longer than the fuselage.
One sheet of clear thin white paper for insignia.
One small tin of black drab for ditto.

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AIR DEFENCE CADET CORPS NOTES

By "DUTY PILOT"

Headquarters :
KINNAIRD HOUSE
1a PALL MALL EAST
LONDON, S.W.1

SQUADRONS have not been very loquacious this month in their reports of model-making activities. Many of them have written in to say that they have formed a model-making section and are making models, but general statements like that repeated 200 times make rather uninteresting reading. What I want to know is what models you are making, what difficulties you are meeting with, what successes you attain and what happens to the models when you have made them. Flying-Officer C. W. Brooks, of No. 149 (Poole) Squadron, writes the sort of report we want : " Since the outbreak of war," he says, " the cadets have been building a scale model of the Fairey Battle, which will have a wing span of approximately 4 ft. and will be powered by a 2½ cc. engine. We started by enlarging the plans that were given in a book, the size being about 6 in. by 4 in., and it is from these plans that we are working up our model. The fuselage is constructed by cutting the formers in 1 mm. plywood; when these have been reinforced with ⅛ in. square balsa wood the main strength is taken by the longerons which run along the sides and bottom of the fuselage. After we had got it all lined up we started to put in the stringers, which have now given us a fine strong job. The engine will be situated in the front cockpit so as to keep the weight as near to centre of gravity as possible. The airscrew will be driven by an extended shaft.

" I have been building models for the past ten years, and I have had some very good results with various machines. I also make most of my petrol engines from castings which I purchase from local dealers. I enclose photographs of a Miles Merlin which I made two years ago and which has proved very satisfactory."

No. 130 (Bournemouth) Squadron. The Bournemouth Squadron is fortunate in having among its members Corporal R. A. Hill, who is known to many readers of THE AERO-MODELLER as British representative in the 1939 Wakefield Cup competition. Naturally Corporal Hill is looking after the model-making activities of his squadron, and we expect to hear news of interesting results very soon.

No. 148 (Barnsley and District) Squadron. The *Barnsley Chronicle*, in a long illustrated report of the Squadron's activities, mentions that Mr. F. Smith, holder of the Barnsley and District trophy for model aeronautics, has given his services voluntarily as lecturer to the squadron. " Mr. Smith," says the report, " certainly has a way of instilling the principles into the cadets in a highly entertaining manner, and the fact that his points were grasped by all was proved by the questions which were asked afterwards."

No. 111 (Sunderland) Squadron. This squadron is making and supplying to certain untis of the Royal Air Force scale models of enemy aircraft which are used by the R.A.F. for instructional purposes. The squadron does not make any charge for the construction of the models, but looks to the R.A.F. units concerned to reimburse it for the materials used.

As there appears to be an enormous demand for models of enemy aicraft, the squadron is now evolving a system for semi mass-production and is prepared to extend the supply to other units of the R.A.F.

This seems to be quite a good idea for other squadrons to follow, and they can do it without encroaching on Sunderland's market. All over the country there are Observer Corps men, anti-aircraft gunners, to say nothing of new R.A.F. pilots, whose knowledge of aeroplanes could be rapidly and considerably improved by these means, thus reducing the wear and tear on air-raid sirens ! A naval officer whom I asked the other day how he managed to recognise enemy aeroplanes said, " I don't try to recognise them ; I just fire at anything that comes too near." That would be rather hard on the Royal Air Force if everyone did it, so recognition model-making can be regarded as a contribution to air defence or at least to R.A.F. comfort.

No. 48 (Worthing) Squadron. In order to take advantage of existing arrangements in connection with the provision of lectures and facilities for model aeroplane flying, the squadron has made arrangements with the Worthing Model Aeroplane Club for affiliation as a whole. The only difficulty is that each member of that club is obliged to pay an affiliation fee to the Society of Model Aeronautical Engineers of 1s. The squadron asked the Air League if it could obtain some concession from the S.M.A.E. in respect of squadron memberships. The Air League has been in touch with the hon. secretary of the S.M.A.E., but he is unable to give a decision on the matter.

(*Continued on page* 134).

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"ON TEST"——THE WESTLAND "LYSANDER"

REPORT BY AERO-MODELLER TEST PILOT

THE Atlanta Aero Model Co., of Atlanta Mills, Walker Lane, Dixon Lane, Leeds 12, have recently placed on the market a series of 16-inch span flying scale kits costing only 1s. 3d. each. These models have had a remarkable success, and one of them forms the subject of our " On Test " report this month.

The Westland " Lysander " is one of the finest military aeroplanes in service with any air force in the world, not only because of its high top speed or its manœuvrability, but because of its marvellous range of speeds. It has several features which make it an ideal type for a flying scale model.

The kit supplied by Atlanta Aero Model Co. was packed in a stout cardboard box, and the contents were as follow : Sheets of balsa printed out with formers, wing ribs, etc., strip balsa, balsa blocks for nose-piece, etc., propeller of the machine-cut variety, ready bushed wheels, rubber, two sheets of tissue, cement and fittings . . . and, of course, a very neat little plan, with full instructions.

The fuselage construction is quite simple, and after the formers, which are printed in two halves, are cut out, they require to be cemented together, after which they can be notched ready to receive the stringers. The balsa strip for these is supplied ready cut to the required length.

The construction of the wing halves and tail unit is simplicity itself, and even the most inexperienced aero-modeller should find little difficulty here. Of course, they should be built on a flat board to ensure that there is no warping during construction.

The sheet supplied for the spats is cut to shape shown on the plan, and then they are built up from the three laminations. The centre piece of sheet has the centre cut out to take the wheel. Here I should like to advise readers to use a thicker piece of sheet for this centre lamination, as the sheet provided with the kit hardly leaves sufficient clearance for the wheel.

Once I had finished the construction, it did not take long to cover the separate parts, and when the paste was dry I sprayed them with water in the usual manner. Here again I should like to offer some good advice, which I hope will not go disregarded. Do not use tightening dope on small models such as these. The water shrinking makes the tissue quite tight enough, and if doped the fragile surfaces will warp in a most alarming manner. Also, if dope is used, the completed model is much heavier, and the performance will be considerably impaired.

I found that the assembling of the parts was quite an easy matter, but would advise any beginner constructing these models to take plenty of time and trouble with this part, as upon the wings, tail, etc., being correctly aligned up and having the correct amount of dihedral, incidence, etc., depends the flying performance of the model.

As you will see from the photographs, my model looks quite attractive. The kit contained two sheets of tissue, one orange and one green. I used the orange for the fuselage and rudder, and the green for the wings and stabiliser, after which I effected quite a creditable camouflage scheme by applying red indian ink to those parts where the dark shadow-shading should have come. The result is neat, and it has the advantage of adding very little weight to the finished model. A little black dope was used for the touching-up of the cabin, cowling, etc., and the addition of the R.A.F. insignias provided with the kit made the model look even more realistic.

The propeller provided with the kit is of the machine-cut variety, and seems to be very efficient ; washers, wire hook, and a small hardwood nose-piece being provided to make up the mechanical part of the model.

I do not think that the rubber provided with the kit is quite sufficient, and for balancing tests I installed four strands of $\frac{1}{8}$ in. flat strip. The model required some weight adding to the nose, but I soon had quite a flat glide, although the model tended rather to " sink " than to glide, this being due, no doubt, to the peculiar wing area of the " Lysander."

However, I took the model out to test with every hope of success. With 100 turns the model dived into the ground rather steeply. I retrimmed the model, and the next flight was a great improvement. The model is a very fast flyer, and will go for a long way with full winds. I achieved one flight of nearly 20 sec. with 250 turns on the rubber.

These kits are remarkable value, and in the words of one gentleman, " I don't know how they do it for 1s. 3d." To be able to build a model as shown in the photographs for only fifteen pence is certainly an achievement.

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A LETTER TO THE EDITOR

SIR,

The vexed question of the Wakefield Cup rules is once more to the fore, and the point of adjustment or revision is raised in the remarks of the S.M.A.E. Secretary in the Society's new journal. It appears to be an annual point of discussion, and looking back a few years we find that the rules were altered as regards the minimum weight with a view to cutting down soaring flight, and the luck element. As experience has shown, this alteration has proved ineffective, as the times recently put up by Wakefield class machines have been enormous.

We are given to understand that a suggestion has been put forward to hold a competition during the coming season with a view to maybe sometime making these rules apply to the Wakefield contest. These new rules are briefly: Wing area, 144 sq. in., minimum weight 5 oz., with an allowance of 1 oz. only of rubber. This competition will no doubt prove very interesting, but there are one or two serious objections, the most important of these being :—

1. Limiting the amount of rubber limits the scope of the designer to a certain degree. As the competition is purely for duration, the designer's aim is to obtain the greatest power-weight ratio, consistent with efficiency.

2. Then, again, this size of model is getting near the critical point of aerodynamic efficiency. It is well known that aerofoil characteristics break down at chords of only three or three-and-a-half inches.

The disadvantage of the present ruling is that durations are too high, due to the power-weight ratio.

Our suggestion, as previously made in the AERO-MODELLER, is :—The model to conform to the present Wakefield formula, but to carry a " pay load " of say, 25 per cent of its unloaded weight. As an example, if the model has a weight of 8 oz. (unloaded), it will have to carry an additional minimum weight of 2 oz. Therefore, it will be seen that it will be necessary to construct a model of more substantial structure in order to contend with the additional weight. This will automatically reduce the amount of rubber in order to keep the loaded weight of the model to the minimum of 10 oz., or increase the wing loading.

This suggestion does *not* limit the designer's scope, but will definitely tend to eliminate the chances of abnormal times as at present obtained. We contend that this suggestion should be in the list of competitions for the 1940 season.

By giving these new suggestions a chance to have an airing in actual practice during the coming season we shall be paving the way for creating a set of rules worthy of this great contest.

Might we added that we have run a competition on these lines for the past few years, and looking back it has always been successful, and the best machines have invariably won.

We invite comment and criticism on these suggestions, and shall be delighted to hear other aero-modellists' views on what we consider to be the best all-round way yet brought forward of getting settled this question of " Wakefield " rules.

HALIFAX MODEL AERO CLUB.

AIR DEFENCE CADET CORPS NOTES.—*Continued from page* 131.

The question is rather a delicate one. The Corps can hardly expect to have the advantages of S.M.A.E. membership without paying, yet the affiliation of a squadron of 100 boys amounts to £5, which is quite a considerable amount in the finances of our squadrons, which are not very rich. Multiply the £5 by the 200 squadrons, and affiliation would cost us £1,000, a sum not easily come by these days, in spite of many appeals. No doubt we shall be able to find some way out of the difficulty.

No. 85 Southgate) Squadron. Model aeroplane instruction in No. 85 squadron is in the hands of Mr. C. A. Rippon, of the Northern Heights Model Flying Club, and in a letter the adjutant tells us that the squadron considers itself indeed fortunate in having his assistance. Mr. Rippon will be sending in reports of the squadron's activities in future, and they will undoubtedly make interesting reading.

The Croydon Wing.

The Croydon wing of the Cadet Corps has a workroom in its fine headquarters at Wellesley Road for the making of models, and when visiting there recently I saw some good work in progress, about which we shall probably hear later.

Bad Show, Chaps.

Squadrons should be mentioned by name in reports like this, but sometimes the name is better omitted, so I will give no indication of the direction from which this story came, merely relating it to illustrate the difficulties of mixing aeronautics and drill. Two flights of No. blank squadron were on parade doing drill under their kindly " bark worse than bite " sergeant-major, and doing it in the guardsmanlike manner which has made them the admiration of all the girls in the town. Marching very stiffly, they were approaching the wall of their diminutive parade ground, and the sergeant-major, standing between them and the wall, was preparing to shout " About turn," when suddenly along came a model aeroplane straight towards his nose and took the words out of his mouth. The cadets, joyfully remembering repeated injunctions to wait for the word of command, continued marching, so that the model aeroplane belonging to a rival flight, and the beloved sergeant-major were both slightly trampled on before the latter could cry " Halt." And the consequence is that an order has now been made that model aeroplane flying is not to take place on the parade ground while cadets are being drilled.

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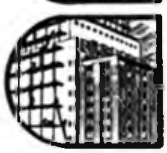

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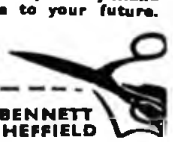

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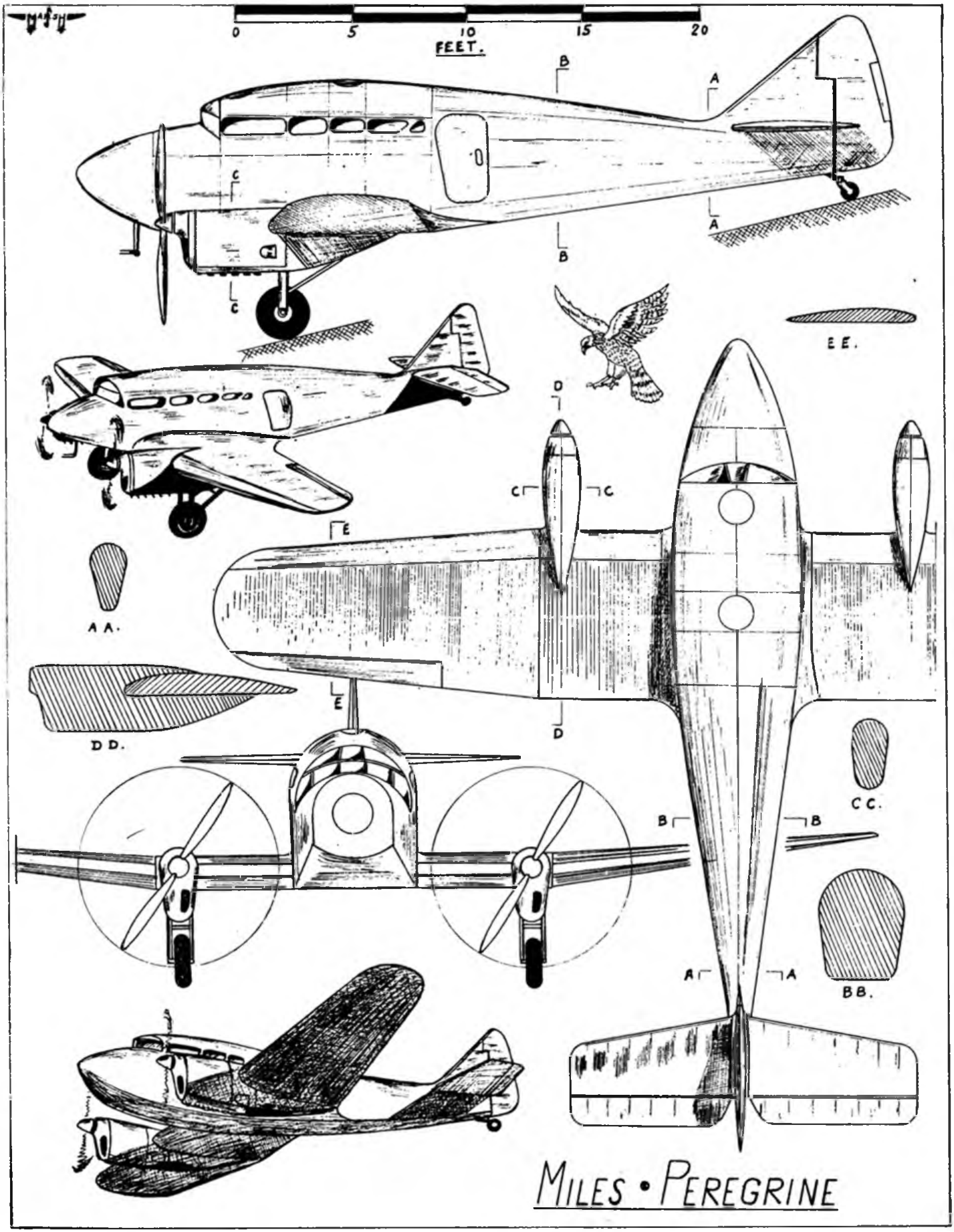

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HIGH-LIFT STABILISING DEVICES FOR MODEL AIRCRAFT

By

DR. ING. PIATELLI

This interesting tricycle undercarriage on a petrol 'plane was observed at a recent Italian meeting, the photo being sent to us by Dr. Piatelli.

WHILE the full size aeroplane is every day increasing its baggage of slots and flaps, in an effort towards better aerodynamic efficiency, the model is still contented with simple cambered surfaces as a lifting means. A desire of reproducing more closely the external appearance of real aeroplanes in the models is more and more evident all over the world among model enthusiasts, and high lift devices, dummy or working, are sometimes added for " realistic " purposes, but it may be said that no attempt has been made in earnest to take full advantage of means capable of increasing the absolute lift or the working range of ordinary aerofoils. Even the very simple and efficient wing slot described in THE AERO-MODELLER recently (November issue) is certainly not intended for competition models. There must be some reason for this.

To cut a slot through the leading edge of a model wing, or to apply a slot in front of it, or even to arrange for movable and controllable flaps, is certainly not very difficult for an experienced aero-modeller. But the same aerodynamical reason, namely, our old friend (or foe?) the Reynolds number, which is responsible for the very limited advantage gained in model work from an accurate selection of wing profiles, is also the cause of the little use to be found on models for high-lift or stabilising devices, working perfectly in full-size practice. Wind tunnel operators, in spite of the very high air speed of modern installations, are every day confronted with the problem of reproducing satisfactorily on scale models such devices, and to obtain reliable data for the prediction of full-size performances. More often than not it has been found convenient to strip the model of all complications and to find a solution combining results experienced with calculations.

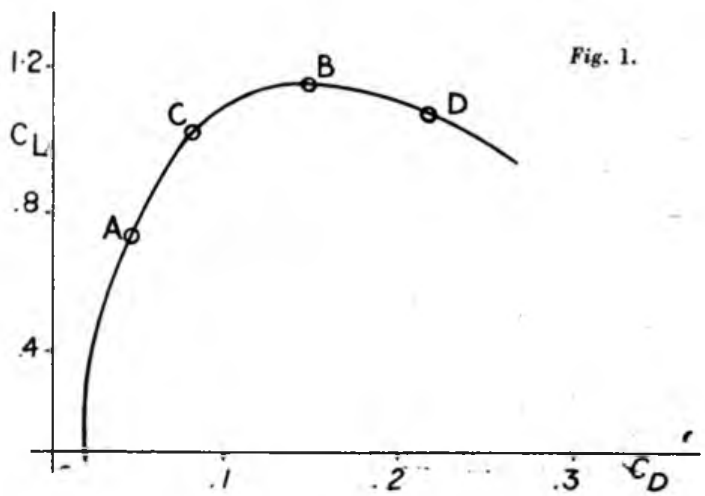

Fig. 1.

A fairly good idea of the possible effect of high lift devices on models may be gained from a close analysis of the conditions of flight. If we do not consider the varying effect of thrust and torque in rubber or power-driven models, and refer to the aerodynamically simple glider, we find it is rigidly set to fly at a given incidence during the entire flight. Plotting lift and drag coefficients for every incidence in a diagram to draw a polar curve like in Fig. 1, the position of the model is represented by a point A, corresponding very often to the best lift-to-drag ratio of the whole model, achieved (for any given position of the centre of gravity) by a definite tail setting giving the best gliding distance from a given height. This point A is not very far from point B, corresponding to the maximum lift obtainable. A third point C, representing the angle of attack, giving the minimum vertical sinking speed, is to be found for a lift value even higher than A and nearer to B. It is quite clear that it is most desirable to adjust the model for point C in any case. In fact, a glider, at its best sinking speed, will be in still air for the longest duration, and will take the best advantage

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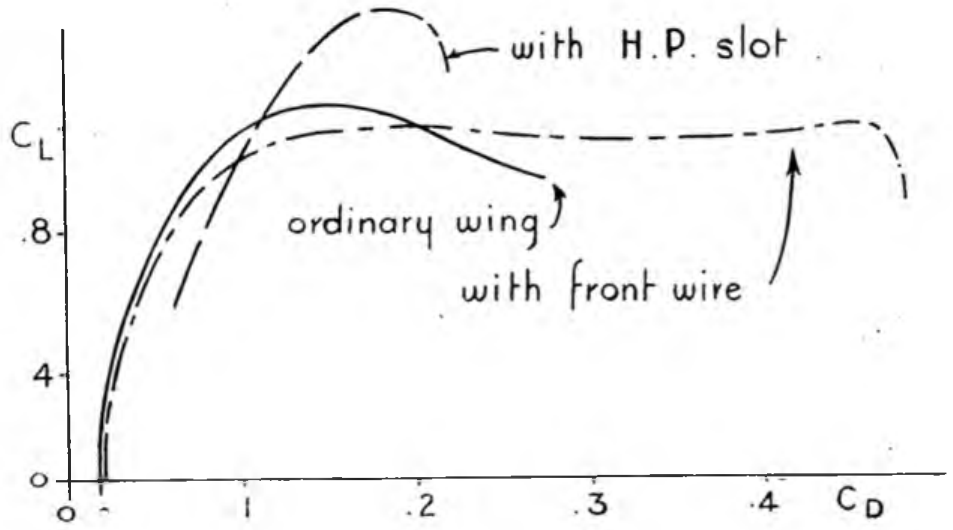

Fig. 2.

of thermals. A powered model, for any given power, will have in this condition the best climbing speed. Nevertheless, models are very rarely set at point C in practice. In fact, when a model is flying at such high angles of attack, any external cause is liable to modify its position in the wrong direction, and it may easily overdue point B and go in the descending slope of the polar curve. As soon as a point like D is reached, every increase in angle will be followed by a decrease in lift; the wing is stalled, and there is no pilot to re-establish the balance. A spin, or in a lucky case a dive, will follow with considerable loss of height and possibly a crash.

The effect of a Handley-Page slot in front of the wing is to increase the critical angle. With H.P. slots open the polar curve is represented dotted in Fig. 2. It is very doubtful if the point of best sinking speed is to be found at a better lift value, which certainly would give advantage because of the possible reduction of wing area. In fact, the best lift-to-drag ratio is generally impaired by slots, and the real useful effect is to increase the critical angle. Unfortunately, there is no pilot to take advantage of the warning given by the unusual attitude of the aeroplane, and the model may easily reach the new critical angle and stall even worse than in the previous case, the descending slope of the curve being in general steeper with slot in action. Besides, it is very doubtful if so tiny slots will give so efficient and regular passage of air as to allow the phenomenon to develop in practice. More often than not, as tunnel practice has indicated, and especially on the smaller models, they will only spoil the wing profile.

A new system of conveniently modifying the slope of the polar curve has been found recently, and may be easily and efficiently applied to models. Italian designers have found that a wire, placed in front of the leading edge of a wing, has a marked beneficial effect on the longitudinal and lateral stability of an aeroplane in stalled flight. The device, known as the Mattioli-Randisi disruptor, is now applied, for safety, to the latest Caproni trainers, and has also been studied by Jacobs at the N.A.C.A., as reported by Franc Zaic in his 1938 Year Book. The effect of the wire is represented diagrammatically in Fig. 2. The polar curve is flattened, and after reaching the point of maximum lift there is no descending slope, but the lift is maintained for increasing values of the angle of attack and drag coefficient. There is no sudden stall, nor spinning tendency, and the aeroplane, or model, has all the time to return to the correct position under the action of its stabilising surfaces.

The reason for this is turbulence. The wire is, in fact, a turbulence maker in front of the main wing, and the emulsionated air is more apt to follow the wing section without breaking away suddenly at increased angles of attack.

The very important point regarding this device is that, unlike other systems, it is even more efficient on models than on full-size machines. For a long time its designers have feared that the very marked beneficial effects (even increases of absolute lift) noted on models, should not be present in full scale. Actually, the use of the wire is now limited to the aileron zone, where flow control at any angle or speed is most desirable.

There is no difficulty in experimenting this device on ordinary models. The best position of the wire in relation to the leading edge of the wing varies with wing section and size, but may be easily found by trials. As suggested in Fig. 3, a thin music wire may be stretched between small wooden blocks, cemented in front of the wing, to strong reinforced ribs, a number of holes providing for different position adjustments. A very thin, round or flat rod may also be used. Once the principle is proved, the keen aero-modeller will surely find many applications of this interesting device.

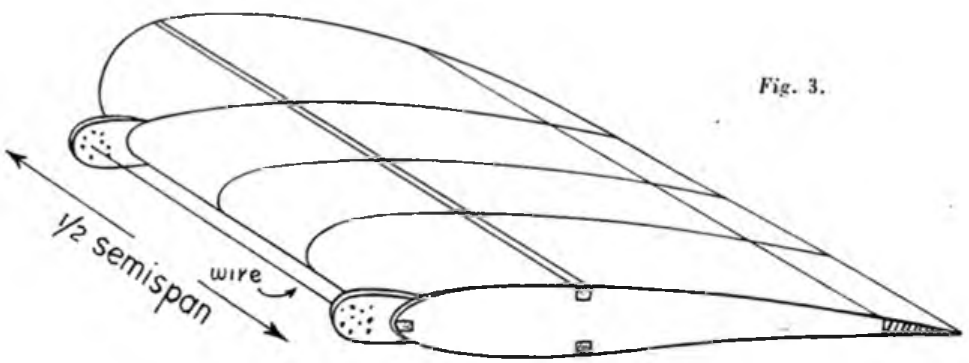

Fig. 3.

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MODEL AVIATION IN SOUTH AFRICA

By
M. WATKINS

I HAVE recently spent seven months in South Africa. While I was there I visited several places of interest and met many well-known model builders. In South Africa the vast spaces tend to centre model activities in several large communities. There are four main centres, Capetown, Port Elizabeth, Durban, and Johannesburg, of which Capetown and Johannesburg are its biggest and most important. The European population in South Africa is very small, and considering this the number of enthusiasts is surprisingly large. Of the four centres, Johannesburg is unique in that it stands at an altitude of nearly 6,000 feet above sea level. The other centres are coastal ports. Aeroplanes flying at this high altitude have a good performance, and moving from Capetown to Johannesburg practically the only obvious difference is the slower climb of models, especially petrol models. A Johannesburg petrol model enthusiasts is always rather nervous of flying his 'plane at sea level, because he has to be prepared to find that sometimes models need completely readjusting. The effect that change of altitude has on a model is a debatable subject. But from experience it is know that propellers often become more efficient or less efficient, with consequent difference in thrust, and it is very rarely that a model does not need readjusting. Petrol motors usually turn over at a greater speed at the lower altitude, with an increase in power.

The four centres mentioned embrace aero-modellers over a wide area, and because of this they develop along individual lines. Modellers keep in touch with England and America, and follow their developments closely. Capetown is concentrating on petrol models, in which American influence is very evident. Most of the models are " improved " versions of successful American types. V. C. Gracie has been the leading light of the club since its promotion, and has been mainly responsible for the club's attempt to produce a radio-controlled model, co-operating—on the wireless technical side—with Mr. Reider, the inventor and maker of the apparatus. They have built a large sailplane to test the controls, and later hope to proceed on to a petrol-powered 'plane. The apparatus was tested for practical purposes in a model battleship, and demonstrated to the club in Capetown Harbour. It impressed us all very much with the quick response obtained, and evident reliability. The club have great hopes in this development, and should have every success with their attempts in the future.

Johannesburg has a slightly bigger club, which was originally intended to cover the Rand, and was called the Rand Model Aeronautic Club. Since then clubs have been formed at Berens and Springs. Johannesburg has many petrol models, and these are the main attraction at flying meetings, which are held as often as possible. Rubber powered models are more in evidence here and perform well. Petrol models are mainly built from model kits, and few venture to design their own; there are also American types. Rubber models are mainly original designs, especially the Wakefield types.

In Johannesburg it is possible to hold flying meetings all the year round, the only disadvantage being high winds. Capetown has a very wet winter, and in summer the dreadful " Cape winds," which make flying impossible.

Durban and Port Elizabeth are also active, but not so far advanced. Durban has some experts on Wakefield models, who put up a good showing at the National competitions.

Port Elizabeth concentrates on rubber models, many of the English type, because of similar weather conditions there. What petrol models we saw there were of very poor quality, but this, of course, should quickly improve.

Petrol motors in use are confined almost entirely to a few popular American makes.

Construction is almost entirely of balsa. Spruce is used for engine bearers, wing spars, etc. Covering is of silk for durability in the climate, and silk is also used extensively for covering Wakefield fuselages. Wakefield models are well built and streamlined. Mechanical motor tensioners are in favour, and also bass wood propellers.

Folding propellers have been developed with single and double blades, and the increased performance of several models was noted with interest.

Gliding seems to have been neglected by the majority of enthusiasts, and I especially noticed the absence of specialised machines which, considering the excellent weather conditions usually prevailing, is rather surprising. The popularity of this sport seems spasmodic, and many models are suitable conversions of rubber types. Johl, of Capetown, produced an excellent design, and members of other clubs have built similar models with good results. While I was in South Africa there was no official sailplane record, though several claims for one had been made.

The organisation which controls national competitions and the awarding of official records is the South African Model Aeronautic Association, which is similar to the British S.M.A.E. Members of all affiliated clubs are

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permitted to wear the smart association badge which has been recently introduced.

There are at present two annual national competitions in South Africa; one is usually at Easter, and the other early in July.

The South African Wakefield Cup is presented to the winner of the competition held to decide the team to represent South Africa in the International Wakefield Cup Competition. The Union is divided into suitable areas, and elimination competitions held to pick the teams to go to the actual competition. Nominally, the first six go with their models. This year Capetown provided no competition, and six machines arrived from Johannesburg, and six from Durban, and one from Maritzburg, where the competition was held. Dalgety, from the Rand, won the Cup for the third time in succession, and three of the first four places were taken by this club.

The day was a beautiful one, and considering this the times were surprisingly poor. The winning average was 115 sec., but we were all glad that there had been no thermal flights. One thing that impressed me was that most of the models weighed around 10 oz., and only one or two approached the minimum weight. Another was that although several models had excellent climbs, the glides were correspondingly poor. Also, many of the machines had components still in the experimental stage, especially undercarts, mechanical and inherent tensioners, and propellers. Most of the machines were of original design, and some were very unstable in flight. " Crack ups " from this and other causes reduced the number of competing machines from 13 to about 8.

The other annual competition is the " National." This competition is sponsored by the Ford Company of South Africa, and without the advantages and facilities afforded by this organisation it would be almost impossible to hold such a competition, and South African modellers are very grateful. It was first introduced in 1938, and held successfully at Port Elizabeth. The Ford Company offers three cups for competition, one for petrol models, one for senior, and one for junior rubber models. Elimination competitions are held at provincial centres; prizes, which consist of free travel and hotel expenses at Port Elizabeth, are awarded in proportion to the number of entries received at each centre; only one, in any case, is awarded to the Rhodesian centre Bulawayo, owing to the great expense.

This year the Transvaal eliminations were held at the emergency landing ground of the Rand Airport, Germiston.

It was a very popular competition, and many hundreds of spectators turned up to watch.

The Club Secretary arrives with his models.

The contingent which left Johannesburg on July 8th was much larger than from any other centre, but the fact helped to liven up the journey of 700 odd miles, which was tediously long.

The majority of models were dispatched beforehand by train, and were unpacked at the first opportunity. Competitors had the use of a hostel, and were soon very busy building and adjusting their models. Port Elizabeth has a reputation among modellers of being the windiest spot in South Africa! This is statistically inaccurate, but much to our disappointment it was windy enough to give us only one opportunity to test models before the competition.

In spite of a 25 m.p.h. wind on the aerodrome, the competition commenced on the afternoon of the 14th. The three major competitions were started, and it was hoped that every competitor should have two of the three flights allowed. The petrol models started last, and were flying in the rain for some time. The wind unfortunately caused much damage by blowing models across the surface into the boundary fences. The petrol model competition is run on similar lines to the English Bowden Cup Competition, models being required to remain in the air between 40 and 60 sec. Points were given for various stages of the flights, and owing to the high wind models lost points by turning over after what might have been a perfect landing. As soon as all scheduled flights were completed the cars and vans took us back to the town. The next day dawned calm and fine, and in the afternoon competitors proceeded to the field. The event was popular, and there was a large crowd. Leading competitors in the petrol competition had to return home before intended, and this was completed first, the Cup going to Mr. Hart, of Capetown. There were several post-entry competitions, which filled up the time between

Left to right: Van School holds Johl's " Pelican II; " Brooke, *who took second place in the Wakefield (S.A.) Trials; Felix Haahoff, winner of the Yardley Cup; and Jessie Reeves, with her petrol model.*

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Left to right: Hart, Spargo and Stewart, and the Secretary of the Rand Club.

the final rounds of the senior and junior rubber competitions. A remarkable flight was made by Rex Stewart, when he sent his G.4 up on its final flight, which lasted officially for 15 minutes, although it was seen long after this. So the junior championship returned again to Capetown, this time in the hands of the holder of the South African record of 23 min. for rubber models, and the Capetown Club record of 32 minutes.

The Senior Rubber Championship went to Sparngo, of Durban, flying a Wakefield type machine, after some exciting moments of breaking motors amongst the finalists.

The day's flying ended with a mass flight by all types of models, and when this had been concluded the prizes were awarded by the Mayor of Port Elizabeth to the competitors who took places.

Then came the job of collecting all the models for transport in the van back to the hostel.

Later, some of us were shown films taken of model activities in Johannesburg and Durban, and the coloured ones were especially appreciated.

The next day was Sunday, and was spent repacking the models for their long journey. Competitors for Johannesburg, Pretoria, Durban and Bulawayo left that evening by train, Capetown competitors leaving an hour or so before us.

So ended the second " National." And now South Africa is waiting for the news of the third of the national competitions, which have aroused interest in model 'planes all over the country, the primary aim of the sponsors.

I have attempted in this article to give a comprehensive survey of South African model aviation, after having excellent opportunities to study the subject. Model aviation is well established in the country, although the almost entire lack of a supporting manufacturing trade might curtail activities if supplies were cut short. Owing to the comparatively small demand for materials it is most economical to import supplies, the price of which varies extensively owing to geographical factors; generally the average cost of a 'plane is slightly higher than in England. It was proposed recently that petrol motors under 10 cc. capacity should be imported free of duty, which has been in the past an expensive item.

Individual modellers have reached a high standard, and have developed several original ideas, but the lack of a suitable publication devoted to modelling, has proved difficult to distribute these ideas, and this is one reason why the national competitions are so looked forward to, because it enables aero-modellers from all parts of the Union to contact new developments in the country, while keeping in touch with the rest of the world through various well-known American publications and THE AERO-MODELLER.

I should like to take this opportunity to thank members of the Rand Club, especially Felix Haarhoff and Michael McCardle, for their hospitality and generous assistance on every possible occasion, and also to say that if this article arouses any comments in South Africa I should be very pleased to hear of them. To all South African aero-modellers, known and unknown to me, the best of luck, and success in the future.

CLUB ACCOUNTS II

By "DIGANOS"

THIS article, unlike the previous one on. Club Accounts, which was written primarily for club treasurers, is intended for the person with perhaps the most onerous duty in the club, namely, the auditor, who has the task of preparing the club accounts at the year end. These accounts usually consist of an income and expediture account and a balance sheet.

The value of a well-compiled set of club accounts is perhaps not fully appreciated. As an example, take the case of a club with a long and valuable list of patrons, each of whom makes an annual donation to the club. He is far more likely to renew his subscription when he finds an intelligently compiled set of accounts placed before him, showing that the affairs of the club are being carried out in a businesslike way than when he gets a statement scrawled on a piece of paper ripped out of a Woolworths' notebook.

It is imperative that accounts be prepared, and, in the casse of a small, self-sufficing club, displayed on the club notice-board, and in the case of a club with a larger membership and patronage, that a copy should be sent to each patron and member, and to anyone who has at all rendered any assistance, financial or otherwise, during the year. The accounts also have the useful purpose of

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reminding the patrons that another year has passed and that once again their subscriptions would be welcomed. It should not be forgotten that the S.M.A.E. require a a copy of the last year's accounts upon application for affiliation or reaffiliation.

Auditor.

It is advisable that the club should appoint two auditors, and whenever possible they should both have a knowledge of book-keeping. The duties of an auditor are to check the subsidiary books, such as the subscription book, with the cash book, to check the balances and totals shown in the cash book. To check the bank columns of the cash book with the bank pass book, cheque book and paying-in book, checking substantial payments (say, over 5s.) with the receipt which should have been obtained by the treasurer, checking the counterfoils of the club receipt book with the respective items on the receipts side of the cash book, and finally building up the final accounts.

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INCOME AND EXPENDITURE ACCOUNT FOR YEAR ENDING DECEMBER 31ST, 1938.

EXPENDITURE.	£	s.	d.	INCOME.	£	s.	d.
Birchester Corporation. Rates	2	0	0	Members' subscriptions	4	0	0
Birchester Corporation. Ground rent	1	0	0	Members' subscriptions owing	1	0	0
Heating and lighting	2	0	0	Vice-presidents' subscriptions	5	0	0
Postages and stationery	2	10	0	Dance profits	2	0	0
Repairs and Renewals	1	0	0	Rally profits	2	0	0
Bank charges	0	5	0	Sundry donations	0	10	0
Depreciation. Clubroom	2	0	0	President's donation for cost of clubroom	40	0	0
Fixtures	1	0	0	President's donation for cost of fixtures	10	0	0
Balance, surplus of income over expenditure, carried to balance sheet	52	15	0				
	£64	10	0		£64	10	0

BALANCE SHEET AS AT DECEMBER 31ST, 1938.

LIABILITIES.				£	s.	d.	ASSETS.				£	s.	d.
Amount owing to printer				1	5	0	Cash in hand				1	0	0
Add surplus, as per I. and E. A/c.	52	15	0				Cash at bank				10	6	0
Reserve: Balance at January 1st	5	0	0				Subscriptions owing				1	0	0
				57	15	0	Clubroom	40	0	0			
							Less Depreciation	2	0	0			
											38	0	0
							Fixtures and fittings	10	0	0			
							Less Depreciation	1	0	0			
											9	0	0
				£59	0	0					£59	0	0

AUDITORS' CERTIFICATE.

We, the undersigned, have audited the books and accounts of the Soaring Model Aero Club for the year ending December 31st, 1938, and have received all the information and explanations we have required. In our opinion the above balance sheet exhibits a true and correct view of the state of the affairs of the club.

W. BROMAY, *Hon. Treasurer.*

D. HAYSON,
S. GROFELL, *Auditors.*

Compiling the Final Accounts.

At the end of the club's financial year it will be necessary to prepare some form of profit and loss account. It is, however, very seldom that this name is used by clubs for their accounts, as they do not exist to make profits. There are two types of accounts in common use, and are known as (1) Receipts and Payments Account, (2) Income and Expenditure Account.

Re (1), Receipts and Payments Account. This account is by far the simpler of the two, and is used in cases where a balance sheet is not prepared. It is simply a summarised cash book, with receipts to the left-hand side and payments to the right. All the separate items on the receipts side of the cash book are classified under headings, and the totals under each heading are shown as receipts in the Receipts and Payments Account. Exactly the same procedure is followed with the payments. To abstract the various items from the cash book the auditor will make use of a large sheet of paper, which he will rule into columns. (This will be unnecessary if the use has been made of the analysed cash book, as mentioned in the previous article.) Commencing with the receipts, he will head these columns with wordings such as: Members' Subscriptions; Vice-Presidents' Subscriptions; Donations; Rally Profits; Dance Profits; Miscellaneous; etc. He will make as many headings as he finds necessary, and opening the cash book at the beginning of the accounting period, will transfer each individual item into its respective column on the sheet.

Example: Cash Book. January 1st. Received donation, D. Smith, 5s.

He will list this item under donations on his sheet, at the same time making a tick against the item in the cash book (to show that he has transferred it). So he will proceed through the receipts side of the cash book. When he has transferred the last item, he will total the figure under each heading. A check for accuracy is that the sum of these totals should equal the total receipts for the year as shown by the cash book.

The auditor will then follow the same procedure with the payments side of the cash book, listing the items

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under, for example, the following headings: Rent of Clubroom; Rates and Ground Rent; Heating and Lighting; Postages, Stationery and Sundries; Repairs and Renewals of Tools, etc.; Bank Charges; Publicity Expenses; Miscellaneous. He will eventually find the totals of all these divisions, and should employ the check previously mentioned with regard to the receipts.

The auditor should now be in a position to build up his Receipts and Payments Accounts, which is simply a summary of the cash transactions as per the cash book.

Firstly he puts on the left-hand side of the account the cash in hand and bank at the beginning of the accounting period. All the separate totals of his abstract sheet of receipts should be entered on the receipts (left-hand side) of the Receipts and Payments Account, and the separate totals shown on his abstract sheet of payments on the payments (right-hand side) of the account. The account should now show a balance, which, we hope, shows that the receipts exceed the payments. This balance should agree with the total of the balances of the cash and bank columns in the cash book at the end of the year.

EXAMPLE:

	£	s.	d.
Receipts			
Members' subscriptions	5	5	0
Donations	4	4	0
Dance profits	2	0	0
Payments			
Printing, etc.	2	8	0
Heat and light	3	0	0
Bank charges	0	7	0

MIDTOWN M.A.C.

RECEIPTS AND PAYMENTS ACCOUNT FOR YEAR TO 31/12/38.

RECEIPTS.				PAYMENTS.			
Balances at Jan. 1:				Printing, etc. ...	2	8	0
Cash ...	0	10	0	Heat and light ...	3	0	0
Bank ...	0	10	0	Bank charges ...	0	7	0
Members' subs. ...	5	5	0	Balances at Dec. 31:			
Donations	4	4	0	Cash ...	0	14	0
Dance profits ...	2	0	0	Bank ...	6	0	0
	£12	9	0		£12	9	0

Re (2), Income and Expenditure Account. This is merely another name for a profit and loss account. It is in many respects different to the Receipts and Payments Account, as, with the Income and Expenditure Account a balance sheet is necessary. Provided the auditor follows these instructions, and provided that the set of books has been fairly well kept, he will find that this account portrays, along with the balance sheet, a true and correct state of the affairs of the club.

The same procedure is followed to the building-up stage of the accounts, as in the Receipts and Payments Account. It is here that the differences commence. The payments and expenses should be inserted on the left-hand side of the account, headed Expenditure; and the receipts on the opposite (right-hand) side of the account, headed Income. The account is then similarly built up as the Receipts and Payments Account, apart from the fact that the balance of funds in hand at the commencement of the period is omitted. Everything actually received or paid by the club during the year, together with the cost of things received and not paid for, or subscriptions owing, should be entered. For example, say a local benefactor erects a clubroom for the benefit of the club, it should be entered on the receipts side of the account as actually received at the present value.

With regard to depreciation, in the case of a clubroom, for instance. When the building is actually erected, the value may be taken at the cost price of, say, £40. Now this clubroom would be shown as an asset in the balance sheet for year after year at a value of £40. After ten years, if one wanted to sell the clubroom, would £40 be got? No, it would have depreciated in value, and may now be worth £20. So system of depreciation must be used. In our opinion the best way is to value at the end of the year the clubroom and fittings, or whatever the assets consist of.

Example: Clubroom at January 1st, £40. Fittings added during year to the value of £10. Estimated value at December 31st, £45. The balance sheet would show:

Clubroom and fittings, January 1st	£40
Added, fittings	£10
	£50
Depreciation	£5
Present value, December 31st	£45

The item of £5 for depreciation would be entered as an expense in the Income and Expenditure Account.

When all the items have been entered in the account it will be observed that a balance exists. Should the income exceed the expenditure there should be inserted at the foot of the expenses side: "Balance, being surplus of income over expenditure, carried to balance sheet," and the necessary balancing figure inserted. (Note that the check used in the Receipts and Payments Account cannot be employed in the Income and Expenditure Account *re* balance sheet. A balance sheet of a club should show on the date stated at the head of the same the exact financial position of the club. The left-hand side of the balance sheet is headed "Liabilities," and the right-hand side "Assets."

Re the Assets. The cash in hand and cash in bank, at the date of the balance sheet, should first be inserted. It is quite possible that some of the members' subscriptions will be owing; these should be entered as an asset, having also been added to the amount of subscriptions actually received in the Income and Expenditure Account. If the club has a clubroom, as previously illustrated, this clubroom should be shown at the value at the beginning of the period, plus additions, etc., less depreciation. The illustration previously referred to will clarify this point. And so we go through the list of assets, putting them all down on the right-hand side of the balance sheet.

Re the Liabilities. Probably the club owes something to somebody, such as, say, £2 for rates. This should be put down as a liability, as should all other items which have not been paid, and for which something has been received, whether actual, such as printing, etc., or nominal, such as rates.

We now reach the important part of the balance sheet. Upon totalling of the assets, and of the liabilities, it will be observed that a difference exists. This balance shows the amount the club is actually worth, and is known as "Capital" or "Reserve." The amount of capital, or reserve, at the beginning of the year, added to the excess of income over expenditure, as shown by the Income and Expenditure Account, should be equal to this balance. Indeed, if the accounts have been drawn up correctly, it *will* balance.

The auditor should then sign the certificate on the accounts, as shown in the following illustration. The accounts should also be signed by the treasurer, and they are then ready for duplication and distribution.

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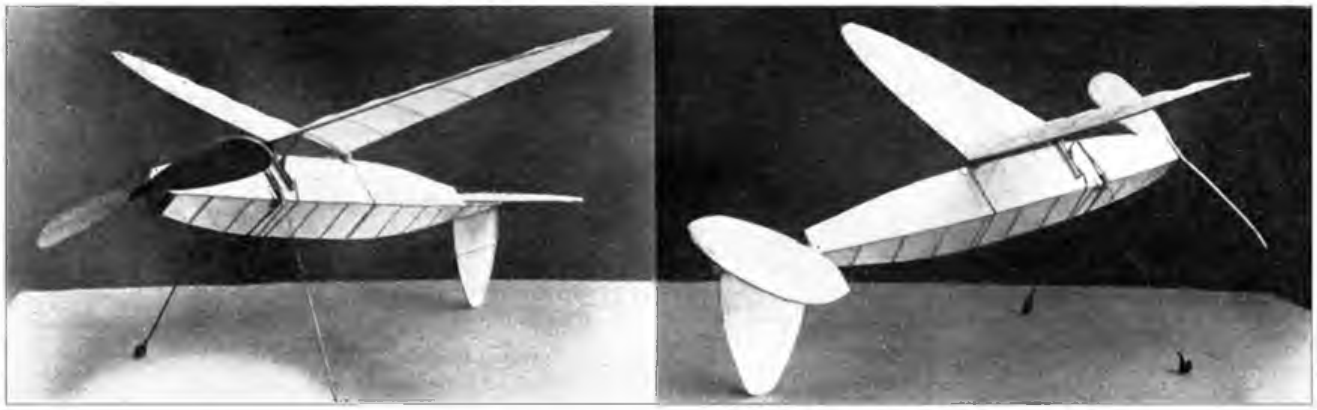
BUILD THE PYLON PATROLLER

Designed by **H. McDOUGALL**



THIS model is a development of a previous free-flying model built by the author. It weighs, complete with rubber, less than one ounce, and the duration is about 90 seconds. Owing to its small size it could be flown quite easily in even the smallest of halls, and due to its light weight it is steady in flight, and not erratic like the smaller but relatively heavier type of model.

Fuselage.

The fuselage is square in shape, and is built in the usual manner, two sides being constructed first and then assembled together with spacers.

When completed it should be set on edge, so that it appears as a diamond shape when seen from the front. At the rear, the top longerons cover the last two bays, that is to say, three inches may be cut away, together with the adjoining spacers, and this leaves a platform which the tailplane will eventually rest upon.

Two additional spacers, cut from $\frac{1}{4}$ in. by $\frac{1}{16}$ in. balsa, should be added on the top two sides immediately in front of the platform just mentioned. A part of the fuselage which will benefit by the addition of small square pieces in the corner of the bay is the point where the under-carriage legs are attached.

Wing.

This is very easily constructed. The leading and trailing edges are of medium stock $\frac{1}{16}$ in. square balsa, which should be held to the plan with pins in the usual manner, while the wing ribs are cut from $\frac{1}{32}$ in. sheet balsa. The shape shown serves for the two largest ribs, and the others may be cut to the same shape. Varying lengths of the trailing edge may be cut away, so that they will fit into position.

Two wing halves are made in this manner (one being shown dotted), and the largest rib in each half should be inclined slightly, so that when they are assembled together and firmly glued, each wing tip will be raised to a height of 2 in. On the original model it was a little more than is really necessary.

The front bracket for the wing comprises four pieces of $\frac{1}{16}$ in. square balsa arranged as shown, Fig. 1. This is attached to the leading edge of the wing at the centre, shown dotted. At the lower extremities two short lengths of 22s. gauge wire suitably bent are glued firmly in place. If the cement is applied liberally no binding is required.

For the rear wing the fitting, Fig. 2, is even simpler. It consists of two small pieces of $\frac{1}{32}$ in. sheet balsa, each measuring $\frac{1}{2}$ in. by $\frac{1}{4}$ in. set at right angles to each other, with a piece of $\frac{1}{8}$ in. sheet attached to the top. The trailing edge is glued to this so that the resulting bracket will fit to the top edge of the fuselage. This results in the trailing edge fitting practically flush with the top longeron, while the leading edge is raised a little, and this, of course, gives the wing the required incidence.

Tail Assembly.

Tailplane construction is exactly the same as for the wing halves, except that in this case it may be built in one piece, as there is no dihedral angle.

The fin is the simplest component of all, being constructed entirely of $\frac{1}{16}$ in. square balsa.

Under-carriage.

The under-carriage legs are made from $\frac{1}{16}$ in. square bamboo, and $\frac{1}{2}$ in. diameter balloon type wheels on short lengths of 22s. gauge wire are attached to the ends. At the top of each leg a little fitting, made as shown in Fig. 3, is glued. The two small pieces of $\frac{1}{32}$ in. sheet measure $\frac{3}{4}$ in. by $\frac{1}{2}$ in., the remaining piece of balsa being of $\frac{1}{8}$ in. sheet, and the addition of this little component enables each under-carriage leg to be held to the fuselage with rubber bands.

Nose Fittings, Propeller, etc.

The noseblock, Fig. 4, is made from four laminations of $\frac{1}{16}$ in. medium hard sheet balsa, with an extra piece of $\frac{1}{16}$ in. sheet added at the back, and this should be made to fit into the cutaway portion of the nose former, the latter being made from $\frac{1}{32}$ in. sheet, as shown full size in Fig. 5, and glued to the nose of the fuselage.

Covering.

Superfine Jap tissue throughout, watered only.

Assembly.

The fin is cemented in place to the bottom longeron, and the tailplane is also placed in position with the trailing edge raised by means of small chips of balsa to a

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height of ⅛ in. If a large box has been obtained for carrying purposes it may be firmly glued, otherwise it should only be glued lightly, and then cut away with a razor blade for carrying purposes.

The wing may be placed on top of the fuselage, and when the rear fitting has been clipped in place with a rubber band, a further rubber band may be slipped on to one of the hooks on the leading edge bracket and passed underneath the fuselage on to the other hook.

The under-carriage is held with rubber bands to the side of the fuselage, where it has been specially strengthened.

A hole should be drilled in each of the two extra wide pieces which were added in the top two sides of the fuselage to accommodate the rubber anchorage pin, a short length of bamboo about the size of a matchstick

The power is supplied by six strands of ⅛ in. flat American brown rubber, 20 in. long, which will take upwards of 1,000 turns, and this skein is held in place with the rubber anchorage pin mentioned above.

THIRTEEN OUNCES!

YES. That is what it weighed. And I had built it to win the Wakefield Cup! Now laugh!

Let me start at the beginning.

In the autumn of 1936 I, in common with so many more of you, set out to design and build a Wakefield machine to the new 8-oz. specification for use the following summer in the Wakefield Trials.

Like yours, it was to be a truly wonderful machine, entirely original in design (ahem) and a real contest winner. I had decided upon a low-wing monoplane with high thrust line, taper wings and all-balsa monocoque body, etc.

At cost of much time, blacklead, india-rubber and midnight oil, I completed a set of full-sized drawings, together with full details of the balsa fuselage sections —all eighteen of them, all different. Then I set to work to build the machine. I built the fuselage in two halves, stringers and half-sections first and, oh boy, they looked good!

Then I started to cover them with 1/64 in. balsa.

Of course, it might have been different if my fuselage had been round, but it wasn't. It was pear-shaped. I tried butt-jointing the planking, but you—sorry—*I* cannot butt-joint 1/64 in. balsa with success. So I had to cement another thickness under each joint. That fuselage took me about sixteen evenings, seven large tubes of cement and all the pins in my wife's workbasket before it was completed.

And it weighed 2½ oz. without either noseblock or centre section wing roots!

A bit heavy perhaps, but worth it to have such a nice, strong job. Then I tackled the wings. Here I did much better. ¾ oz. the pair and very strong too. In fact, they were always the best part about that bus.

So I took heart and had a go at the centre section It was a good centre section, well faired with good wing fixings, but it weighed as much as the wings.

The tail and rudder were good, too, but in case you are ever tempted, don't put solid, hard balsa flaps ½ in. wide along the trailing edge of tail-plane and rudder. Chassis? Oh, this worked out very light indeed. In fact, I was surprised.

Remained only the gearbox—did I tell you I was using gears?—and the propeller.

My gearbox, made with great care, weighed an ounce. I followed *all* the instructions of ALL the people who have written saying how gearboxes should be made. The third time it was assembled it worked.

It was perhaps unfortunate that no one had thought to suggest to me that it was unwise to put the gears behind a balsa nose fairing, glued on. You see, you had to cut the nose fairing off each time you did anything to the gears. There was oil too.

However, she was finished and, to my horror, weighed 8½ oz. with propeller, but minus rubber.

Long before this I had ceased to wonder where I was going to put the cup, but after all my labour she just *had* to fly. So I took 3 oz. of one-eighth rubber and made it into two ropes of twenty strands each and set off for my test field.

On glide she was so tail heavy that the wing had to come back nearly an inch. Major structural alterations. Back to the test field. On a few hundred turns all she did was circle for 12 sec. at about 10 ft. up and land.

So I bumped on more turns and —er—er well, I must have missed some of those gearbox instructions, because the shaft turned in the gear wheel. More repairs (poor nose fairing) and the rubber rearranged to have 24 strands on each hook.

I then began to get R.O.G. flights of about 35 sec., but she finished up with a nose dive on the fourth flight which upset the gearbox completely.

So I rebuilt it stronger (another half ounce) and increased flights to 45 sec., but no height.

This was getting rather more than a joke, so I rebuilt the gearbox once more (half an ounce lighter) and powered with 4 oz. of ¼-in. rubber arranged in two skeins of twelve strands each.

It was now July. Wakefield Trials were over—minus poor me—and I was due for my holiday. This was my chance for somet final tests of a machine that I was beginning to fear was a real dud. But my troubles were over. With lots of sand as an aerodrome and the higher power she performed well, although weighing as much as 13 oz.—5 oz. overweight.

Twice she did 70 sec. and could be relied upon to turn in 55 to 60 sec. every flight. These were all R.O.G., and were followed by a good landing and taxi to a standstill with propeller freewheeling.

At no time did she seem to strike any thermals, and was probably far too heavy to notice them if she did.

She was fast, stable, and flew an S-shaped course, landing in most cases fairly near the take-off point.

I tried more torque and shorter motor run. This gave more height, but reduced flights to 45 sec.

It was all great fun, and I shall hope to try again another year, because if I can get 70 sec. out of a bus that is more than 60 per cent overweight surely I can do a lot better with a bus built down to the 8 oz.

And, as the laugh is very much on me, I will sign myself

JUST AN AERO-MODELLER.

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The technical chapters have been re-edited, and entirely reillustrated with a complete set of new sketches. The chapters on construction have been entirely rewritten so as to deal with the latest practice in the construction of model aircraft. Here again new sketches have been added. In addition, many new and hitherto unpublished photographs have been introduced. The chapter on Petrol Engines has been considerably extended, and now forms the most up-to-date treatise on their operation and tuning. The book is printed on fine art paper, thread-sewn, and is bound in full cloth with stiff covers. Size is 8¾ in. × 5½ in., and there are over 250 pages.

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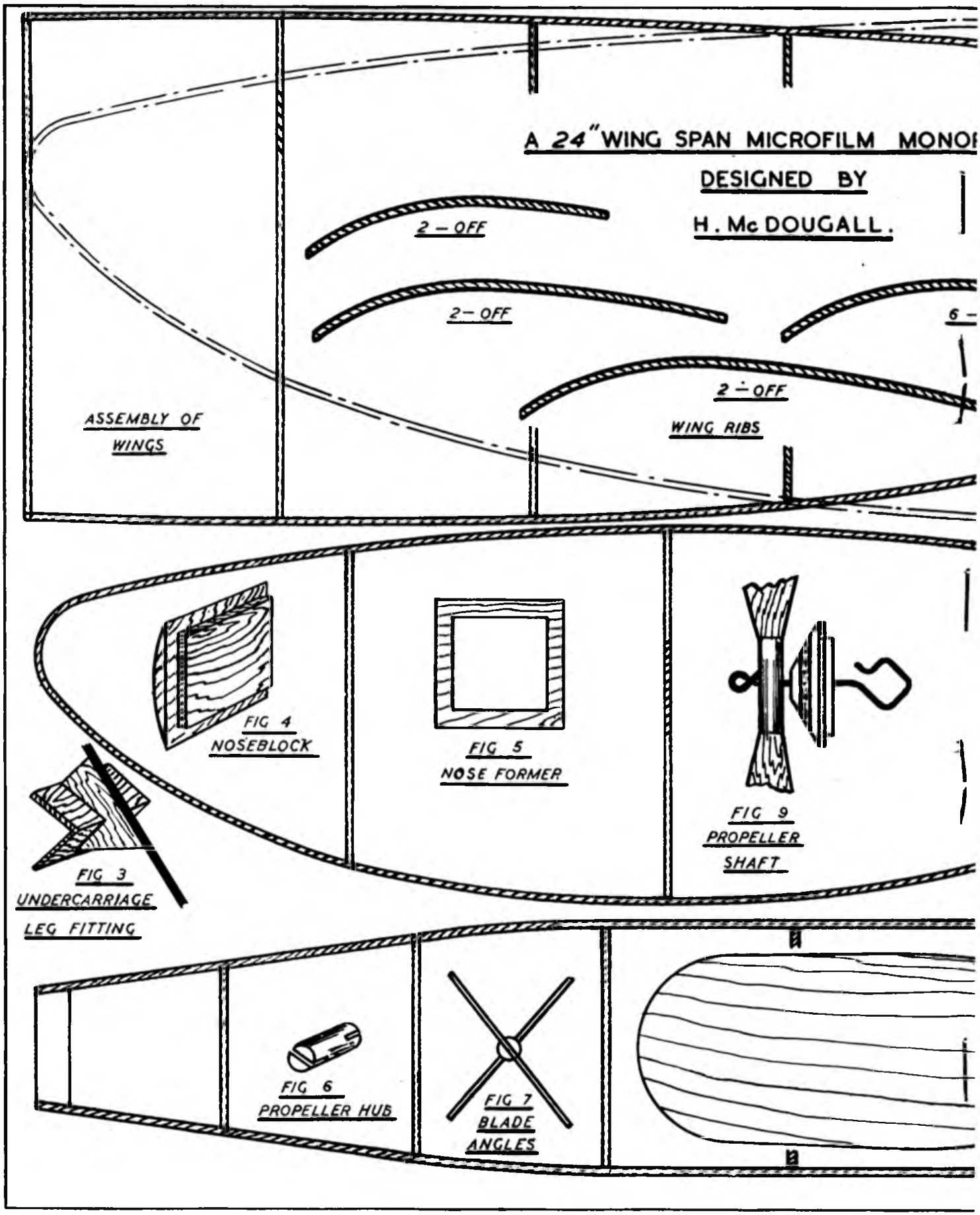

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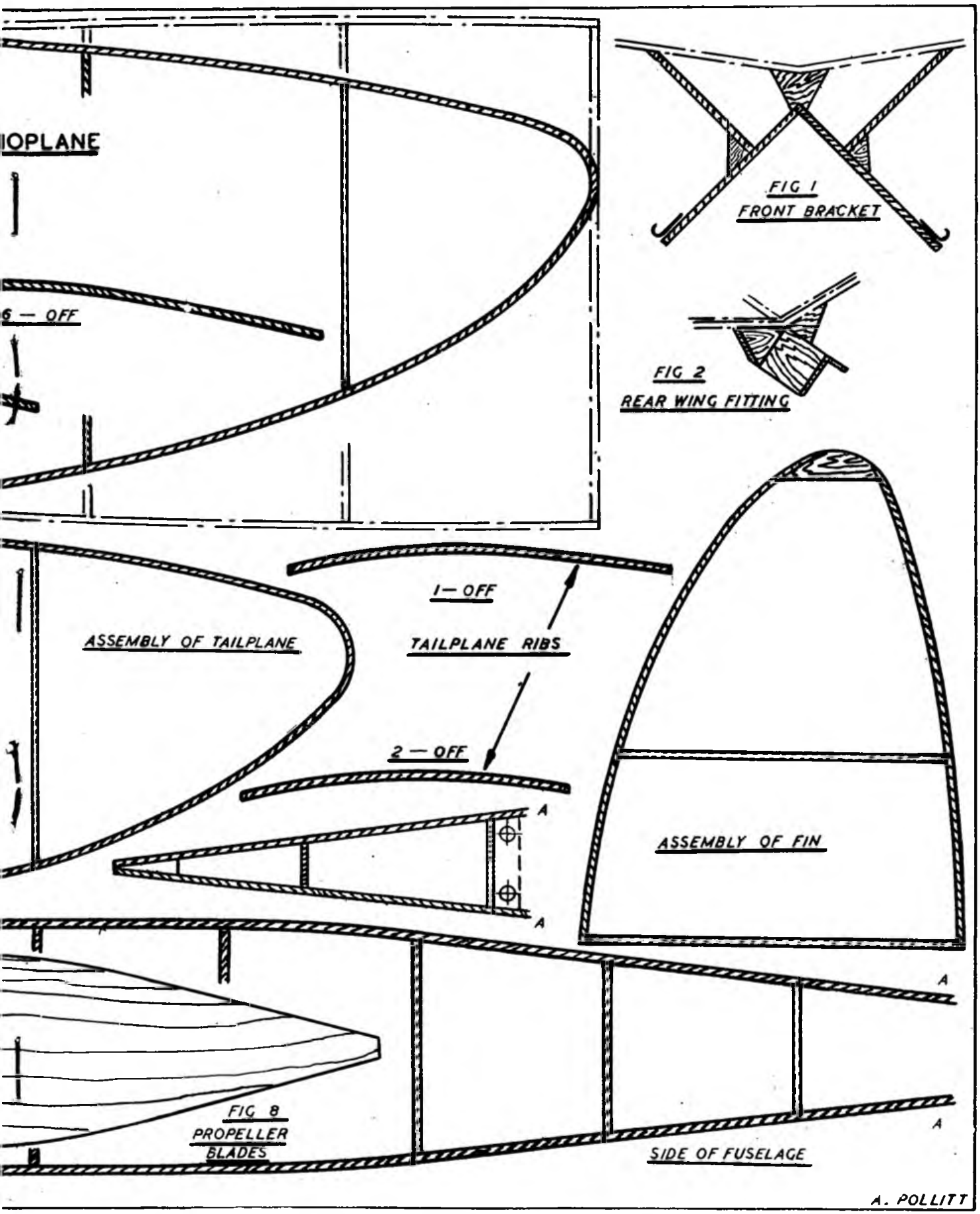

FIG 1
FRONT BRACKET

FIG 2
REAR WING FITTING

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Diam. ... inches	12	13	14	15	16	17		
Unvarnished	1/6	1/9	2/1	2/5	2/9	3/2		3d.
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A light prop. for lightly loaded duration models. Also very suitable for flying scale models.

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Unvarnished	5d.	6d.	8d.	10d.	1/-	1/3	1/6	2d.
Varnished	6d.	7d.	9d.	1/-	1/2	1/5	1/8	"
Diam. ... inches	12	13	14	15	16	17	18	
Unvarnished	1/9	2/-	2/3	2/7	3/-	3/8	4/3	3d.
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TYPE "K." Scale type with Spinner. Just the thing for Flying Scale Models

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AT THE SIGN OF THE WINDSOCK

MODEL Aircraft Stores (Bournemouth) Ltd., 127b Hankinson Road, Bournemouth, have just placed on the market a new range of 1-72 scale solid models of British, French and German warplanes.

At present the range includes Potez 63.C3, Hawk 75, Messerschmitt M.E.109, Heinkel H.E.111K, Hawker " Hurricane," Westland " Lysander," Avro " Anson," and Handley Page " Hampden." The range will be rapidly supplemented, and fuller particulars of the new models can be obtained by sending for a free list.

* * * * * *

Many of our readers will be interested to know that the popular " Skybird " models are proving more popular than ever, despite the war. In fact, the war has given added interest to this indoor hobby of constructing solid-scale models to 1-72 scale.

The seventh Annual Rally and Model Aeroplane Competition, organised by The Skybird League, will take place as usual about Easter next. Now is the time to prepare those prize-winning models. Particulars of the competition and the models eligible can be obtained from Skybird League Headquarters, 8 Aldermanbury Avenue, London, E.C.2.

* * * * * *

In our December issue " On Test " article we dealt with " The Terrier " kit supplied by Premier Aero-model Supplies, 2a Hornsey Rise, London, N.19.

" The Terrier " is described as a general purpose monoplane, and has many unique features, evidence of the experience of its designer, Mr. C. A. Rippon, Premier's manager and adviser on technical matters. The kit is attractively presented, and contains everything necessary to build the model, including pins, waxed paper, and a supply of rubber bands for assembling. The box in which the kit is packed will also hold the completed model for easy transport.

Fuller particulars of this model and others stocked by this well-known firm are contained in their advertisement on page 144.

* * * * * *

A new series of models of entirely British design and manufacture, which are proving very popular, are " Skyleada " models. There are seven flying scale models and two duration models available at present, and additions are being made from time to time.

We have recently examined a kit of the Hawker " Hurricane," and at the retail price of 1s. these kits seem to be excellent value for the money. They contain printed balsa sheet, balsa strip, cement, rubber, tissue, and 1,500 words of instruction.

The latest additions in this series are the "Hurricane" and " Spitfire " fighters.

Dealers are invited to write to " Skyleada " Models, 5 South End, Croydon, Surrey, for full particulars of these attractive kits. *Trade distributions only* are handled from this address, but readers can obtain their kits from most model aircraft and toy stores.

* * * * * *

We have been asked by The Harborough Publishing Co. Ltd. to apologise to all those who ordered copies of

H. J. Towner's and Howard Boys' " Scale Model Aircraft That Fly " before the Christmas holidays. The delay in executing these orders was due to no fault of theirs.

Government priority work made it impossible for the printers to complete this publication before the holidays as planned, and communications were sent to all who had placed orders giving the reason for the delay.

The books by Mr. Stubbs, Mr. Rushbrooke, and Mr. Towner and Howard Boys have had an immediate success, and large supplies of all three are now available, prompt delivery being guaranteed.

Readers will be pleased to hear that a revised edition of " The Design and Construction of Flying Model Aircraft," by D. A. Russell, A.M.I.Mech.E., is being published. Full particulars are given on page 147.

The new edition will contain several entirely new chapters, and the whole is revised, brought up to date, and illustrated with many hitherto unpublished photographs and diagrams. The chapters on petrol engines, and flying of petrol 'planes, have been considerably enlarged. The dust cover of the book is printed in full colours, and one of Mr. Russell's latest petrol 'planes forms the subject depicted thereon.

Copies of the book will be available the first week in February.

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and now — the "MAYBIRD"!

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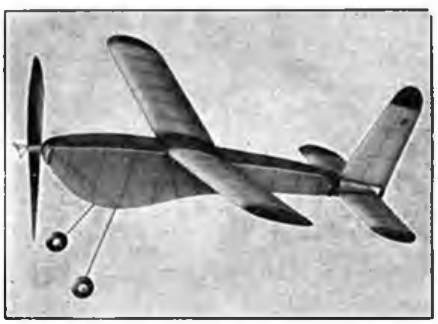

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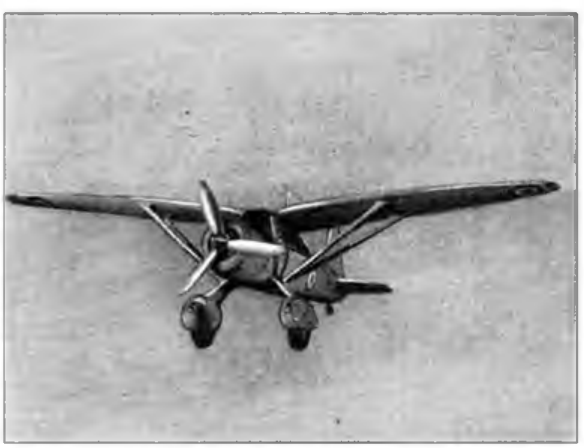

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BY EFFORT WE ACHIEVE

By C. A. RIPPON

His brow was sad, his eye beneath
Showed to all his sorrow and grief.
Alas! my " pusher " is no more—
Back to the drawing board . . .
Excelsior!

WE are living in a period of contradictions. On the one hand all is keyed up for events that never seem to happen, and we are torn between some form of secret fear of what may or may not happen and sheer boredom and annoyance at what appear to be irksome restrictions, but which our common-sense assures us are for our ultimate safety, and on the other hand a veritable turmoil of upset of our usual habits and also our pastimes and hobbies, and so it is not to be wondered at, therefore, that our own particular hobby has come under the shadow of this baneful influence and that many aero-modellers and clubs have for a time fallen by the wayside.

But now that events and circumstances have granted us time to take stock, let us look around and consider the position; many of our No. 1 fliers have been drawn into the military machine, while others are devoting most of their time to A.R.P. work. Many of the younger ones have been evacuated, and so, consequently, apart from the possibility of personal danger putting us off our shot, this " General Post " has so thoroughly disorganised the movement that it has taken some weeks to collect our senses—and, after all, we were expecting an aerial " Blitzkrieg " weren't we?—so take heart and don't criticise your club or the S.M.A.E. too harshly for not publishing sooner a war-time policy.

As one associated very closely with the model aeroplane movement as a whole, and with the S.M.A.E. and The Northern Heights in particular, it has astonished me no end to observe how scattered aero-modellers have become in so short a time. People I know intimately are now transplanted north, south, east and west at home and abroad, and it all happened in a few days. No wonder the S.M.A.E. could not call a representative meeting, and, of course, we must always remember that most jobs of work in the club movement are voluntary and honorary, and so in cases of emergency have to take a back place. Who wasn't busy " blacking-out " and reassuring their womenfolk and seeing the children off to safe places, etc., until all nerves were steadied?

We are now prepared and have achieved a feeling of security that allows us to look around to see in what way we can reorganise our activities. Of course, some people and clubs in the provinces will doubtless retort that " they haven't felt the strain." Well perhaps they haven't, and they are to be congratulated, but I feel that it must have been pretty general, otherwise the S.M.A.E. would not be complaining that in response to their questionnaire they were still awaiting replies from sixty clubs. Let's hope that by now the clubs in question will have achieved some measure of reorganisation and have let the governing body know of their intentions, for without complete co-operation the S.M.A.E. can achieve nothing.

As soon as the first shock of the declaration of war was over, we of the Northern Heights took stock of the situation and decided to carry on as far as possible, in spite of the fact that many of our 150-odd members, including committee-men, were called to war service. We decided, too, that all serving members should have their subscriptions suspended for " the duration " but retain their full benefits. All members evacuated, also, should retain their full benefits at a reduced fee until such time as they returned. We instituted a knitting campaign to provide warm comforts for our serving members, and our treasurer was also instructed to send parcels of smokes and other desirable etceteras from time to time to those away. We have, up to date, about forty ladies all hard at work on the " knitting front " !

For our members still on the " home front " we arranged our usual Construction and Finish contest for the winter session, and in view of the extra hours that most members are having at home in the evenings, we expect not only a record entry but some models of outstanding quality. In common with many other clubs, we lost our club-rooms to the military authorities, and so we have had to arrange temporary club-rooms at private houses. However, as I write this I am glad to state that we have at our disposal a splendid hall suitable for meetings and pole flying, where we can use the pole and have a diameter of 22 feet.

So you will see that we have now turned the corner and achieved stability, and have even gained some new members, and have lived up to our motto which heads this article—" By effort we achieve." The spirit which has animated our activities for over nine years, and which must have been apparent at our annual gala meetings.

Now don't you think that by a little effort you aero-modellers and clubs could co-operate to strengthen the movement even in these difficult times? I think you have the greatest opportunity of doing so with people looking around for some pastime to help the dark evenings along and to keep their minds off the serious things of

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present-day life. Therefore let us get together and see in what way this can be done.

Having all agreed that aero-modelling in any of its forms is ideal for the " black-out," the more we display our models the more new blood will take up the hobby, and an exhibition of models for the benefit of the Red Cross funds will attract new people to the hobby, particularly the young folks, who, we must all realise, may be our tip-top model fliers after this war is over—if those who are left on the home front look after them and give them the right kind of instruction! So give them all the help you can. Maybe you have lads evacuated into your district; get 'em going—you will be helping to lighten their home-sickness and giving them valuable instruction at the same time. What a chance for clubs in this direction. I know personally of two districts where strong contingents of evacuees are in full swing.

Then another fruitful ground for new aero-modellers is among the A.F.S. and A.R.P. workers; for what better pastime is there to while away the long hours of just—waiting! That is where our hobby scores, too. It doesn't require a large tool kit, and any old piece of board may be made to serve as a bench to work upon, at least for the simpler types of models and solid scale kits, etc.

Doubtless, too, it would be a good idea for clubs to pass on a few simple kits to military hospitals, where convalescents would be only too glad to take up some light pastime to while away the seemingly long hours of mending. As a matter of interest I know of several hospitals which encouraged model aeroplane construction to this end before the war started.

Don't forget, however, to look after your own serving members, keeping them posted with news of the club and its doings. Try out new ideas; there is no such thing as stagnation in model aeroplane design. There are still plenty of models to try out, such as rotor 'planes, flying-boats, semi-scale jobs, heaps of ideas that put an entirely new angle upon the hobby, not forgetting, of course, your 1940 Wakefield models and speed 'planes! In other words, prepare for peace and a renewal of friendship and rivalry with aero-modellers the world over. Get down to it, for—" By effort we achieve "!

" RIP."

THE CASE FOR THE BIPLANE MODEL

By ARNOLD WATHEW

IN the world of model aeronautics it has become the accepted thing to regard the building of a biplane model, other than a purely scale effort, as a difficult task, fraught with many pitfalls for the unwary. Indeed, good performance is hardly expected; certainly nothing so good as that to be obtained from the average monoplane of similar weight and wing area. I am not by any means sure that this view is the correct one.

At the time of writing there are so few biplane models in general use, particularly of Wakefield specification, that it is almost impossible to gain any useful information by comparing their actual performance with that of monoplane models. Let us instead examine the history of biplane *versus* monoplane in full-size aeroplane design, enquiring as carefully as we may why each has had its period of predominance.

In the very early days of aviation the brothers Wright used a biplane both for their early glider experiments and later for their first power-driven flight. Why? Surely because this was the easiest if not the only structure they were able to make that would bear the strains imposed upon it, and at the same time be sufficiently light in weight. Farman, Cody, Curtiss, and many others, did the same, no doubt for similar reasons.

M. Bleriot, it is true, made a bold bid for fame with his monoplane, but the necessary external bracing wires imposed a handicap upon his machine which eventually caused it to give place to biplanes.

In those days of low-powered engines it was simply not possible to build a monoplane as strong as a biplane of anything like the same weight. Not until new methods of construction, new materials and better engines were available was it possible for the monoplane to compete.

So long as speeds were fairly low this did not matter a great deal; in fact it had its advantages.

But with the advent of modern high speeds, struts and cross bracing, plus biplane wing interference, had to go. Even De Havilands, designers of some of the world's finest and most efficient commercial biplane air liners, have just brought out as their latest the " Flamingo," a monoplane of most beautiful design and efficiency.

This all boils down to the fact that to-day the bigger and faster a machine is the more it *has* to be a monoplane. But our models are neither big nor fast! In fact they are the slowest of all mechanically propelled flying machines. Which does away at one fell swoop with all the major arguments in favour of the monoplane. In fact the primary advantages of the monoplane as shown by full-sized practice have no existence at all for the aero-modellist!

There are, however, a great many biplane advantages that he can, and should, use. He can build his wings to a lighter, thinner and more efficient section, using a really strong cross-braced box girder structure. He can put his thrust line just where it will do most good. Down-thrust, for the biplane builder, does not exist. Last, but not least, he can enjoy the advantages of high aspect ratio without the doubtful stability and high dihedral of the very wide span.

Almost every biplane model I have seen had no inter-plane struts or wing bracing. A strutted and braced structure could have been built for the same or less weight with considerably less wing resistance.

For greatest strength and lightness the correct placing of the inter-plane strut is important. It should be two-thirds of the way from the wing root to the wing-tip. A shorter, lower wing has advantages both for stability and when landing on an uneven keel.

Although some of my friends laugh at me, I feel sure that the time is not far distant when we shall see a biplane model fly away with one of the major trophies. When this happens the biplane will at last come into its own as a model. After all, the difficulties are mainly structural and should not be beyond the capabilities of the more advanced of the majority of our club members.

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NIGHT FLYING

By A. HARCUS CUTT

WHERE do the flye(r)s go in the winter time? We all know the answer. They go indoors to while away the time with discussions, and see who can make a piece of microfilm stay longest in the air. Not that I have anything against gossamer-weight indoor jobs, but he would be a brave man who compared them to the real honest-to-goodness aeroplanes

Why stay indoors anyway? I don't suppose it is because of the cold. Running after your model when clad in a heavy coat will soon make you warm enough. Rain and wind spoil the fun just as much as in summer. When all is said and done it is darkness that proves to be the worst obstacle.

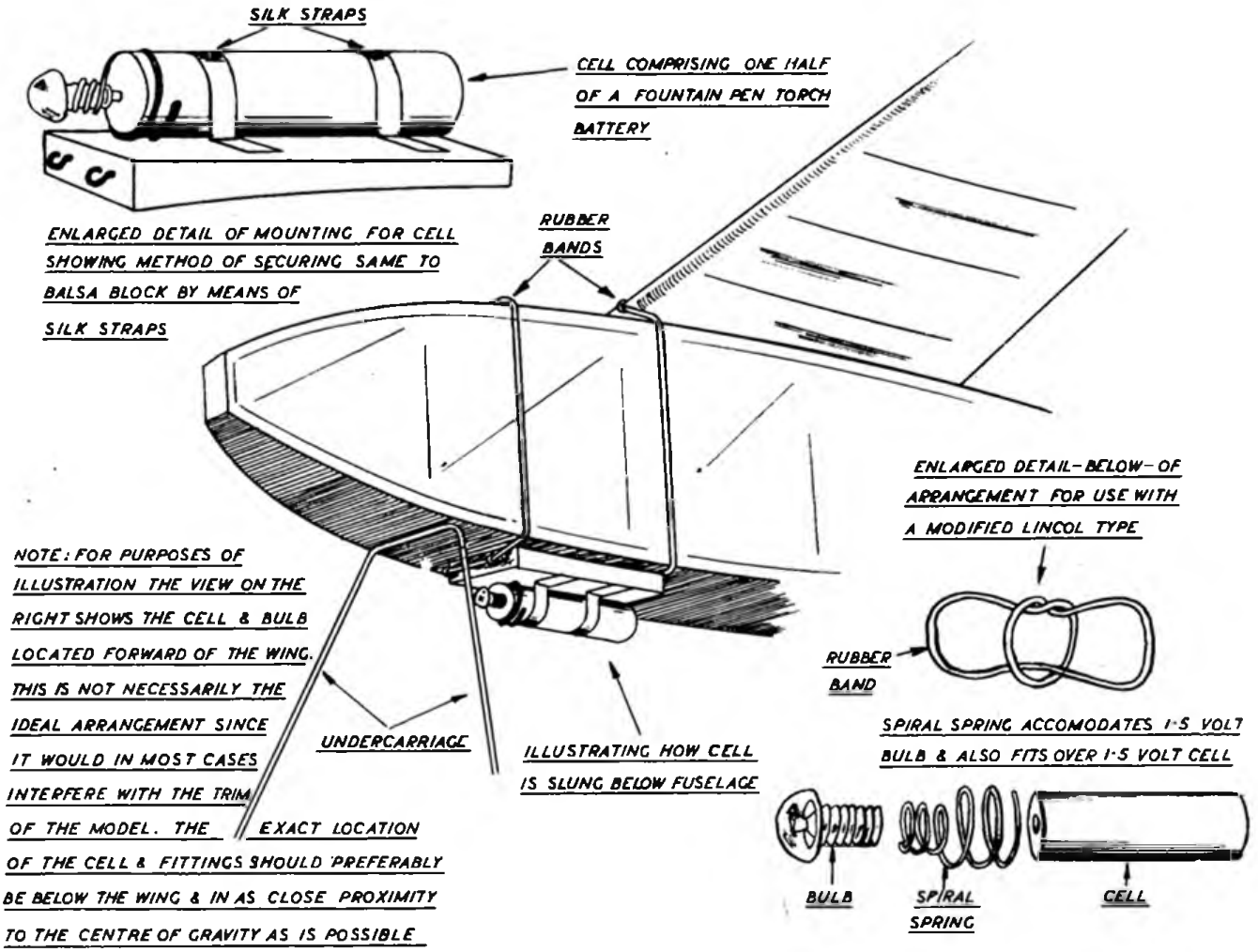
I think I have always been a night bird, for I can remember testing my first man-size model on a bright moonlight night. That *was* a thrill. The big white 'plane looked like a seagull as she swooped around in circles. All went well while I only gave her a couple of hundred turns, but when she was given leave to explore the upper air she flew straight for the moon and looked as if she'd reach it. At any rate, she disappeared from view, and, believe me, it's no joke to look for a lost 'plane even with the aid of a full moon.

Many a time since then I have spent an hour or so on the flying field, but I always took the precaution of using a powerful torch and never giving the motor very many turns. It was great fun and gave me a fellow feeling for those poor blokes who work the searchlights.

Last winter I decided that the only way to get some real sport would be to make the 'plane carry its own lamp. Then came the problems of weight, method of attachment, etc. The result was a simple unit that weighs half-an-ounce and costs 2½d. It can be made in ten minutes.

The battery—or rather, cell—is half of a fountain pen torch battery, costing 3d. at any branch of Messrs. Woolworths. The bulb is rated at 1·5 volts and costs one penny. The lampholder is merely a piece of springy steel wire of about 28 gauge, which is wound into a tapering spiral. The narrow end screws on to the bulb and the wide end grips the outside of the cell firmly. This holder has several advantages. It is simple and light, while it acts to some extent as a shock absorber for the bulb. By screwing the bulb in or out the light can be switched on or off.

The method of attaching the "navigation light" varies with the design of the 'plane. My sketch shows a simple attachment used with a (modified) Lincol type. A rubber thread band is tied round the cell and sprung tightly on to the clips holding the rear legs of the under-



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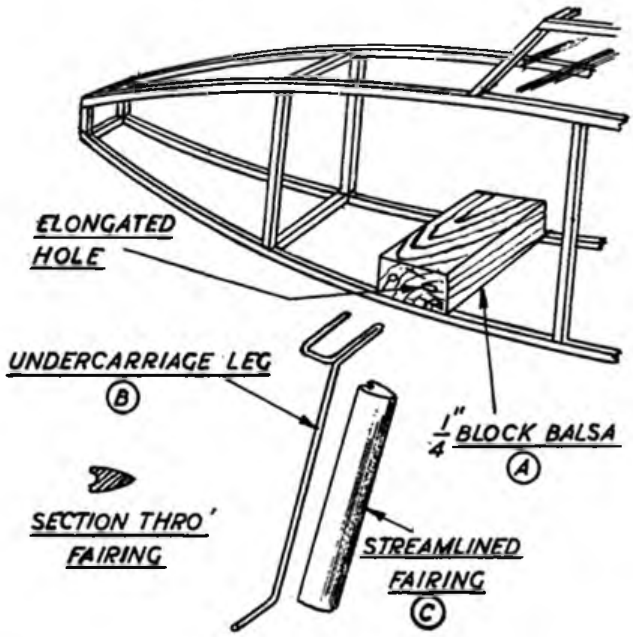
carriage. The only drawback to this method is that the lamp is apt to slip forward in the case of a heavy landing, and this upsets the balance of the 'plane. On this account it is necessary to mark the exact position of the lamp and check it before each flight. If desired, a piece of sticking plaster could be added to make everything stay in position. For 'planes which have the undercarriage set far forward the simplest method is to mount the lamp on a piece of $\frac{1}{8}$ in. balsa about four inches long, and slip this under the wing bands. Other methods will readily suggest themselves, but the main point is to keep the weight as low as possible. In some 'planes it might be worth while fitting the lamp well forward, but generally the best place is directly below a point one-third back from the leading edge of the wing. If this is carefully done the trim of the 'plane need not be altered.

My first trial of the lamp was with an old Lincol type. There was snow on the ground and a sleety shower was falling. The tissue of the wings was so limp that I didn't expect any more than low and speedy "hops." After putting on a hundred turns, under the shelter of an umbrella the 'plane was hand-launched and did a nice little flight of about 50 yards. Next I put on 300 turns. A poor launch made her heel sharply to port and she climbed steeply and shot across the field, narrowly missing two huge trees and soaring over several small ones. Next she headed straight for a house, missed that, and set off for an air survey of several back gardens. By this time all I could see was the tiny red glow from the lamp, and this finally glided out of sight. After a hurried dash along a lane, through a garden and along a road, I came to the field where she had apparently landed. A tiny spot of light in the middle of the field told the tale, and she was none the worse for her adventure. Thus was proved the great advantage of a lamp attached to the 'plane, for I know of few more difficult jobs than spotting the whereabouts of a white model at night in a snow-covered field.

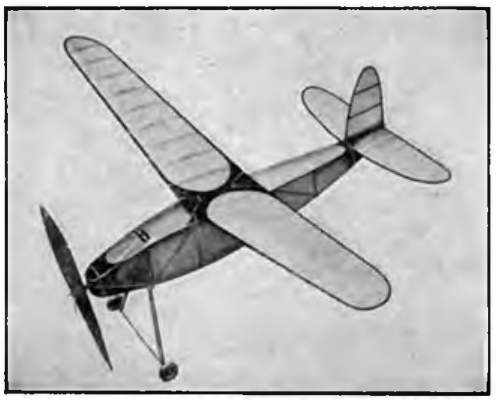
AN UNDERCARRIAGE FOR LIGHT TO MEDIUM WEIGHT MODELS

By A. C. BOSWELL



THIS undercarriage is very simple to construct, and yet it is also very efficient. Being of the cantilever type, it is neat in appearance, and is useful on scale models. It is detachable, and can be used on almost any shape of fuselage.

"A" is a piece of fairly hard $\frac{1}{4}$ in. sheet balsa, which is cemented firmly into the fuselage. "B," the undercarriage leg, consists of a piece of music wire bent into the shape shown. It is plugged into holes which have been forced in block "A," as shown. It will, in most cases, be found desirable to stiffen the undercarriage leg with a balsa fairing, "C." This is cemented and bound with tissue to the wire.



Span 28in. Length 19½in. Weight 2¾ oz.

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THE OLD PRETENDER

By C. A. HAWKES

" I've had dealings with them, and I know."

" I DON'T hold with these aeroplanes, model or otherwise," said the old man, truculently, as he seated himself more comfortably at the bench outside the little public-house. " I've had dealings with them, and I know. Let me tell you we had one in this very village before you was born. A real one, I mean, that carried a man in it.

" Belonged to Eli Brown, it did, who used to live in that little cottage across the green there. Eli always was a bit queer in the 'ead, you know; when 'e was at school 'e used to tell us that poachin' wasn't honest, and as he got older he got worse. Eli was about forty at the time I'm tellin' you about, and he wasn't married—for good reason too. I ain't sayin' he was downright ugly, mind you, but he certainly was the plainest lookin' mortal the Lord had ever made and let live.

" I went with Eli quite a bit in those days, and I knew he had got his eye on Widder Bygrave; but then, on account of there bein' a cottage and a bit o' money attached, several others was tryin' to hang their hats up there, and of course Eli didn't stand much chance.

" I don't know whether 'e got so disheartened that he wanted to do away with 'imself, or what it was, but any rate one day he told me he was goin' to make an aeroplane, and I—not knowing any better in them days—offered to 'elp 'im. Eli had got plans already drawn, and we started work in the barn at the back of 'is cottage. We got Will Anderson, the blacksmith, to make the iron parts, while Eli and me got on with the wooden framework. We had a couple of old wheel-barrer wheels for it to stand on, and we put a seat for Eli in front. We covered the framework with some old curtains Eli had by him, and afterwards painted the whole thing bright yellow. It was driven by elarstic, like yours, mister, but instead of a propeller it 'ad flapping wings like a bird. Eli called it a hornithopterer or something, but, as I said, he was always daft.

" After working on it nearly all the winter we 'ad it finished; and one spring morning we wheeled it out into the field behind the barn. Half the wimmin and kids and all the dogs in the village came out to watch us. Eli climbed into 'is seat, while I wound up the elarstic from the back with a big 'andle.

" ' Well, I'm off ! ' shouts Eli when I 'ad finished; and almost before I could get out of the way he was flappin' across the field like a great yeller duck. I had never expected it to move at all, and I was too surprised to look the other way. When it was about 'alf-way across the field it rose off the ground and went flappin' away over the trees, with Eli wavin' like mad, and was soon out of sight.

" I 'ung about that field pretty near all the morning, waiting for Eli to come back. At last, about ten minutes before closing-time, just as I was going to get 'elp to look for 'im, I saw a dot in the sky over Alf Juggs's pigsty, and I knew it was Eli. He came nearer and nearer, and landed close by me.

" It was wonderful, Joe," he ses to me when he got out. " I've been flying over 'alf the county. It was wonderful. All the country spread out under me, with the trees and 'ouses looking like toys and the—still, you can see for yourself—it's your turn now."

" ' No thanks ! ' I ses, very sharp. ' I may be daft, but I ain't daft enough to go up in that contreraption.' We argued about it for a bit, but I was firm, and in the end we agreed that Eli was to do all the flying.

" Eli used to go up pretty near every day after that, although at first there was a terrible hue and cry from the whole countryside. People complained that Eli 'ad scared their children and 'orses, and one old woman even tried to make out her hens wouldn't lay after Eli 'ad flown over. It wasn't only the airyplane that frightened people—that was bad enough—but Eli's face lookin' over the side make it an 'undred times worse.

" After a time, 'owever, the farmers got together and offered Eli a job. This place 'ad always been pestered out with birds, jackdaws especially—they nest over by Widder Bygraves's place, in them holler trees. Well, as I was saying, the farmers round 'ere got together and offered to pay Eli sixpence an hour for flying low over their fields to scare off the birds. Eli accepted the job, and he was flying over their fields pretty near all day. The farmers was very pleased with the results, and Eli might 'ave done very nicely out of it if only he had stuck to business.

" But as it was, the silly fool would go an' circle over Widder Bygrave's 'ouse between whiles. When he first did it he so frightened the ole gal that she pretty near 'ad highstirricks, but after a while she got used to 'im, and would wave back whenever he flew over.

" I was doing a bit of gardening for the Widder at this time, so I got my information straight from the 'orse's mouth, so to speak. The Widder would come out in the garden and ask me all sorts of questions about Eli, and every time he flew over she would come running out of the cottage to wave to 'im. I began to think that maybe

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Eli wasn't quite such a fool after all. One day, after I 'ad told the Widder that Eli didn't drink, she gave me a shilling, and the same evening, when I met Eli in the " Red Lion," I told 'im about it, and he stood me a pint. Which just goes to prove it don't always pay to tell the truth.

I was still working at the Widder's place, and Eli's flights over it became more and more frequent. Then one day he tried to be too clever. He came swooping low over the garden, and before he could pull out straight again 'e 'ad gorn straight into them trees what grow by the garden. About a million jackdaws flew out, of course, squawking like mad. The Widder came rushing out of the cottage, and when she saw what 'ad 'appened she did some squawkin' to. But that didn't 'elp Eli, because he was stuck, with 'is airyplane, up one of the tallest trees in the village.

" When we got nearer to the tree we could see Eli was all right, although his airyplane was smashed up considerable. I left the Widder 'owling at the bottom of the tree, and went off to the village to get a ladder.

" It was a long time before I could get a ladder long enough, and it was getting dusk by the time I got back to the Widder. She was in a terrible state, because while I 'ad been gorn Eli had slipped considerable, and now he was only 'eld safe by the sharp end of one broken branch bein' 'ooked in the seat of his trowsis.

" We worked all the evening cutting Eli down. I wish you could 'ave seen us, mister The ladder was only just long enough, and we only 'ad lanterns for light. We had to cut off whole branches before we could get at 'im, and all the time the Widder stood underneath hollering at us to be careful When at last we did get him down he was shakin' all over.

" ' Poor feller, he's all nerves,' ses the Widder, taking his arm. ' Come inside, Eli, I've got something in a bottle that will soon fix you up.'

" All those wot had been looking-on stepped forward and said wot about their nerves, but the Widder was already going into the house with Eli, and although they had spoke quite loud, she couldn't 'ave 'eard, because she slammed the door in their faces.

" I went back to the village with the others, and most of us found our way into the bar here. We was all talking Eli and the Widder, and the scandal that flew about was something shocking In the midst of all the row I saw Eli beckoning to me from outside the window, and I sneaked outside to see him.

" ' I've done it,' he whispered to me, very excited.

" ' I should say you 'ave,' " I said " That tree will never look the same agin."

" ' No, I don't mean that,' he said, getting very cross.

" Well, I'm off," shouts Eli.

' I mean the Widder's took me. She's mine, Bill ! When I got in her cottage I plucked up 'eart and asked for her hand. We're goin' to be married at the end of next month.'

" I was so took back that I let him go off whistling, without trying to find out any more news. 'Owever, by the time I realised what was what 'e 'ad already gorn, so I went back into the bar and told the others

" You never heard such a row in all your life. Those wot had had ideas about the Widder themselves said that Eli ought to be made to spend the rest of 'is life pertater diggin', while the others said as 'ow they 'oped they would be a very happy couple, and that anyway Eli deserved to marry the Widder—whatever they meant by that.

" After a time, 'owever, they began to calm down, and by closing-time even the Widder's former admirers was all takin' her character away, and Dave Penney even went so far as to say he had heard rumours about how her first 'usband 'ad died."

(*Concluded from opposite page*).

motor can be prevented by inserting a paper motor tube between the nose-block and the rear hook. This is made by wrapping one or two turns of strong paper around a dowel or broomstick of ¾ in. diameter, cementing the surfaces well as you proceed. A special bulkhead can be made to hold the end of the tube nearest the rear hook. This will keep the sides of your " crate " intact, and save repairs.

(1) Before assembling a small model, always paint it first, supporting the parts on pins. This ensures a good neat finish, without any tell-tale finger-prints or smudges.

(2) Thin music wire can be used as struts and undercarriage on small models, thus saving time making those parts out of wood.

(3) White paste made from flour and water or flour and thin glue makes good wing fillets, and can be used with success on a streamline model such as the " Hurricane," where the curves are difficult to shape out of wood.

(4) Cardboard, sometimes used for spools of thread, may be used for cowlings and end rings, as they can be sandpapered to shape.

(5) For larger models the caps from toothpaste tubes, and the parts on to which they are fastened, can be used for gas caps

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HERE'S HOW —— TO DO THAT JOB!

Useful Tips for all Model 'Plane Fans

By J. B. DUNNETT

Floats and Skis.

GETTING floats to rise from the water is pretty difficult, but if the following additions are made, no difficulty should be experienced.

(1) Place small bits of drinking straws through the float vertically, directly behind the step. This will allow air to get under the step and help the 'plane on its way up.

(2) Waterproof the float with lacquer or varnish; banana oil will *not* waterproof it.

(3) To overcome skin friction between the float and the water, wax the bottom of the float with car or floor wax, rubbing it in thoroughly.

With these aids your 'plane will take-off easily.

Skis are also tricky to perfect, and are best made from bamboo. The best strut on which to attach them to is wire. Get a straight piece of bamboo free from knots and shave off the pitch. Use the shiny portion as the ground side. Steam the thinned bamboo and set it in the desired shape with pins as a form. Place the form and bamboo in an oven and heat for several minutes. After this heating the bamboo will retain the desired shape. Join the wire strut or brace to the fuselage, slightly in front of the centre of gravity, and cement firmly. Hinge the ski to it so that the ski swings freely. Balance the ski slightly tail heavy. Now tie a thread from the fuselage to the rear of each ski, so that the ski will be parallel to the ground when the 'plane is gliding. Wax the bottom of the skis to facilitate the take-off.

Model machine-guns can be made out of sections of drinking straws and a piece of balsa to the desired shape. A button makes an excellent gun drum after the holes are filled in and painted over. Bent pins make good cocking handles and grips for machine-guns.

Instrument boards may be simulated by cutting a good grade of glazed white paper to the shape of a panel board, and drawing a dial on it with Indian ink, and pasting it on a balsa background. Cover the whole with a piece of Cellophane to the shape of the panel. This gives a realistic glass shine to the dials.

Always follow the plans accurately. Don't try to change them, and don't guess at dimensions. Use a jig on the fuselage to get it correct. If the fuselage is warped out of shape, it will sometimes affect the line of thrust to such an extent that a model will not fly. Also changes in the plans will mean that some of the parts will not be strong enough, and the 'plane will not balance well.

Don't try to save money by using cheap balsa. Balsa wood is very delicate. It warps easily and breaks easily. A good grade of balsa is absolutely necessary. A straight-grained, firm balsa will benefit a model, whereas a flimsy, soft kind will ruin it. Warped parts are responsible for the failure of many flying models. A warped fuselage will change the angle of incidence of the wing with the line of thrust, causing the 'plane either to dive or stall. The propeller, too, should be made exactly as the plans call for, without warp. The blades should be sanded enough, so that the light from an electric bulb can be seen through them. Be sure that the propeller balances perfectly. If you balance your 'plane with lead you are shortening the life of your model. The 'plane may balance all right with the motor wound, but when the motor is unwound the 'plane falls heavily, often damaging vital parts.

Always glue flat washers to each axle hole on celluloid wheels, otherwise the axle wire will tear the celluloid and enlarge the hole at the first hard bump, causing the wheels to be wobbly. To protect your rubber from being cut by piano wire shafts or rear hooks, cover these units where they contact your "power plant," with rubber tubing cut from rubber-covered electric wire, or wind $\frac{1}{8}$ in. strips of electrician's tape around the hooks.

How to Make Scaarf Rings.

Round reed or rattan is good for making scaarf rings for mounting guns of the Lewis type on two-seaters and bomber models, but this material is hard to bend into a perfect circle by ordinary means. However, it can be done if the reed is wet and wound around a small bottle or can of the desired size, leaving about $\frac{1}{2}$ in. overlap. This overlap is to be used for a long, tapering joint when cemented. Secure the reed at two or three points with narrow ribbons of surgical adhesive tape. Then warm it carefully over a flame, watching to see that the moisture sizzles out of the reed but that the reed does not char.

Turn it around slowly until the whole circle is dried out. Then take it off and cement the ends together with a tapered joint.

To make a solid model look well, even if you have no enamel paints, try this method.

Sandpaper the model completely, and apply the first coat of whatever paint you have. Sand again with the same paper, and apply a second coat of paint. Spread on a coat of ordinary cheap glue. Sandpaper again and apply a second coat of glue. This will result in a shiny finish at a very small cost to the model-builder.

Imitation cylinders for radial engines can easily be made in the following manner. First take an ordinary cigarette and give it a coat of good fast-drying glue, and wind a length of fish line around the cigarette. When the glue is quite dry, give the fish line two coats of black lacquer or dope. When the lacquer or dope has dried, cut off cylinders of whatever size you need and take out the part of the cigarette left inside—i.e. the tobacco. This will give an imitation cylinder that is very light and looks very realistic. Rocker arms can be made for the cylinders with short lengths of strip balsa. Valve stems can be made by snipping off the heads of common pins and cutting them the length of the cylinder. Two rocker arms and two valve stems are cemented to each cylinder, and the completed job is glued to the crankcase.

Very often the usual process of bending bamboo over a candle flame results in burned wood. It can be safely and easily bent over the point of a hot electric iron. Balsa may be bent easily by softening it with heat applied by means of corks which have been soaked in boiling water. Finally, damage to a model by a flailing broken rubber

(*Continued at foot of previous page*).

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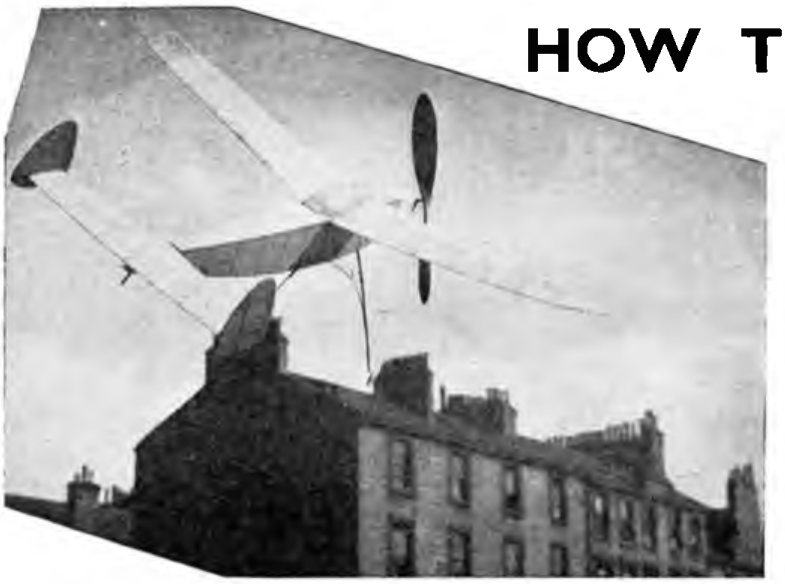
HOW TO PHOTOGRAPH



This is a good example of photography of the type described by Mr. Ross. The model has been posed . . . but with a natural background, which is much better than a flowered wallpaper!

A REAL thrill is to be had from making a photographic record of the models you make. You want something to carry around with you to show your friends. The model will be rather big for the pocket. A good snapshot is the thing. You get a strange thrill when you see it living on paper before your eyes. You fall in love with it for the second time. Remember, too, that actual models crash, get crushed, and lose their first fine splendour.

Almost anyone can make a thoroughly presentable photograph of a model aeroplane. You don't require expensive cameras and elaborate apparatus. All you require is some simple reliable equipment and some common sense.

The three main factors in photographing your model are :—

Good light,
Suitable background,
The angles of your shot.

Light.

Don't waste your time trying to take photographs in bad light. There *will* be good light some day. Have patience and wait for the light. If you want that brilliant metallic glint of your machine to show in your photograph you must have good sunshine. Wait for it!

Background.

The background can prove very troublesome. You require a plain surface much bigger than the model. This is rather difficult to find out of doors. The following make very good out-of-doors backgrounds—a school blackboard, a wide window blind, the reverse side of a large wall map. A white sheet or table cloth might do, but there is a danger of light glare with these.

The colour of the background is the next problem. Obviously, the colour of the model and that of the background must be in strong contrast. A blue 'plane against a blue background would give very poor results. You want sharp, clear cut lines. A black or a red background is suitable for light coloured machines. For dark coloured machines you require light backgrounds.

It is important, too, that the background should have an even plain surface free from patterns of any kind. The camera can play some queer tricks with backgrounds. Take no risks and have the background free from annoying details.

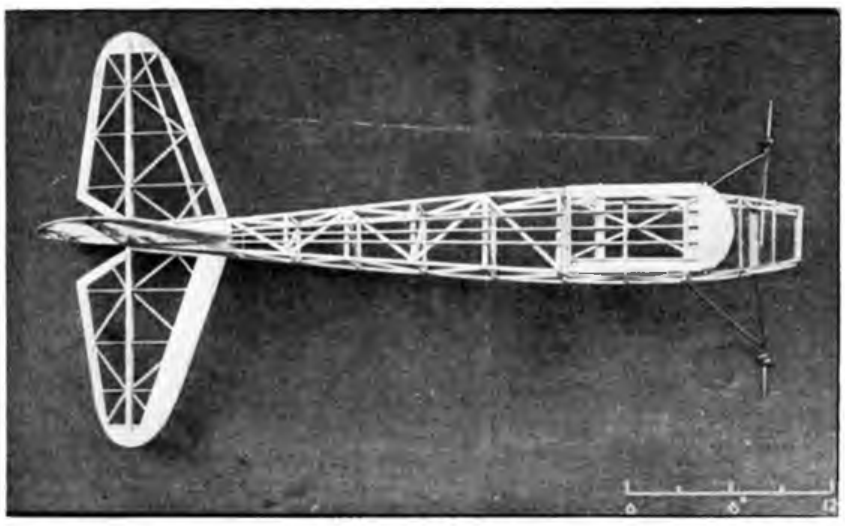
Angles.

A machine lying on the ground is difficult to photograph. Try it and you will see for yourself. The perspective will be all wrong.

Diagrams 1 and 2 show you how to get over the angles difficulty. The background is fixed in a *vertical* position. Note this carefully. Then, with drawing pins and thread you fix the model to the background so that the thread and drawing pins are not visible.

Why have the background in a vertical position and not flat on the ground? Diagram 2 supplies the answer to this question. With the background in a vertical position you can circle round the model, and the back of the camera is always parallel to the background and consequently to the model. With this method you can get any angle you please. You realise how difficult it would be to get a plan view of the machine if you tried to photograph it from above, with the machine flat on the ground. It would be well nigh impossible. It is quite easy if you have the machine fixed against a vertical background, and you have the camera in position *b*, Diagram 2.

Side views can be secured by placing the camera in positions *a* and *c*, as in Diagram 2. Here you realise why the background must be much larger than the model.



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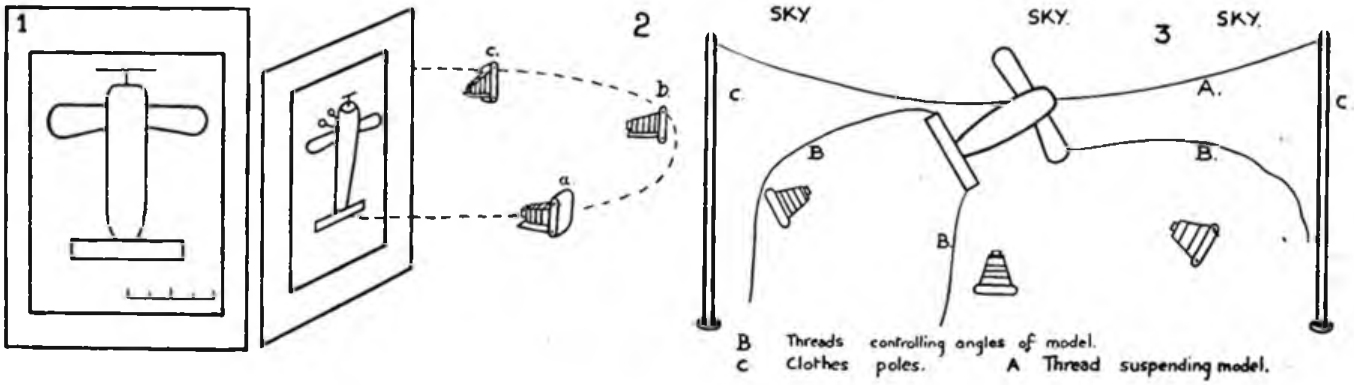
YOUR MODEL

By J. J. ROSS



A glance through the viewfinder from a side standpoint will explain this problem.

You may wish to emphasise the structure of the model on the underside. It may be something special about the undercarriage. This is easy. Simply fix the machine to the background so that the undercarriage is facing the camera.

A finished effect to the photograph can be secured if you draw a frame round the model in chalk. You can add details as to scale, stage of construction, name of model, name of designer, etc. It is a pleasant experience to see your name flourishing in the finished photograph of an impressive-looking machine.

In the Air!

After all, the place for an aeroplane is in the air. Can you photograph the machine in the air? You can! Perhaps not in actual flight (that is a very tricky business), but certainly you can catch you machine in the air.

Have a look at Diagram 3. It pretty well explains itself. An air photograph demands: Sky! Clouds! Tops of houses! Tops of trees! It is quite easy. In Diagram 3 the model is suspended by means of thread A. Threads B are used to control the angle of the model. Notice that the camera is always *under* the model. This secures the sky as a background. With threads B you pull the model this way and that until you get the angle you want. You will require some friends to haul on the cables at this stage to allow you to do the camera work.

This kind of photograph will look all right, then someone will say that it is a fake. The propeller is at a standstill! All right. Remove the propeller, and with a pencil work into your photograph a propeller—that fuzzy oval that represents a propeller in motion.

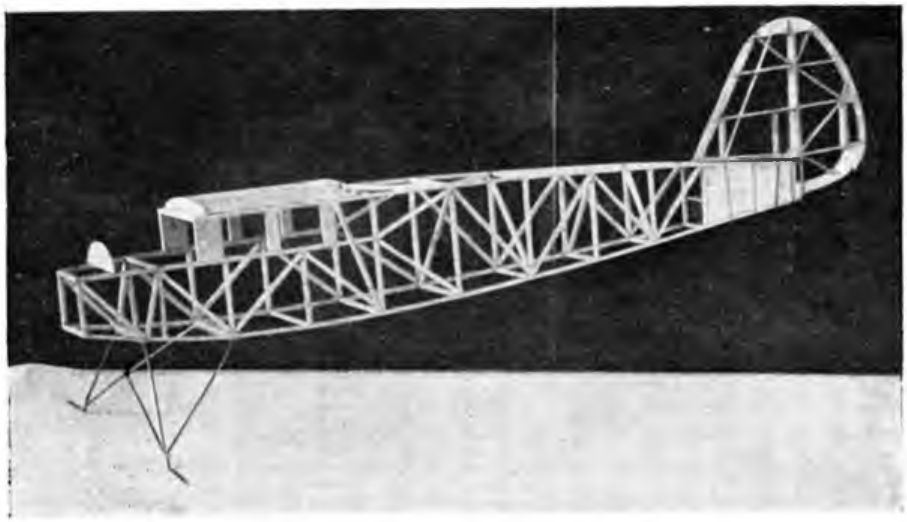
Stages of Construction.

An instructive series of photographs is one that shows your model growing from the blue print stage to the flying stage. Why not photograph the model stage by stage? The number of the stage, data as to scale and design are lettered on the background in chalk. If you do this you will have a fascinating record of the model of your heart from childhood until it comes to full maturity. Try it!

A Final Word.

Before you take a single photograph spend a long long time squinting through the viewfinder. Try to allow for every possible hitch. Go through every possible angle until you are thoroughly familiar with the model as seen through the viewfinder. Then shoot!

If you are a builder of small solid scale models, there is no limit to the realistic scenes you can portray. You can hang two fighters and a bomber up with white thread against a white background and obtain some remarkable shots of an aerial combat.



For smaller models of 1-72 in. scale, a portrait attachment is necessary. This extra lens may be obtained to fit most cameras for about 2s., and it will enable you to get much nearer the object to be photographed.

EDITOR'S NOTE.

We are always pleased to receive photographs of models built by our readers, and will pay for those published. The photographs should preferably be not smaller than postcard size, and should be sharp and clear.

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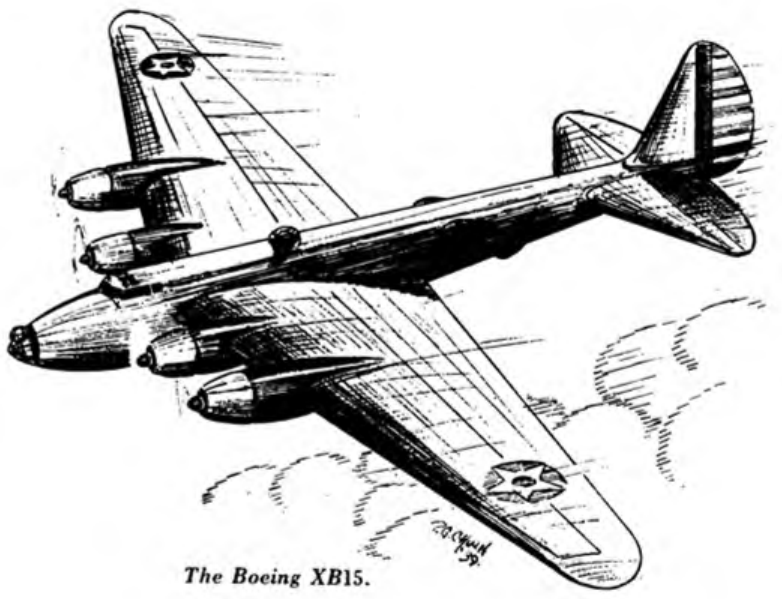
MORE DESIGNS FOR THE SCALE MODEL BUILDER

By P. G. CHINN



The Boeing XB15.

EARLY last November a battle was fought to a finish—not in Europe—not in China—and not with bombs or bullets, but in Washington, U.S.A., where " war " over the American Neutrality Act was waged. That " battle," as we all know, resulted in a victory for the President, for the U.S. aircraft industry—and for the Allies. The Arms Embargo was repealed, which will enable Britain and France to buy more aeroplanes, and for delivery of those already ordered to be resumed (Lockheed " Hudsons " and North American " Harvards " for the R.A.F., and Curtiss " Hawk 75A " fighters, Douglas DB.7 bombers, and North American trainers for the Armee de l'Air).

I am not going to attempt to predict the type of 'plane we shall order, but it is pleasing to note that America can sell us practically any type of machine, from primary trainers to long-range bombers. Another fact which should cheer those " dismal Jimmies " who wail about time taken for delivery, is in a report issued by the Aeronautical Chamber of Commerce of America in November. This stated that the United States aircraft industry was at that time capable of turning out 1,250 'planes per month, and was making a substantial increase on this figure within a very short period. Added to this is the fact that the U.S. Government is to subsidise aircraft firms in order that output may be further increased by the setting up of new factories. Thus the manufacturers should be able to attend to any fresh orders that the Allies may place, as well as the large contracts made by America's own air forces and other foreign governments. To under-rate the strength of the German Air Force would be foolish, but there is little doubt that American military aircraft are more than equal in fighting power to those of the Nazis. The nine French pilots who, some weeks ago, engaged twenty-seven Messerschmitts, shooting down nine of the enemy with no appreciable damage to their own machines, were flying American Curtiss Hawk 75As, and these are far from being the best fighters that United States manufacturers are at present capable of turning out.

Reports issued just after the lifting of the arms ban stated that Britain and France were considering the purchase of a number of four-engined bombardment 'planes from the Boeing Company, so I will deal first with the famous Boeing Model 299, designated B.17 in the U.S. Army, and known the world over as the " Flying Fortress." The prototype appeared in 1935, and created quite a stir in the aeronautical world when it flew from Seattle to Dayton, a distance of 2,100 miles, at an average speed of 232 m.p.h. Eventually this machine crashed, which also caused a stir, but it was afterwards established that the accident had no bearing on the airworthiness of the 'plane, and subsequently orders were placed with the manufacturers for a number of B.17s.

Fitted with more powerful motors, the production type has a speed of approximately 260 m.p.h., and a weight of 22 tons. The B.17 is undoubtedly one of the finest examples of streamlining on a large aeroplane, and forms a striking contrast to the slow and ugly-looking bombers of Russia, which has also specialised in large multi-engined military 'planes. The machine is, of course, entirely constructed of metal, except the elevators, ailerons, etc., which are fabric-covered for ease of control. The big cantilever wing is fitted with trailing-edge split-type flaps and mounts four Wright "Cyclone" motors, totalling about four thousand horse-power for the take-off. Triple-blade controllable-pitch propellers are fitted.

A number of gun turrets are placed on the fuselage in various positions which, it is said, cover the whole field around the bomber, and leave no blind-spots of which an enemy fighter could take advantage. The undercarriage is, of course, retractable, and swings forward into the nacelles of the two inboard engines. Height may be maintained on any two motors, and the range of the B.17 is approximately three thousand miles with a five ton bomb load.

A later version of the Boeing 299 is the B.17B, and forty of these were ordered for the U.S. Army Air Corps last summer. Apparent differences between this and the earlier models are the improved nose section and turret, and neater lines of the motor nacelles. Less noticeable are the special exhaust-driven superchargers, which enable each engine to maintain its 1,000 h.p. output in the less dense atmosphere of the higher altitudes. Rumours are current that the B.17B is capable of nearly 300 m.p.h. This would not seem to be a too optimistic estimate, since the first B.17B flew from Burbank, California, to New York in less than nine and a quarter hours, an average speed of 250 m.p.h.

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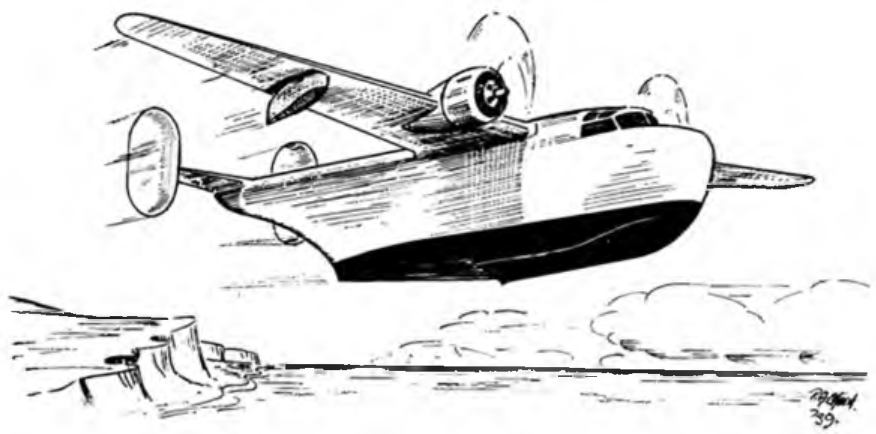
Principal dimensions of the B.17 are as follow :— Span, 103 ft. 9 in. ; chord, 19 ft. ; length, 68 ft. 9 in. ; height, 14 ft. 6 in. ; and span of tailplane, 33 ft. 9 in.

Although a pretty large aeroplane, the B.17 is more or less dwarfed by the Boeing XB.15, a really gigantic machine completed in 1937. In spite of the fact that it weighs more than thirty tons, and is only slightly more powerful than the smaller Boeing, the XB.15 is said to be even faster. Range is definitely greater, possibly five or six thousand miles.



The Consolidated 31, *in use by the R.A.F.*

The " Super Fortress," as it has been dubbed, is mid-winged instead of low-winged, but otherwise its general design follows that of the B.17. It has an extra " blister " turret under the nose, and each landing-gear strut is fitted with two wheels. A circular turret is situated on the top of the fuselage, and this will house an automatic " cannon." The engines are Pratt and Whitney " Wasps," type R-1830, of 1,150 h.p. As on the B.17, complete de-icing equipment is installed, consisting of rubber " boots " on the leading-edges of the wing and tail surfaces, and slinger-ring hubs on the airscrews. All the fuselage compartments are sound-proofed, and are provided with an air-conditioning system. There are complete sleeping-quarters for the personnel, in fact, the whole crew may live quite comfortably aboard the XB.15, there being a galley equipped with ice-box, electric hot-plate, percolator and soup-heater ! The machine is fitted with a 110-volt A.C. electrical system generated from two auxiliary petrol motors, instead of the usual low-voltage engine-driven equipment.

The XB.15 has a wing span of 152 ft., a maximum wing chord of 29 ft. 1½ in., an overall length of 90 ft., and a tail span of 49 ft.

Both the standard "Fortress" and "Super Fortress" should make attractive solids. They should be finished in natural dural colour, for although photographs have appeared of these machines in camouflage paint, this is not adopted for normal peace-time flying. The gun-turrets can be made in various ways, but one of the best is the " layers of dope over a former method." This was well described by Mr. J. Symonds in the December issue of AERO-MODELLER. For those who possess or have access to a lathe, there is another method of which I have just heard, and which I should imagine yields excellent results. Briefly, the process is to obtain solid "lump" celluloid, and machine it in much the same way as a piece of wood is turned. From photographs the results appear to be very realistic.

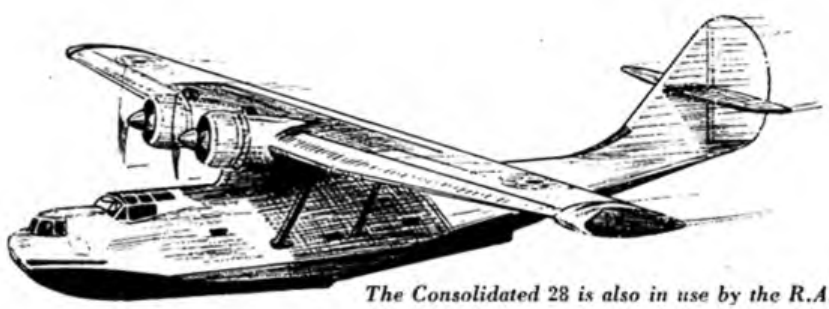
Several months ago, as most of you will remember, the Air Ministry bought a Consolidated Model 28 flying-boat from the United States. It merited quite a bit of attention, since it flew the 5,700 miles from San Diego, California, to Felixstowe, England, in two hops, and, as the newspapers put it, " still had enough petrol for another fifteen hundred miles."

The Consolidated Model 28 is a twin-motored semi-cantilever high-wing monoplane of metal construction. It is in wide use with the U.S. Navy, and has also been purchased by several foreign governments and private concerns. It has gained a great name for itself in the numerous long-distance flights it has made in various parts of the world. The Navy patrol-bomber version is known as the PBY type, and is fitted with either Pratt and Whitney or Wright radial engines totalling about 1,800 h.p., and long-range fuel tanks permitting a range of up to 4,000 miles and a speed of 206 m.p.h. It can reach an altitude of 30,000 feet, and has accommodation for a crew of six. There are four machine-gun positions.

Much larger, however, and comparable with our Short " Sunderland " four-engined patrol boat (December issue of AERO-MODELLER) is the four-engined Consolidated PB2Y—1. In October, 1938, this machine flew non-stop across America from the Pacific to Atlantic coasts in 12 hours 50 minutes, averaging two hundred miles per hour, which is certainly remarkable for a twenty-eight ton flying boat. Several other long distance flights have been made since. The PB2Y—1 is a full cantilever high-wing monoplane, metal construction, of course, and, like the Model 28, features the use of retracting wing-tip floats. It is powered with four P. and W. " Twin Wasp " motors. No figures have (at this writing) been released, but some idea of the PB2Y's performanace may be judged from its trans-continental trip, which was made with the ship in an overloaded condition.

Another machine of the same type is the Sikorsky S-44, otherwise known as the U.S. Navy's XPBS—1. Like the Consolidated, it is a high-wing cantilever monoplane, has four " Wasp " motors, and is heavily armed with machine-guns, possibly the American Armament Corporation's big 37 mm. shell-gun, too.

Both these ships appear to have nose and tail turrets similar to the " Sunderland," although they are bigger



The Consolidated 28 *is also in use by the R.A.F.*

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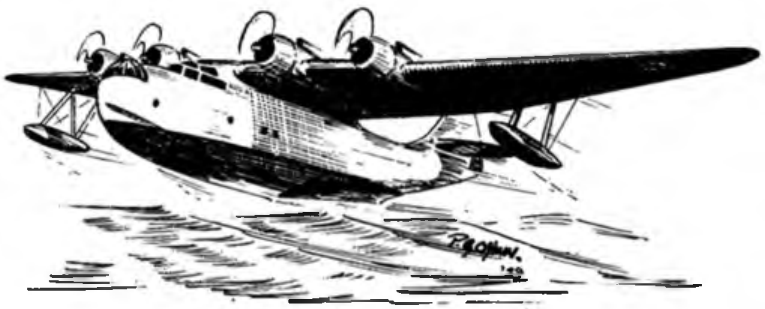
and heavier than the British boat. The Sikorsky has a span of 126 ft., a chord of 19 ft. 6 in., and a length of 78 ft. American Export Air Lines plan to use a commercial version of this machine on a fast New York—Southampton passenger and mail service early next year.

Probably the most advanced flying-boat in the air to-day is the Consolidated Model 31. It deserves a lot more attention than I can give it here, but to start with it was designed, built and flown in less than ten months, which is something of an achievement, since most large prototypes take two or three years, sometimes longer. Its design features the use of a new type of thin aerofoil section in fairly high aspect-ratio wings, a completely retractable tricycle beaching-gear and retractable floats. The two engines were also experimental, and when installed in the new machine were flown for the first time. These are Wright eighteen-cylinder " Duplex Cyclones," each of which is rated at 2,000 horse-power for the take-off, thus making it the most powerful radial engine in the world.

The Consolidated Model 31 was designed for operating either as a naval patrol-boat or as a commercial air liner. As the latter it is capable of accommodating fifty-two passengers. Its loading capacities as a military aircraft have not, of course, been disclosed, neither have any other performance figures, but unofficially it is credited with a speed of at least 300 miles per hour, which is phenomenal for a fifty thousand pound flying-boat. Even more astonishing is its range, which is estimated at 12,000 miles maximum—two hops to go round the world!

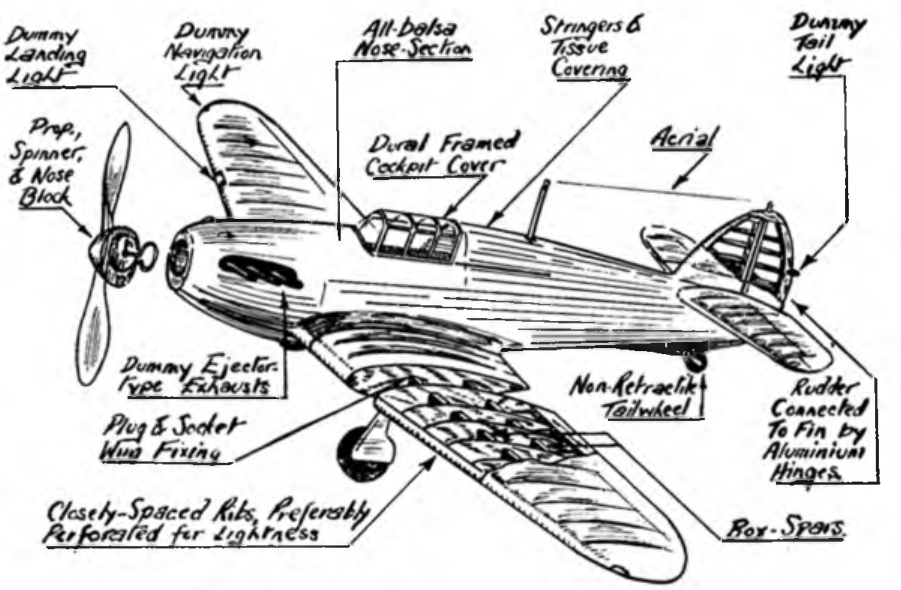
Empty, the machine weighs 25,000 pounds. It has a span of 110 ft., a maximum wing chord of 14 ft., a height of 23 ft., and a total length of 73 ft.

None of the designs with which I have dealt so far in this article have been suitable for flying models, and



The Sikorsky XPB5-1.

so for the flying-scale enthusiasts I have prepared a rough drawing of a typical Hawker " Hurricane " model. The " Hurricane " is one of the most popular flying-scale designs, and since it is now engaged in the war its popularity will, no doubt, be ever increasing. The sketch will, I hope, help those who construct a model of the " Hurricane."



There is no need to go into a lengthy description of the full-size machine, as it has been dealt with extensively in most aeronautical journals and books. It will suffice to say that it differs from the " Spitfire " in that it is slightly larger, is mainly fabric-covered, is about 35 m.p.h. slower, and has an initial rate of climb of 2,400 feet per minute.

Analysing the general design of the " Hurricane," we first notice that it has a generous wing-area (257·5 sq. ft.), and clean lines, factors that contribute much to the performance of a flying model. No increase in fin area should be necessary. To maintain longitudinal stability, however, the tail-plane would have to be enlarged, and the dihedral angle is, of course, insufficient to ensure lateral stability. As regards structural design, this depends on whether the modeller has any preference for any particular type of construction. The fuselage, for instance, could be of the " backbone, former and stringer " type, or could be built with formers and stringers on a rectangular-section frame. The full-size machine is built by the latter method. The centre-section, complete with undercart, would best be built rigidly on to the fuselage. Wing panels can then be attached by the plug and socket method, making them conveniently removable. The landing-gear could be made retractable, but on a model where maximum possible performance was desired, it would be best to make this detachable rather than retractable. Do not forget to make the propeller " knock-out-able " if you intend making H.L. flights without the undercarriage!

Finish and detail are left to individual choice. Those who are willing to sacrifice performance for extra realism will add interior cockpit fittings, navigation and landing lights, pilot-tubes, etc., and will finish the model in standard shadow shading camouflage.

Next month I hope to deal with a few of the vaunted German military aircraft that are proving to be such a puzzle to everyone, and shall also provide some " cut-away " sketches of two of the aircraft I have described, for the guidance of those who wish to build flying scale model aircraft of these 'planes.

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CLUB NEWS

By the "CLUBMAN"

Members of the Halifax Club, with Dr. and Mrs. Thurston and other visitors. Len Stott is holding the Northern Challenge Cup and "The Aero-Modeller" Northern Rally Championship Cup.

BRRRR! And even more Brrrr's! As I write this the frost is thick upon the windows, and as far as I can see through the accompanying fog the land is under a poetic mantle of white snow. This "beautiful winter" stuff is all very well for the first few hours or so, but then one starts to feel the inevitable chill—and the "cold, still purity, spangled with fairy crystals," loses a lot of its attraction. Who can be poetical and appreciate the scenery with a ruddig doze ad a 'ackid corf? Where's thad whiskey ad lebod—thads sub combensation ad any rade!

Joking apart, I wonder how many of you have tried model flying in such wintry conditions. Though we don't get many days like this, I have occasionally flown when the thermometer is knocking at the zero mark, and though I will not go so far as to say that it was pleasant, there was a keenness in the air that made running 'ell for leather after a model something of an enjoyable interlude, not always appreciated when the temperature is around the 80s. Generally speaking also, when hard frost is about, the usual high winds are absent, and good trimming tests can be conducted—but mind the rubber motors. I find that cold has just as disastrous an effect on rubber as excessive heat—and don't get a whack over the knuckles by the propeller, Boyoboy, does it make you jump!

Black-out evenings have undoubtedly had a beneficial effect on aero-modelling interest, and I know of a great number of newcomers to the game who have been attracted by the technical and craftsmanship intricacies of this—to us—finest of all sports. Many clubs report increasing memberships, and I am confident that, with intelligent procedure, the present unhappy period can have a stimulating effect on the already healthy club movement in our midst.

I am interested in, and extremely pleased to see, the way in which certain clubs are promoting general good-fellowship among other clubs in their districts. At the suggestion of Mr. M. R. Knight, all clubs using Wimbledon Common for Sunday flying are working on a rota scheme, so that, no matter what Sunday you happen to turn up, you will always find a number of fellow enthusiasts on hand to confer and combine with. (This, of course, is subject to the usual weather limitations). After all, membership of Club A should not prevent a companionship flying day with Club B, and I foresee great possibilities in this friendly co-operation.

Mr. O'Neil, on behalf of the Surrey Club, has extended an invitation to all petrol modellers who find their activities restricted owing to confiscation of grounds, etc., to use the Surrey Club field (please notify the secretary first, so that the thing can be worked properly!), while the Lancashire Society threw open two of its pre-Xmas indoor meetings to all comers. This invitation is now extended to all the early 1940 meetings just arranged, the dates of which are given herewith :—

January 9th.
February 7th and 22nd.
March 12th and 30th.

All these meetings commence at 7 p.m. with the exception of the final event, which starts at 2 p.m., and will take place at the Manchester College of Technology, Whitworth Street, Manchester.

Willingness to help and co-operate is one of the fine things that this war has created, and this exemplary spirit is to be encouraged. I have occasionally met what can only be classed as "vindictive" competition among individuals and clubs, and the sooner we all get on to a real friendly and help-each-other basis, the sooner we shall reach that Utopia we read about. I remember Mr. Houlberg, speaking at a Northern Club dinner, stating "the success of any club is a direct reflection of the energy and efficiency of its officers," and I would submit to all officials that the ultimate success and efficiency of your own club will benefit by a willingness to co-operate and confer with other clubs in your district. Much turning over of old ground can be eliminated in this way, and a lecture prepared by your club may be welcomed by the others in your locality—while they in return may have have something of interest to you.

Mr. Knight made a strong plea for CONTINUITY of the S.M.A.E. and clubs, and I would add to that an equally strong call for CO-OPERATION. Never was there a truer saying that "United we stand," and we now have a golden opportunity of proving that fact, and simultaneously consolidating our own position. The hard work put into the formation and building up of clubs should not be indiscriminately thrown to the winds for the Duration, and I look forward to the time when, with hostilities in the dim and distant past, we settle down to a normal existence, and fly our models in peace, and in even greater harmony than in the past.

I have been pulled over the coals a bit this month owing to a remark made in the December issue regarding the outcome of certain activities directed against the flying of models on Sundays. Actually the trm used was not mine, but part of the report sent in—and included as such, but I feel the exception taken calls for a slight

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(Top left) The aero-modeller's delight, or who spilt the glue on the eiderdown! A model built by Mr. N. Fowler, of the Northampton M.A.C.
(Top middle) An unusual model—a "Short Sunderland"—built by a Belgian enthusiast.
(Top right) "Standard Buccaneer," built by Mr. Matthews, of the Woodford M.A.C.
(Bottom left) N. Shatford (Kettering and D.M.A.C.) with his gas-buggy.
(Bottom middle) A group of Buenos Aires modellers out for a competition.
(Bottom right) 42 in. span "Bristol Blenheim," built by a member of the Wallington M.A.C.

explanation, and, of course, an apology to those whose susceptibilities were disturbed.

There are two subjects on which I steadfastly refuse to argue or debate, e.g. politics and religion, *but* I reserve the right to follow my own inclinations without let or hindrance from others, providing that I obey the natural decencies required of us all. At the same time I expect we have all met the type of person who wishes to impose his own beliefs and conduct on his fellows, regardless of whether said fellows are desirous or in need of their felicitations—and whether their action is right has been debated from time immemorable, and never gets nearer a satisfactory solution.

I have one answer to those who would debar us from flying our models on a Sunday. Does such a practice lead to a criminal or wasted life; and has the aero-modeller ever tried to prevent his opposite number from attending Church, or following his private spiritual inclinations? I think not. Why, then, should these people make such decided efforts to forcibly deprive the aero-modeller of his facilities?

Well, that's my little say on the matter, and I will finish by saying that in future I must be drastic in blue-pencilling such controversial items in reports, and again apologising for the previous unfortunate remark that slipped through the usual censorship. The writer who brought the matter up was very fair in his criticism, and I accept his views without reserve, and wish that the senders of the report to which exception was taken were as lucky in their relations with similar persons in their locality. Friends again? I hope so.

I have received a copy of the first number of the newly instituted S.M.A.E. Journal, which I think will be well received by the affiliated clubs. I understand that distribution is not limited in any way, and I hope to be able to give you fuller details as to subscription and distribution next month. Naturally, the first issue took time, many items requiring attention that are non-recurring, and by the time our next little chin-wag comes round all details will have been settled. I am glad to see Mr. Cosh stressing one item that is very important, that all information contained in the Journal is for the interest of *all* members of the club, and should not, as I know has on occasion happened, be kept to the sole knowledge of the secretary.

An interesting item is that the possession of an F.A.I. Licence (obtainable through the Competition Secretary of the S.M.A.E.) is a great help when applying for enlistment in the R.A.F. Some of you experienced modellers who have had difficulty in this direction may be interested in this aspect.

It is necessary to remember that the setting up of the Emergency Committee does not mean the cessation of Area activities. I feel rather that the opposite is the case, and where travelling facilities permit, these meetings can serve a most useful purpose in cementing the co-operation between clubs in various areas, and the forwarding of well-considered ideas and suggestions for the consideration of the committee. So, those areas that had got organised before the start of the present spot of bother—keep up the good work, even if conditions prevent as regular meetings as desired, and those who have still to get things going—it's time you saw to it. He gets nowhere who waits for things to happen, you know!

I am surprised at the number of clubs that failed to reply to the circular sent out by the S.M.A.E. requesting advice as to the continuance or otherwise of clubs. Presumably some secretaries had been called away to other duties, but where such is the case arrangements should have been made for the attention of correspondence by another party. If you are a club member, make it your business to ascertain whether or not the S.M.A.E. has been informed of your continued existence. It would be just too bad to go blithely on, and suddenly find that officially you are dead!

The subject of official S.M.A.E. lectures has been

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raised, and I am assured that the matter is to receive careful and speedy attention. This will be welcomed by both old and newly established clubs, and will fill a long felt want.

A wrong interpretation of the question of the Wakefield Cup Competition may be taken from the abbreviated report contained in last month's issue. The actual position is that no alteration has been made to existing specifications of the model type, and a competition under the existing rules will be included in the proposed list of events to be staged in 1940. (No official international event will be held). Eight events are planned, all to be run on the decentralised system—undoubtedly the only equitable method under the present circumstances. The final details will be settled at the A.G.M., together with many other far-reaching matters that will be to our benefit. The Emergency Committee seems to have made a good start, and with a thousand and one fiddling items off their plate, the full benefit of a small, efficient committee will soon make itself felt.

Mr. J. C. Smith sums up the situation very succinctly when he writes: "The work of the Emergency Committee will be greatly assisted if all will understand them to be, as the country's war-time Cabinet, anxious to do the best in very difficult times. Clubs' secretaries and delegates are asked to fully understanad that, while they will not be present at the new Emergency Committee meetings, whatever suggestions they may make from time to time, will be fully welcomed by that committee and fully considered."

It's not often I chatter on technical subjects in this column, but I have just finished reading a very interesting chapter in "Air Trails," the American publication, in which the writer gives the results of some very intensive and extensive tests made with a view to finding the best location for the tail-plane. He discloses that by far the most efficient position is at a place midway up the fin. This gave far better efficiency and longitudinal stability than the usual location on top of the fuselage, while a position at the top of the fin was definitely inefficient. The tests were made with a high-wing cabin type plane, and, of course, the results can only be certified for that type, but it is interesting for all that, and I thought you might like to hear of these findings for use in designing all those record-breakers you have on the board.

While on the subject of American news, a new book illustrating the national contests—and including a section on this year's Wakefield event—has been received, and makes interesting reading comparison with our own ways and methods. For a start, can you visualise the scene in a posh English hotel if a group of the lads started running up petrol engines on the beds, and strung models all across the rooms, and made microfilm in the baths, and held group meetings in the corridors in a half-naked state, and built models on the polished dressing tables! Ah me, such is Freedom.

I was tickled at the tale of the hardy "nuts" who slept on the field without even a fly-sheet over their cots. And the names they invent: Chicago Aeronuts,

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Mad Modellers, Balsa Butchers, Gas Bugs, etc., etc., all embroidered on special club singlets. (I'm going to get me one emblazoned with " The Crackbrained Clubman "—but it'll be bullet proof!) It certainly brightens up the proceedings to have a bunch of clubs all labelled this way—a bit different to the hotch-potch of costumes seen at our big meetings, ranging from berets to " donkeys' breakfasts."

Ever heard of High T. and H.? It means high temperature and humidity, and John Zaic gives a very interesting surmise in this book—(" The Nationals in Pictures," F. Zaic)—in which he theorises that the " sun turns the sulphur in rubber into sulphur dioxide, which in turn becomes sulphurous acid when it contacts the moisture in the air." This may give an explanation of the rubber fatalities at the Wakefield Finals. The evening before the meeting, when out test flying, our chaps were miles ahead of the rest, with their steady climb and long motor run, but came unstuck through motor breakages on the great day. Copland, who is highly regarded in the States, made the best showing, but was unlucky in his thermal chasing.

According to Ted Booth (Canada), the most surprising feature of the meeting was " the unsuccessful showing of the English team members. Serious, intent, and strongly regarded, they were expected to provide the strongest competition. Their school of thought—using long motor run and slow climb—was evidently not working right. Possibly the heat reduced the power of their motors more than they realised, but in any case they were not gaining sufficient altitude for long flights." Which bears out Mr. Cosh's remarks that " our lack of success was due almost entirely to the weather conditions, and not to any fault of the team or their models." Illness, etc., dogged some of the members, and this, together with the weather and rubber nuisance, made things well and truly difficult for them. As Cosh says: " They deserved better for their untiring efforts, and in saying that we are not seeking to make excuses for them." With which I think you will all agree.

An interesting snippet from this book, that will be well to keep in our own minds, is the remarks on the petrol events. " Considering the over-abundance of power on small and light models, we are doing well to keep them under control. There is still too much tail-chasing." And again: " The gas event has developed into a spectacular exhibition rather than a friendly competition of one design against another, and your chances of placing depends on how big a motor you can mount on a minimum allowable 'plane." Read, mark, learn, and well and truly digest these remarks, you enthusiasts, and don't allow the English event to follow suit, either in design or rules. Control is the all-important factor to remember with all models, and in particular petrol-engined affairs.

I was delighted to note the gracious acknowledgment given to our patron, Lord Wakefield, in this book, the writer evidently being as well informed of our good fortune in this respect as ourselves, and giving full credit for the international benefit received from our benefactor. It is good to see such appreciation coming from other sources than ourselves.

Well, well, well! Have I chattered this month! Unless the Editor gives my stuff the blue pencil, there will hardly be room for the reports you yourselves have forwarded. Still, there are not so many this time, evidently owing to the recent festive season's enervating effects, so here we go to the usual résumé of happenings here and there in the " Tight Little Island."

Members of the Gloucester and District M.A.C.

(Courtesy Gloucester Newspapers Ltd.).

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Before home news there are a couple of international items, one from Buenos Aires, and the other from Belgium. The South American correspondent sends a photo of a meeting held, in which all 'planes were built from plans that appeared in THE AERO-MODELLER last year. The winner, Manuel Mera, put up an average time of 83 sec., followed by Nicolas Gaudino with 76 sec. Messrs. Baldomero and Azzimonti were third and fourth. (The photo is numbered with the winners). I doubt if anyone could distinguish this group from a similar meeting held in England—the type of chap seems the same.

M. Norbert Goldenrath, of Brussels, sends in a very interesting snap of a model, "Short Sunderland," he has built. Fitted with a twin drive and movable controls, this looks a fine piece of work, and flying tests are now eagerly awaited.

A letter from the Secretary of the No. 374 SKYBIRD F.M.C. asks whether he can send in reports of his club's activities. All clubs are welcome to send news, so will all model aero clubs please note.

The newly-formed SOUTH BRADFORD M.A.C. reports increasing membership (30 at the moment), the fortnightly meetings being well attended.

N. Shatford, "Minister of Propergander," of the KETTERING AND D.M.A.S., sends in a photo of himself with his 6 ft. span petrol job, "Inspirer." He came second in an indoor flying meeting with a time of 36·5 sec. (not with the aforementioned 'plane!), being beaten to first place by D. Whitworth, who clocked 38 sec. It is hoped to start a branch of the club at Corby, where a number of people are interested.

The LANCASHIRE M.A.S. has had a very successful year in all directions, and is, at the moment, concentrating on an intensive winter programme. A series of indoor meetings booked for the early portion of 1940 is mentioned earlier in this column, and various competitions will be held at the later dates. Two competition meetings were scheduled for December, but the second meeting had to be diverted to practise flying, owing to decorations and bunting being strung across the top of the room for the purposes of a dance to be held later in the evening. The competition held at the first meeting was for pylon flying, and produced some extremely good times, as will be noted from the list of high finishes herewith:

					Average.
1. P. L. Smith ...	...	136	146	158	146·6 sec.
2. A. W. Shaw...	...	102	100	88	96·6 ,,
3. W. Titterington	...	87	85	92	88·0 ,,
4. J. Taylor ...	...	115	102	42	86·3 ,,
5. E. Brown ...	...	55	84	78	72·3 ,,
6. L. D. Mellor	...	58	80	76	71·3 ,,

They certainly seem to have got the hang of this type of flying in this part of the country—over 2½ minutes is good going, and a lot better than most times reported for pylon work. (Incidentally, I would be glad if clubs will inform me of their club record for this type of flying with, if possible, length of line used, and height of pylon. Only officially timed figures please, not approximations). I have noted a curious thing in connection with pylon flying, and that is the almost total lack of glide obtained. Has anyone any theories for this? The models used at the meeting were specified as maximum weight not to exceed 2 oz.

The summer programme—no, I'm not kidding, they said "summer"—will be fixed at the A.G.M., to be held immediately following the similar event of the S.M.A.E., when the club fixtures will be made to

Mr. E. Salmon presenting a cup to the winner of a solid scale competition staged by the Keighley (Yorks) M.A.C.

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A mass launch by members of the Gloucester M.A.C.

coincide with the national events. Commencing at 7.30 p.m. on January 26th, this will take place at the Manchester College of Technology. Disappointment is felt at the present impossibility of holding the usual dinner and dance, an event of increasing popularity among the northern modellers, while a proposed exhibition may have to be cancelled owing to A.R.P. difficulties on the question of crowds.

Since its reconstruction a year ago the READING AND D.M.A.C. has made rapid progress, membership passing the 40 mark, with finance on the useful side. Mr. Chandler gave a film show of the club's activities, followed by a pole flying event. (Mr. Chandler has built his own ciné-projector, including many ideas of his own that I am informed are extremely efficient). Mr. B. C. Sparkes, of 22 School Road, Tilehurst, Reading, has taken over the duties of Secretary in the absence of Mr. Ham, now on military service.

" Prof. Legpullski," of the TUNBRIDGE WELLS M.A.C., who terms himself pub(licity) manager, informs us that this club has opened a library of moder aeroplane periodicals and blue-prints. Mr. Cater, the club Crazy Flier, has finished a weird and wonderful machine which cannot make head-on collisions with Mother Earth—it flies backwards. The Professor's record to date is: 2 lost in trees. 2 head-on collisions. 1 eaten by cow (honest), and 2 jumped on and set alight. Nice fellows! Average flight is about 5 seconds, but it is hoped to double this soon.

An exhibition held by the KEIGHLEY M.A.C. included a solid-scale contest, and was won by Mr. H. Williamson with his fine Westland Lysander, followed by C. Butterfield (Hurricane), S. Parkington (D.H. Albatross, and N. Ferguson (Fairey Battle). Mr. Salmon, of Sheffield, presented the winner with the cup, seen in an accompanying photo. (It looks like a model of the Italian glider hung up there, plans of which were published in THE AERO-MODELLER a short time ago). Appreciation is expressed of help received from the trade in connection with this event. The secretary is now living at 41 Caledonia Road, Keighley. (Name, Mr. N. Ferguson).

Another secretary to change his address is K. Stothers, of the STONEYGATE M.A.C., who is now at 140 Uppingham Road, Leicester.

The STOCKTON-ON-TEES M.A.C. are building a " communal " petrol 'plane, with the intention of turning out the finest model ever. They have levied themselves one penny per person per week to defray costs, and all are co-operating on the project. A propeller carving contest is also to be held.

The VICTORIA M.A.C. roped in five new members at a recent indoor meeting, when times of 39, 45, 64 and 76 seconds were recorded. Mr. Vanderbeck, of T.M.A.C., made the best time with a geared model, and finished with an average of 65 sec. This club, in combination with the Dulwich and Brixton clubs, is producing a paper to be called " Torque," first number out on January 6th, and thence fortnightly. (Incidentally, will all clubs publishing their own papers or magazines please see that I get a copy for reference purposes. But don't ask me to pay for 'em—I'm skint).

Two new biplane records set up in the TROWBRIDGE AND D.M.A.C. are H.L. at 118·35 sec., and R.O.G. 116·8 sec., both by V. D. Wilkins. Indoor flying is being promoted here, and quite good fun is seen when certain models find the electric lights.

A combined meeting of the Ulster and Belfast clubs resulted in an amalgamation under the title of the ULSTER M.A.C., now, I am told, the only club in Northern Ireland. A committee was elected, and appreciation was expressed of the good work put in by Mr. B. Croft, who regretted he could no longer take an active part. Owing to the black-out the usual " Bun-Worry " did not take place, and a presentation of trophies was made by the Chairman. Mr. McKendry obtained 3, W. A. Martin 3, Dr. Charles 3, J. W. McLeod 3, and Messrs. N. B. Croft 2, D. B. Hamilton 1, and A. Taylor 1. After the meeting pole flying was introduced for the first time by Mr. Rodgers, with the result that a programme of talks and competitions has been arranged for the winter.

The DEWFLY *Designed by G. H. TUCKER*

Span 30 in. Weight 2¾ oz.

In introducing this new model we have no hesitation in stating it is one of the finest models available at the price. The best flight to date is one of 12½ minutes. The kit is complete with printed ribs, Drome thrust race, Dunlop rubber, tissue, cement, dope, tissue paste, rubber lubricant, propeller shaft and bobbin, finished propeller and full-size detailed blue print, etc. *Average Flight 2½ min.* **8/6**

Catalogue and Guide 3d. *Blue Print only* 2/- *Carriage* 9d. *extra*

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The WOODFORD M.A.C. have obtained the South Woodford Congregational Church Hall as their new club-room, and meetings are held there every Wednesday fortnight. An auction sale realised 14s., and an indoor meeting held later on included a competition round the pole with models built from two or more parts purchased in the sale! Mr. B. Smith was the winner. A photo sent in shows Mr. P. Matthews' " Standard Buccaneer."

Mr. Evans, of the WOLVERHAMPTON M.A.C., won a pole-flying event, and tied for first at a second meeting with Jack Everett, times 58·4 sec. Evans has since passed the minute mark with a time of 64 seconds. These chaps have acquired a club-room over a pub.! Nice woik! The secretary sends the following masterpiece :—

ODE TO A HARASSED INDOOR MODELLER (IN A BLACK-OUT).

" I squeeze upon a darkened bus
That should go to the terminus
That's near the club-room. Nasty thought!
' I wonder if I've really brought
Everything that I shall need.'
I squash myself into a seat,
And someone's great big hefty feet
Annihilate a corn. And lest
I crush my parcel to my chest
It will get smashed. ' I wonder where
I put that penny for my fare? '
Oh! here it is. Oh! dash, my lube
Has squashed itself out of the tube
And filled my pocket. There we are,
The stop at last. Now it's not far,
A little street, and now I'm here.
But, oh! dear me! my box I fear
Is smashed out flat. But I don't care,
In fact, I'm glad, not in despair.
I'm very glad, I say again,
That I forgot to pack my 'plane."

Arrangements are in hand for an early resumption of activities of the CHINGFORD M.F.C., and, with the acquisition of a suitable hall, indoor flying is to be introduced. A social evening, held on November 25th. was a very enjoyable affair, and celebrated the second anniversary of the club. Mr. Gibbons gave an interesting hour's ciné entertainment.

The ELLESMERE COLLEGE M.A.S. has had a successful term, and though some of the older members have had to leave owing to tending exams., new members are abundant. The secretary and chairman have been so busy they have hardly had time to stick two bits of balsa together, but the success more than makes up for that. Owing to the generosity of a member, the club has the use of a ciné-projector, but are experiencing difficulty in obtaining films. Will anyone able to help in this direction please communicate with Mr. R. Morris, School House. Shifnal, Shropshire.

A. W. Morris, of the BOWDEN AND D.M.A.S., has raised the club duration record to 75 seconds, while membership has risen to 15.

Ray Vines (aged 15 years), of 64 Cecil Street, Williamstown, W.16, Victoria, Australia, is anxious to correspond with someone in England, mainly on aero-modelling matters. What about it some of you?

The WALLINGTON M.A.C. is now holding its meetings on alternate Saturday afternoons.

Flying meetings are held about once a month, and, owing to increasing numbers, a very good show is always to be seen.

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Enlistment in the ranks of the Royal Air Force is at present taking place in the following trades:

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Volunteers should apply at the nearest Combined Recruiting Centre, the address of which can be obtained from local Ministry of Labour Exchange, or on application to the

INSPECTOR OF RECRUITING
VICTORY HOUSE, KINGSWAY
W.C.2

A twin-engined fad has started in the club, there being a Handley-Page " Hampden," and a Bristol " Blenheim " (photo enclosed), both being club designed, and also an Airspeed " Envoy " under construction.

The NORTHAMPTON M.A.C. are trying to fix up indoor flying meetings; meanwhile two or three members are putting in good work outdoor flying. Mr. Evans has been doing good work with lectures, which are much appreciated. A photo sent in shows a diamond-type model built by N. Fowler—and a grand view of an aero-modeller's bedroom! He does his building on the bed by the look of things!

Mrs. King presented the Fletcher Trophy of the GLOUCESTER DISTRICT M.A.C. to Mr. C. G. Moon for his record-breaking flight of 621·8 seconds. This took place at the second A.G.M. of the club.

Mass flight by members of the Scunthorpe M.A.C.

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Mr. Geo. A. Ginns and his successful petrol model, 5 ft. span, and powered by a 2.3 cc. Ohlsson. Over 60 flights have been made.

Meetings are held at the club-room every Wednesday evening, and flying every Sunday, weather permitting. An exhibition was staged at a local cinema, and drew appreciative crowds—and buckshee seats from the manager! Photos forwarded show members at a meeting last August, and a fine model aerodrome constructed by I. Newman.

A concert is being arranged by the BEVERLEY AND D.M.A.C. for January 25th, in aid of a R.A.F. Cigarette Fund, while billiards and darts handicaps are being run for the same purpose. Good work chaps. One parcel has already been sent. Between times, the members still find time for a spot of flying, and R. T. Ragg has had a flight of over a minute with a catapult launch glider.

The SPELDHURST (Kent) M.A.C. hope to hold a dance in January in celebration of their first anniversary, and it is hoped to have the club trophies presented by Dr. and Mrs. Thurston.

The war seems to have had a stimulating effect on the NORTHERN HEIGHTS M.F.C., and they are following a busier than usual winter programme, in spite of the present "chronic inconvenience."

Meetings are now held at 2a Hornsey Rise, London, N.19, on Saturday afternoons, at 3 p.m., and at the house of Mr. Rippon, 58 Hampden Way, Southgate, at 8 p.m., on Tuesdays.

The annual general meeting was held on Saturday, December 1st, officers for the coming year being drawn from those who would not be liable for service. The Gouge Trophy was run off in an icy gale on Sunday, November 19th. The rules limit the model to 1 sq. ft. of area, 5 oz. minimum total weight, and 1 oz. of rubber. The competition was won by Mr. Rippon with an average of 16 sec. The best average, 23 sec., was made by Mr. Ware, but his rubber was afterwards found to be overweight.

A pole flying contest, held on Saturday, December 9th, for models having a minimum span of 18 in., was won by Mr. Disney, who broke the club record with a fine flight of 95 sec.

On Saturday, December 16th, Bob Copland gave a practical demonstration of his own method of comparing the torques of various samples of rubber, and the practical use of the results.

Members of the SWINTON AND D.M.A.C. recently competed in two indoor meetings held by the L.M.A.S. on December 2nd and 16th, for R.T.P. and microfilm flying respectively. However, Lady Luck must have forsaken the said competitors, as Mr. Snape did not repeat his former successes at R.T.P. flying, and festive decorations at the competition hall ruined the microfilm flying. Nevertheless many lessons were learned.

Mr. Read, of the SALISBURY AND D.M.E.S., sends the following:—

"In spite of the black-out (in fact, I think, because of it), the club-room has been well patronised lately, and sometimes it has been too crowded for comfortable working.

"Some very nice models are being turned out, including a 2 in. scale 'Mr. Mulligan,' and a Hawker 'Fury,' by C. Sellwood. A Howard 'Mike,' by A. Burden, and a potential record breaker (or so he says!) by Mr. Dickenson. Other models being built at home are a Westland 'Lysander,' Airspeed 'Envoy,' and Miles Kestrel Trainer, all from AERO-MODELLER plans, and a Cunliffe-Owen 'Flying Wing.' You will notice that for some unknown reason practically everyone is building scale models, which up to now have been more or less neglected by our members. I send a photograph of the Lysander, which you may like to publish.

"We are also grappling with the mysteries of microfilm and indoor jobs, our star performer in this line being Mr. Lovell, who recently brought to the club-room a very pretty little microfilm covered model of about 12 in. span, which flew extremely well.

"I am glad to say that several new members have been enrolled, but we should like many more, so as to offset the inevitable reduction in membership caused by conscription and other effects of this war.

"A round the pole contest has been fixed for February 15th, for any type of model, the only stipulation being that wing span must not be more than 24 inches."

With the decision of the S.M.A.E. to hold contests during the coming season, members of the HALIFAX M.A.C. are already turning their thoughts to new models. This club has now a reputation to keep up for being in the forefront, and the winning way will be paved by the time put into new models at home during the next few weeks.

By kind permission of the Odeon Cinemas Ltd. the club is having another two weeks' show, in conjunction with the R.A.F. film, "The Lion Has Wings."

The Lees family have again had a successful year, the club championship cup having been won by Dennis G. Lees, who also won the chairman's cup for the best flight of the year, 17½ min.

Will members who have not recently appeared please note that meetings are now held on the first Tuesday in the month?

The annual general meeting of the Lancaster M.A.S.

1 in. scale job of a Lysander, built by R. A. Read, of Salisbury M.E.S.

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was held on December 15th, at the Society's temporary club-room at the J.B. Exchange and Mart, 13 Market-gate, Lancaster.

The Hon. Sec. opened the meeting by giving a brief report of the society's activities during the past year, in which he stated that at the beginning of the year, when the society took over the organisation known as the Lancaster, Morecambe and District Aero Club (Model Section), the membership stood at 29, a figure that it is regretted will not be able to be maintained under present cirmustances.

Numerous rallies have been visited during the past season, while the club events have been staged at Bolton-le-Sands, where waterlogged boots were unfortunately too prevalent! Miss E. P. Collings has taken over the duties of treasurer, owing to the previous officer, Mr. McDougall, being on active service.

A well-built model aerodrome constructed by I. Newman, of the Gloucester M.A.C.

The newly-formed WASHINGTON (Co. Durham) M.A.C. is fortunate in securing the use of a three-room club-house, where meetings are held regularly. Three contests have been held to date, and the club duration record now stands at 84·4 sec.

Owing to the R.A.F. duties of Mr. Anderton, Mr. H. E. Vauvelle, of 10 Barthorpe Crescent, Scott Hall Road, Leeds, has taken over the secretaryship of the LEEDS M.F.C. Unfortunately, the membership address book is mislaid, and he would be obliged if all members will please get in touch with Mr. Vauvelle immediately. This sort of happening is unfortunate, but cannot be blamed on anyone, the rush circumstances under which some officials have had to relinquish their jobs creating a great deal of confusion. The petrol-model bug has well and truly bitten these chaps, and it is expected to have 16 models of this type in 1940.

THE CLUBMAN.

IMPORTANT NOTICE TO MEMBERS OF THE NATIONAL GUILD OF AEROMODELLISTS

The first year's insurance expires on January 31st, 1940. All members must use the form printed on the back inside cover page of this issue, so as to re-register for the next twelve months. The insurance is being carried on exactly as before. Will all members fill in and send off their renewal form and subscription as soon as possible?

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COLCHESTER.—Kent Blaxill and Co. Ltd., 3a High Street. Balsa, kits and accessories, steam engines, Meccano, Hornby and Trix trains, agents for Handicrafts, Hobbies and Studiette materials and outfits.

DAGENHAM.—V. Cowing Ltd., 157 Broad Street, and R. Cowing and Son, New Road, Rainham. For latest kits, balsa, dopes, wire, cements, tissues, and ship models, etc.

DEVON, PAIGNTON.—H. Cove Clark, 13 Hyde Road, Stockists of "Joy Plane" products, model aero requisites, also first class selection of games, toys. Fishing tackle specialists, guns and sports dealer.

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HARROW.—A. H. Matthews, 15 Peterborough Road. For model aircraft supplies, balsa wood, cements, dopes, Jap tissue, piano wire, celluloid wheels, plywoods and hardwoods of all descriptions.

HERTFORD.—Woodcrafts, Railway Street. Largest stock of model aero supplies in East Herts. 30 in. duration models ready to fly from 12s. 6d. Ohlsson and Brown Junior engines in stock. Penguin, Frog, Dixon, Scalecraft, Cloud, Club, Veron, Star, Aeromodel and Megow kits are here.

LANCASTER.—Parkinson's, Sports Outfitters, The Lancaster Depot for aero modelling requirements. Solid kits, flying constructional kits, duration kits, and all accessories. Main "'Frog" depot.—Parkinson's, 40 Church Street, Lancaster. 'Phone 48.

LEICESTER.—Aero- Modellers! C. Farmer can supply all your requirements. Kits, balsa, tissue, props., wheels, dope in bottles or sold loose, wire, cement, Caton's rubber, etc. Local agent for Baby Cyclone engines. Call and have a chat. The address is 183 Green Lane Road. 'Phone 27722. Also THE AERO-MODELLER in stock.

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LONDON.—Norman Jaggers, 617 Barking Road, E.13, and 346 High Street, E.12, for comprehensive aero-modelling supplies. Scalecraft, Skyleader, Cloud, C.M.A., etc., kits stocked. We run "Joy," Slick, and Studiette products.

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Commencing with the March issue, please deliver or reserve for me "The Aero-Modeller" until further notice.

*Signature*_____ *January, 1940*

*Address*_____

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"CLOUDCRAFT" ABOVE ALL OTHERS

Supermarine Spitfire
16 in. Span

D.H. Hornet Moth

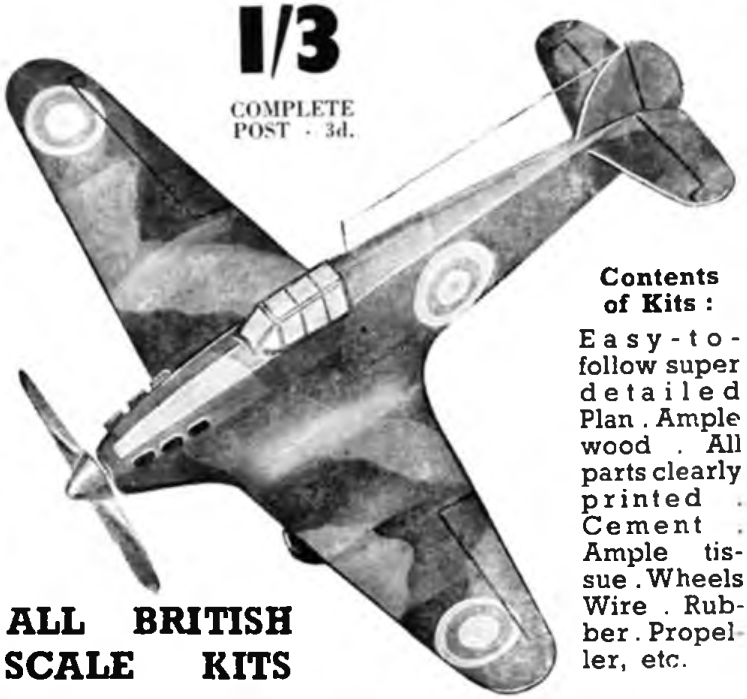
Gull Duration Model
15½ in. Span

Blackburn Skua
15 in. Span

H.17 Sailplane
20 in. Span

1/3

COMPLETE
POST · 3d.



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Contents of Kits :

Easy-to-follow super detailed Plan. Ample wood. All parts clearly printed. Cement. Ample tissue. Wheels Wire. Rubber. Propeller, etc.

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A Flying Monster, 15 in. to 20 in. Wing Span

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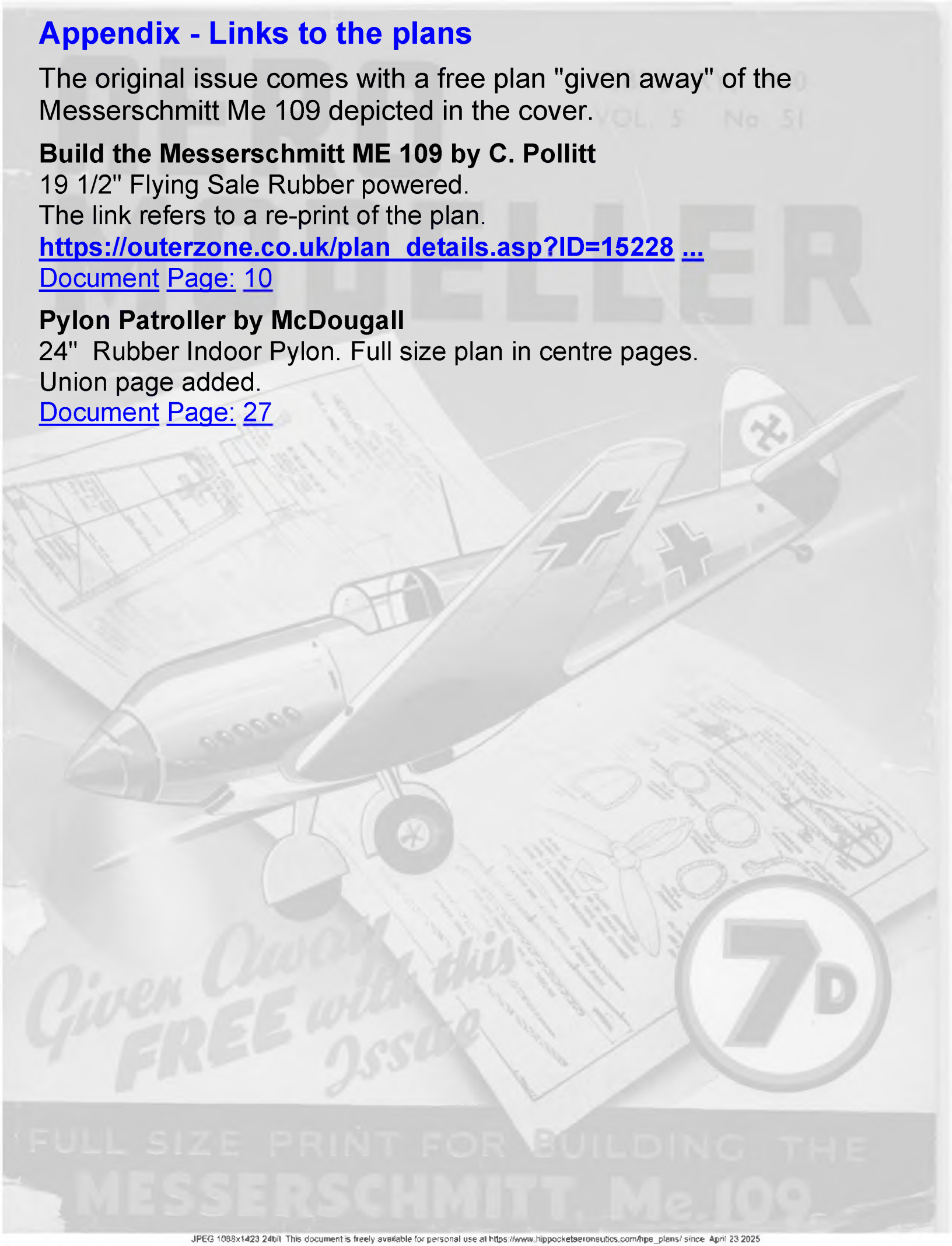
Appendix - Links to the plans

The original issue comes with a free plan "given away" of the Messerschmitt Me 109 depicted in the cover.

Build the Messerschmitt ME 109 by C. Pollitt
19 1/2" Flying Sale Rubber powered.
The link refers to a re-print of the plan.
https://outerzone.co.uk/plan_details.asp?ID=15228 ...
Document Page: 10

Pylon Patroller by McDougall
24" Rubber Indoor Pylon. Full size plan in centre pages.
Union page added.
Document Page: 27



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A 24" WING SPAN MICROFILM MONOPLANE

DESIGNED BY

H. Mc DOUGALL.

ASSEMBLY OF WINGS

2 — OFF

2 — OFF

6 — OFF

2 — OFF

WING RIBS

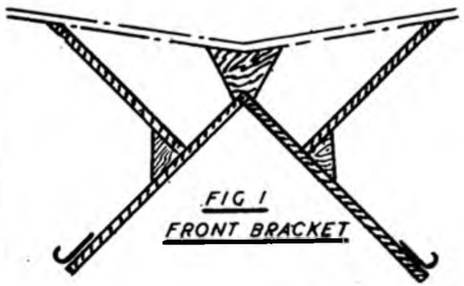


FIG 1
FRONT BRACKET

FIG 2
REAR WING FITTING

FIG 4
NOSEBLOCK

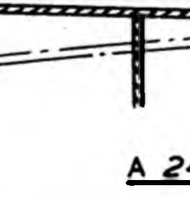


FIG 5
NOSE FORMER

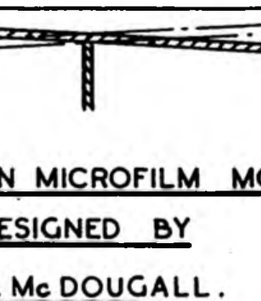


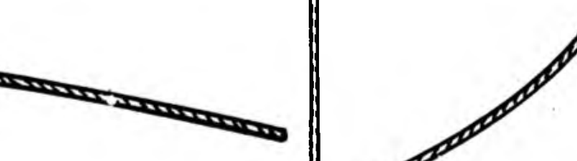
FIG 9
PROPELLER SHAFT

1 — OFF

TAILPLANE RIBS

ASSEMBLY OF TAILPLANE

2 — OFF



ASSEMBLY OF FIN

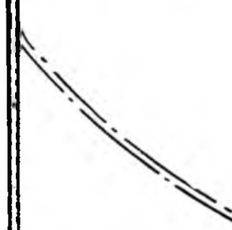


FIG 3
UNDERCARRIAGE LEG FITTING

FIG 6
PROPELLER HUB

FIG 7
BLADE ANGLES

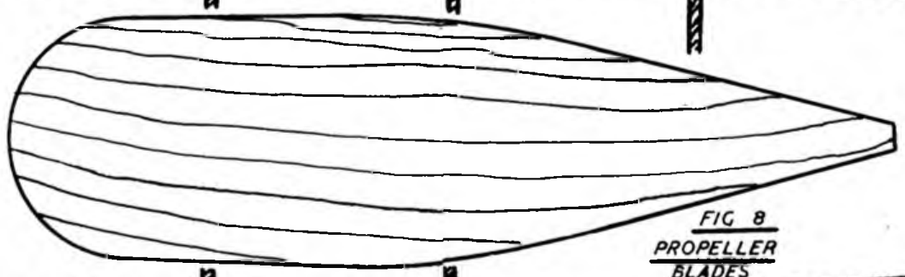


FIG 8
PROPELLER BLADES

A

A

SIDE OF FUSELAGE

A. POLLITT

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